MTN (PTY) LTD

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

ENVIRONMENTAL IMPACT ASSESSMENT REPORT
FINAL

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ENVIRONMENTAL IMPACT ASSESSMENT REPORT
FINAL

EIA REFERENCE 14/12/16/3/3/2/988

Prepared for:

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2195

Prepared by:

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Mtunzini
3867

May 2017

EXECUTIVE SUMMARY

DESCRIPTION OF THE PROPOSED ACTIVITY

Introduction

Telecommunications is one of the fastest growing sectors of South Africa's economy which has been driven by rapid growth in the number of mobile phone users and their need for broadband connectivity. South African mobile companies are also making inroads internationally, with MTN now having well over 200 million subscribers in more than 20 countries in Africa, Asia and the Middle East. The proposed ACE Cable System will provide an opportunity to facilitate the growth of the telecommunications infrastructure in South Africa and promote sustainable growth and development within South Africa and the African continent as a whole.

Mobile Telephone Networks (Pty) Ltd (MTN) proposes installing a submarine telecommunications cable, referred to as the Africa Coast to Europe (ACE) Cable System, to link South Africa and the West Coast of Africa with key international telecommunication hubs in Europe. In doing so, the company will facilitate more affordable and effective transport of voice, data, internet and television services.

Consistent with environmental best practice and environmental legislation, MTN has appointed ACER (Africa) Environmental Consultants as the Environmental Assessment Practitioner (EAP) to take responsibility for the EA requirements, including identifying environmental aspects relevant to the proposed telecommunications infrastructure and construction of the ACE Cable System.

Need and Desirability

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. As such, the improvement in Africa's information technology infrastructure via telecommunication cables will remove one of the current key inhibitors to development in Africa and support economic growth and opportunities on the continent.

Today, Africa relies primarily on satellites with few marine cables to provide its international communications. Improvement in Africa's information technology infrastructure via telecommunication cables will remove one of the current key inhibitors to development in Africa and support economic growth and opportunities on the continent. Following installation of the proposed ACE cable system, MTN will be able 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.

By supplying increased bandwidth, the proposed ACE Cable System will support the following NEPAD objective:

- To eradicate poverty in Africa and to place African countries both individually and collectively on a path of sustainable growth and development to thereby halt the marginalisation of Africa in the globalisation process.

Legal Requirements

There are many legal requirements (National, Provincial and Local Government spheres) to which the project proponent must adhere for the proposed ACE Cable System. A review of this legislation and guidelines applicable to the proposed project are provided in Chapter 2 of this report.

In the case of the proposed ACE Cable System, environmental authorisation will be based on the current Environmental Impact Assessment Regulations, 2014, published in Government Notices R 982, 983, 984 and 985 of 4 December 2014 under Section 24(5) read with Sections 24, 24D and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998). A list of all regulated activities potentially triggered by the proposed development is provided in Table 2. As the project involves the installation of an international telecommunications cable, the competent authority for this development is the national Department of Environmental Affairs (DEA) (in close consultation with the Western Cape Department of Environmental Affairs and Development Planning (DEADP)).

In addition to the environmental authorisation, the following permissions and licences will be required:

- A Water Use Licence will be required from the Department of Water and Sanitation as a wetland will be affected by the proposed development.
- Way leave and servitude agreements will be required from the City of Cape Town.
- Beach Driving permits will be required for construction vehicles to access the beach where the marine cable will make landfall.
- Risk assessments and emergency evacuation plans will be required as the project takes place within the Precautionary Action Zone (PAZ) of Koeberg Nuclear Power Station owned and operated by ESKOM.

ALTERNATIVES

MTN and ACER have undertaken environmental screening and scoping to try and identify the best possible landing alternatives and cable alignments to reach the MTN Cable Landing Station (CLS) site in Duynefontein. Initially, five landing site alternatives were considered, viz. Yzerfontein Beach and four alternatives near Melkbosstrand. Of these alternatives, two were considered as fatally flawed due to environmental and operational factors, one was considered feasible but would have significant impacts on the biophysical and social environment and two were considered feasible with low expected impacts. These two beach landing alternatives and cable alignments to the CLS site were selected for further assessment in the impact assessment phase of the environmental authorisation process. A detailed description of the alternatives assessed is provided in Chapter 5 of the Final Scoping Report and Chapter 4 and 6 of this Environmental Impact Assessment Report.

DESCRIPTION OF THE ENVIRONMENT

At each landing country associated with the ACE Cable System, the proposed fibre-optic cable will transit coastal waters and be brought on shore using industry-standard installation methodologies. When selecting the route alignment for the ACE Cable System, the following criteria were taken into account by the engineering and EIA team in order to find the most practical and cost effective alignments:

- The placing of the cable close to and along existing alignments of submarine telecommunications cables entering South Africa's waters.
- Identification of a suitable landing beach that minimises on-shore environmental and infrastructure constraints and enables the cable to be linked to the proposed cable station.

A detailed description of the receiving environment is provided in Chapter 5 of this Environmental Impact Assessment Report

METHODOLOGY USED TO DETERMINE SIGNIFICANCE OF POTENTIAL ENVIRONMENTAL IMPACTS

Issues and potential impacts were identified during Scoping. Those requiring further investigation were addressed by specialist studies and/or further detailed input from the environmental and technical team. Terms of reference were prepared to guide each specialist to ensure that issues and associated impacts were correctly understood and addressed, thereby enabling an integrated assessment of the proposed development. Information was collated, evaluated and integrated. Thereafter, each potentially significant impact was assessed, taking cognizance of assumptions and limitations.

SPECIALIST FINDINGS AND RECOMMENDATIONS

The following specialist studies were undertaken:

- Social Impact Assessment (Mr D Keal, ACER (Africa) Environmental Management Consultants, externally reviewed by Exigent Environmental).
- Vegetation and Ecological Assessment (Fauna and Flora) (Mr S Todd, Simon Todd Consulting).
- Fisheries Specialist Assessment (Mr D Japp, CapMarine).
- Cultural Heritage Resources Assessment (Ms L Webley, ACO Associates cc.).
- Wetlands Specialist Assessment (Mr D Ollis, Freshwater Consulting Group).
- Beach and Coastal Dune Dynamics Assessment (Mr S Bundy, Sustainable Development Projects cc.).

The specialist findings, identified impacts and recommendations are summarised in this EIA report (Chapter 8) and the full reports are contained in Appendix 5.

DESCRIPTION OF ENVIRONMENTAL ISSUES AND ASSESSMENT OF THEIR SIGNIFICANCE

The key issues identified during Scoping and carried through to the Impact Assessment have been identified as seven main questions:

- What are the potential social and socio-economic impacts associated with the construction and operation of the proposed ACE Cable System?
- What impacts will the construction and operation of the ACE Cable System have on the terrestrial environment (flora and fauna)?
- What impacts will the construction and operation of the ACE Cable System have on the fishing industry?
- What impacts will the construction and operation of the ACE Cable System have on wetlands within the study area?
- What impact will the construction and operation of the ACE Cable System have on the beach and dune cordon at Van Riebeeckstrand?
- What impact will the construction of the ACE Cable System have on cultural and heritage resources, including any paleontological resources (if any are identified during the study)?
- What cumulative impacts will the construction of the ACE Cable System have?

Drawing from the specialist studies, Chapter 9 describes each of these issues and associated impacts and discusses their significance.

A number of mitigation measures are provided to mitigate the potential impacts which are described in detail in Chapter 10 if this report.

ASSESSMENT OF POTENTIALLY SIGNIFICANT IMPACTS

The potentially significant impacts associated with the proposed ACE Cable System are described in detail in Chapter 9. These impacts have also been assessed and assigned significance ratings, according to the assessment conventions, before and after mitigation.

Although some negative impacts have been identified for the construction and operation of the proposed ACE Cable System it must be noted that the proposed development has a relatively small development footprint with limited support infrastructure. As such, the impacts associated with the proposed development during construction are limited and not considered significant. In addition to the above, much of the terrestrial footprint of the proposed development takes place in areas previously disturbed through urban development and the establishment of the suburbs of Duynefontein and Van Riebeeckstrand thus limiting the impact on these environments associated with the implementation of the proposed ACE Cable System.

OPINION ON ACTIVITY AUTHORISATION AND ASSOCIATED CONDITIONS

It is the professional opinion of the Environmental Assessment Practitioner that the proposed construction and operation of the ACE Cable System should be granted environmental authorisation by the Department of Environmental Affairs.

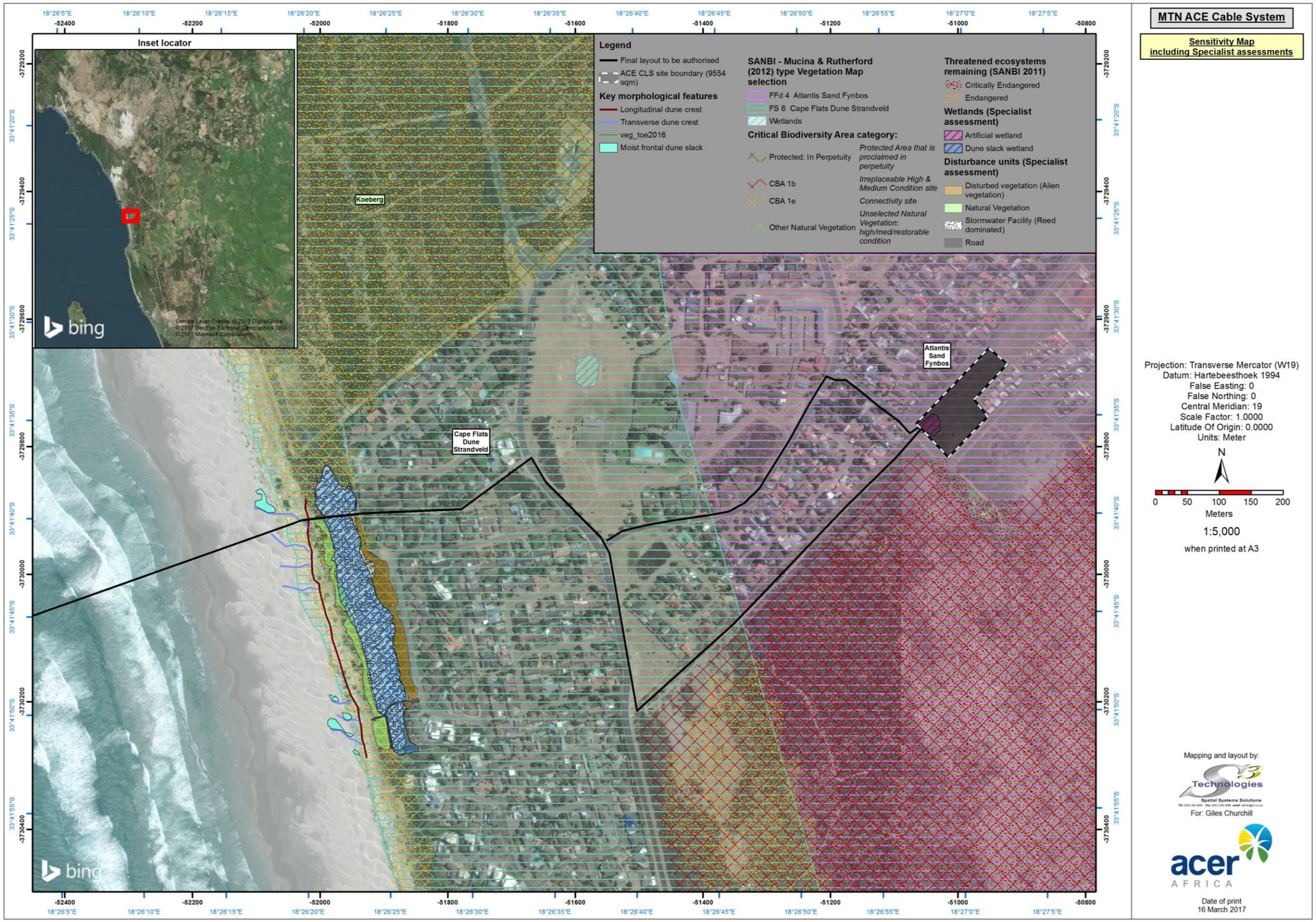
Authorisation for the following project alternatives are recommended for the ACE Cable System:

<u>Marine Environment</u>

- ❑ The proposed deepwater cable alignment.
- ❑ The proposed northern shallow water cable alignment.

<u>Terrestrial Environment</u>

- ❑ Proposed cable landing Alternative A
- ❑ Proposed Beach Man Hole at Alternative A
- ❑ Proposed cable alignment from landing Alternative A to the Cable Landing Station (CLS) in Duynefontein. From Otto du Plessis drive to the CLS the Alternative B alignment can also be authorised as an alternative to the Alternative A alignment (refer to Figure below)



MTN ACE Cable System

Sensitivity Map including Specialist assessments

Projection: Transverse Mercator (W19)
Datum: Hartebeesthoek 1994
False Easting: 0
False Northing: 0
Central Meridian: 19
Scale Factor: 1.0000
Latitude Of Origin: 0.0000
Units: Meter

N

0 50 100 150 200
Meters

1:5,000
when printed at A3

Mapping and layout by:
Technologies
Spatial Systems Solutions
For: Giles Churchill

acer AFRICA

Date of print
16 March 2017

ENVIRONMENTAL IMPACT STATEMENT

Following Scoping and the distillation of issues and associated potential impacts, six specialist studies were undertaken during the Environmental Impact Assessment Phase to further investigate the key issues, identify and assess potential impacts and the mitigation thereof. Following a review of the specialist studies undertaken and the integration of their findings it is apparent that the proposed ACE Cable System is not anticipated to have any significant detrimental impacts on the environment.

Terrestrial Environment

The Vegetation and Ecology, Wetland, and Beach and Coastal Dune Dynamics Assessments identified sensitive areas within the proposed development footprint including a dune slack wetland, Dune Strandveld vegetation type and a Critical Biodiversity area adjacent to the proposed project area. Other than the dune slack wetland the other sensitive areas can be avoided entirely by the proposed development and no impacts on these sensitive areas are expected.

Heritage resources within the proposed study area are known to occur but following an assessment by the Heritage specialist it was determined that impacts to archaeological and palaeontological heritage are likely to be low.

The coastal dune cordon at Van Riebeekstrand has been shown to presently be a mobilising system where engulfment by sediments of the formerly vegetated dunes is seeing a leeward migration of dunes and some engulfment of vegetation. Such transgression of the dune structures has arisen since 2010 and may be a response to changing maritime and meteorological factors. Following due consideration of the state of the two site options for the landing of the cable at Van Riebeeckstrand, landing Alternative A is the preferred landing alternative as it will result in limited disturbance to the prevailing dune morphology and has less vegetation cover. With mitigation, the impacts on the coastal dune cordon due to construction is considered not to be significant.

Marine Environment

The offshore demersal trawl fleet is based predominantly in the ports of Cape Town and Saldanha Bay and operate extensively off the West Coast. Trawl gear is towed along bathymetric contours and would be expected to cross the proposed cable route perpendicularly at a depth range of between 200 m and 750 m below sea level. The additional exclusion zone of the new cable would cover approximately 0.3% (187 km^2) of the total ground available to the fishing industry. Fishing activity in the vicinity of the cable routing is equivalent to less than 1% of the total effort expended by the fishing industry on a national level. The impact of this exclusion on the fisheries is expected to be of low intensity (where fishing could continue in a slightly modified way) and of overall low significance due to the localised extent of the impact. In addition to the above, annual fish quota allocations to the fishing industry are defined by the permits issued to the fisheries participants and as such, it is envisaged that the proposed ACE Cable System will not impact on the amount of fish caught but rather the level of fishing effort expended in certain areas within the fishing grounds.

Although impacts on the benthic environment will occur during cable installation the long term impact on the benthic environment is considered to be positive as the exclusion zones around marine telecommunications cables act as refuges for fish species and benthic organisms where fishing and disturbance to the benthos is not permitted by fishing vessels. Overall the ACE Cable system will ensure that an additional 187 km^2 of ocean floor is offered some level of protection over the next 25 years (approximate lifespan of a marine telecommunications cable).

Provided mitigation measures as recommended in this report are implemented and construction is undertaken in accordance with specifications contained within the EMPr, no significant negative environmental impacts are anticipated from the construction and operation of the ACE Cable System.

Assessment of key impacts of the proposed ACE Cable System on the environment

Description of Impact	Nature of Impact	Intensity	Duration	Extent	Significance without Mitigation	Significance with Mitigation
Improved bandwidth and telecommunications capacity in South Africa	Positive	Medium	Long - Term	National	High	N/A
Potential damage to existing infrastructure (pathway between Dunker and Edward Crescent)	Negative	High	Long - Term	Local	High	Low
Disruption of access to local residents	Negative	High	Short - Term	Local	Medium	Low
Employment creation	Positive	Medium	Short - Term	Local	Low	Low
Disturbance to local residents (construction)	Negative	High	Short - Term	Local	High	Low
Impact Heritage resources	Negative	High	Long - Term	Local	Medium - Low	Low
Cumulative effects on the biophysical environment (Construction)	Negative	High	Short - Term	Local	Medium	Low
Cumulative effects on the biophysical environment (Operations)	Negative	Low	Long - Term	Local	Low	Low
Cumulative impacts on the social environment (Construction)	Negative	High	Short - Term	Local	Medium	Low
Impact on the fishing industry	Negative	High	Long - Term	Regional	Medium	Low
Impact on dune slack wetland	Negative	High	Short - Term	Local	Low	Low
Impact on beach and coastal dunes	Negative	High	Short - Term	Local	Medium	Low
Impact on Critical Biodiversity Areas and Cape Flats Dune Strandveld	Negative	High	Short - Term	Local	Medium	Low

ENVIRONMENTAL APPLICATION

Adherence to Regulatory Requirements, Regulation No R. 982 published in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) (as amended)

CONTENT OF ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT AS PER THE 2014 EIA REGULATIONS (APPENDIX 3)		RELEVANT SECTION WITHIN THE EIA REPORT
(a)	Details of:	-
	(i) the EAP who prepared the report; and	Chapter 1, Section 1.2
	(ii) the expertise of the EAP, including a curriculum vitae;	Chapter 1, Section 1.2
(b)	The location of the activity, including:	Chapter 4
	(i) the 21-digit Surveyor General code of each cadastral land parcel;	n/a (included in Project Maps)
	(ii) where available, the physical address and farm name;	n/a (included in Project Maps)
	(iii) where the required information in items (i) and (ii) is not available, the coordinates of the boundary of the property or properties;	Chapter 4 (included in Project Maps)
(c)	A plan which locates the proposed activity or activities applied for as well as the associated structure and infrastructure at an appropriate scale, or, if it is:	Chapter 4 (included in Project Maps)
	(i) a linear activity, a description and coordinates of the corridor in which the proposed activity or activities is to be undertaken;	Chapter 4 (included in Project Maps)
	(ii) on land where the property has not been defined, the coordinates within which the activity is to be undertaken;	-
(d)	A description of the scope of the proposed activity, including:	Chapter 1
	(i) all listed and specified activities triggered and being applied for; and	Chapter 1 (Table 2)
	(ii) a description of the associated structures and infrastructure related to the development;	Chapter 4
(e)	A description of the policy and legislative context within which the development is located and an explanation of how the proposed development complies with and responds to the legislation and policy context;	Chapter 2
(f)	A motivation for the need and desirability for the proposed development, including the need and desirability of the activity in the context of the preferred location;	Chapter 3

CONTENT OF ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT AS PER THE 2014 EIA REGULATIONS (APPENDIX 3)		**RELEVANT SECTION WITHIN THE EIA REPORT**
(g)	A motivation for the preferred development footprint within the approved site	Executive Summary
(h)	A full description of the process followed to reach the proposed development footprint within the approved site, including:	Chapter 4, Section 4.6
	(i) details of all the alternatives considered;	Chapter 4, Section 4.6
	(ii) details of the Public Participation Process undertaken in terms of regulation 41 of the Regulations, including copies of the supporting documents and inputs;	Chapter 7 (and in Appendix 2)
	(iii) a summary of the issues raised by I&APs, and an indication of the manner in which the issues were incorporated, or the reasons for not including them;	Chapter 7, Section 7.5 (and in Appendix 3)
	(iv) the environmental attributes associated with the development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Chapter 5
	(v) the impacts and risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts: (aa) can be reversed; (bb) may cause irreplaceable loss of resources; and (cc) can be avoided, managed or mitigated;	Chapter 6, Section 6.4
	(vi) the methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks;	Chapter 6, Section 6.4
	(vii) positive and negative impacts that the proposed activity will have on the environment and on the community that may be affected focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects;	Chapter 9
	(viii) the possible mitigation measures that could be applied and level of residual risk;	Chapter 9
	(ix) If no alterative development locations for the activity were investigated, the motivation for not considering such; and	n/a
	(x) A concluding statement indicating the preferred alternative development location within the approved site;	Chapter 11 and Executive Summary
(i)	A full description of the process undertaken to identify, assess and rank the impacts the activity and associated structures and infrastructure will impose on the preferred location through the life of the activity, including	Chapter 6, Section 6.4
	(i) A description of all environmental issues and risks that were identified during the environmental impact assessment process; and	Chapter 9

CONTENT OF ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT AS PER THE 2014 EIA REGULATIONS (APPENDIX 3)		RELEVANT SECTION WITHIN THE EIA REPORT
	(ii) An assessment of the significance of each issue and risk and an indication of the extent to which the issue and risk could be avoided or addressed by the adoption of mitigation measures;	Chapter 9
(j)	An assessment of each identified potentially significant impact and risk, including	Chapter 9
	(i) Cumulative impacts;	Chapter 9
	(ii) The nature, significance and consequences of the impact and risk;	Chapter 9
	(iii) The extent and duration of the impact and risk;	Chapter 9
	(iv) The probability of the impact and risk occurring;	Chapter 9
	(v) The degree to which the impact and risk can be reversed;	Chapter 9
	(vi) The degree to which the impact and risk may cause irreplaceable loss of resources; and	Chapter 9
	(vii) The degree to which the impact and risk can be mitigated;	Chapter 9
(k)	Where applicable, a summary of the finding and recommendation of any specialist report complying with Appendix 6 to these Regulation and an indication as to how these finding and recommendation have been included in the final assessment report;	Chapter 8
(l)	An environmental impact statement which contains	Chapter 11
	(i) A summary of the key findings of the environmental impact assessment	Chapter 11
	(ii) A map at an appropriate scale which superimposes the proposed activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers; and	Appendix 7
	(iii) A summary of the positive and negative impacts and risks of the proposed activity and identified alternatives;	Chapter 11
(m)	Based on the assessment, and where applicable, recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management objectives, and the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation;	Chapter 9 and Chapter 12
(n)	The Final proposed alternatives which respond to the impact management measures, avoidance, the mitigation measures identified through the assessment;	Chapter 12
(o)	Any aspects which were conditional to the finding of the assessment either by the EAP or specialist which are to be included as conditions of authorisation	Executive Summary
(p)	A description of any assumptions, uncertainties and gaps in knowledge which relate to the assessment and mitigation measures proposed;	Executive Summary

CONTENT OF ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT AS PER THE 2014 EIA REGULATIONS (APPENDIX 3)		**RELEVANT SECTION WITHIN THE EIA REPORT**
(q)	A reasoned opinion as to whether the proposed activity should or shouldn't be authorised, and if the opinion is that it should be authorised, any conditions that should be made in respect of that authorisation;	EAP's Opinion on Authorisation and Chapter 12
(r)	Where the proposed activity does not include operational aspects, the period for which the environmental authorisation is required and the date on which the activity will be concluded and the post construction monitoring requirements finalised;	Not applicable
(s)	An undertaking under oath or affirmation by the EAP in relation to:	After Authors and in Appendix 1
	(i) the correctness of the information provided in the reports;	After Authors and in Appendix 1
	(ii) the inclusion of comments and inputs from stakeholders and I&APs;	After Authors and in Appendix 1
	(iii) The inclusion of inputs and recommendation from the specialist reports where relevant; and	Chapter 8
	(iv) Any information provided by the EAP to interested and affected parties and any responses by the EAP to comments or inputs made interested or affected parties;	Chapter 7, Section 7.5
(t)	Where applicable, details of any financial provisions for the rehabilitation, closure, and ongoing post decommissioning management of negative environmental impacts;	Not applicable
(u)	An indication of any deviation from the approved scoping report, including the plan of study, including	Not applicable see Chapter 4
	(i) any deviation from the methodology used in determining the significance of potential environmental impacts and risks; and	Not applicable see Chapter 4
	(ii) a motivation for the deviation;	Not applicable see Chapter 4
(v)	Any specific information that may be required by the competent authority; and	N/A
(w)	Any other matters required in terms of section 24(4)(a) and (b) of the Act.	N/A

CONTENT OF ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) AS PER THE 2014 EIA REGULATIONS (APPENDIX 4) – AS AMENDED APRIL 2017		**RELEVANT SECTION WITHIN THE EMPR**
(1)	An EMPr must comply with section 24N of the act and include	√
(a)	Details of	-
	(i) the EAP who prepared the EMPr; and	Chapter 1, Section 1.2; Appendix 8
	(ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Chapter 1, Section 1.2; Appendix 8
(b)	A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Chapter 4 and Appendix 8
(c)	A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Appendix 7 and 8
(d)	A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including	Appendix 8
	(i) Planning and design;	Appendix 8
	(ii) pre-construction activities;	Appendix 8
	(iii) construction activities;	Appendix 8
	(iv) rehabilitation of the environment after construction and where applicable post closure; and	Appendix 8
	(v) where relevant, operation activities;	Appendix 8
(f)	A description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to	Appendix 8
	(i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation;	Appendix 8
	(ii) comply with any prescribed environmental management standards or practices;	Appendix 8
	(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and	Appendix 8
	(iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Appendix 8
(g)	The method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Appendix 8
(h)	The frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Appendix 8
(i)	An indication of the persons who will be responsible for the	Appendix 8

CONTENT OF ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR) AS PER THE 2014 EIA REGULATIONS (APPENDIX 4) – AS AMENDED APRIL 2017		**RELEVANT SECTION WITHIN THE EMPR**
	implementation of the impact management actions;	
(j)	The time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Appendix 8
(k)	The mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Appendix 8
(l)	A program for reporting on compliance, taking into account the requirements as prescribed by the regulations;	Appendix 8
(m)	An environmental awareness plan describing the manner in which	Appendix 8
	(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and	Appendix 8
	(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Appendix 8
(n)	Any specific information that may be required by the competent authority.	-
(2)	Where a government notice *gazetted* by the Minister provides for a generic EMPr, such generic EMPr as indicated in such notice will apply.	Not applicable

ENVIRONMENTAL ASSESSMENT PRACTITIONER'S OPINION ON AUTHORISATION

It is the professional opinion of the Environmental Assessment Practitioner that the proposed construction and operation of the ACE Cable System be granted environmental authorisation by the Department of Environmental Affairs.

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. As such, the improvement in Africa's information technology infrastructure via telecommunication cables will remove one of the current key inhibitors to development in Africa and support economic growth and opportunities on the continent. This support to South Africa's economic growth is considered a huge benefit to the country given the current economic climate and constraints experienced in South Africa

After investigations and assessment, the key issues associated with the proposed development are the potential impacts on the natural environment, potential impacts on primary dunes, potential impacts on the fishing industry, potential impacts on wetlands and potential social and socio-economic impacts and benefits. Although some negative impacts have been identified for the construction and operation of the proposed ACE Cable System it must be noted that the proposed development has a relatively small development footprint with limited support infrastructure. As such the impacts associated with the proposed development during construction is limited and not considered significant. In addition to the above, much of the terrestrial footprint of the proposed development takes place in areas previously disturbed through urban development and the establishment of the suburbs of Duynefontein and Van Riebeeckstrand thus limiting the impact on these environments associated with the implementation of the proposed ACE Cable System. With the mitigation proposed the negative impacts associated with the proposed development can be mitigated or avoided entirely and as such it is the EAPs opinion that environmental authorisation be granted for the proposed development.

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT DISTRIBUTION

The Draft Environmental Impact Assessment Report was distributed to key stakeholders and was available at the following places for public review, during the period 3 April 2017 to 7 May 2017.

Venue	Street	Contact Person and Number
Koeberg Public Library	Merchant Walk, Duynefontein, 7441	Ms. Roelda Brown 021 553 2514
Melkbosstrand Ratepayers' Association	25 Jacobus Crescent, Duynefontein, 7441	Mrs. Smokie La Grange 073 357 6359

The Draft Environmental Impact Assessment Report was also available on ACER's web site (www.acerafrica.co.za) under the 'Current Projects' link.

The following authorities were also sent hard copies of the Draft Environmental Impact Assessment Report:

1. Department of Environmental Affairs
   Ms Sindiswa Dlomo
   Email: Sdlomo@environment.gov.za

2. Department of Environmental Affairs – Biodiversity Oceans and Coast Division
   Mr Lindelani Mudau
   Email: Lmudau2@environment.gov.za
   (Mr A Boyd has requested that the report be submitted to Mr Mudau for comment)

3. Department of Environmental Affairs and Development Planning, Western Cape Government
   Mrs Adri La Meyer
   Email: Adri.LaMeyer@westerncape.gov.za

4. City of Cape Town (Energy, Environment and Spatial Planning Division)
   Ms Pat Titmuss
   Email: pat.titmuss@capetown.gov.za

5. CapeNature (Theewaterskloof, Overstrand & Stellenbosch)
   Mr Rhett Smart
   Email: rsmart@capenature.co.za

6. Department of Water Affairs & Sanitation
   Ms Hester Lyons
   Email: LyonsH@dws.gov.za

7. Department of Agriculture, Forestry and Fisheries
   Ms S. Ndundane
   Email: SiphokaziN@daff.gov.za

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ABBREVIATIONS AND ACRONYMS

ACE	Africa Coast to Europe
ACER	ACER (Africa) Environmental Consultants
BID	Background Information Document
BMH	Beach Man Hole
CA	Competent Authority
CLS	Cable Landing Station
CPTs	Cone Penetrometer Tests
CRR	Comments and Responses Report
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department Environmental Affairs (national)
DEADP	Western Cape Department of Environmental Affairs and Development Planning
DSR	Draft Scoping Report
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
EIAR	Environmental Impact Assessment Report
EIS	Ecological Importance and Sensitivity
EMPr	Environmental Management Programme
Eskom	Eskom Holdings (SOC) Limited
EEZ	Exclusive Economic Zone
FSR	Final Scoping Report
GPS	Global Positioning System
HDPE	High-density polyethylene
I&APs	Interested and Affected Parties
ICMA	Integrated Coastal Management Act (Act No. 24 of 2008)
LWM	Low Water Mark
MPAs	Marine Protected Areas
MTN	Mobile Telephone Networks (Pty) Ltd
MBES	Multi-beam echo sounder
NEMA	National Environmental Management Act
NEPAD	New Partnership for Africa's Development
NHRA	National Heritage Resources Act
NNR	National Nuclear Regulator
Nm	Nautical Miles
NWA	National Water Act, 1998 (Act 36 of 1998)
OC	Department of Environmental Affairs – Oceans and Coasts
PAZ	Precautionary Action Zone
PEB	Public Exclusion Boundary
PES	Present Ecological State
PLGR	Pre-Lay Grapnel Run
SAHRA	South African Heritage Resources Association
SAFE	South Africa Far East Cable
SADSTIA	South African Deep Sea Trawling Industry Association
SAHARA	South African Heritage Resources Agency
SAMSA	South African Maritime Safety Authority
SAT-3/WASC	South Atlantic 3/West Africa Submarine Cable
SARCA	Southern African Reptile Conservation Assessment
TNPA	Transnet National Ports Authority
TW	Territorial Waters
UNCLOS	United Nations Convention on the Laws of the Sea
WA	National Environmental Management: Waste Act, 2008 (Act 59 of 2008)
WACS	West Africa Cable System
WD	Water Depth

AUTHORS

The authors of this Environmental Impact Assessment Report are Mr. G Churchill and Dr R-D Heinsohn (ACER (Africa) Environmental Consultants). An external review was conducted by Mr. P Scherzer (E&D Consulting Services).

environmental affairs
Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

DETAILS OF EAP AND DECLARATION OF INTEREST

	(For official use only)
File Reference Number:	12/12/20/
NEAS Reference Number:	DEA/EIA/14/12/16/3/3/2/988
Date Received:	

Application for authorisation in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended and the Environmental Impact Assessment Regulations, 2014

PROJECT TITLE

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

Environmental Assessment Practitioner (EAP):[1]	Giles John Churchill		
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Project Consultant:	Giles Churchill		
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Telephone:	035 3402715	Fax:	035 3402232
E-mail:	giles.churchill@acerafrica.co.za		

4.2 The Environmental Assessment Practitioner

I, Giles Churchill , declare that –

General declaration:

- I act as the independent environmental practitioner 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 environmental impact assessments, 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 will take into account, to the extent possible, the matters listed in regulation 8 of the regulations when preparing the application and any report relating to the application;
- I have no, and will not engage in, conflicting interests in the 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 the 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;
- I will ensure that information containing all relevant facts in respect of the application is distributed or made available to interested and affected parties and the public and that participation by interested and affected parties is facilitated in such a manner that all interested and affected parties will be provided with a reasonable opportunity to participate and to provide comments on documents that are produced to support the application;
- I will ensure that the comments of all interested and affected parties are considered and recorded in reports that are submitted to the competent authority in respect of the application, provided that comments that are made by interested and affected parties in respect of a final report that will be submitted to the competent authority may be attached to the report without further amendment to the report;
- I will keep a register of all interested and affected parties that participated in a public participation process; and
- I will provide the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not
- all the particulars furnished by me in this form are true and correct;
- will perform all other obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

Disclosure of Vested Interest (**delete whichever is not applicable**)

I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Environmental Impact Assessment Regulations, 2014;

Signature of the environmental assessment practitioner:

ACER (Africa) Environmental Consultants

Name of company:

Date:

1. INTRODUCTION

1.1 Background

Submarine telecommunication cables are important for international telecommunication networks; they transport almost 100% of transoceanic Internet traffic throughout the world (www.iscpc.org). It is widely recognised that access to affordable international bandwidth is key to unlocking economic development in every country. Today, Africa still relies primarily on satellites with only few submarine cables to provide its international communications. Communication via submarine telecommunication cables generally allows for lower cost, better performance, and greater capacity (throughput) than that available via satellite.

Improvement in Africa's information technology infrastructure via telecommunication cables will remove one of the current key inhibitors to development in Africa and support economic growth and opportunities on the continent. MTN (Pty) Ltd (MTN) proposes installing a submarine telecommunications cable, referred to as the Africa Coast to Europe (ACE) Cable System, to link South Africa, the West Coast of Africa and Europe with key international telecommunication hubs in Europe (Figure 1). 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 NEPAD (New Partnership for Africa's Development), and provide a means of fulfilling the South African Government's requirements in terms of digital television broadcasting for the country.

MTN South Africa aims to secure local landing permits to land the ACE Cable System as the designated Landing Partner of the Cable System in South Africa and has the required licences to operate international telecommunication infrastructure in the country.

The proposed ACE Cable System requires environmental authorisation from the Department of Environmental Affairs (DEA) in terms of the 2014 Environmental Impact Assessment Regulations published under the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA). In this context, ACER (Africa) Environmental Consultants (ACER) has been appointed by MTN to take responsibility for the application for environmental authorisation for the construction of the ACE Cable System.

This Environmental Impact Assessment Report (EIAR) has been compiled in accordance with the requirements of NEMA, in particular, Government Notice Regulation 982, published on 4 December 2014, which outlines the requirements of an Environmental Impact Assessment (EIA) undertaken to apply for environmental authorisation for activities listed in Government Notice Regulation R 983, 984 and 985 of 4 December 2014 under Section 24(5) read with Sections 24, 24D and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998).

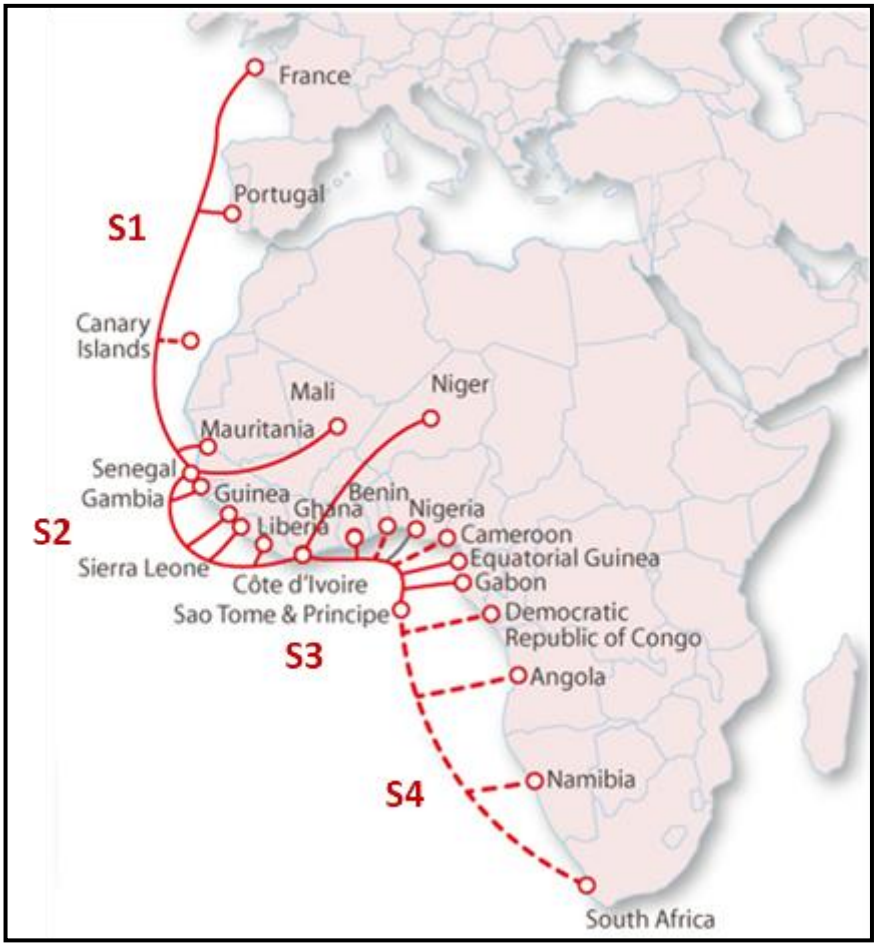


Figure 1 Proposed ACE Cable System linking South Africa and the West Coast of Africa to Europe (Dotted line indicates those sections of the cable system still to be implemented)

1.2 Qualifications and experience of the Environmental Assessment Practitioner

ACER (Africa) Environmental Consultants (ACER) is a well-established company with wide ranging expertise in environmental management and assessment processes. ACER has twice won the IAIAsa National Premium Award for excellence in environmental management and assessment. The qualifications and experience of the primary assessors and report compilers are listed in Table 1 and curriculum vitae are provided in Appendix 4.

Table 1 Qualifications and experience

EAP	Academic Qualification	Relevant Work Experience
Dr Dieter Heinsohn (Internal Reviewer and Project Director)	PhD	More than 25 years' experience in environmental management and impact assessments. He is registered with the South African Council for Natural Scientific Professions in the field of environmental science (Registration No 400442/04) and certified with the Interim Certification Board
Mr Giles Churchill (EAP and Co-author)	MSc	9.5 years' experience in environmental management, impact assessments and the monitoring of compliance with specifications contained in Environmental Management Programmes
Mr P Scherzer (External Reviewer)	MA Food, Society and International Food Governance BSc (Agric)	Mr Scherzer has 19 years' experience in environmental and social impact assessments, including numerous marine and submarine cable related environmental assessments. He is a registered professional natural scientist and a certified Environmental Assessment Practitioner and has undertaken project work in seven other Southern and Central African countries.

1.3 Environmental assessment requirements and process

In terms of the current Environmental Impact Assessment Regulations, 2014, published in Government Notices R 982, 983, 984 and 985 of 4 December 2014 under Section 24(5) read with Sections 24, 24D and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998), the proposed ACE Cable System includes activities that are listed in the current environmental regulations. As such, the project may not commence without environmental authorisation from the relevant competent authority, in this case, the national Department of Environmental Affairs (DEA)[1] (in close consultation with the Western Cape Department of Environmental Affairs and Development Planning (DEADP)). In terms of the current regulations and environmental best practise, the potential impacts of the project on the environment (social, economic and biophysical) must be considered, investigated and assessed prior to implementation.

In the case of the proposed ACE Cable System, environmental authorisation will be based on the current Environmental Impact Assessment Regulations, 2014, published in Government Notices R 982, 983, 984 and 985 of 4 December 2014 under Section 24(5) read with Sections 24, 24D and 44 of the National Environmental Management Act, 1998 (Act No. 107 of 1998). Given that the project triggers listed activities in these regulations (Table 2), the application for environmental authorisation requires a process of Scoping and Environmental Impact Assessment as outlined in Regulation R982 (as amended). The EIA process is currently in the Environmental Impact Assessment Phase. This is the phase during which issues identified for further investigation during scoping are assessed and reported on so that they can be considered by the DEA for decision making.

[1] DEA is the authorising authority as the project crosses international boundaries and is of national importance.

Table 2 Listed activities potentially triggerd by the proposed ACE Cable System as per the 2014 and 2017 regulations

LISTED ACTIVITIES UNDER THE 2014 REGULATIONS	
Activity Numbers	**Relevant Listed Activities as set out in Listing Notice 1 (GN No. R. 983) and reasons why they are triggered**
Activity 15 of Listing Notice 1 (No. R. 983 of 2014) The development of structures in the coastal public property where the development footprint is bigger than 50 square metres, excluding - (i) the development of structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (ii) the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (iii) the development of temporary structures within the beach zone where such structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared; or (iv) activities listed in activity 14 in Listing Notice 2 of 2014, in which case that activity applies.	The project will entail the landing of a marine telecommunications cable at Van Riebeeckstrand Beach. This will entail the digging of a trench down the beach (coastal public property) into the intertidal zone and the installation of the underground telecommunications cable.
Activity 17 of Listing Notice 1 (No. R. 983 of 2014) Development- a. in the sea; b. in an estuary; c. within the littoral active zone; d. in front of a development setback; or e. if no development setback exists, within a distance of 100 metres inland of the high- water mark of the sea or an estuary, whichever is the greater; in respect of- i. fixed or floating jetties and slipways; ii. tidal pools; iii. embankments; iv. rock revetments or stabilising structures including stabilising walls; v. buildings of 50 square metres or more; or vi. infrastructure with a development footprint of 50 square metres or more - but excluding- (aa) the development of infrastructure and structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;	The project will entail the landing of a marine telecommunications cable at Van Riebeeckstrand Beach. This will entail the digging of a trench down the beach into the intertidal zone and the installation of the underground telecommunications cable.

(cc) the development of temporary infrastructure or structures where such structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared; or (dd) where such development occurs within an urban area.	
Activity 18 of Listing Notice 1 (No. R. 983 of 2014) The planting of vegetation or placing of any material on dunes or exposed sand surfaces of more than 10 square metres, within the littoral active zone, for the purpose of preventing the free movement of sand, erosion or accretion, excluding where - (i) the planting of vegetation or placement of material relates to restoration and maintenance of indigenous coastal vegetation undertaken in accordance with a maintenance management plan; or (ii) (ii) such planting of vegetation or placing of material will occur behind a development setback.	The project will entail the rehabilitation of the primary dune belt along Van Riebeeckstrand Beach where construction activities associated with the laying of the underground telecommunications cable will disturb vegetation on the primary dune. In addition, the project will involve the planting of vegetation and material to aid in dune rehabilitation once construction is complete. As such, this listed activity is triggered.
Activity 19 of Listing Notice 1 (No. R. 983 of 2014) The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from- (i) a watercourse; (ii) the seashore; or (iii) the littoral active zone, an estuary or a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever distance is the greater but excluding where such infilling, depositing, dredging, excavation, removal or moving- (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; or (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies.	The project will entail the excavation and deposition of more than 5 m^3 of material within a 100 m of the high-water mark of the sea when trenching for, and backfilling of, the marine telecommunications cable takes place and, as such, this listed activity is triggered.
Activity Numbers	**Relevant Listed Activities as set out in Listing Notice 2 (GN No. R. 984) and reasons why they are triggered**
Activity 10 of Listing Notice 2 (No. R. 984 of 2014) The development of facilities or infrastructure for marine telecommunication.	The proposed development involves the installation and landing of the ACE Cable System (marine telecommunications cable) by MTN near Van Riebeeckstrand in the Western Cape. As such, this listed activity is triggered by the proposed development.

Activity 14 of Listing Notice 2 (No. R. 984 of 2014) The development and related operation of- (i) an island; (ii) anchored platform; or (iii) any other structure or infrastructure on, below or along the sea bed; excluding - (a) development of facilities, infrastructure or structures for aquaculture purposes; or (b) the development of temporary structures or infrastructure where such structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.	The proposed development triggers this listed activity as the ACE Cable System will be placed on the sea bed once it enters the marine environment. In shallow waters (less than 1,500 m in depth) the cable will be buried under the sea bed to provide extra protection to the cable system.
Activity 26 of Listing Notice 2 (No. R. 984 of 2014) Development-- i. in the sea; ii. in an estuary; iii. within the littoral active zone; iv. in front of a development setback; or v. if no development setback exists, within a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater; in respect of – a) facilities associated with the arrival and departure of vessels and the handling of cargo; b) piers; c) inter- and sub-tidal structures for entrapment of sand; d) breakwater structures; e) coastal marinas; f) coastal harbours or ports; g) tunnels; or h) underwater channels; but excluding the development of structures within existing ports or harbours that will not increase the development footprint of the port or harbour.	Although unlikely to be triggered, this listed activity has been included as the proposed trench for the marine cable may result in the entrapment of sand within the inter- and sub-tidal zones. In addition, the trench created to bury the cable may be construed as a under water channel.
Activity Numbers	**Relevant Listed Activities as set out in Listing Notice 3 (GN No. R. 985) and reasons why they are triggered**
Activity 12 of Listing Notice 3 (No. R. 985 of 2014) The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of	The proposed development will require the removal of indigenous primary dune vegetation where the cable system lands at Van Riebeeckstrand as well as along the existing

indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. **a) In Eastern Cape, Free State, Gauteng, Limpopo, North West and Western Cape provinces:** iii. Within the littoral active zone or 100 metres inland from the high-water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; or iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.	beach pathway along Van Riebeeckstrand which is located within 100 m of the high-water mark of the sea. As such, this listed activity is triggered.
Activity 15 of Listing Notice 3 (No. R. 985 of 2014) The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, such land was zoned open space, conservation or had an equivalent zoning, on or after 02 August 2010. **(c) In Western Cape:** i. Outside urban areas, or ii. Inside urban areas in: (aa) Areas zoned for conservation use or equivalent zoning, on or after 02 August 2010; (bb) A protected area identified in terms of NEMPAA, excluding conservancies; or (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act as adopted by the competent authority.	The proposed development will require the trenching of approximately 900 m of trench through areas zoned as public open space and conservation near Van Riebeeckstrand. It is anticipated that servitudes will have to be registered with the City of Cape Town and, as such, this listed activity is potentially triggered.
LISTED ACTIVITIES UNDER THE 2014 REGULATIONS AS AMENDED (APRIL 2017)	
Activity Numbers	**Relevant Listed Activities as set out in Listing Notice 1 (GN No. R. 983) and reasons why they are triggered**
Activity 15 of Listing Notice 1 (No. R. 983 of 2014) The development of structures in the coastal public property where the development footprint is bigger than 50 square metres, excluding - (v) the development of structures within existing ports or harbours that will not increase the development footprint of the port or harbour;	The project will entail the landing of a marine telecommunications cable at Van Riebeeckstrand Beach. This will entail the digging of a trench down the beach (coastal public property) into the intertidal zone and the installation of the underground telecommunications cable. Hence, this listed activity is triggered.

(vi) the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (vii) the development of temporary structures within the beach zone where such structures will be removed within 6 weeks of the commencement of development and where coral or indigenous vegetation will not be cleared; or (viii) activities listed in activity 14 in Listing Notice 2 of 2014, in which case that activity applies.	
Activity 17 of Listing Notice 1 (No. R. 983 of 2014) Development- f. in the sea; g. in an estuary; h. within the littoral active zone; i. in front of a development setback; or j. if no development setback exists, within a distance of 100 metres inland of the high- water mark of the sea or an estuary, whichever is the greater; in respect of- vii. fixed or floating jetties and slipways; viii. tidal pools; ix. embankments; x. rock revetments or stabilising structures including stabilising walls; or xi. infrastructure with a development footprint of 50 square metres or more - but excluding- (aa) the development of infrastructure and structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) the development of temporary infrastructure or structures where such structures will be removed within 6 weeks of the commencement of development and where coral or indigenous vegetation will not be cleared; or (dd) where such development occurs within an urban area.	The project will entail the landing of a marine telecommunications cable at Van Riebeeckstrand Beach. This will entail the digging of a trench down the beach into the intertidal zone and the installation of the underground telecommunications cable. Hence, this listed activity is triggered.
Activity 18 of Listing Notice 1 (No. R. 983 of 2014) The planting of vegetation or placing of any material on dunes or exposed sand surfaces of more than 10 square metres, within the littoral active zone, for the purpose of preventing the free movement of sand, erosion or accretion, excluding where –	The project will entail the rehabilitation of the primary dune belt along Van Riebeeckstrand Beach where construction activities associated with the laying of the underground telecommunications cable will disturb vegetation on the primary dune. In addition, the project will involve the planting of vegetation and material to aid in dune rehabilitation once construction is complete. As such, this listed activity is triggered.

(i) the planting of vegetation or placement of material relates to restoration and maintenance of indigenous coastal vegetation undertaken in accordance with a maintenance management plan; or (ii) (ii) such planting of vegetation or placing of material will occur behind a development setback.	
Activity 19 of Listing Notice 1 (No. R. 983 of 2014) The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse. but excluding where such infilling, depositing, dredging, excavation, removal or moving- (a) will occur behind a development setback; (b) is for maintenance purposes undertaken in accordance with a maintenance management plan; (c) falls within the ambit of activity 21 in this Notice, in which case that activity applies; (d) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or (e) where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.	The project will entail the excavation and deposition of more than 10 m^3 of material within a 100 m of the high-water mark of the sea when trenching for, and backfilling of, the marine telecommunications cable takes place as such, this listed activity is triggered.
Activity Numbers	**Relevant Listed Activities as set out in Listing Notice 2 (GN No. R. 984) and reasons why they are triggered**
Activity 14 of Listing Notice 2 (No. R. 984 of 2014) The development and related operation of- (iv) an anchored platform; or (v) any other structure or infrastructure – on, below or along the sea bed; excluding - (a) development of facilities, infrastructure or structures for aquaculture purposes; or (b) the development of temporary structures or infrastructure where such structures will be removed within 6 weeks of the commencement of development and where coral or indigenous vegetation will not be cleared.	The proposed development triggers this listed activity as the ACE Cable System will be placed on the sea bed once it enters the marine environment. In shallow waters (less than 1,500 m in depth) the cable will be buried under the sea bed to provide extra protection to the cable system. Hence, this listed activity is triggered.

Activity 26 of Listing Notice 2 (No. R. 984 of 2014) Development-- vi. in the sea; vii. in an estuary; viii. within the littoral active zone; ix. in front of a development setback; or x. if no development setback exists, within a distance of 100 metres inland of the high-water mark of the sea or an estuary, whichever is the greater; in respect of – i) facilities associated with the arrival and departure of vessels and the handling of cargo; j) piers; k) inter- and sub-tidal structures for entrapment of sand; l) breakwater structures; m) coastal marinas; n) coastal harbours or ports; o) tunnels; or p) underwater channels; but excluding the development of structures within existing ports or harbours that will not increase the development footprint of the port or harbour.	Although unlikely to be triggered this listed activity has been included as the proposed trench for the marine cable may result in the entrapment of sand within the inter- and sub-tidal zones. In addition the trench created to bury the cable may be construed as a under water channel.
Activity Numbers	**Relevant Listed Activities as set out in Listing Notice 3 (GN No. R. 985) and reasons why they are triggered**
Activity 12 of Listing Notice 3 (No. R. 985 of 2014) The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. i) Western Cape iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas; iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or	The proposed development will require the removal of indigenous primary dune vegetation where the cable system lands at Van Riebeeckstrand as well as along the existing beach pathway along Van Riebeeckstrand which is located within 100 m of the high-water mark of the sea. As such, this listed activity is triggered.

v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister	
Activity 15 of Listing Notice 3 (No. R. 985 of 2014) The transformation of land bigger than 1000 square metres in size, to residential, retail, commercial, industrial or institutional use, where, such land was zoned open space, conservation or had an equivalent zoning, on or after 02 August 2010. (i) Western Cape: ii. Outside urban areas, or iii. Inside urban areas in: (aa) Areas zoned for conservation use or equivalent zoning, on or after 02 August 2010; (bb) A protected area identified in terms of NEMPAA, excluding conservancies; or (cc) Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act as adopted by the competent authority.	The proposed development will require the trenching of approximately 900 m of trench through areas zoned as public open space and conservation near Van Riebeeckstrand. It is anticipated that servitudes will have to be registered with the City of Cape Town and, as such, this listed activity is potentially triggered.

**** Note Activity 10 of Listing Notice 2 (No. R. 984 of 2014) no longer applies under the April 2017 amendment regulations**

Based on the current regulations, the EAP must complete Scoping and the Impact Assessment within 300 days of acceptance of the Application for Authorisation by the National Department of Environmental Affairs (DEA). A Water Use Licence will be required from the Department of Water and Sanitation in terms of Chapter 4 of the National Water Act, 1998 (Act No 36 of 1998), in particular, Section 40(4). This application and supporting documentation was submitted and received by the DWS for decision making on the 27 January 2017.

It is important to note that timeframes in the 2014 regulations are based on calendar days and the following conditions apply:

- 15 December to 5 January are excluded from the calculation.
- No Public Participation between 15 December and 5 January unless justified by exceptional circumstances.
- Organs of State to comment within 30 days from the date on which it was requested to submit comments (2010 = within 40 days).
- For both BA & S&EIR: the Competent Authority (CA) must within 107 days issue a decision.
- Notification of decision by CA within 5 days of date of decision (2010 = within 2 days).

The main phases of the environmental impact assessment process and legislated time frames are shown in Figure 2.

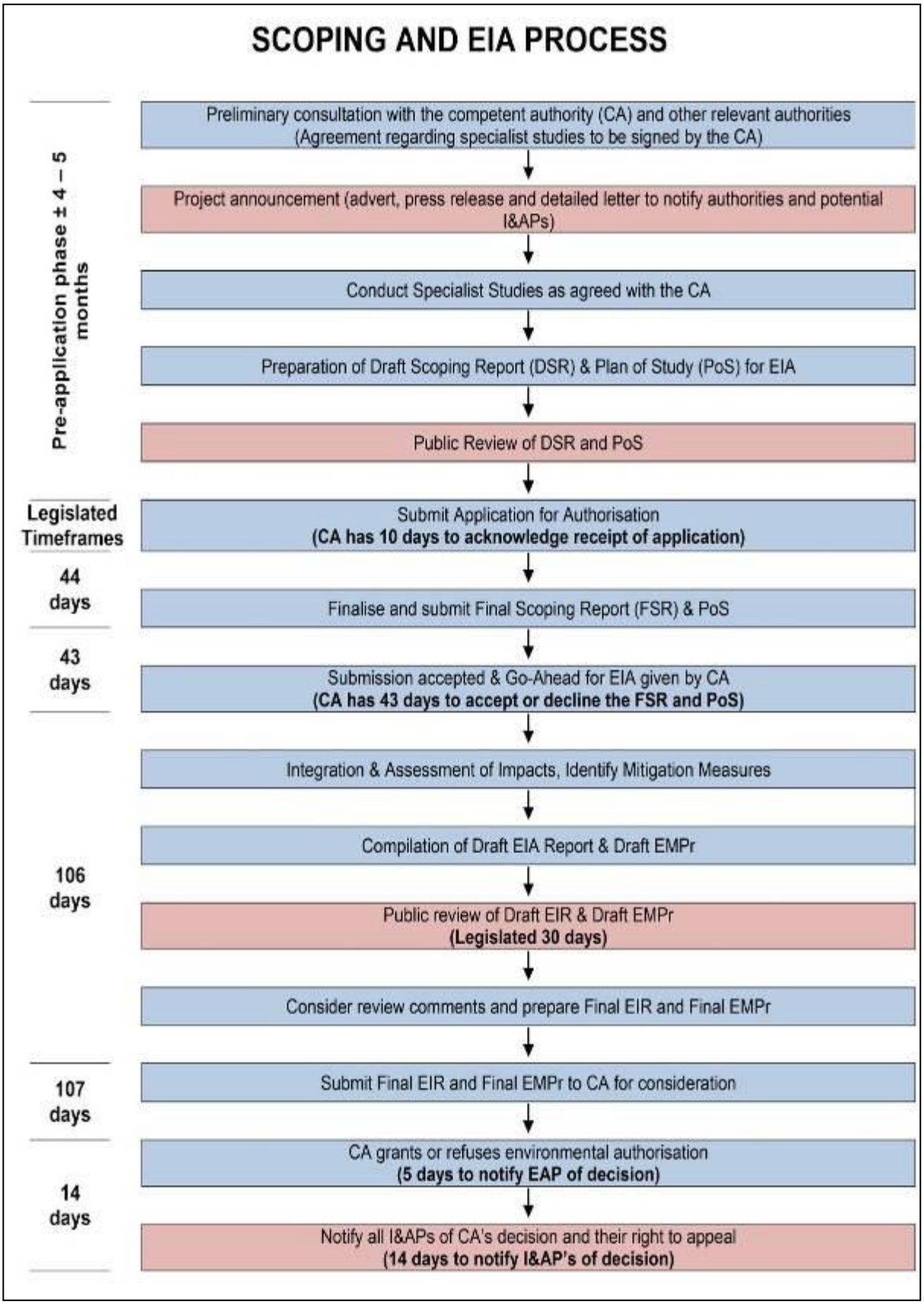


Figure 2 The phases of an environmental impact assessment

1.4 Environmental Impact Assessment Report

This report fulfils the function of the Environmental Impact Assessment Report (EIAR), the findings of which will be reviewed by authorities, key stakeholders and the public. The purpose of the EIAR is to collate, integrate, summarise and evaluate the findings of the specialist studies and to consider each of the issues raised during Scoping. This aims at providing the reader with a holistic understanding of the potential positive and negative impacts of the proposed development in a singular congruent unit. A number of inputs have informed the content of the EIAR, most notably the outcomes of the different specialist studies that were commissioned as part of the Impact Assessment.

An Environmental Management Programme (EMPr) has also been prepared for the design, construction and rehabilitation phases of the project. The purpose of the EMPr is to provide a structured framework for managing the causes of environmental impacts. The information and findings contained in this report have informed the EMPr.

The EIAR has been finalised following review and comment from commenting authorities and the public. This report has now been submitted to the competent authority (DEA) for decision-making.

2. FRAMEWORK FOR THE ENVIRONMENTAL ASSESSMENT

The key considerations that guided the approach to this EIA and helped to shape the assessment framework that was used are discussed below.

2.1 Concept of sustainability

The concept of sustainability underpinning this assessment considers three inter-related dimensions of the environment, viz. the social, economic and biophysical dimensions (Figure 3). For an option or project to be sustainable, it needs to demonstrate economic viability, social acceptability and soundness, and ecological integrity within a framework of good governance.

All three dimensions of the environment, and the interactions between them (two- and three - dimensional), contribute to achieving sustainability and, therefore, each dimension, individually and its combined interaction with the other two dimensions, needs to be taken into account when assessing a proposed option or project, taking due cognisance that the three dimensions are seldom in perfect balance, with optimised solutions often being dictated by local circumstances, and requiring tradeoffs between the dimensions.

In terms of sustainability and the assessment framework, key principles included:

- Development must not irretrievably degrade the natural, built, social, economic and governance resources on which it is based.
- Current actions should not cause irreversible damage to natural and other resources, as this potentially precludes sustainable options.
- Where there is uncertainty about the impact of activities on the environment, caution should be exercised in favour of the environment.
- Land-use and environmental planning need to be integrated.
- Immediate and long-term actions need to be identified and planned for, so that urgent needs can be met while still progressing towards longer-term sustainable solutions.

For the proposed ACE Cable System, as is shown in later sections of this report, there will be limited negative impacts on the biophysical dimension. These impacts are localised and can be managed to reduce their intensity and significance. Similarly, there may be limited negative impacts on the local social dimension but, again, they can be managed to reduce their intensity and significance. Impacts to the local and national economic dimension are positive and, with active management intervention, they can be optimised. Considering the three dimensions on a regional and national scale, it can be argued that although there will be some localised impacts on the biophysical environment the cumulative positive impact on the socio-economic environment of South Africa outweighs the localised negative impacts which can be mitigated.

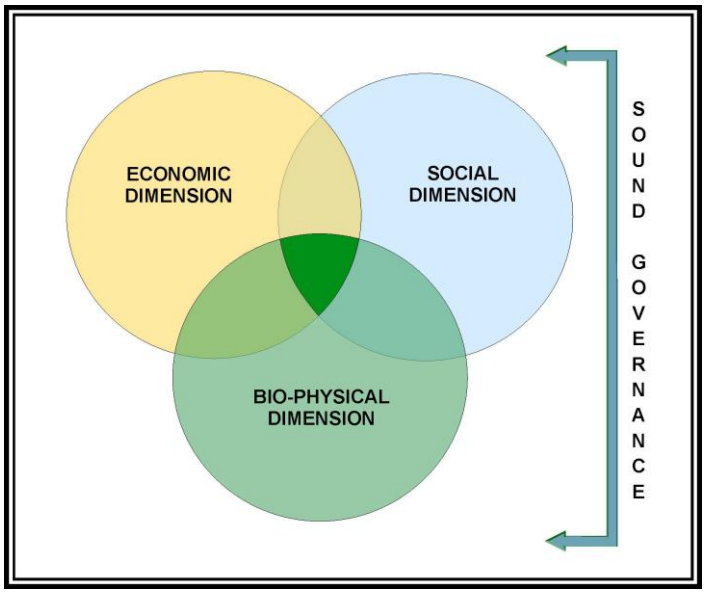


Figure 3 Inter-related dimensions of sustainability (in a perfect situation)

2.2 Legal or statutory requirements

For a development such as the proposed ACE Cable System, there are a host of legal requirements (National, Provincial and Local Government spheres) to which the Project Proponent must adhere.

The legal environment in which development takes place is such that there is a fundamental requirement for planning and implementation procedures that involve the ongoing integration of environmental values and principles into all decisions and actions that are taken for development purposes.

In particular, the principles of integrated environmental management and assessment are relevant to all situations at all times. The Constitutional right that people have to environmental protection as set out in the Bill of Rights in the Constitution (Section 24) has been interpreted in the National Environmental Management Act, 1998 (Act No. 107 of 1998). It is this, plus many other laws and sets of regulations that govern the manner in which integrated environmental management has to be adhered to by any person or organisation that proposes any form of development. The Scoping Report (Draft and Final) dealt with the key pieces of legislation relevant to the proposed ACE Cable System development. These are not repeated in the EIAR. Rather, for completeness, the key pieces of legislation are listed below:

- ❑ Constitution of the Republic of South Africa Act, 1996 (Act No. 108 of 1996) as amended by the Constitution of the Republic of South Africa, Amendment Act, 1997 (Act No. 35 of 1997)
- ❑ National Environmental Management Act, 1998 (Act 107 of 1998)
- ❑ The Environmental Impact Assessment Regulations, 2014 (as amended)
- ❑ National Water Act, 1998 (Act 36 of 1998)

- National Heritage Resources Act, 1999 (Act 25 of 1999)
- National Forest Act, 1998 (Act 84 of 1998)
- Hazardous Substance Act (No 15 of 1973) and Regulations
- Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983)
- National Environmental Management: Waste Act, 2008 (Act 59 of 2008)
- National Environmental Management: Biodiversity Act 10 of 2004
- Integrated Coastal Management Act (Act No. 24 of 2008) (ICMA)
- The Marine Living Resources Act (Act No. 18 of 1998)
- Maritime Zones Act No. 15 of 1994
- Telecommunications Act 103 of 1996
- Marine Traffic Act 2 of 1981

For the proposed ACE Cable System, the Constitution of the Republic of South Africa Act, 1996 (Act No. 108 of 1996) as amended by the Constitution of the Republic of South Africa, Amendment Act, 1997 (Act No. 35 of 1997) is the overarching legislation of over-riding importance. Chapter 2 of the Constitution contains the Bill of Rights, which is the cornerstone of democracy in South Africa. It enshrines the rights of all people in our country and affirms the democratic values of human dignity, equality and freedom. It is within this context that all legislation since 1996 has been formulated.

There are several other pieces of key legislation through which the protection of human rights, community health, and safety and security will be assured:

- Labour Relations Act.
- Basic Conditions of Employment Act.
- Employment Equity Act.
- Occupational Health and Safety Act.
- Promotion of Access to Information Act.

And some key associated Regulations:

- Labour Relations Regulations.
- Compensation for Occupational Injuries and Diseases Regulations.
- Construction Regulations.
- General Safety Regulations.
- Hazardous Chemical Substances Regulations.

It is within this framework that the proposed ACE Cable System will need to be constructed and operated. It is widely believed that South Africa's Constitution is one of the most progressive world-wide and, in the context of the country's history since 1996, MTN are completely confident that human rights amongst staff and the wider community will be respected and, over time, enhanced through the enhancement of the quality of life of communities within South Africa as the accessibility to broadband telecommunications is made more accessible.

As per the current regulations the objective of the environmental impact assessment process is to, through a consultative process:

a) Determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context.

b) Describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location.
c) Identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment.
d) Determine the nature, significance, consequence, extent, duration and probability of the identified impacts occurring to inform identified preferred alternatives.
e) Identify the degree to which the identified impacts can be reversed or may cause irreplaceable loss of resources, and can be avoided or mitigated.
f) Identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment.
g) Identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity.
h) Identify suitable measures to avoid, manage or mitigate identified impacts.
i) Identify residual risks that need to be managed and monitored.

In summary, MTN has a number of legal obligations in terms of legislation, the pertinent obligations being:

- An obligation to undertake an EIA for activities that fall within the scope of Government Notices R 982, R 983, R 984 and R 985 of 2014.
- An obligation to obtain permits in terms of other relevant environmental legislation (for example, heritage, water and biodiversity).
- Adherence to the principles of sustainability.

In addition, the City of Cape Town Spatial Development Framework and the National Nuclear Regulator conditions for development within the Precautionary Action Zone (PAZ) of the Koeberg Nuclear Power Station owned and operated by Eskom have been taken into consideration for the proposed development.

3. NEED AND DESIRABILITY

Submarine telecommunication cables are important for international telecommunication networks as they transport almost 100% of transoceanic Internet traffic throughout the world (www.iscpc.org). It is widely recognised that access to affordable international bandwidth is key to economic development in every country. Today, Africa relies primarily on satellites with a few submarine cables to provide its international communications. Communication via submarine telecommunication cables generally allows for lower cost, better performance, and greater capacity (throughput) than that available via satellite.

Improvement in Africa's information technology infrastructure via telecommunication cables will remove one of the current key inhibitors to overall development in Africa and support economic growth and opportunities on the continent. MTN (Pty) Ltd (MTN) proposes installing a submarine telecommunications cable, referred to as the Africa Coast to Europe (ACE) Cable System, to link South Africa, the West Coast of Africa with key international telecommunication hubs in Europe. Following installation of the proposed ACE cable system, MTN will be able 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.

By supplying increased bandwidths the proposed ACE Cable System will support the following primary NEPAD objective:

- To eradicate poverty in Africa and to place African countries both individually and collectively on a path of sustainable growth and development to thereby halt the marginalisation of Africa in the globalisation process.

At the core of the NEPAD process is its African ownership, which must be retained and strongly promoted, so as to meet the legitimate aspirations of the African people. (http://www.dirco.gov.za/au.nepad/nepad_overview.htm)

Telecommunications is one of the fastest growing sectors of South Africa's economy which has been driven by rapid growth in the number of mobile phone users and their need for broadband connectivity. South African mobile companies are also making inroads internationally, with MTN now having well over 100 million subscribers in more than 20 countries in Africa, Asia and the Middle East (http://www.eversheds.com). The proposed ACE Cable System will provide an opportunity to facilitate the growth of the telecommunications infrastructure in South Africa and promote sustainable growth and development within South Africa and Africa as a whole.

In the local context, the proposed development is in line with the Cape Town Spatial Development Framework (Key Strategy 1, Policy 2) which includes supporting the rollout of broadband technology and the use thereof.

4. PROJECT DESCRIPTION

This chapter describes the infrastructure and operational aspects of the ACE Cable System. The aim of this chapter is to enable readers to gain a better understanding of how the cable system will be installed and maintained in order to understand the possible impacts the development may have on the receiving environment.

4.1 General description

The section of the ACE Cable system which forms part of this environmental impact assessment includes the section of cable from when it 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. In this context, the project description incorporates the materials comprising the ACE Cable System and the methods to be used to install the cable system in the marine and terrestrial environments.

The ACE Cable System is comprised of the following project components from when it enters South Africa's EEZ until it reaches the MTN CLS site in Duynefontein:

- Marine Fibre Optic Cable (marine environment to the Beach Man Hole).
- Beach Man Hole (BMH) located behind the coastal dune cordon near Van Riebeeckstrand.
- Terrestrial Fibre Optic Cable (Beach Man Hole to the CLS site in Duynefontein)

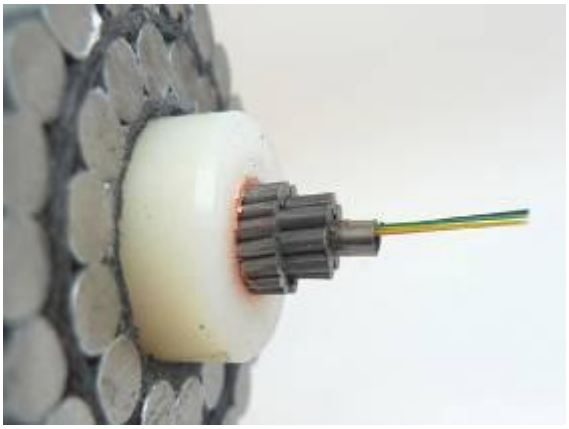
4.2 Marine components and installation methods

4.2.1 Marine Fibre Optic Cable

The proposed cable route will run down the West Coast of Africa (generally parallel to the coastline) and approach South African coastal waters from the north (i.e. from Namibian waters). Offshore, the cable is laid by a purpose-built cable-laying ship. Consistent with industry practice, the unarmoured cable (Plate 1 & 2) will rest on the seabed in water depths greater than 2,000 m, where the risk of inadvertent damage from human activities is negligible.

As the cable route changes direction to approach the coastline of Van Riebeeckstrand, the cable will be buried beneath the sandy seabed of these shallower marine waters. This is typically achieved with the use of a specially designed plough which is submerged onto the seabed by the cable laying ship. The cable is then fed from the ship to the plough which effectively buries the cable to a depth of approximately 1.5 metres. This burial is intended to provide protection to the cable from the hazards posed by ships' anchors, fishing trawls/lines and the like.

The diameters of the marine fibre optic cables range in size from 17 mm diameter (cables installed at a water depth of between 7,000 – 1,500 m) to 37.5 mm diameter (rock armoured cable which is installed in shallow water depths (< 200 m)).



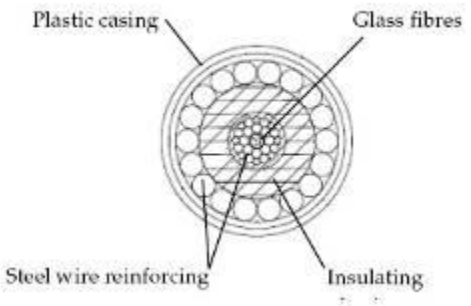


Plate 1 Cross section of a typical marine telecommunications cable

Lightweight (LW)	Lightweight Protected (LWP)	Single Armour (SA)	Double Armour (DA)	Rock Armour (RA)
Used in water depths up to 8,000m.	Used in water depths up to 7,000m.	Used in water depths up to 2,000m.	Used in water depths up to 500m.	Used in water depths up to 200m.

Plate 2 Cable armouring and operational depths

4.2.2 Marine Fibre Optic Cable Installation

Prior to the installation of the ACE Cable System taking place, the following offshore marine investigations have been performed by a contractor appointed by MTN to install the cable system.

Cable Route Survey

The proposed cable routes have been surveyed by the project team to identify whether or not the substrate and topography of the ocean floor are suitable for the installation of the ACE Cable System. The survey included the following activities:

- A geophysical survey of the deep water, shallow water, and inshore sections of each proposed cable route. This included the establishment of bathymetric corridor widths of 500 m (inshore and up to a depth of 500 m). In deeper water this corridor was extended up to three times the water depth centred on the proposed cable route.
- Conducting 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 was surveyed using multi-beam echo sounder (MBES) Swath Bathymetry systems. The MBES equipment is integrated with the surface navigation equipment Global Positioning System (GPS).
- Bathymetric data was processed using an onboard workstation with specialised software to verify the coverage and accuracy of the collected bathymetry data and to provide colour contour charts. These charts were used to review the proposed route and where necessary plan offset lines.
- In the shallow water sections, an integrated Side Scan Sonar and a Sub-bottom Profiler was used. These were housed in a device which was towed behind a boat in order to get to an optimum position close to the seabed. The position of this towed device was tracked acoustically using an ultra-short base line (USBL) tracking system.
- A burial assessment survey was 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 included 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) were collected along the shallow water and inshore routes utilising gravity coring and grab sampling devices.
- The landing sites for all cable segments were positioned utilising Global Positioning System (GPS) and topographic surveying practices. The in-shore survey vessels used a GPS navigation system.

Cable Route Clearance Operations

Prior to the installation of the ACE Cable System, route clearance operations will be conducted along those sections of the route where burial is to be performed to ensure that, as far as practically possible, the burial operation will not be hindered by out of service cables or discarded fishing gear. This route clearance operation is typically called the Pre-Lay Grapnel Run (PLGR). The objective of the PLGR operation is the clearance of any seabed debris, for example wires or hawsers, fishing equipment etc., which may have been deposited along the route.

PLGR is undertaken by dragging grapnels (Figure 4) behind a ship along the proposed cable route in order to clear the route of debris. Different types of grapnels can be used depending on the seabed conditions (Gillford in rockier areas and Rennies and Flat Fish in softer sandy sediments). The PLGR operations are normally carried out by a vessel specifically fitted out with winches and grapnels, and capable of sustaining good slow speed positional control. The vessel will be equipped with navigation and positioning system to the same specification as the main lay vessel.

Any debris recovered during these operations will be discharged ashore on completion of the operations and disposed in accordance with local regulations. If any debris cannot be recovered, then a local re-route of the ACE Cable System will be planned to avoid the debris.

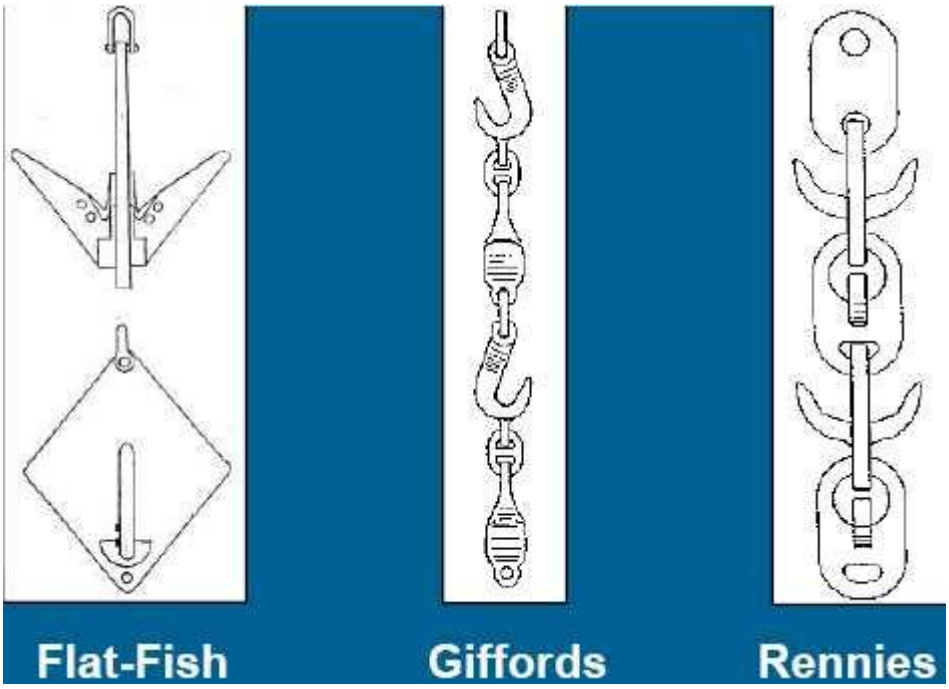


Figure 4 Types of grapnels used to clear the cable route of debris (Source: https://coast.noaa.gov)

Installation of the marine telecommunications cable

The ACE Cable System will be installed using a purpose-built cable ship fully equipped with all the necessary equipment, tools and facilities to safely handle and install, join, test, and power the submerged plant, including simultaneous lay and plough burial. The vessel will have sufficient power and dynamic positioning capability to carry out the installation in the expected weather and current conditions. During cable laying an automatic log of all critical operational parameters will be kept including navigational data, speed, tension, slack, cable counter and plough data.

Surface Laying Operations

Surface laying implies that the cable will be laid on the surface of the seabed. The objective is to install the cable as close as possible to the planned route with the correct amount of cable slack to enable the cable to conform to the contours of the seabed without loops or suspensions.

Plough Burial Operations

The cable will be buried to a target depth as defined in the burial plan, and as determined by the cable route and burial assessment surveys. Burial depth will be controlled by adjusting the height of the plough's front skids. The depth of burial achieved will be continuously recorded by the plough and logged with the ship's data. In areas where plough burial is planned, the cable will be buried to a target depth of 1 - 1.5 m (Plate 3).

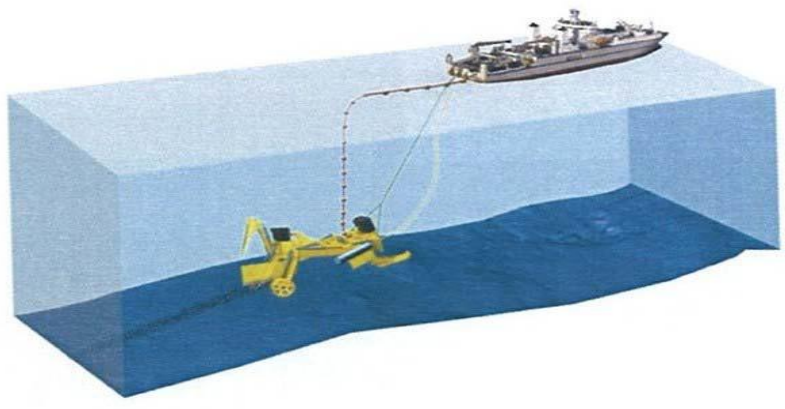


Plate 3 **Sea plough to be used to bury the cable along sections of the cable alignment (less than 100 m deep) where conditions permit burial**

Shore End Operations

Shore end operations refer to the installation of the cable through the shallow water near the shore, through the intertidal zone and up onto the beach (Plates 4 and 5). All shore end landings will be performed directly from the main cable installation vessel except where shallow water conditions require the use of a small shallow draft vessel or barge, usually mobilised specifically for the task, and equipped with cable tanks, cable engines, cable handling gear and a suitable cable burial device.

During cable landing near Van Riebeeckstrand Beach, the following activities will be performed by the appointed contractor:

- Preparation of a detailed operational plan, based on the findings of the survey, with site visits as necessary.
- Provision of an advance party to establish the beach equipment and to prepare the beach, cordon off a working area to protect the public, etc.
- The marking of any existing in-service cables at the shore end location (with the assistance of the cable owners).
- Performance of the installation of the shore end section of the sea cable and support of the cable vessel activity.
- Installation of cable slack at the beach, as required.
- Installation of a cable loop in the beach manhole to facilitate re-terminations.
- Securing the cable in the beach manhole by means of an armour wire anchor clamp.
- Burial of the cable from the Beach Man Hole to the Low Water Mark (LWM) to a depth of 2 m (or to bedrock, if reached sooner).
- Reinstatement of the beach to the required standards.
- All testing, reporting, and accurate as-built records.
- Articulated pipe, where required across the beach up to the Beach Man Hole, will be fixed to the beach manhole outside wall by means of a flange adapter.

Plate 4 Landing of a cable on shore. Similar works will be undertaken for the landing of the ACE Cable System

Plate 5 **Bringing the cable to shore from the cable laying vessel. Cable is buoyed off and pulled to shore with smaller vessels.**

4.3 Terrestrial components and installation methods

4.3.1 Beach Man Hole

Once the fibre optic cable has made landfall and been buried through the beach section of the route, the cable will be anchored at the Beach Man Hole (BMH) which will be constructed on the edge of the residential area at Van Riebeeckstrand. The BMH will be constructed underground and will have the following dimensions: length (approximately 4.0 m); breadth (approximately 2.0 m) and depth (approximately 2.0 m) (Figure 5).

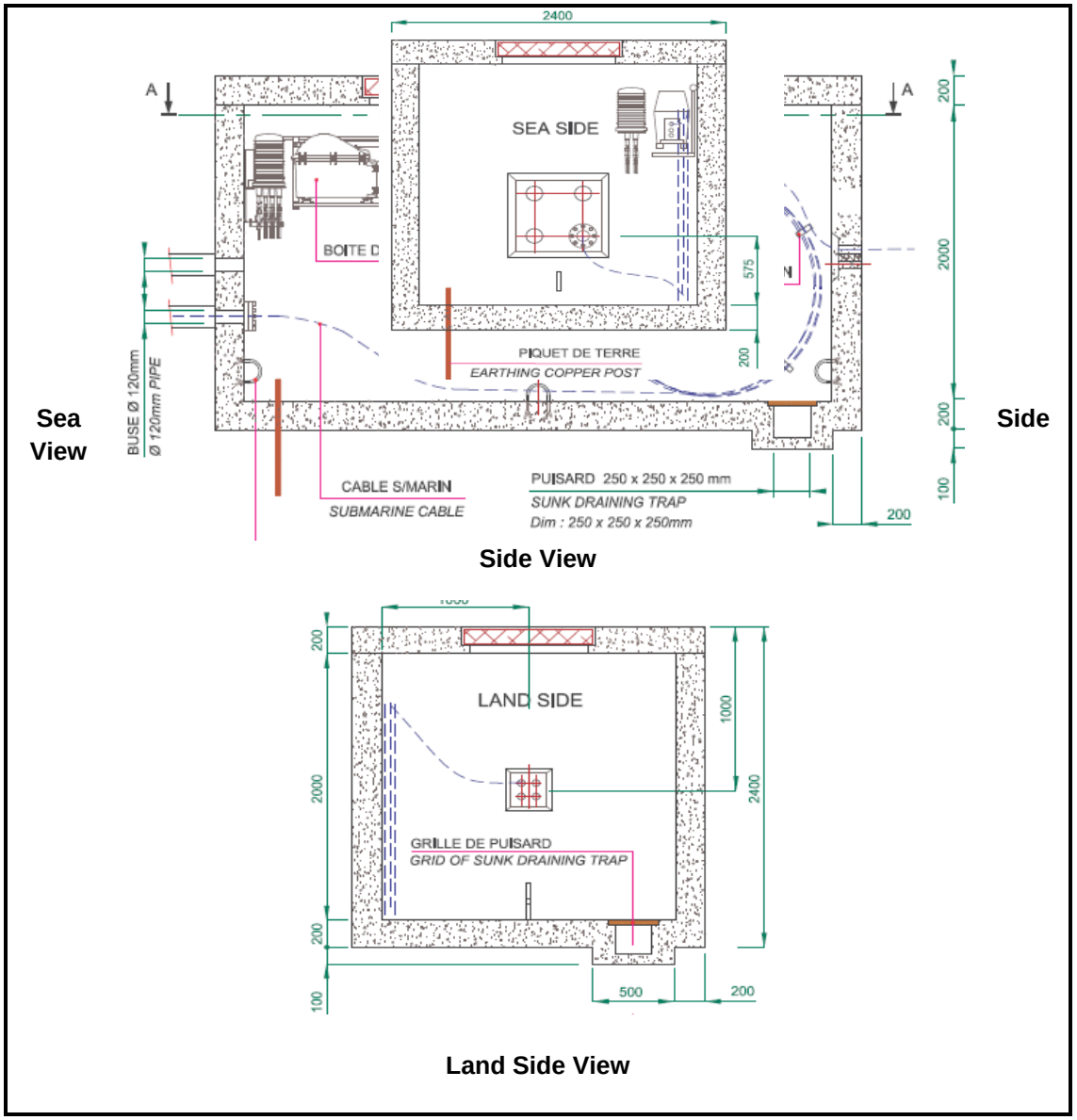


Figure 5 Beach Man Hole building plans

The BMH is expected to take approximately two months to construct and once complete the only visible sign of the structure will be the manhole covers and cement roof slab.

4.3.2 Cable trenching

From the BMH, the land cable will be installed to the Cable Landing Station (CLS) located in Duynefontein. The trench for the cable will be dug by both mechanical (TLB) and manual (spades) means depending on the alignment selected and the presence of other service infrastructure within the area. The trench will be excavated to a depth of 1 – 2 m before the cable is installed which will be housed within High-density polyethylene (HDPE) or PVC ducts (Figure 6). The width of the excavated trench is expected to be approximately 500 mm.

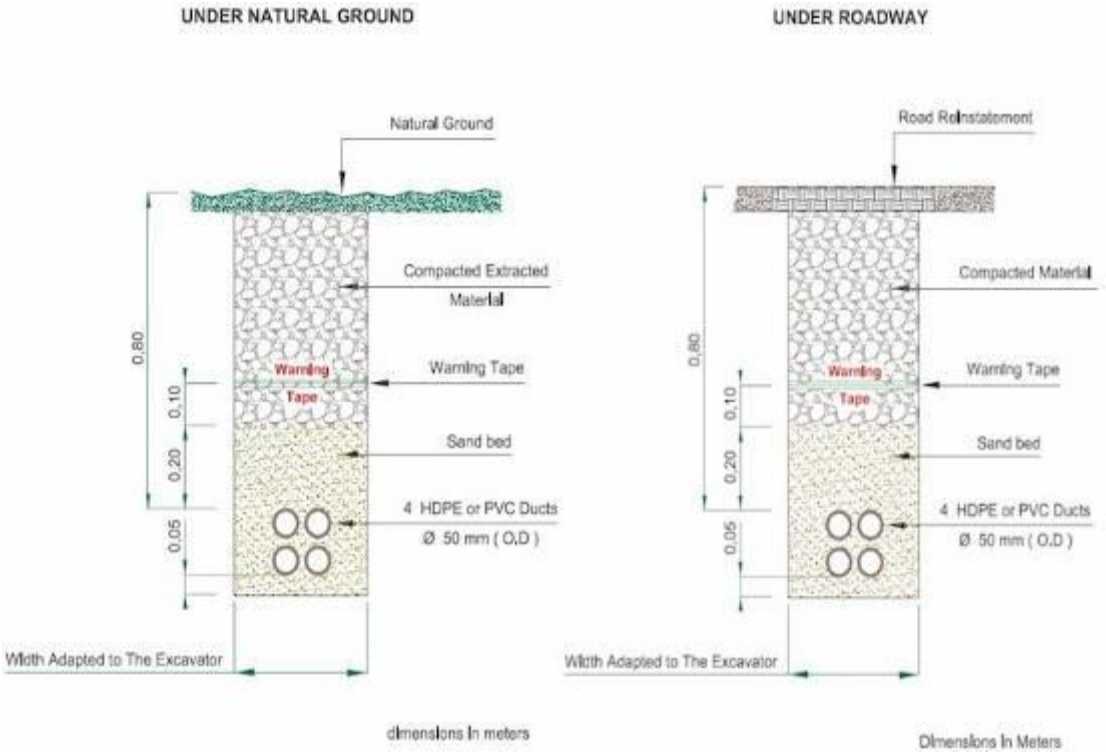


Figure 6 Cross section of the terrestrial cable trenches

4.3.3 Construction Programme

Construction of the Beach Man Hole, and trenching from the beach man hole to the CLS site will take place prior to the landing of the marine cable so that all infrastructure required for the landing of the ACE Cable System (BMH, ducting for the cables, manholes, etc.) is in place prior to the landing of the marine cable. It is anticipated that construction of all infrastructure required for the landing of the ACE Cable System will not take longer than six months to complete. An outline of the preliminary construction programme is provided below:

- MTN is proposing to install four to six ducts (100 mm ducts) within the trench dug from the BMH to the CLS site in Duynefontein and four ducts from the BMH to the sea across the dunes to an anchor stopper (buried cement block where the ducts terminate) on the beach. Additional ducts have been incorporated in the design to allow MTN the option of landing at least three more Cable Systems to the same landing site in future. The spare ducts will allow for possible future cables without needing to again dig through the dunes or along the road edges.
- The BMH construction and seaward ducts construction will take between 8 - 12 weeks to complete.
- The Land Route construction (trench from the BMH to the CLS) will take about 6 – 12 weeks to complete and will be done in stages. This means that sections of the proposed cable alignment will be excavated and then backfilled before opening the next section of trench along the proposed alignment.

4.3.4 Project implementation

The landing of the cable is entirely dependent on receiving a positive Environmental Authorisation which will be issued by the Department of Environmental Affairs. Only once the environmental authorisation process is nearing its completion will the project proponent be able to realistically set dates for project implementation. MTN is hoping to have the ACE Cable System cable installed by the end of 2017 or the beginning of 2018.

4.4 Existing services and project implementation

During construction and installation of the ACE Cable System on land the following services will be utilised by the appointed service providers.

4.4.1 Water

Water for construction purposes will be sourced from the closest municipal supply point and tankered to site when required. Water use during construction is however very limited and confined to the concrete works required for the construction of the BMH.

4.4.2 Sewage

During construction and installation of the ACE Cable System on land, chemical toilets will be provided for construction workers. These chemical toilets will be routinely serviced by the appointed service providers and all waste will be disposed at a licensed waste treatment works within the area. Given the short construction period associated with this project, the impact associated with sewage is not expected to pose any significant risk.

4.4.3 Roads, private property access and road reserves

During the construction and installation of the terrestrial section of the ACE Cable System some roads may be impacted locally due to trenching activities. Where major roads need to be crossed by the cable, directional drilling (commonly called horizontal directional drilling / pipe jacking) will be employed to install the cable. This will allow the cable to be installed without disrupting traffic and road users. It is likely that directional drilling will be used to cross Otto du Plessis Road and Atlantic Avenue. Way leave agreements will be obtained by MTN from the City of Cape Town prior to any works being undertaken.

If the cable alignment is installed within the road reserve, some impacts on private property and driveways are anticipated. Where possible, these will be avoided but if trenching results in damage to private properties along the cable alignment this damage will be recorded and the areas affected be reinstated to what is currently in place. Prior to construction commencing, the appointed contractor and MTN will notify all surrounding landowners of the construction activities to take place and the scheduling thereof.

4.4.4 Storm water

The proposed development is not expected to have any impact on storm water once construction is completed. During construction, however, the appointed contractor will take cognisance of the fact that the City of Cape Town does have storm water infrastructure within the project area and these structures must be avoided during construction. Prior to construction commencing it is advisable that the City of Cape Town is consulted to discuss the implementation of the proposed development and the manner in which construction will be phased.

While trenching of the cable alignment is underway, stockpiles of soil will be located outside any storm water drains to prevent the wash away of material and siltation of downstream habitats. This is of particular relevance in the dune slack wetland to where most of the stormwater from Van Riebeeckstrand is channelled.

4.4.5 Tourism and recreational infrastructure

As outlined by the City of Cape Town the proposed preferred route alternative A will affect a paved pathway that the City Parks Department has recently installed. Avoidance of this pathway is unavoidable and MTN must approach the City Parks Department to come to an agreement on the remedial works required to reinstate the pathway once installation of the cable system has been completed. It is envisaged that a like for like replacement and repair to the pathway will be undertaken by MTN, at their cost, under the supervision of the City Parks Department officials.

4.4.6 Waste streams

During the construction and installation of the terrestrial section of the ACE Cable System, little waste is expected to be generated on site and waste will be limited to litter, spoil from the trenching operations (where rubble or buried waste is unearthed) and material off cuts. A skip will be hired for the duration of the construction period where all construction related waste will be stored and then disposed by an appointed service provider.

4.4.7 Decommissioning

Submarine cables are designed to have a life-span of 25 years. Currently most of the installed cables are operating beyond this so decommissioning of the ACE Cable System in the near future is unlikely given the current growth in the telecommunications sector within South Africa. If and when decommissioning takes place, all activities would be subject to legislation relevant at the time.

4.5 Construction phase

4.5.1 Pre-Construction

Typically, prior to construction, technically feasible alternatives are identified and are studied for environmental feasibility, and financial and economic viability. In the case of the proposed ACE Cable System, alternate sites are limited due to topographical features of the Melkbosstrand Beach, current development within the area and existing marine telecommunication cables which make landfall within the area. Therefore, the selected near shore cable alignments and beach landing positions relate primarily to the final positioning of the BMH locations at the selected landing points. From these points two terrestrial cable alignments were considered to get the cable from the beach landing sites to the CLS site in Duynefontein.

As outlined in the Final Scoping Report it is also important to note that MTN has investigated other sites within and around Melkbosstrand and Van Riebeekstrand during the screening phase of this assessment. While some of these sites hold potential, Sites 1 and 2 hold the greatest potential and, therefore, were identified for further assessment during the EIA process.

4.5.2 Construction camps

Given the small scale of the development in terms of the construction and installation of components of the development no construction camp will be required during construction. It is envisaged that the only infrastructure which will be erected during construction of the BMH will be a temporary perimeter fence with lockable gates to ensure that no members of the public enter the construction site. The type of perimeter fence will be decided on following discussions with the City of Cape Town to conform with the city's current building regulations. Should material need to be stored on site, a lay-down area will be established within the footprint of the CLS site and will be fenced off in the same manner as the BMH construction site.

The exact extent of the working area to be fenced off will be identified by the contractor, Resident Engineer (RE) and the City of Cape Town prior to construction (this will need to be identified with the assistance of the Environmental Control Officer (ECO) so that it does not infringe on sensitive areas). No construction workers will be accommodated at the construction or lay-down sites. Rather, local people who will comprise the majority of the work force, will overnight at their normal places of residence.

4.5.3 Construction activities

Construction will entail the following activities for the laying of the ACE Cable System offshore by means of a purpose-built cable-laying ship:

- Pre-Lay Grapnel Run (PLGR) to clear the cable alignment of all debris (disused cables and fishing gear). Any debris recovered during these operations will be discharged ashore on completion of the operations and disposed in accordance with local regulations.
- Unarmoured cable will be placed on the seabed in water depths greater than 2,000 m where the risk of inadvertent damage from human activities is negligible.
- Simultaneous lay and plough burial at water depths of less than 2, 000 m. The cable will be buried up to 1.5 m below the sea bed.

Construction will entail the following activities for the landing of the ACE Cable System at the preferred beach landing site:

- Provision of an advance party to establish the beach equipment and to prepare the beach, cordon off a working area to protect the public, etc.
- The marking of any existing in-service cables at the shore end location (with the assistance of the cable owners).
- Performance of the installation of the shore end section of the sea cable and support of the cable vessel activity.
- Installation of cable slack at the beach, as required.
- Installation of a cable loop in the beach manhole to facilitate re-terminations.
- Securing the cable in the beach manhole by means of an armour wire anchor clamp.

- Burial of the cable from the Beach Man Hole to the Low Water Mark (LWM) to a depth of 2 m (or to bedrock, if reached sooner).
- Reinstatement of the beach to the required standards.
- Burial of the cable from the beach to the BMH at a depth of up to 2 m below ground level.

Construction will entail the following steps for construction of the Beach Man Hole (BMH):

- Site clearance.
- Demarcation of construction footprint.
- Excavation of footprint for the BMH.
- Construction of concrete base, walls and roof of the BMH.
- Connection of cables.
- Rehabilitation of working areas and protection of areas susceptible to erosion.
- Testing and commissioning of the telecommunications cable.

Construction will entail the following steps for trenching and burial of the cable from the BMH to the CLS site:

- Site clearance.
- Demarcation of construction footprint.
- Excavation of the trench (by hand if access if problematic for a TLB).
- Construction of concrete base, walls and roof of the BMH.
- Connection of cables.
- Rehabilitation of working areas and protection of areas susceptible to erosion.
- Testing and commissioning of the telecommunications line.

The following will also be required during construction:

- Temporary stockpile areas for construction materials and building rubble, specifically at the BMH site.
- Water for potable use will be bought onto site daily by construction workers and the contractor in the form of water bottles and 25 l drums.
- Water for construction purposes will be sourced from the nearest municipal supply and transported to site by tanker.
- Chemical toilets for ablutions. These must be regularly serviced and maintained by the appointed service provider.
- Stormwater management measures.
- Solid waste will be collected and stored temporarily in the waste skips provided until removal for recycling or disposal at an appropriately permitted landfill site.
- Diesel generators will be utilised for the provision of electricity during construction.
- Traffic control when working close to access roads within the area.

Hazardous substances, which include fuels, oils, lubricants and cement will be stored and dispensed on site during construction. Measures for the storage, use and management of hazardous substances on site are stipulated in the EMPr.

4.5.4 Employment opportunities

During construction of the ACE Cable System, a few temporary jobs are expected to be created. Although numerous skilled workers will be imported to undertake the installation of the telecommunications cable, some jobs will be available to local community members

during the construction of the BMH, site clearance, trenching operations and the rehabilitation of the sites. Specific measures will be put in place to optimise job opportunities, specifically to ensure that local people are employed. It is anticipated that 5 professional positions, 10 skilled and 20 unskilled positions will be made available for the construction of the proposed ACE Cable System. These jobs will, however, be limited to the duration of the construction period.

During operation, the proposed project is not expected to create many jobs with the work force at the CLS comprising of approximately 5 individuals who will be responsible for the operation and maintenance of the CLS and ACE Cable System. During operation, the ACE Cable System will also require routine maintenance, which includes maintenance to the cable as well as the BMH.

South Africa has statutory requirements for the composition of a labour force and, to this end, MTN will ensure that its appointed contractors adhere (comprising a balance between genders, youth, elderly and disabled persons) to these requirements. MTN will be guided by the provisions of the Labour Relations Act, the Basic Conditions of Employment Act, the Skills Development Act and the Employment Equity Act (and all relevant Regulations published under these Acts).

During construction and operation, MTN will place a priority and premium on occupational health and safety. All activities on site will be subject to the Occupational Health and Safety Act and relevant Regulations. These will be formalised within a Health and Safety Plan which must be compiled by each contractor prior to the commencement of activities on site. The Plan must set measurable and verifiable targets, which must be reported each month (monthly reports and during site meetings). Copies of all reports must be submitted to the Department of Labour.

4.5.5 Construction programme

It is the proponent's intention to have the ACE Cable System completed by the end of 2017 or the beginning of 2018. Thus, it is anticipated that construction of the ACE Cable System will occur during 2017/2018. This EIA is being managed with a target date of September 2017 for the issuing of environmental authorisation by the DEA.

4.6 Project alternatives

The identification and examination of alternatives is fundamental to environmental assessments. It provides decision-makers with information that enables them to properly consider optimal solutions to development proposals. Alternatives illustrate and contrast the environmental implications and consequences of different options available to achieve the same end. In this way, both the proponent and the authorities who must consider the authorisation are in a position to make informed choices or decisions.

Various alternatives, including macro, the no-go, site, technical and technological alternatives have been considered during this EIA.

4.6.1 Macro alternatives

On a macro scale, although there are a number of available telecommunication mechanisms used world wide and in South Africa, the scale of customer demand and expectation of ever faster data transfer have made many of these inadequate or obsolete. Radio has largely been

phased out due to restricted bandwidth and poor data transmission. Currently, Africa relies primarily on satellites with a few submarine cables to provide its international communications. Satellite and microwave transmissions are unable to offer the capacity required for South Africa and other African countries to remain part of the global community in terms of communication services.

Within South Africa, fibre optic networks are currently the only available technology able to transmit sufficiently high volumes of voice and data traffic, with higher security, reliability and at a lower cost. This is the current preferred technology for meeting demand for data and voice transmission on a global scale and is one of the main reasons why the ACE Cable System is based on a fibre optic network. It is for this reason that no alternatives to fibre optic cables have been considered in this assessment.

4.6.2 No development alternative

Simply put, the no development alternative means that MTN does not construct the proposed ACE Cable System and does nothing to address the need for access to affordable international bandwidth in South Africa. In this context, the Government's vision and objectives for economic growth and provide a means of fulfilling the South African Government's requirements in terms of digital television broadcasting for the country, will not be achieved.

A number of existing marine telecommunications cables make landfall in South Africa. If the proposed Ace Cable System is not constructed it would mean that an independent mobile operator, such as MTN, will not have the ability to increase competition within the telecommunications market. Increased competition is expected to help South Africa reach is broadcasting requirements and ensure that connectivity to international markets is maintained in the event that one or more of the existing cable systems go down.

The no-go alternative would mean that the primary NEPAD objective to eradicate poverty in Africa and to place African countries both individually and collectively on a path of sustainable growth and development to thereby halt the marginalisation of Africa in the globalisation process would also not be achieved. In the context of the proposed development, the No-Go alternative would mean that access to affordable international bandwidth would not be achievable in South Africa which is known to be key to economic development in every country.

If the No-Go alternative is selected, MTN and South Africa as a whole will be missing out on an opportunity to unlock economic development within the country. In addition, should the No-Go alternative be selected it would mean that MTN will not be able to operate an international fibre-optic bandwidth and they will be unable to facilitate more affordable and effective transport of voice, data, internet and television services to South Africa's population.

Considering the aforementioned, and the relatively small-scale nature of the proposed project (in terms of footprint, infrastructure and impacts on marine and terrestrial environments), it is the opinion of the EAP that the no development alternative is unrealistic as the project provides a means to provide affordable international bandwidth in South Africa. In addition, non-implementation of the proposed ACE Cable System would be contrary to Government policy objectives.

4.6.3 Landing site alternatives

Findings from the initial screening exercise identified five possible landing sites for the ACE Cable System (one alternative at Yzerfontein and four alternatives to the north and south of Melkbosstrand). These were then assessed further during scoping to identify the most environmentally feasible alternatives to consider for detailed assessment during the EIA. From these assessments two possible sites for landing alternatives were selected for the ACE Cable System which were assessed by the appointed specialists to identify which of the two were the most suitable from an environmental, economic and social perspective. With the selection of two possible landing sites the environmental assessment also considered offshore alignment and onshore alignment alternatives for the ACE Cable System as discussed below.

The first landing site considered (Alternative A) is located along the northern section of Van Riebeeckstrand Beach and is located close to the Safety Exclusion Zone of the Koeberg Nuclear Power Plant which is approximately 1.7 km north of this proposed landing site. The proposed site is accessible from the land along an existing maintenance road which is used by the City of Cape Town when cleaning out the stormwater drains located behind the primary dune cordon. From the suburb of Van Riebeeckstad, access to the site is from Dunker Street and then along the maintenance road (Figure 7 and 9).

The second landing site considered (Alternative B) is located along the northern section of Van Riebeeckstrand Beach and can be accessed from Die Bad Road (Figure 8 and 9). The proposed landing point is directly in front of the access track used by the City of Cape Town for storm water maintenance which runs from Die Bad Road towards the beach. The proposed location of the Beach Man Hole (BMH) will be directly adjacent to Die Bad Road where the cable from the marine environment will tie into the land cable which will connect to the MTN Cable Landing Station (CLS) in Duynefontein.

Both alternative landing sites were assessed in detail by the specialists appointed during the impact assessment phase of the environmental assessment. Findings from these assessments and the identification of the preferred alternative for implementation are discussed in detail in Chapter 9 of this report.

Figure 7 Alternative Landing Site 1 (Alternative A) and position of the proposed Beach Man Hole (Source Google Earth 2016)

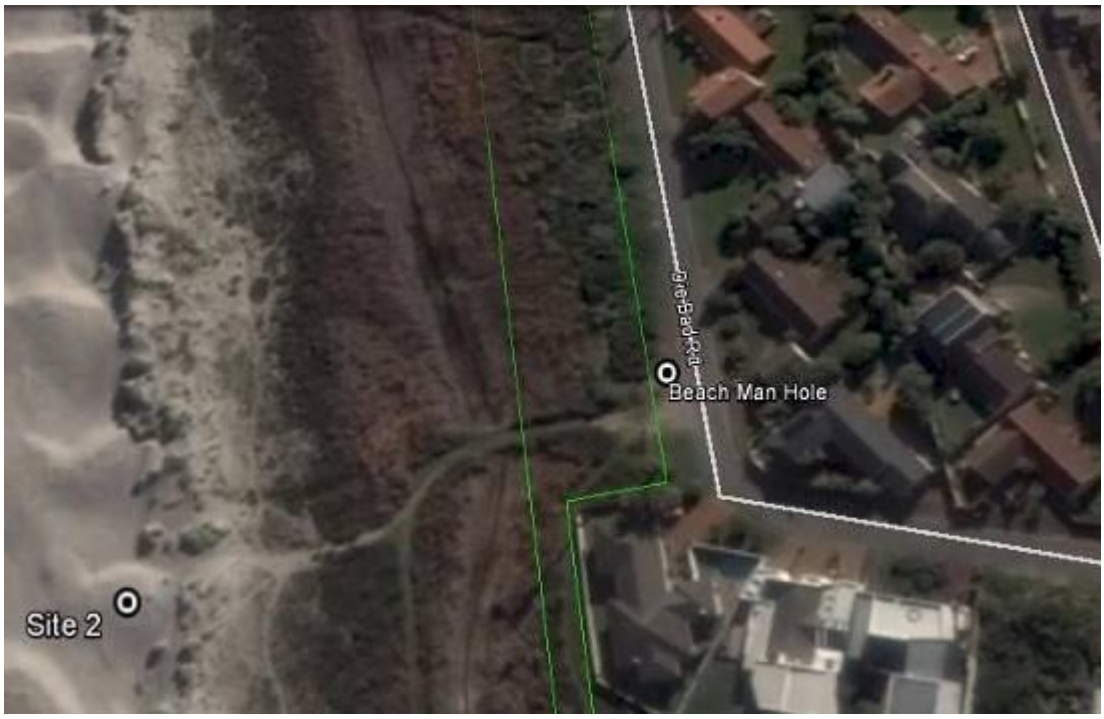


Figure 8 Alternative Landing Site 2 (Alternative B) and position of the proposed Beach Man Hole near Die Bad Road (Source Google Earth 2016)

4.6.4 Terrestrial cable alignment alternatives

From the two landing site alternatives assessed, two route alternatives were identified to get the ACE Cable System from the respective Beach Man Hole (BMH) sites at landing alternatives 1 and 2 (A and B) to the Cable Landing Station (CLS) in Duynefontein. These route alignments were selected following discussions with the City of Cape Town Planning Department and included the following considerations:

- The use of existing service corridors where possible.
- An alignment which would reduce impacts on surrounding properties and residents of Van Riebeeckstrand and Duynefontein.
- Alignments which were feasible in terms of future developments and plans to be implemented by the City of Cape Town.
- Alignments which would minimise impacts on the terrestrial environment (vegetation specifically).
- Alignments which were economically feasible and viable in terms of construction and operational costs.

It is important to note that the proposed route alternatives allow for some degree of flexibility in terms of the final alignment selected as both of the proposed route alternatives intersect at points and, therefore, the final alignment for the cable may make use of a combination of the alignments proposed from the two landing sites to the CLS site in Duynefontein. Following assessment of the proposed terrestrial alignments by the appointed specialists a preferred alignment was selected which is discussed in detail in Chapter 8 and 9 of this report and outlines the reasons why this alignment has been selected and mitigation measures required to reduce environmental impacts along the selected alignment.

4.6.5 Marine cable alignment alternatives

The proposed ACE Cable System follows the alignment of existing submarine cables entering South Africa's territorial waters. The proposed alignment of the ACE Cable system closely follows that of the SAT-2 cable (currently out of service) and the South Atlantic 3/West Africa Submarine Cable (SAT3/WASC) (Figure 10) which both land at Melkbosstrand on the West Coast of South Africa. This alignment was followed in order to minimise the impact of the ACE Cable System to other seabed users more especially the trawling industry.

Two alternative shallow water alignments (starting about 50 km offshore) were surveyed and assessed 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.). However, the southern shallow water alignment will require the ACE Cable System to cross the SAFE and SAT-2 Cable Systems which is not desirable from an installation and operational perspective. In addition to the above, the survey results along the southern shallow water alignment also identified an anomaly which could be the wreck of a small fishing boat named the Rooibok lost at sea on 21 December 1973. Given that both shallow water alternatives are viable MTN have selected the northern shallow water alignment as the preferred cable alignment for implementation as it minimises impacts on existing marine cable systems and will not have any impact on potential heritage resources (ship wreck of the Rooibok) (Figure 11).

Figure 9 Proposed cable alignment from Alternative Landing Sites 1 and 2 (A and B) to the CLS site in Duynefontein

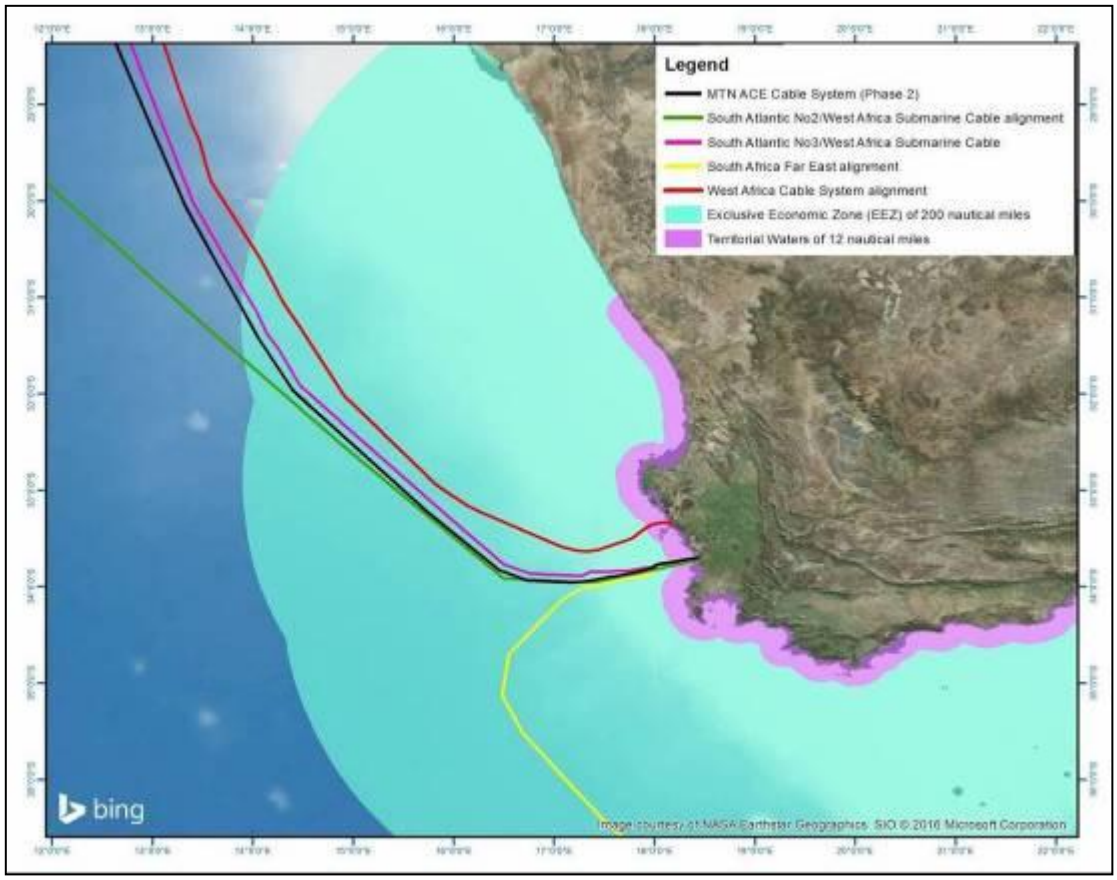


Figure 10 Alignment of the ACE Cable System in relation to existing telecommunication cable systems landing along the Western Cape coastline

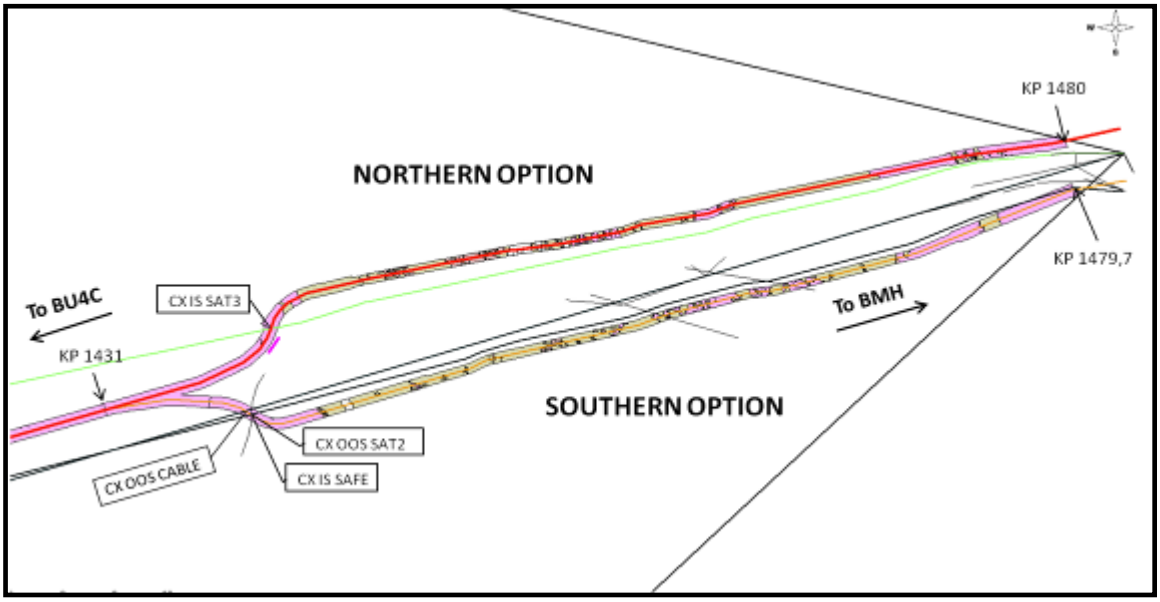


Figure 11 The two shallow water alignments of the ACE Cable System surveyed starting 50 km offshore. The northern option is the preferred alignment for implementation

4.7 Technology alternatives

Within South Africa, fibre optic networks are currently the only available technology that is able to transmit sufficiently high volumes of voice and data traffic, with higher security, reliability and at a lower cost. This is the current preferred technology for meeting demand for data and voice transmission on a global scale and is one of the main reasons why the ACE Cable System is based on a fibre optic network. It is for this reason that no alternatives to fibre optic cables have been considered in this assessment.

4.8 Other considerations

4.8.1 Community safety

The main safety issues during project implementation of the proposed ACE Cable System are that construction activities may pose a safety risk to local residents and pedestrians, in particular children who regularly use these sites as a thoroughfare to the beach or to amenities in Duynefontein as there will be working machinery and open trenches associated with the construction of the proposed project. Mitigation measures will be implemented to manage these safety risks including:

- Construction vehicles must obey regulated speed limits, lights will be switched on at all times and no large vehicles will use the roads at dawn, dusk, at night or in heavy mist conditions to reduce the risk of accidents with other vehicles and pedestrians.
- Deliveries of materials and large components will be scheduled for times that fall within, or outside of the school day, and not in the early morning or mid-afternoon when there are school children using the access roads.
- All trenches must be dug with digging, placement of infrastructure and backfilling taking place on a progressive basis in order to limit the amount of open trench on site.
- Open trenches may not exceed 300 m at any time during construction and all trenches must be suitably barricaded to prevent access by surrounding residents or children.

4.8.2 Sustainable management and natural resources

Over recent years, private sector finance for infrastructure projects, both in the developed and developing world, has increased in importance. This has exposed financial institutions to increasing pressure from Non Governmental Organisations (NGOs) for their involvement in a variety of controversial projects and the need for greater transparency, accountability and tighter standards in the operations of commercial banking. Stemming from these demands and concerns is a set of standards known as the Equator Principles, which are based on the International Finance Corporation (IFC) performance standards on social and environmental sustainability, and on the World Bank Group's Environmental, Health and Safety General Guidelines. The Equator Principles promote socially responsible conduct and sound environmental practices in relation to project financing initiatives.

The single most important factor in reducing the environmental (and social) impacts of marine telecommunications infrastructure projects is good site selection and the ease at which marine telecommunications cable can tie into the existing land based telecommunications network (distance from landing site to the Cable Landing Station and existing network). The best option is, as much as possible, to avoid negative impacts on the environment from the outset, thereby minimizing the amount of environmental mitigation measures required. It is for this reason that a number of landing alternatives for the ACE Cable System were investigated initially (see Final Scoping Report) and only the best two alternatives considered further during the environmental assessment phase of the project.

5. DESCRIPTION OF THE RECEIVING ENVIRONMENT

This section describes relevant characteristics of the receiving environment that may affect or be affected by the proposed ACE Cable System development and associated infrastructure. For this project, the study area has been defined as the proposed cable landing sites, the offshore cable alignment and the onshore cable alignment and their immediate surroundings, as well as the surrounding communities.

5.1 Marine and Offshore Environment

At each landing country associated with the ACE Cable System, the proposed fibre-optic cable will transit coastal waters and be brought on shore using industry-standard installation methodologies. When selecting the route alignment for the ACE Cable System, the following criteria were taken into account by the engineering and EIA team in order to find the most practical and cost effective alignments:

- The placing of the cable close to and along existing alignments of submarine telecommunications cables entering South Africa's waters.
- Identification of a suitable landing beach that minimises on-shore environmental and infrastructure constraints and enables the cable to be linked to the proposed cable station.

5.1.1 Biophysical Characteristics

Prevailing currents

The oceanographic regime around South Africa is dominated by two major current systems: the cold Benguela Current along the Atlantic coast to the west and the warm Agulhas Current along the Indian Ocean coast to the east. On the west coast, the Benguela Current has two main components namely the eastern limb of the South Atlantic Subtropical Gyre which has a broad, sluggish, equator ward flow of only 0.1–0.3 m s^{-1} and inshore of this, a coastal component which exhibits dynamic wind-driven upwelling. The inshore coastal component is mainly driven by local weather systems, resulting in short-term upwelling cycles with a periodicity of 5–10 days. Offshore, mean monthly sea surface temperatures range from 15.4°C to 20.1°C, but in the near shore upwelling region, variability is greater and temperatures range from 10°C to 18°C. These upwelling events along the west coast bring nutrient rich waters which result in high biological productivity, which in turn supports large fish stocks, including pilchard, anchovy, hake, and rock lobster, each forming the basis for lucrative commercial fisheries (Shannon *et al.,* 1988).

Bathymetry

The continental shelf off Cape Town is relatively narrow, about 35 km, but widens northward to about 230 km at Alexander Bay. Based on results of the screening studies undertaken the following description of the bathymetry along the proposed ACE Cable System has been compiled from where the cable enters the EEZ of South Africa until it makes land fall at Van Riebeeckstrand.

The proposed ACE Cable System enters South Africa's EEZ at 30°32.930'S, 13°35.162'E at a Water Depth (WD) of 2,905 m and proceeds in a south-southeast direction over a gentle sloping seabed. A local seabed rise is passed by the route between 30°47.677'S, 13°42.989'E in 2,840 m WD and 30°54.564'S, 13°46.651'E with moderate to steep gradient observed along the sides. After that, the route runs over a gentle seabed with occasional moderate gradients for approximate 50 km until two scarps are encountered at approximately 31°19.930'S, 14°00.178'E in 2,911m WD and 31°21.304'S, 14°00.913'E in 3,008 m WD. Very steep scarps measured up to 28° can be observed along the proposed cable alignment.

- *31°22.601'S, 14°01.605'E in 3,054 m WD to 33°02.544'S, 15°32.596'E in 3,346 m WD*
  At the beginning of this section, the proposed route heads south-southeast and then alters gently to the southeast at 31°57.577'S, 14°23.411'E in 2,968 m WD. The seabed is gentle in general with occasional moderate gradients.
- *33°02.544'S, 15°32.596'E in 3,346 m WD to 33°49.140'S, 16°26.485'E in 2,642 m WD*
  In this section, the seafloor rises to the southeast along the route. The seabed is gentle with localised moderate slope gradients and one scarp with moderate slope is crossed by the route at around 33°17.167'S, 15°48.720'E in 3,203 m WD.
- *33°49.140'S, 16°26.485'E in 2,642 m WD to 33°56.936'S, 17°15.551'E in 1,500 m WD (Offshore shallow water survey boundary)*
  In this section, the route gradually alters course from the southeast to the east direction. Irregular seabed is present with scattered to numerous moderate to very steep slopes. The route crosses the SAT 2 cable at 33°55.540'S, 16°42.525'E in 2,794 m WD. At 33°56.936'S, 17°15.551'E the route reaches the burial limit of 1,500 m WD and continues eastwards climbing on the continental slope.
- *33°56.935'S, 17°15.551'E (KP1368.7) in 1500m WD to 33°54.892'S, 17°27.537'E (KP1387.6) in 520m WD*
  In this section, the route traverse to the east-northeast on a seabed with gentle to localised steep slope gradients. The seabed rises eastwards successively. The slope gradients are mainly gentle to moderate. Some local scarp or depressions can be observed on either side of the survey route. From 1,500 m WD (to the east), the seabed geology is characterised with thick sediment stratum. The results from gravity cores prove that the surface sediments mainly comprise of very soft to soft sandy silt over inter-bedded firm to stiff sandy silt and medium dense silty sand. A section of hard dense sediment was mapped between 33°56.877'S, 17°16.013'E in 1,456 m WD and 33°56.860'S, 17°16.150'E in 1,437 m WD.
- After 33°56.445'S, 17°19.441'E in 1105m WD, the seabed sediment becomes denser with some medium to stiff clayey silt and coarser sediments.
- After 33°55.486'S, 17°25.163'E in 665m WD, the shallow geology becomes intermittent veneers of soft to stiff sandy silt over medium dense to very dense silty sand until the end of this section. Beside the presence of shallow hard ground in the eastern part of this section, a total of eleven (11) sonar contacts attributed to debris were identified along the proposed cable alignment. A pre-lay grapnel run is recommended along this section of the ACE Cable alignment.

5.1.2 Biodiversity threats and Marine Protected Areas

South African marine biodiversity is under threat from a range of anthropogenic activities, the intensity and variety of which have increased significantly over the past hundred years. Direct exploitation of coastal resources range from traditional subsistence exploitation and recreational fishing to full-scale commercial activities.

Currently, 23% of the South African coastline, but less than 1% of the country's EEZ, falls within Marine Protected Areas (MPAs). Spatial assessments of South African marine biodiversity noted fish fauna as the most exploited and threatened major component of the marine biota, while high-profile reefs and pinnacles, soft-bottom trawling grounds, and coastal and subtidal areas exposed to mining on the west coast were identified as the most threatened habitats (http://sanpcc.org.za/pssa/articles/includes/NSBA). Efforts are currently underway to increase the level of protection to South Africa's marine environment with the Department of Environmental Affairs (DEA) recently publishing a draft notice (03 February 2016 in the *Government Gazette N*o. 39646) and regulations to declare a network of 22 new proposed Marine Protected Areas (MPAs) as part of the Operation Phakisa Initiative.

The declaration of these new MPAs aims to create approximately 70 000 km^2 of marine protected areas, bringing SA's ocean protection within the South African Exclusive Economic Zone (EEZ) to more than 5% (Figure 12). The proposed alignment of the ACE Cable system does not pass through any of the areas identified for future MPAs (or current ones).

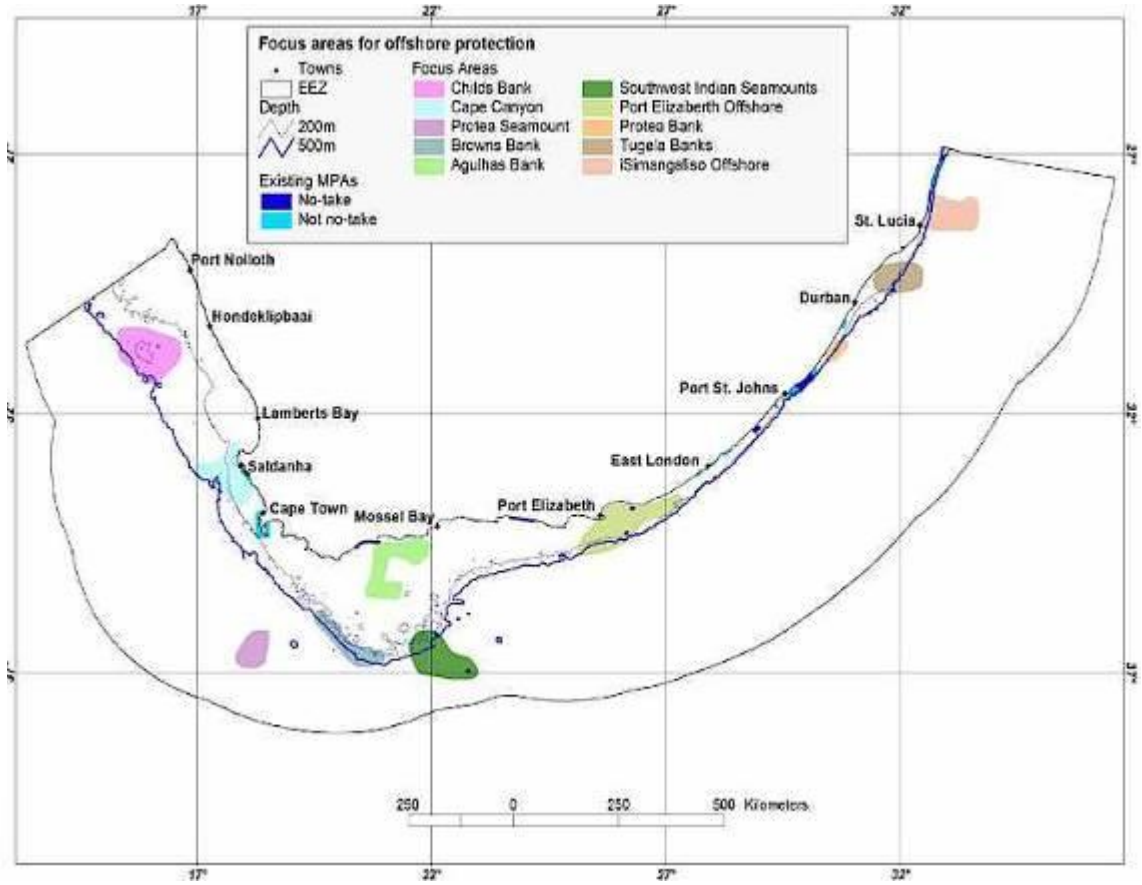


Figure 12 Proposed focus areas for offshore protection (Source: Sink *et al.*, 2011)

Marine telecommunications cables although having some direct negative impacts associated with the installation and operation of these cable systems, do offer protection to the marine benthic environment along their alignment through the implementation of the legislated buffer zone either side of the cable as defined in the Marine Traffic Act (Act No. 2 of 1981) read together with the Maritime Zones Act (Act No. 15 of 1994). This buffer zone effectively protects the benthos from bottom trawling and acts as a refuge for benthic fish species in these areas.

5.1.3 Marine Fauna

Fish Species

The marine environment off the south-western coast of Africa with its nutrient rich waters supports large populations of pelagic, mid-water and demersal fish species and high numbers of bird and mammalian predators (Hutchings *et al.,* 2009). Of particular relevance to the proposed ACE Cable System are the fish stocks occurring within oceans surrounding the proposed cable route and the fishing industry which targets these fish species. These fish species include the following commercially targeted species:

Pelagic species

- Pilchard (*Sardinops occelata*).
- Anchovy (Family Engraulidae).
- Snoek (*Thyrsites atun*).
- Chub mackerel (*Scomber japonicus*).
- Yellowtail (*Seriola lalandi/rivoliana*).
- Tuna (numerous species).

Demersal species

- Hake (*Merluccius paradoxus/capensis*).
- Kingklip (*Genypterus capensis).*
- Monkfish (*Lophius americanus*).

Marine Mammals

There are a number of marine mammals which are known to occur on the West Coast of South Africa and within the project area. Included in these are the following species:

Cape Fur Seal (*Arctocephalus pusillus*) - The Cape Fur Seal is the only seal species that breeds in South Africa; however, other seal species such as Elephant Seals, Sub-Antarctic Fur Seals and Leopard Seals are occasionally encountered along South Africa's coastline. Cape Fur Seals have been protected in South Africa since 1893 but were commercially harvested up until the 1990s before a ban on the commercial harvesting seals was enforced.

Dolphins – there are three dolphin species generally found off the West Coast of South Africa, namely the common dolphin (*Delphinus delphis*), bottlenose dolphin (*Tursiops truncates)* and the Heaviside's dolphin (*Cephalorhynchus heavisidii)*. Sightings of the Heaviside's dolphins are more common off the Skeleton Coast of Namibia, but they have also been recorded as far south as the southern tip of South Africa.

Whales – there are a number of whale species which are known to occur on the West Coast of South Africa, the most common of which are the southern right whale *(Eubalaena australis)* and the humpback whale (*Megaptera novaeangliae)*. Whales are generally observed in the

waters off Melkbosstrand and Yzerfontein between June and December when groups of between 8-10 whales are often observed. During this period, the cows calve in the calm coastal waters close to shore.

Birds

Birds are common and important components of coastal ecosystems, being top predators both in near shore and intertidal environments where near shore is defined as *"the region extending from the low-water mark out to sea, approximately as far as the edge of the continental shelf"* and the intertidal environment is defined as "*that extending above the low-water spring mark to the limit of direct marine influence*" (Hockey *et al.,* 1983). The distribution patterns of birds are also highly dependent on food availability and suitable nesting sites. Seabirds feed at sea and breed on land and are, therefore, important redistributors of nutrients within these environments.

The near shore environment of Southern Africa supports large numbers of both breeding and non-breeding seabirds. Breeding seabirds are spatially restricted by the availability of safe nesting sites such as islands and mainland cliffs, but non-breeding species can theoretically occur throughout the region. The distribution of sea birds is also highly dependent on food availability and, as such, the upwelling of nutrient water in the Benguela Current often results in large numbers of seabirds congregating around large shoals of fish such as pilchards and smaller pelagic shoaling fish.

The three most abundant seabird species encountered within the project area are the Jackass Penguin (*Spheniscus demersus*), Cape Cormorant (*Phalacrocorax capensis*) and Cape Gannet (*Morus capensis*). Seabird diversity varies seasonally within the project area with the area supporting a reduced diversity of species during the summer months.

5.1.4 Offshore Fishing Industry

Approximately 14 different commercial fishery sectors currently operate within South African waters. In addition to commercial sectors, recreational fishing occurs along the coastline comprising shore angling and small, open boats (generally less than 10 m in length). The commercial and recreational fisheries are reported to catch over 250 marine species, although fewer than 5% of these are actively targeted by commercial fisheries, which comprise 90% of the landed catch.

The primary fisheries in terms of highest economic value are the demersal (bottom) trawl and long-line fisheries targeting the Cape hakes (*Merluccius paradoxus* and *M. capensis*) and the purse-seine fishery targeting small pelagic species including pilchard (*Sardinops ocellatus)*, anchovy (*Engraulis encrasicolus*) and red-eye round herring (*Etrumeus whitheadii*). Highly migratory tuna and tuna-like species are caught on the high seas and seasonally within the South African Exclusive Economic Zone (EEZ) by the pelagic long-line and pole fisheries. Targeted species include albacore (*Thunnus alalunga*), bigeye tuna (*T. obesus*), yellowfin tuna (*T. albacares*) and swordfish (*Xiphias gladius*).

Offshore trawling is usually conducted along specific trawling lanes on "trawl friendly" substrate (flat, soft ground). The total trawl footprint within the South African EEZ is approximately 70,400 km^2 of which offshore grounds amount to 57,420 km^2 and inshore grounds 12,983 km^2. On the West / South-West Coast, these grounds extend in a continuous band along the shelf edge between the 300 m and 1,000 m bathymetric contours[2].

[2] Trawling to these depths started in the mid 1990s for deep-water species such as orange roughy.

The primary offshore fishing ground on the west coast is a sandy and muddy offshore ground that was first fished in the 1920s and continues to be a very important area for the offshore trawl fleet (Figure 13). Trawl nets are generally towed along depth contours (thereby maintaining a relatively constant depth), running parallel to the depth contours in a north-westerly or south-easterly direction. Trawlers also target fish aggregations around bathymetric features, in particular, seamounts and canyons (i.e. Cape Columbine and Cape Canyon), where there is an increase in seafloor slope. In these cases, the direction of trawls also follows the depth contours. Trawlers are prohibited from operating within five nautical miles of the coastline.

8.1.5 Offshore Mining Concessions

Approximately 98% of South Africa's exclusive economic zone is subject to a right or lease for offshore oil and gas exploration or production. The Petroleum Agency of South Africa is responsible for the 'promotion and regulation of offshore exploration and production' and maintains a national database of petroleum exploration and production. Over the past decade (since 2006) this database has shown a rapid increase in the application and grant of offshore rights and leases. The South African government has also actively promoted offshore oil and gas exploration through Operation Phakisa which seeks to support the rapid development of the offshore oil and gas sector by "*creating an environment that promotes exploration*".

Recently there have also been an increasing number of applications for "*unconventional"* offshore oil and gas activities (hydraulic fracturing). Although impacts associated with fracking (hydraulic fracturing) in the marine environment are relatively unknown, the Department of Environmental Affairs recently granted PetroSA permission to include hydraulic fracturing in three of its gas field development wells near Mossel Bay. The granting of this permission is in contrast to the most recent iteration of the Petroleum Exploration and Production Regulations (technical regulations for fracking) which excludes offshore exploration and production from its scope (http://cer.org.za/safeguard-our-seabed/mineral-and-petroleum-extraction). As such, it appears that offshore exploration and production are currently unregulated and aggravated by little available knowledge of potential impacts on the marine ecosystem and existing marine uses, including fishing.

The proposed ACE Cable System crosses five of these offshore oil and gas concessions from where it enters EEZ of South Africa until it makes landfall at Van Riebeeckstrand. Following investigations by the project team it appears that all of these concessions are currently inactive and. as such no direct impacts on the concession holders are expected during the installation of the proposed telecommunications cable system. If the concession holders do decide to commence exploration at a later date, they will have to abide by the legislated buffer zone either side of the cable as defined in the Marine Traffic Act (Act No. 2 of 1981) read together with the Maritime Zones Act (Act No. 15 of 1994).

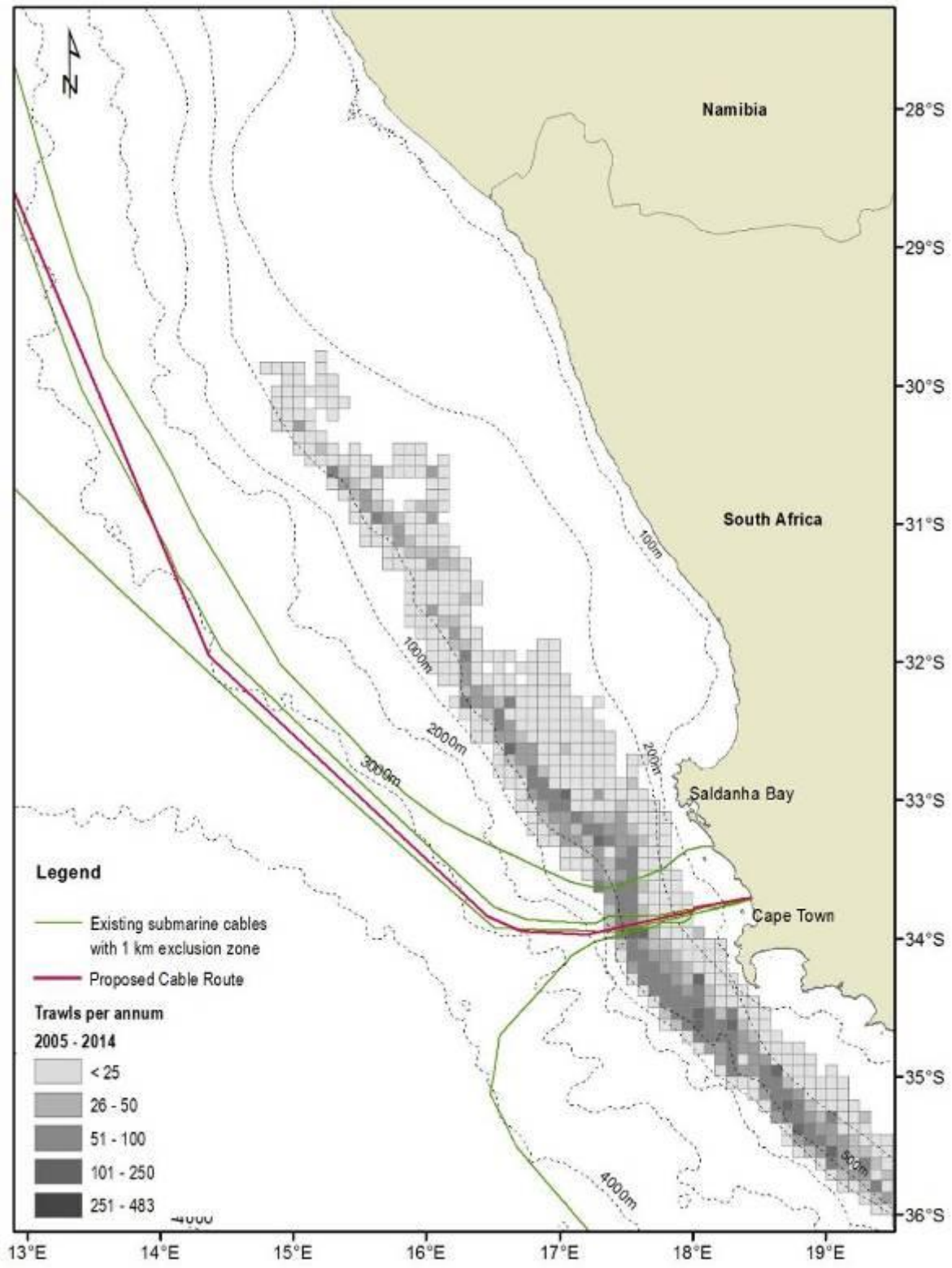


Figure 13 Spatial distribution of trawling efforts off the West Coast of South Africa in relation to existing submarine cables as well as the proposed ACE cable route. Fishing effort is displayed at a 5' x 5' grid resolution showing the average number of trawl start positions per annum (2005 – 2014)

The proposed ACE Cable System enters and exits the following oil concession blocks along its proposed alignment which as indicated above, were found to be inactive:

- Cable exits OCB 3013-OK Energy concession and enters OCB 3113-OK Energy concession at the following co-ordinates: (S 13^{o} 48.935 and E 30^{o} 58.855).
- Cable exits OCB 3113-OK Energy concession and enters OCB Orange Deep - Shell concession at the following co-ordinates: (S 13^{o} 59.491 and E 31^{o} 18.644).
- Cable exits OCB Orange Deep - Shell concession and enters OCB 3315 – New Age concession at the following co-ordinates: (S 15^{o} 28.965 and E 32^{o} 59.155).
- Cable exits OCB 3315 – New Age concession and enters OCB 05 06 – Anadarko concession at the following co-ordinates: (S 15^{o} 59.101 and E 33^{o} 26.000).
- Cable exits OCB 05 06 – Anadarko concession and enters OCB 3318C – Rhino Oil and Gas Exploration South Africa (Pty) Ltd concession at the following co-ordinates: (S 17^{o} 59.584 and E 33^{o} 49.509).

Rhino Oil and Gas has an application pending with DEA for inshore oil and gas exploration and have been added to the project database as an interested and affected party (See Appendix 7 for a map of the offshore concessions crossed by the proposed ACE Cable System).

5.1.6 Offshore marine telecommunications infrastructure

Telkom SA, as one of the operators of other marine telecommunication cable systems on the west coast (SAT-3/WASC/SAFE and WACS), has an interest in the proposed ACE cable system from an operational and risk perspective. MTN, like Telkom SA, is a member of the International Cable Protection Committee (ICPC) and, as such, there are a number of guidelines and standards to abide by to ensure that new cable systems do not negatively impact on existing marine telecommunications systems. Therefore, MTN must abide by the conditions stipulated by the ICPC to ensure no negative impacts are experienced by existing marine cable operators such as Telkom SA. As per the recommendations of the ICPC, MTN will engage directly with Telkom SA to reach a formal agreement with regards to the installation and operation of the ACE Cable System.

However, Telkom SA's support of the ACE Cable System must be noted as it will aid as a driver of Africa's economic growth and support NEPAD's goals. In addition, Telkom SA welcomes an additional cable on the west coast of South Africa as it allows South Africa to maintain access to Europe should the WACS (operated by Telkom SA) fail.

5.2 Beach and Terrestrial Environment

The final section of the ACE Cable System which makes landfall in South Africa involves the installation of the cable through the intertidal zone, across the beach and then approximately 1.5 km of land cable until reaching the Cable Landing Station (CLS) site in Duynefontein. The following section of this report briefly describes the biophysical, social and economic environment.

5.2.1 Van Riebeeckstrand Beach and coastal dunes

Van Riebeeckstrand Beach is a long, sandy beach between the southern border of the Koeberg Nuclear Power Station, and the mouth of the Kleine Zoute River (www.capetown.gov.za). The beach is predominantly used by local residents for walking, swimming, surfing and fishing, although kite surfers/wind surfers also frequent this beach as it has a left to right break with swells reaching up to 3 m at times. Van Riebeeckstrand Beach is backed by the suburbs of Duynefontein and Van Riebeeckstrand. There are numerous access points along its 2 km stretch and both of the proposed landing sites for the ACE Cable system are located near two of these access points to the beach.

The dune cordon at Van Riebeeckstrand lies leeward of a wide dissipative beach. The cordon comprises of a number of dune structures and a wide, permanently wet dune cordon. Recent imagery indicates that previously stable portions of dune have become more transgressive in nature and that the dune slack is an important stabilizing feature within the area (Figure 14).

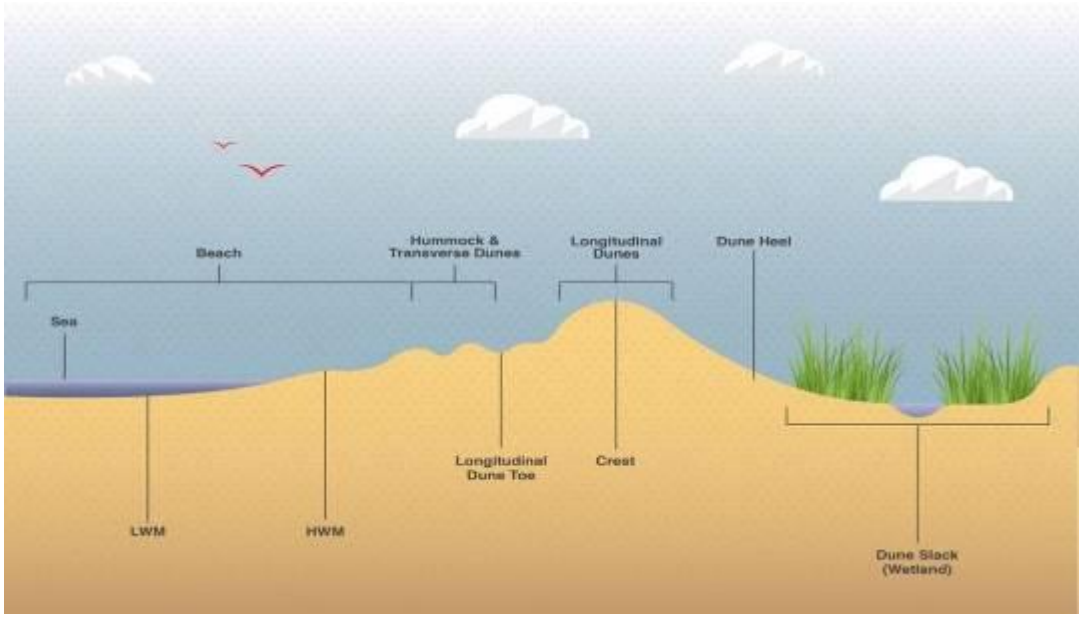


Figure 14 Graphic representation of the cross section of Van Riebeeckstrand beach and dune cordon

5.2.2 Vegetation

From an ecological perspective, prevailing climate, habitat complexity and species diversity are known to play a significant role in determining the state of a dune form. Using SANBI data (Mucina and Rutherford, 2006), the project area is comprised of three habitat types, viz. Cape Seashore Vegetation, Cape Flats Dune Strandveld and Atlantis Sand Fynbos (Figure 15). Of these vegetation types, Cape Seashore Vegetation is considered to be “least threatened” from a habitat conservation perspective, while Cape Flats Dune Strandveld is considered to

be “endangered”. Atlantis Sand Fynbos is a more terrestrial, inland habitat and is considered to be “critically endangered” from a conservation perspective. Of the three vegetation types, Cape Flats Dune Strandveld is most severely threatened by urban sprawl (Mucina and Rutherford, 2006), as well as invasion by alien plant species.

Both of the terrestrial cable route alternatives have the potential to impact on a Critical Biodiversity Area (CBA) 1b according to the Biodiversity Network (BioNet) for the City of Cape Town in the section before it reaches the CLS, which is also classified as CBA in the draft internal version of the provincial biodiversity spatial plan. The impacts on this Critical Biodiversity Area will, however, be fully investigated during the impact assessment phase of the EIA and mitigation measures will be specified to mitigate impacts on these Critical Biodiversity Areas.

Figure 15 Vegetation types within the study area

Vegetation on the primary dunes at Van Riebeeckstrand can be classed as the Cape Seashore Vegetation type and includes species such as *Sporobolus virginicus* and *Ehrharta villosa*, with *Tertragonia decumbens* and *Didelta carnosa* being common. Behind the primary dune cordon the wet dune slack gives rise to a habitat dominated by *Typha capensis* and *Juncus kraussii*. Where better drained soils occur, species typical of Cape Flats Dune Strandveld veld type are evident, in particular *Chrysanthemoides monilifera* and *Dassispermum suffruticosum*.

Vegetation within the study area is subject to ongoing disturbance, primarily through pedestrian traffic moving through the dune slack and frontal dune cordon to access the beach. In addition, the establishment of storm water infrastructure within the dune slack and clearance of vegetation have resulted in ongoing disturbance to the area, the latter being evident where there are attempts within the slack to facilitate the flow of water (Figure 16). There is also evidence of informal attempts to stabilise the frontal dune cordon through *ad hoc* brush wood packing and occasional plantings.

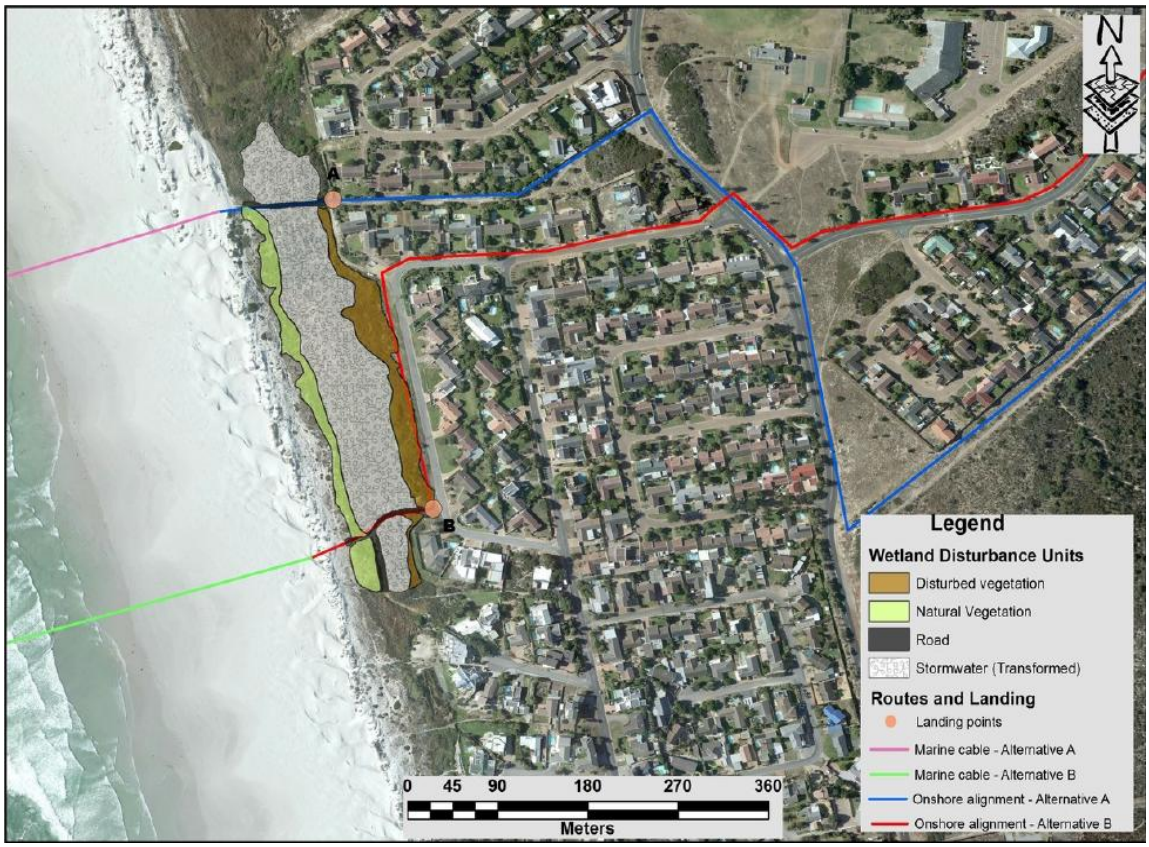


Figure 16 Disturbance within the dune slack wetland within the study area

5.2.3 Fauna

Mammals

The study area is likely to have relatively low mammalian species richness. Although the site falls within or near the edge of the distribution range of 42 terrestrial mammals and nine bats, the high degree of transformation within the study area means that only species tolerant of human development are likely to be present. Species which are known to be located within the study area include the Cape Gerbil (*Tatera afra*) and the Cape Molerat (*Georychus capensis*). Two listed terrestrial mammal species are described as potentially occurring within the study area, namely the Honey Badger (*Mellivora capensis*) and the White-tailed Mouse (*Mystromys albicaudatus*) (Endangered) but their presence at the site is highly unlikely given the extensive transformation of most habitats within the urban setting of the routes.

Reptiles

According to the Southern African Reptile Conservation Assessment (SARCA) database, 31 reptiles have been recorded within the study area. This includes three listed species, the Bloubergstrand Dwarf Burrowing Skink (*Scelotes montispectus*), Cape Dwarf Chameleon (*Bradypodion pumilum*) and Cape Sand Snake (*Psammophis leightoni*). Although the Cape Dwarf Chameleon might occur in residents' gardens, it is unlikely that these three species occur within the affected areas of the cable route as the habitat is not suitable either through the transformed nature of the urban context or through degradation of remnant vegetation along the route. In terms of the likely impacts of the development on reptiles, habitat loss is not likely to be highly significant as the cable alignment routes are not likely to create a large loss of habitat. Although the construction phase will generate some disturbance which may negatively impact reptiles, this would be temporary and in the long-term, impacts on reptiles are likely to be low.

Amphibians

The diversity of amphibians within the affected area is likely to be relatively low given the low diversity of frogs in the project area and the small terrestrial footprint of the cable system. Impacts on amphibians are likely to be low and, if any, concentrated in the construction phase.

5.3 Climate

The Western Cape has a semi-arid Mediterranean climate, which is strongly influenced by the cold Benguela Current and coastal winds. The Cape Town area is characterised by dry summer months (December to February) of hot, sunny weather, with an average temperature of around 26°C. This is the most popular time to visit Cape Town and tourists and residents usually enjoy approximately 11 hours of sunshine every day.

During the winter months, the weather is characterised by cooler rainy weather with June-August being the coldest months having an average temperature of 19^{o}C. Rainfall within the study area predominantly occurs during the winter months with the highest monthly rainfall occurring in July when it rains for approximately 18 days on average each year (http://www.worldweatheronline.com). Graphs depicting the average monthly temperatures and rainfall for Melkbosstrand are provided in Figure 17.

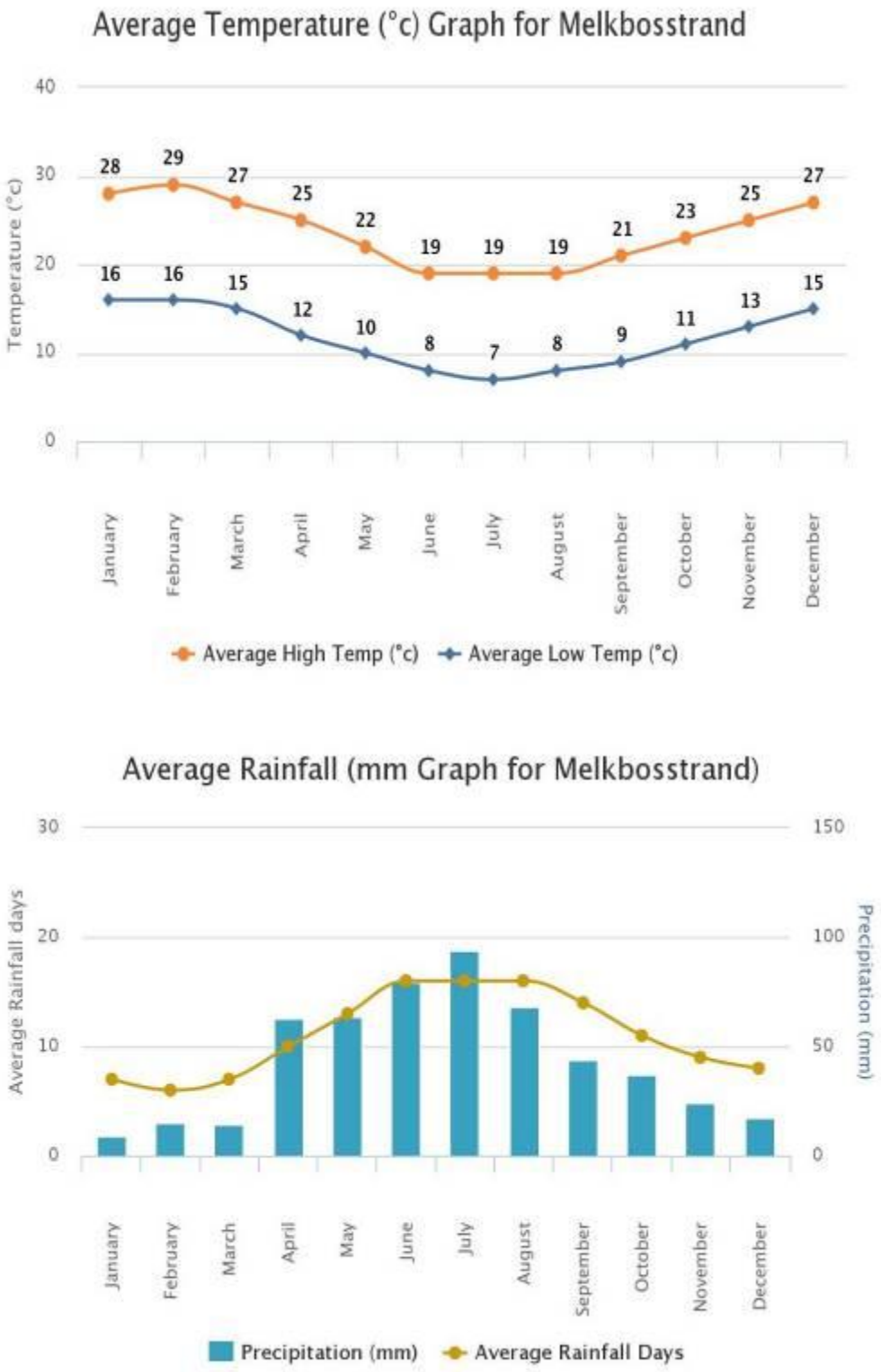


Figure 17 Average monthly rainfall and temperatures for Melkbosstrand (Source: http://www.worldweatheronline.com)

5.4 Topography and geology

The project area and the settlement of Duynefontein are situated in close proximity to the R27 regional road and are surrounded by conservation areas such as Koeberg Nature Reserve and the Cape West Coast Biosphere Reserve, with the Blouberg Provincial Nature Reserve located to the south. The study area falls within the Southern Western Coastal Belt Aquatic Ecoregion. This ecoregion is characterised by plains and a moderate to low relief, with gentle slopes (<5% gradient) occurring over more than 80% of the region.

The surface geology along the coast at Van Riebeekstrand is dominated by Quaternary sediments, overlying meta-sediments of the Tygerberg Group. The Quaternary sediments grade from those associated with the Langebaan Formation (consisting of limestone and calcrete, partially cross-bedded with calcified parabolic dune sand) immediately inland of the coastline to those associated with the Witzand Formation (consisting of unconsolidated calcareous sand of marine origin), with the more acidic light-grey to pale-red sandy soils of the Springfontyn Formation occurring further inland, to the east.

5.5 Socio-economic overview of the receiving environment

The proposed project is located in Ward 23 of the City of Cape Town. In order to identify, assess and place in context potential socio-economic impacts that the proposed project may have, the socio-economic dynamics of the receiving environment need to be understood. The following section provides an overview of the socio-economic characteristics of the project area.

Population

Ward 23 has a population of 33,448 which equates to 13,215 households with an average household size of 2.53 people which is below the municipal average of 3.5 people per household (StatsSA, 2012). The population within the ward is predominantly white (76%) which is in contrast to the municipal averages where 42% of the population is classified as coloured and 39% black (StatsSA, 2012). In terms of age structure the majority of the population (60.7%) fall between the ages of 25 and 64 years of age, higher than the municipal figure of 51.3% in the same age category (SatsSA, 2012). Access to education is also better within Ward 23 than the municipality as a whole, with 82% of the population over the age of 20 in Ward 23 having completed a Grade 12 or higher while only 46% of the population in the municipality have attained this level of education (StatsSA, 2012).

Economic profile

In terms of income, 17% of households have a monthly income of R 3,200 or less within Ward 23 which is significantly lower than the 47% of households in the City of Cape Town reporting a monthly income of R 3,200 or less (StatsSA, 2012). Figure 18 below illustrates the higher level of income experienced by households within Ward 23 in comparison to the City of Cape Town as a whole.

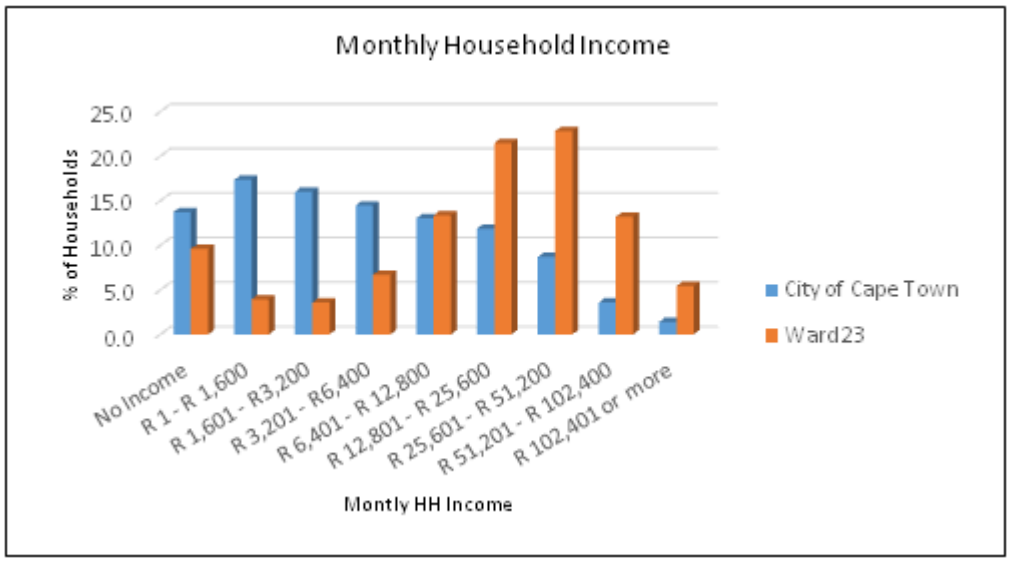


Figure 18 Monthly household income within the City of Cape Town and Ward 23

Access to services

Household access to piped water, sanitation and electricity is on average better in Ward 23 than it is for the City of Cape Town as a whole. This is particularly noticeable when looking at the percentage of households with access to piped water inside their dwelling and flush toilets connected to a formal sewerage system. Figures 19, 20 and 21 illustrate the differences in the level of access to services between Ward 23 and the rest of the City of Cape Town.

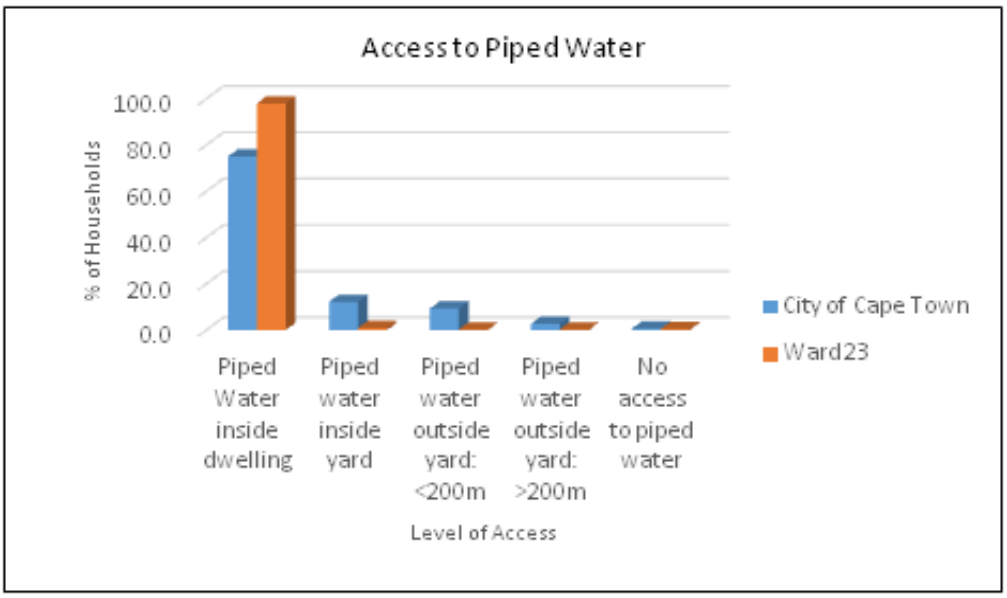


Figure 19 Access to piped water in City of Cape Town and Ward 23

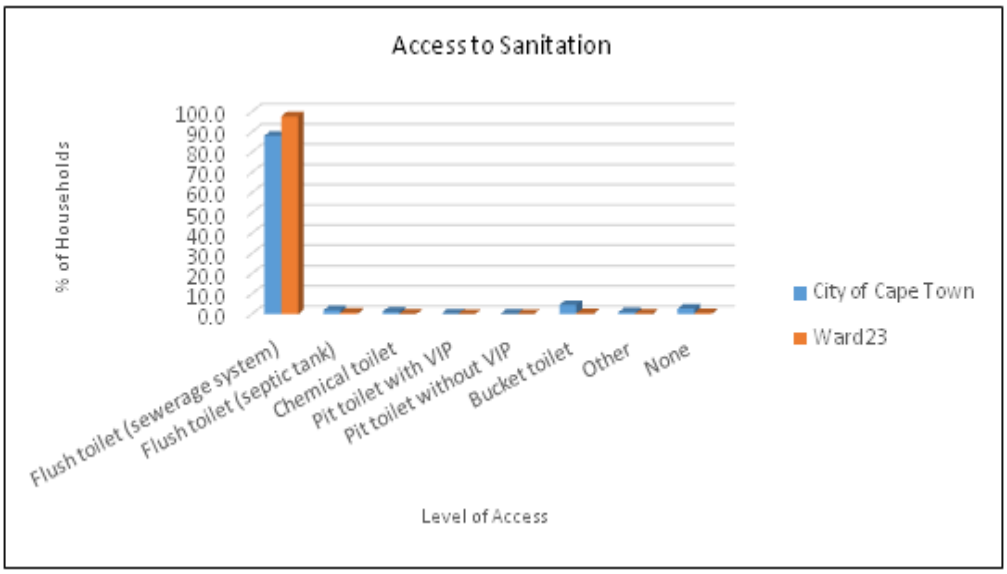


Figure 20 Access to sanitation in the City of Cape Town and Ward 23

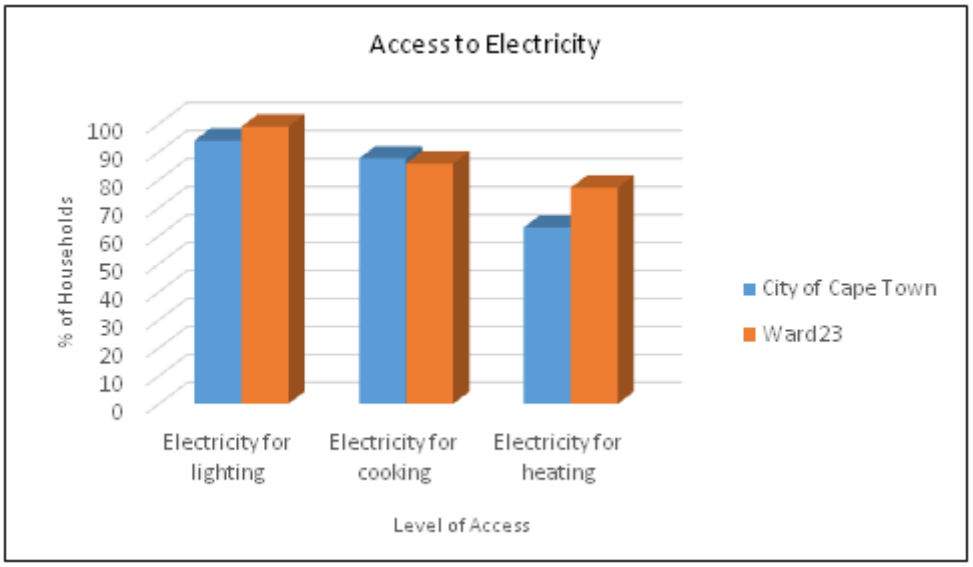


Figure 21 Access to electricity in City of Cape Town and Ward 23

The proposed project site is located entirely within Ward 23 of the City of Cape Town. While the ward includes agricultural areas as well as the Blaauwberg Nature Reserve, the area where the proposed ACE cable will land can be described as a middle to upper income suburban area.

Ward 23 exhibits higher levels of socio-economic development than the City of Cape Town, the Western Cape Province and South Africa as a whole. Households within the study area have higher levels of income, better access to education and unemployment levels in the ward are significantly lower than municipal (24%), provincial (21.4%) and national averages (29.4%) (StatsSA, 2012).

Koeberg Nuclear Power Station

Koeberg is the only nuclear power station in Africa and ranks amongst the safest of the world's top ranking PWRs of its vintage and is the most reliable Eskom power station (http://www.eskom.co.za). Koeberg has operated safely for more than 20 years and has recently undergone a successful peer review by the World Association of Nuclear Operations. The power station is intended to have a further active life of 30 to 40 years, after which time it will be decommissioned in line with the requirements set out by the National Nuclear Regulator.

Koeberg is surrounded by a 3,000 ha private game reserve owned by Eskom, containing more than 150 species of birds and half a dozen small mammal species. The power station was originally located outside the metropolitan area, whose but growth has far exceeded expectations in the intervening 20 years, so that the power station is now close to suburban housing (https:// en.wikipedia.org/wiki/Koeberg_Nuclear_Power_Station). Development is however prevented within the Public Exclusion Boundary (PEB) which, is an area within a 2 km radius from the nuclear facility (both on and offshore), and which is not accessible to the public. It should be noted that both the offshore alignments and on shore alignments of the proposed ACE Cable system fall outside of the PEB. The closest point of the proposed ACE Cable System alignment to the PEB is located approximately 1.8 km offshore as shown in Figure 22.

In terms of the National Nuclear Regulator Act, 1999 and Government Notice No. 287, 2004, developments surrounding a nuclear installation must be assessed to demonstrate that the municipality's Nuclear Emergency Plan can be effectively implemented. In light of this legislation, the National Nuclear Regulator (NNR) requested the City of Cape Town to develop their procedures and processes in order to comply (http://repository.up.ac.za/bitstream/handle/2263/5908/021.pdf;jsessionid=59B3CD6603074D1BF909C4A866B87414?sequence=1).

As the proposed ACE Cable System makes landfall within the 5 km Precautionary Action Zone (PAZ) of the reactors, a risk assessment and emergency evacuation plan are required by the City of Cape Town for the proposed development during construction and operation. These plans are provided in Appendix 6 of this report and will be submitted to the City of Cape Town for review and signoff prior to project implementation if authorized. One of the key components of the plan must be to show that all staff or employees on the project must be capable of being evacuated from the area within four hours of an event.

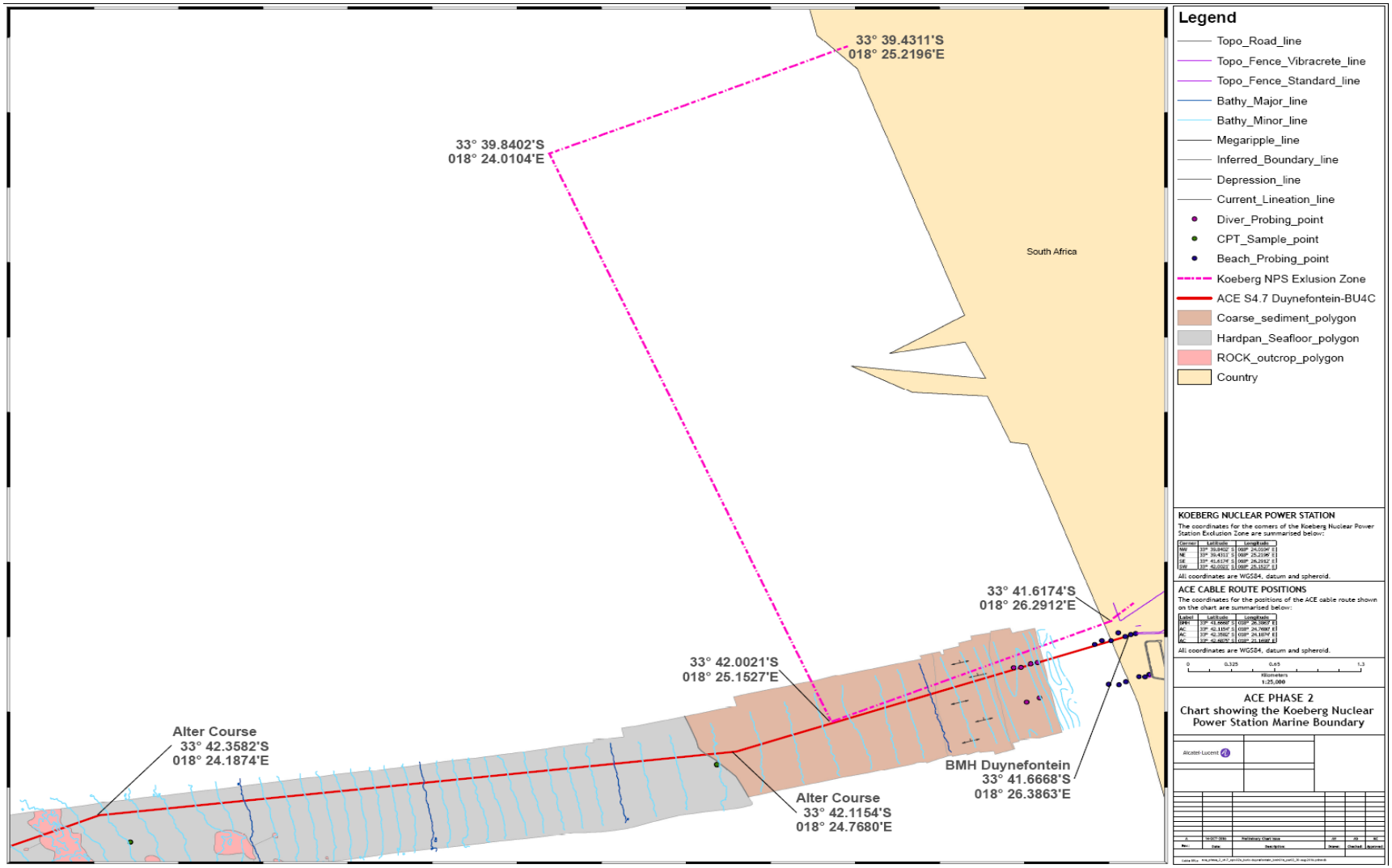


Figure 22 Koeberg 2 km Exclusion Zone

6. ENVIRONMENTAL ASSESSMENT PROCESS

6.1 Scoping

Scoping was undertaken between July 2016 and December 2016. The primary product of Scoping was the Final Scoping Report that was accepted by DEA in February 2017. An important Section of the Final Scoping Report was the Plan of Study for Impact Assessment which provided information on which specialist studies would be undertaken, what would be investigated within each specialist study, how the investigations would be conducted, how potential impacts would be assessed and impact significance determined, public participation activities, and applicable time lines. This information is presented in Section 6.2 as a basis for the environmental assessment process during the Impact Assessment Phase of this EIA.

6.2 Impact Assessment

The aim of the Impact Assessment was to investigate the environmental issues and concerns that were identified during Scoping. The technical and public participation processes continued to interact at important stages to ensure that both processes built towards a comprehensive investigation of the issues identified. The main activities during this phase were to:

- Undertake focused scientific studies to assess the issues of concern.
- Maintain ongoing communication and participation with stakeholders.
- Integrate the findings into an Environmental Impact Report, inclusive of mitigation measures to ameliorate the effects of negative impacts and optimise positive ones.
- Prepare an Environmental Management Plan.

6.2.1 Technical process

In order to provide scientifically sound information in regard to the various issues raised, a number of specialist studies were commissioned. It is important to note that the specialists did not work in isolation but were required to interact and discuss aspects during their investigations. An integrated approach was adopted to consider direct, secondary and cumulative impacts wherever applicable.

In order to address the key issues, each specialist was tasked with assessing the possible impact from their angle of expertise. Thereafter, the findings were integrated by the EAP to provide a comprehensive understanding of the issue. Importantly, information on certain project components and activities were fed into this EIA process from other project team members who did not necessarily form part of the EIA specialist study group.

6.3 Specialist Studies

The specialist studies were undertaken by professionals regarded as experts in their specific disciplines. Arising from Scoping and the distillation of issues and associated potential impacts, the need for the following specialist studies was identified:

- Social Impact Assessment.
- Vegetation and Ecological Specialist Assessment.
- Fisheries Specialist Assessment.
- Wetlands Specialist Assessment.
- Beach and Coastal Dune Dynamics Assessment.
- Heritage Assessment.

In addition to the specialist studies above, a wetland functional assessment and risk assessment matrix were compiled to inform the Water Use Licence (WUL) application submitted to the Department of Water and Sanitation. This information will be used by DWS when making decisions regarding the WUL application submitted by MTN for the proposed development.

The results of the specialist studies were used by the EAP when undertaking the integrated assessment of the proposed ACE Cable System. The outcomes of integration and assessment have been documented in this DEIAR, which will be released in the public domain for comment. Comments on the DEIAR will be considered and included in the Final EIAR for submission to DEA.

An important component of the DEIAR is the section dealing with the Environmental Management Programme (EMPr). The EMPr outlines the mitigation and monitoring measures for avoiding or minimising negative impacts and optimising benefits during project implementation. In this regard, the EMPr provides a critical link between mitigation measures described in the DEIAR and their actual implementation.

Terms of reference for the different specialist studies are outlined below.

6.3.1 Social Impact Assessment

The appointed specialist must provide an assessment of the potential impact that the ACE Cable System and related infrastructure will have on the social environment within the area. With this in mind, the specialist study should identify and discuss the following key aspects.

- Describe the current social environment within the study area.
- Identify and discuss potential impacts (positive and negative, local and regional, including cumulative impacts) of the proposed project on the social environment during construction, operation and decommissioning.
- Identify gaps in knowledge, data or information which may hamper the impact identification and evaluation process.
- Quantify and describe, for each feasible alternative, identified potential social impacts (cumulative, direct and indirect).
- Evaluate, using the agreed upon methodology, the significance of the identified potential social impacts.

- The impact of the development must be assessed in terms of compliance with approved City of Cape Town: Environmental Management Framework's[3] (EMF) management priorities.
- Conduct a comparative assessment of the identified alternatives.
- Make recommendations regarding mitigation and management measures for unavoidable social impacts.
- Contribute in the preparation of an Environmental Management Program.
- Produce a specialist impact assessment report.

6.3.2 Vegetation and Ecological Assessment

The appointed specialist must provide an assessment of the potential impact that the ACE Cable System and related infrastructure will have on the ecology of the area (vegetation and terrestrial fauna). With this in mind, the specialist study should identify and discuss the following key aspects.

1. What are the potential impacts on vegetation arising from the proposed ACE Cable System and associated construction activities?

Specifically, the Vegetation Assessment must address the following primary elements:

- Description of the vegetation present, the relevant and important characteristics and components thereof, including ecological functioning, which may be affected by the proposed ACE Cable System or which may affect the proposed development during site establishment, construction, operation and maintenance and/or decommissioning.
- The assessment must consider the terrestrial environment within the development footprint as well as the terrestrial environment directly adjacent to the proposed cable servitude and construction footprints.
- Identification of species of conservation importance, including Red Data/CITES and TOPS species potentially affected by the proposed project.
- The impact of the development must be assessed in terms of compliance with approved City of Cape Town: Environmental Management Framework's (EMF) management priorities.
- Identify and GPS significant sites that should be conserved, indicate on a suitable map, and motivate why they should be conserved.
- Identify the likely risks and impacts (negative and/or positive, including cumulative impacts if relevant) and their significance, which the proposed activity/infrastructure may have on vegetation assemblages and vice versa during site establishment, construction, operation and maintenance and/or decommissioning. Recommend mitigation measures for enhancing positive impacts and avoiding or mitigating negative impacts and risks (to be implemented during the design, construction, operation and/or decommissioning phases), for inclusion in an Environmental Management Programme.
- The identification of permit requirements as related to the removal and/or destruction of vegetation and specific plant species (all protected tree species within the proposed cable servitude must be counted and their position recorded to facilitate permit application processes).

3 The City of Cape Town: Environmental Management Framework, being a component of the Blaauwberg District Plan, was adopted by the Provincial Minister for Local Government, Environmental Affairs and Development Planning, in terms of Regulation 5(4) of the Environmental Framework Regulations (2010) (Government Notice 33306) on 26 August 2013 [P.N. 297/2013, 13 September 2013].

- ❑ 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).
- ❑ Discuss any other sensitivities and important issues from your specialist perspective that are not identified in these terms of reference.

2. What are the potential impacts on terrestrial fauna and ecology arising from the proposed ACE Cable System and associated construction activities?

- ❑ Animal species identification, including an indication of dominant species, rare and endangered species (Red Data species), and exotic and invader species.
- ❑ Animal species and their habitats.
- ❑ Assessment of the habitat condition for the animals.
- ❑ Desktop study to determine the probability of occurrence of any fauna of concern within these identified habitats.
- ❑ Determine the state of health of the ecosystem by taking into consideration all aspects concerning the natural resources.
- ❑ Recommend mitigation measures to ameliorate the negative impacts of the proposed development on the natural environment to be included in the Environmental Management Programme.
- ❑ The impact of the development must be assessed in terms of compliance with approved City of Cape Town: Environmental Management Framework's (EMF) management priorities.
- ❑ 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).

6.3.3 Fisheries Specialist Assessment

The appointed specialist must provide an assessment of the potential impact that the ACE Cable System and related infrastructure will have on the trawling industry based on the alignment selected. With this in mind, the specialist study should identify and discuss the following topics:

- ❑ Determine the actual number of trawls (all types but more importantly bottom) per annum over the proposed ACE Cable alignment and depict how and from what source of information this was calculated as well as the accuracy of the data.
- ❑ Typically, at what depths are the bottom trawls along the proposed ACE Cable alignment?
- ❑ Provide details of un-trawlable seabed areas along the proposed ACE cable alignment.
- ❑ Provide a detailed explanation of the key methods of how trawls are recorded and clearly depict the accuracy of these recordings.
- ❑ Assess the current trawling logs within the Cape Town area and investigate whether the existing cable alignments and their exclusion zones are avoided by trawling vessels specifically the SAT3/WASC, SAFE, WACS and SAT-2 (Out of Service) submarine cables.
- ❑ Provide a brief comment on the impact of the proposed ACE Cable System alignment and its potential significance to the trawling industry/grounds and also propose an alternate solution with less impact if any. This comment on significance should cover aspects such as the relative percentage of the trawling grounds impacted and/or if the proposed alignment is likely to have any impact on trawling in terms of increased operational costs.

- Address specific issues and concerns raised by relevant stakeholders during the public review phase of the EIA process (an Issues and Responses Report will be provided to all identified specialists).
- Discuss any other sensitivities and important issues from a fisheries industry perspective that are not identified in these terms of reference.

In addition, the following maps should be generated and be included in the specialist report:

- Provide a map of trawl data over the last five years showing trawls across the proposed ACE cable alignment including the existing SAT3/WASC, SAFE, and SAT-2 (Out of Service) cables. The map legend should include trawl numbers for each year assessed and specific areas of catches.
- Provide a similar map of trawl data for trawls over the existing WACS cable for the period five years prior to its installation and since its installation.
- Establish the extent of trawling activities in between the cables with separation of surface and bottom trawls.

6.3.4 Wetlands Specialist Assessment

The appointed specialist must provide an assessment of the potential impact that the ACE Cable System and associated infrastructure will have on wetlands within the project area. With this in mind, the specialist study should identify and discuss the following key aspects.

1. What are the potential impacts on wetlands arising from the proposed ACE Cable System, associated infrastructure and construction activities?

The Wetland Delineation and Functional Assessment must identify and evaluate all wetlands within the proposed development footprint and within 500 m of the proposed development footprint. Specifically, the assignment must address the following primary elements:

- The delineation of the outer edge of the temporary zone of wetlands in accordance with: *A practical field procedure for identification and delineation of wetlands and riparian areas (DWAF, 2006)*.
- Determination of all wetland boundaries (viz. the edge of the temporary wetness zone in each case).
- Determination of ecological buffers as stipulated by both National (DWS) and Provincial legislation.
- Mapping of the wetlands and their respective buffer zones at an appropriate scale.
- The impact of the development must be assessed in terms of compliance with approved City of Cape Town: Environmental Management Framework's (EMF) management priorities.
- Functional assessment using methods outlined in Wet-Ecoservices (Kotze *et al*., 2005). This will comprise a desktop and infield assessment scoring the ecosystem services that the wetlands supply, which will allow for more informed planning and decision making.
- Description of the current state of the wetlands and riparian zones (specifically focusing on Present Ecological State (PES) and Ecological Importance and Sensitivity (EIS)) using the Wet-Health tool (Macfarlane *et al.*, 2007). In addition to the PES and EIS, the overall impact of all activities that affect hydrological, geomorphological or vegetation health must be calculated as this is a requirement for the water use licensing process.

- 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).

For wetlands that are not within the development footprint but are within 500 m of the proposed development, it is only necessary to assess the wetland if the proposed development will impact on one of the four main wetland drivers, viz. habitat, biota, flow and water quality.

6.3.5 Beach and Coastal Dune Dynamics Assessment

The appointed specialist must provide an assessment of the potential impact that the ACE Cable System and related infrastructure will have on the Beach and Coastal Dune Dynamics within the project area. With this in mind, the specialist study should identify and discuss the following key aspects.

1. What are the potential impacts of the proposed ACE Cable System on the primary dune, beach and beach dynamics, in particular, areas of sensitive vegetation, such as the primary dunes, beach access points and the beach/dune/wetland interface?
2. What measures can be applied to rehabilitate, mitigate and manage these impacts in order to optimise environmental integrity at the proposed cable landing points?
3. How should the dunes in question be rehabilitated and what measures are required to ensure dune stability and functionality (i.e. outline a specific action plan)?

The objectives of the dune and coastal dynamics specialist study are to:

- Provide a description of the primary dunes and dune belt present at Van Riebeeckstrand and the relevant and important characteristics and components thereof, including dune dynamics.
- Identify and describe the components, characteristics and natural processes of the coastal environment that may be affected by the proposed development (during pre-construction, construction, operation, maintenance and/or decommissioning), from the perspective of coastal dynamics and dune stability.
- Identify and describe the components of the development that may be affected by the environment (during pre-construction, construction, operation, maintenance and/or decommissioning), from the perspective of coastal dynamics and dune stability.
- The assessment must consider the ACE Cable System development footprint from the intertidal zone up to the BMH located approximately 80 m inland from the primary dunes. Particular attention should be paid to proposed development activities on the primary dunes and near the beach/dune interface.
- Identify the likely risks and impacts (negative and/or positive, including cumulative impacts if relevant) and their significance, which the proposed activity/infrastructure may have on relevant environmental components and processes, and vice versa during site establishment, construction, operation and maintenance and/or decommissioning. Make recommendations on alternatives where additional alternatives could be implemented to avoid negative impacts.
- Recommend mitigation measures for enhancing positive impacts and avoiding or mitigating negative impacts and risks (to be implemented during the design, construction, operation and/or decommissioning phases), for inclusion in an Environmental Management Programme (EMPr).
- Identify key impacts that should be monitored as part of ongoing management of the site, and simple methods of monitoring these impacts.

- Identify and delineate by GPS co-ordinates, significant areas that should be conserved or rehabilitated, indicate on a suitable map, and motivate why they should be conserved or rehabilitated.
- The impact of the development must be assessed in terms of compliance with approved City of Cape Town: Environmental Management Framework's (EMF) management priorities.
- Discuss any other sensitivities and important issues from a specialist perspective that are not identified in these terms of reference.
- 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).

6.3.6 Heritage Assessment

The appointed specialist must provide an assessment of the potential impact that the ACE Cable System and related infrastructure will have on heritage resources within the area. With this in mind, the specialist study should identify and discuss the following key aspects.

1. What are the potential impacts on heritage resources arising from the proposed landing of the ACE Cable System, and associated construction and operational activities?

Specifically, the Heritage Impact Assessment must address the following primary elements:

- 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 flag and fatal flaw issues or impacts.
- Information must be provided on the following:
  - Results of 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 impact of the development must be assessed in terms of compliance with approved City of Cape Town: Environmental Management Framework's (EMF) management priorities.
- The identification and assessment of any paleontological 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).

In compliance with Section 38 of the National Heritage Resources Act 25 of 1999 (NHRA), a Phase 1 Heritage Impact Assessment (HIA) must address the following key aspects:

- The identification and mapping of all heritage resources in the area affected.
- An assessment of the significance of such resources in terms of heritage assessment criteria set out in the regulations.
- An assessment of the impact of the development on heritage resources.
- 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.
- The results of consultation with communities affected by the proposed development and other interested parties regarding the impact of the development on heritage resources.
- If heritage resources will be adversely affected by the proposed development, the consideration of alternatives.
- Plans for mitigation of any adverse effects during and after completion of the proposed development.

OTHER DOCUMENTATION

In addition to the above specialist studies, the EAP made use of existing information contained within the City of Cape Town Integrated Development Plans (IDP) as well as the Spatial Development Frameworks (SDF) to address subjects such as social and socio-economic impacts.

6.4 Integration and impact description

Each specialist was required to review the background and context of the area in which the proposed development is planned to occur. The terms of reference guided each specialist in order to provide input that would eventually ensure that issues and associated impacts were correctly understood and addressed, thereby enabling an integrated assessment of the development proposal.

Each specialist identified (positive and negative) impacts and assessed these. The EIA Team used this information to determine the significance using assessment conventions outlined below:

- **Direct impacts** are impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.

- **Indirect impacts** of an activity are indirect or induced changes that may occur as a result of the activity. These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

- **Cumulative impacts** are impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities. Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.

- **Nature** – the evaluation of the nature of the impact. Most negative impacts will remain negative, however, after mitigation, significance should reduce:
  - **Positive**.
  - **Negative**.

- **Spatial extent** – the size of the area that will be affected by the impact:
  - **Site specific**.
  - **Local** (limited to the immediate areas around the site; <2 km from site).
  - **Regional** (would include a major portion of an area; within 30 km of site).
  - **National** or **International**.

- **Duration** – the timeframe during which the impact will be experienced:
  - **Short-term** (0-3 years or confined to the period of construction).
  - **Medium-term** (3-10 years).
  - **Long-term** (the impact will only cease after the operational life of the activity).
  - **Permanent** (beyond the anticipated lifetime of the project).

- **Intensity** – this provides an order of magnitude of whether or not the intensity (magnitude/size/frequency) of the impact would be negligible, low, medium or high):
  - **Negligible** (inconsequential or no impact).
  - **Low** (small alteration of systems, patterns or processes).
  - **Medium** (noticeable alteration of systems, patterns or processes).
  - **High** (severe alteration of systems, patterns or processes).

- **Frequency** – this provides a description of any repetitive, continuous or time-linked characteristics of the impact:
  - **Once off** (occurring any time during construction).
  - **Intermittent** (occurring from time to time, without specific periodicity).
  - **Periodic** (occurring at more or less regular intervals).
  - **Continuous** (without interruption).

- **Probability** – the likelihood of the impact occurring:
  - **Improbable** (very low likelihood that the impact will occur).
  - **Probable** (distinct possibility that the impact will occur).
  - **Highly probable** (most likely that the impact will occur).
  - **Definite** (the impact will occur).

- **Irreplaceability** – of resource loss caused by impacts:
  - **High** irreplaceability of resources (the project will destroy unique resources that cannot be replaced).
  - **Moderate** irreplaceability of resources (the project will destroy resources, which can be replaced with effort).
  - **Low** irreplaceability of resources (the project will destroy resources, which are easily replaceable).

- **Reversibility** – the degree to which the impact can be reversed/the ability of the impacted environment to return/be returned to its pre-impacted state (in the same or different location):
  - Impacts are **non-reversible** (impact is permanent).
  - **Low** reversibility.
  - **Moderate** reversibility of impacts.
  - **High** reversibility of impacts (impact is highly reversible at end of project life).

- **Significance** – the significance of the impact on components of the affected environment (and, where relevant, with respect to potential legal infringement) is described:

  Please note that this excludes positive impacts on the environment. In these cases, the level of significance should be denoted as Low**, Moderate** or High**.
  - **Low** (the impact will not have a significant influence on the environment and, thus, will not be required to be significantly accommodated in the project design).
  - **Medium** (the impact will have an adverse effect or influence on the environment, which will require modification of the project design, the implementation of mitigation measures or both).
  - **High** (the impact will have a serious effect on the environment to the extent that, regardless of mitigation measures, it could block the project from proceeding).

- **Confidence** – the degree of confidence in predictions based on available information and specialist knowledge:
  - **Low**.
  - **Medium**.
  - **High**.

7. PUBLIC PARTICIPATION PROCESS

The public participation process has been designed to comply with the requirements of the EIA Regulations (Sections 41 to 44 of Regulation 982) and NEMA. The important elements relating to the public participation process that are required by the Regulations are the following:

- The manner in which I&APs were notified of the application for environmental authorisation. This includes on-site notice boards, giving written notice to landowners, letters, Background Information Documents (BID) and advertisements in the media (Section 41).
- Opening and maintaining a register containing the names and addresses of I&APs. These include all persons who have submitted comments, attended meetings, and are organs of State who have jurisdiction in the assessment process, and all those who have requested that they be placed on the register as registered I&APs (Section 42).
- Registered I&APs are entitled to comment, in writing, on all written submissions made to the competent authority by the applicant or the Environmental Assessment Practitioner managing the application, and to bring to the attention of the competent authority any issues, which that party believes may be of significance when the application is considered for authorisation (Section 43).
- The comments of registered I&APs must be recorded and included in the reports submitted to the competent authority (Section 44).

The objectives of public participation in an EIA are to provide sufficient and accessible information to I&APs in an objective manner to assist them to:

- During the Scoping Phase.
  - Identify issues of concern, and provide suggestions for enhanced benefits and alternatives.
  - Contribute local knowledge and experience.
  - Verify that their issues have been considered.

- During the Impact Assessment.
  - Verify that their issues have been considered either by the EIA Specialist Studies, or elsewhere.
  - Comment on the findings of the Environmental Impact Assessment Report (EIAR), including the measures that have been proposed to enhance positive impacts and reduce or avoid negative ones.

The key objective of public participation during Scoping is to assist define the scope of the technical specialist studies to be undertaken during the Impact Assessment.

7.1 Notification of the application

Stakeholders were informed of MTN's intention to apply for environmental authorisation via a Background Information Document (BID), media advertisements and on-site notice board. The application was also posted on ACER's website for stakeholder review.

7.2 Identification and registration of Interested and Affected Parties (I&APs)

Key stakeholders and other I&APs, who include local, provincial and national government authorities, conservation authorities, community based organisations, local businesses, environmental interest groups, affected landowners/users and neighbours were identified and their contact details incorporated in a project database.

The direct mailing list for this EIA consists of individuals and organisations from both within the project area and beyond. A copy of the stakeholder database is provided in Appendix 2. Table 4 shows that these I&APs represent a broad spectrum of sectors of society.

Table 3 Sectors of society represented by I&APs on the direct mailing list

Government (National, Provincial and Local)
Parastatals (Eskom, SAMSA, Transnet National Ports Authority)
Representative Associations: ❑ Melkbosstrand Rate Payers Association ❑ South African Deep Sea Trawling Industry Association ❑ Conservation Organisations ❑ Tourism Organisations
Non-Governmental Organisations
Landowners and Local Residents Associations
Conservation Authorities and Conservation Groups
Business and Industry

While consultation has taken place with representatives of different sectors of society, special efforts have been made to obtain the contributions of all people who may be directly affected by the proposed project. These efforts will be on-going for the duration of the EIA.

7.3 Project announcement

The opportunity to participate in the EIA was announced as follows:

- ❑ Advertisements in local and provincial newspapers:
  - Table View Tygerburger (7 September 2016).
  - Cape Times (7 September 2016).
- ❑ A Background Information Document (BID) was compiled and emailed to all key stakeholders on the 7 September 2016. All I&APs who registered following the project announcement adverts were also sent the BID for their records. Hard copies of the BID were posted to all government departments and other relevant commenting authorities.
- ❑ Notifications by telephone.
- ❑ Placement of an on-site notice board at the cable landing alternative sites and at bus stops along Otto du Plessis Road and Atlantic Avenue (photos of the onsite notices are provided in Appendix 2).

7.4 Obtaining and dealing with comments from I&APs

The following opportunities will be provided to I&APs during Scoping to contribute comments:

- Completing and returning Registration and Comment Sheets.
- Providing comments telephonically or by email.
- Should the need arise, a Public Open Day will be held during the DEIAR review period. The primary aim of an open day would be to:
  - Disseminate information regarding the proposed project to I&APs.
  - Provide I&APs with an opportunity to interact with the EAP and relevant MTN officials.
  - Discuss the studies to be undertaken within the Environmental Impact Assessment.
  - Supply more information regarding the EIA process.
  - Answer questions regarding the project and the EIA process.
  - Receive input regarding the public participation process and the proposed development.
  - Provide I&APs not previously registered on the project database with an opportunity to be formally registered and, therefore, be informed of progress for the remainder of the project.
- Focus group meetings will be held with key stakeholders should the need arise to discuss the project and to address concerns raised by key stakeholders.

Public participation documentation is provided in Appendix 2.

7.5 Comments and Responses Report

Issues and concerns raised by I&APs will be captured in a Comments and Responses Report (CRR), which is appended to this report (Appendix 3). This report will be updated to include any additional inputs from I&APs that may be received as the EIA process proceeds, and as the findings of the EIA become available. To date, the comments received from I&APs and the relevant authorities following review of the Draft and Final Scoping Reports mainly relate to the following topics:

- Requests to be registered as I&APs.
- Support of the proposed development.
- The need to abide by the recommendations made by the International Cable Protection Committee (ICPC).
- The protection of heritage resources.

7.6 Draft Scoping Report

The purpose of the Draft and Final Scoping Report was to enable I&APs and authorities to verify that their contributions to date had been captured, understood and correctly interpreted. The issues identified by I&APs and by the environmental technical specialists, were used to define the terms of reference for the specialist studies which were conducted during the Impact Assessment Phase of the EIA.

The availability of the Draft Scoping Report for public comment was advertised as follows:

- Advertisements in local and provincial newspapers:
  - Table View Tygerburger (9 November 2016).
  - Cape Times (8 November 2016).
- All registered I&APs were notified in writing on the 7 November 2016 of the availability of the Draft Scoping Report for their review and comment.

The Draft Scoping Report was made available at two public venues within the study area for public review (with a 30-day comment period (7 November - 9 December 2016)). Commenting authorities were also contacted by the EAP on the 5 December 2016 requesting that their respective departments provide comment on the Draft Scoping Report for inclusion in the Final Scoping Report.

Comments submitted during this period were taken into account when finalising the Scoping Report and are included in the Final Comments and Response Report which was submitted to the DEA with the Final Scoping Report on the 11 January 2017. I&APs were notified of the submission of the Final Scoping Report to the DEA and an electronic copy of the Final Scoping Report was uploaded to the ACER website for review and comment by I&APs.

7.7 Final Scoping Report

The DEA approved the Final Scoping Report with conditions on the 8 February 2017. The Impact Assessment Phase of the EIA has now commenced and this report provides a consolidated report on the findings of the specialist studies undertaken and the recommended mitigation measures to enhance positive impacts and to avoid or reduce negative ones.

7.8 Draft Environmental Impact Assessment Report

The Draft Environmental Impact Assessment Report was released for public and authority review between the 3 April 2017 to 7 May 2017. Comments received during this period have been addressed in the Comments and Response Report (Appendix 3) and incorporated into this report. The Draft Environmental Impact Assessment Report was also available at the following venues for public review, during the commenting period 3 April 2017 to 7 May 2017:

Venue	Street	Contact Person and Number
Koeberg Public Library	Merchant Walk, Duynefontein, 7441	Ms. Roelda Brown 021 553 2514
Melkbosstrand Ratepayers' Association	25 Jacobus Crescent, Duynefontein, 7441	Mrs. Smokie La Grange 073 357 6359

The Draft Environmental Impact Assessment Report was also available on ACER's web site (www.acerafrica.co.za) under the 'Current Projects' link.

The following authorities were also sent hard copies of the Draft Environmental Impact Assessment Report:

1. Department of Environmental Affairs
   Ms Sindiswa Dlomo
   Email: Sdlomo@environment.gov.za

2. Department of Environmental Affairs – Biodiversity Oceans and Coast Division
   Mr Lindelani Mudau
   Email: Lmudau2@environment.gov.za
   (Mr A Boyd has requested that the report be submitted to Mr Mudau for comment)

3. Department of Environmental Affairs and Development Planning, Western Cape Government
   Mrs Adri La Meyer
   Email: Adri.LaMeyer@westerncape.gov.za

4. City of Cape Town (Energy, Environment and Spatial Planning Division)
   Ms Pat Titmuss
   Email: pat.titmuss@capetown.gov.za

5. CapeNature (Theewaterskloof, Overstrand & Stellenbosch)
   Mr Rhett Smart
   Email: rsmart@capenature.co.za

6. Department of Water Affairs & Sanitation
   Ms Hester Lyons
   Email: LyonsH@dws.gov.za

7. Department of Agriculture, Forestry and Fisheries
   Ms S. Ndundane
   Email: SiphokaziN@daff.gov.za

8. SUMMARY OF SPECIALIST STUDY FINDINGS

Six specialist studies were undertaken (Table 5), the results of which are summarised in this section. Copies of each report are provided in Appendix 5.

Table 4 Specialist studies and specialists

Specialist Study	Specialist	Organisation
Social Impact Assessment	Mr D Keal External Review (Ms J Adam, Exigent Environmental)	ACER (Africa) Environmental Management Consultants and externally reviewed by Exigent Environmental
Vegetation and Ecological Specialist Assessment	Mr S Todd	Simon Todd Consulting
Fisheries Specialist Assessment	Mr D Japp	CapMarine
Wetlands Specialist Assessment	Mr D Ollis and Ms C Walker	Freshwater Consulting Group
Beach and Coastal Dune Dynamics Assessment	Mr S Bundy	Sustainable Development Projects cc
Heritage Assessment	Ms L Webley	ACO Associates cc.

8.1 Social Impact Assessment

The information in this section has been taken from the Social Impact Assessment Report prepared by Duncan Keal (2017) and externally reviewed by Ms J Adam from Exigent Environmental Consulting.

The purpose of this specialist study was to identify anticipated social impacts which may occur as a result of possible changes to existing social processes during the construction and operation of the proposed ACE Cable System. Social impacts can be positive or negative and occur within the context of human behaviour, which is often unpredictable, varies according to cultures, traditions, political and religious beliefs, and which are influenced by perceptions.

The proposed project site is located entirely within Ward 23 of the City of Cape Town. While the ward includes agricultural areas as well as the Blaauwberg Nature Reserve, the area where the proposed ACE Cable System will land, can be described as a middle to upper income suburban area. The economy of the area is heavily reliant on the tourism industry with the majority of the working population commuting outside of the ward on a daily basis. Directly offshore from the proposed project site is one of the most important fishing grounds in South Africa for the demersal trawl sector and is responsible for directly employing approximately 7050 people.

Households within the study area have higher levels of income, better access to education, and unemployment levels in the Ward are significantly lower than municipal, provincial and national averages. Households in the ward have better access to sanitation and electricity with a higher proportion of households residing in formal dwellings. In general Ward 23 on

average exhibits far higher levels of development than the City of Cape Town, the Western Cape Province, and the country as a whole, and can be described as a middle to upper income area. Importantly, the proposed development does not compromise the City of Cape Towns' existing EMF management priorities.

8.1.1 Social change processes

Various social change processes[4] are likely to occur with the implementation of the proposed ACE Cable System. It should be noted that social change processes are not impacts themselves but the occurrence of changes to existing social processes may result in social impacts. The following social change processes may occur as a result of the proposed project:

- Economic processes – economic processes are those processes that affect the economic activity in a given area. In the case of the proposed project, the necessity of offshore exclusion zones around the cable may alter existing fishing practices which could lead to changes in the economic processes. An additional submarine telecommunications line in South Africa will also have various positive spinoffs for economic development which will also likely result in changes to existing economic processes.
- Socio-cultural processes – socio-cultural processes are those that affect the culture of a society, including all aspects of the way that people live together. Changes in the composition of the population as a result of construction workers and/or contractors may result in changes in the way that local communities function, albeit that this would be for a very limited period of time. An increase in socially deviant behaviour is a change which is often associated with construction projects and can have significant social impacts.

8.1.2 Anticipated social impacts

During the construction phase of the project there will be temporary inconveniences (it is estimated that the entire terrestrial component of the project will take 10 – 16 weeks to complete) and nuisance impacts for residents residing close to where construction will take place. During the operation phase of the project, it is not anticipated that there will be any impacts on the quality of the living environment unless repairs are required to the cable. The potential impacts that both of the alternatives may have on the quality of the living environment are described below:

Increased noise

The terrestrial receiving environment (for both alternatives) is a middle to upper income suburban area in Van Riebeeckstrand. The area is characterised by relatively little noise and vehicle traffic. During the installation of the terrestrial portion of the proposed cable various construction vehicles will be on site as well as construction staff. The presence of construction machinery and construction staff will likely cause an increase in noise which may be seen as a nuisance factor for residents in the area as well as for people accessing the beach. This will only be temporary in nature (only occurring during the construction phase) and will be highly localised and thus the increase in noise is not considered a significant impact. No noise impact is anticipated during the operation phase of the project.

4 Social change processes are set in motion by project activities or policies. Depending on the characteristics of the local social setting and mitigation processes that are put in place, social change processes can lead to social impacts" (Vanclay, 2003)

'Alternative A' is the preferred option as less excavations will be required (i.e. no excavation along the Die Bad Road is required)

Increased dust

During the excavation of trenches for the laying of the cable between the BMH and the CLS there is likely to be exposed soil for short periods. During periods of strong wind this may result in dust being blown into adjacent households which is likely to become a nuisance impact for affected parties. Once the construction process is complete the potential for this impact will cease. 'Alternative A' is the preferred option as it is routed through existing servitudes with fewer sections along residential roads or adjacent to property entrances. In addition, it will also require less excavation. Again however, the impact is not considered significant as it is temporary in nature and there is unlikely to be a large amount of dust as the amount of excavated soil is relatively limited.

Visual impact

During the construction phase, there will be construction vehicles, stock piles, trenches and other items associated with a construction site located within the suburban environment. This will be the case along the chosen cable route, the site of the BMH as well as on the beach where the cable will land. Possible sensitive receptors will include local residents, tourists visiting the area as well as people making use of the public roads and/or accessing the beach. The impact will be temporary and will be localised, thus it is not believed that the visual impact during the construction phase will be of any significance.

During the operational phase of the project, the only infrastructure that will be visible is the top of the BMH. Considering the size, location and design of the BMH (only visible sign of the BMH will be manhole covers and a cement slab) the visual impact is considered negligible. Based on the findings of the specialist study and from observations on site, the preferred alternative is 'Alternative A' as it is located away from residential roads and entrances to houses, on a beach access path which is less used by residents of Van Riebeeckstrand.

Disruption to traffic

During the laying of the cable in the terrestrial environment two roads will need to be crossed namely Atlantic Avenue and Otto du Plessis Drive which are major arterial roads within Van Riebeeckstrand and Duynefontein. At the time of the specialist study it had not been determined if the cable will be tunnelled beneath these roads or whether the trenching would cross the roads thus disrupting traffic along these roads. In the event that trenching across Otto du Plessis Drive and Atlantic Avenue takes place it is anticipated that traffic will be disrupted for a period of up to two weeks at each road crossing. This disruption to traffic is not advisable given that these roads are a major evacuation routes within the PAZ of Koeberg and as such the project technical team has indicated that pipe jacking will be the preferred construction method to pass the cable underneath these roads. As such, the proposed construction works are not anticipated to have any significant impact on traffic along Otto du Plessis Drive and Atlantic Avenue or impact on the emergency evacuation plans for the PAZ around Koeberg.

Damage to properties

Of the two cable alignment alternatives considered for the proposed development, Alternative A is the preferred alignment in terms of the potential impact on properties given that the majority of the cable alignment falls within existing service corridors with almost no residential

driveways or properties needing to be disturbed. This alignment will however cross a recently constructed paved walkway between Dunker Street and Edward Crescent as highlighted in the comment received from the City of Cape Town. It is the EAPs opinion however, that the overall impact of Alignment B on properties outweighs those of Alternative A and that construction of the cable along this alignment is the preferred alternative with respect to damage to properties. It will however be a prerequisite that MTN enter into negotiations with the City of Cape Town to ensure that any disturbance to the paved walkway between Dunker Street and Edward Crescent is repaired to a level acceptable to the City of Cape Town. Once construction and installation of the cable is complete no further damages to property are anticipated during the operational phase of the proposed development.

Increased criminal activity

During the construction phase of the proposed project there will be a slight increase in the number of people in the area. The presence of construction workers in an area makes it easier for criminal opportunists to move through areas less conspicuously, therefore increasing the probability of criminal activity. In the case of the proposed project criminal activity is likely to include potential house break-ins and/or petty theft. However, during discussions with Captain Van der Toorn from the Melkbosstrand police station it was noted that this was unlikely to be a significant concern (Per. Comm, 2016). Regardless however, steps should be taken to ensure that there are no incidents that can be considered a direct result of the proposed project. Mitigation measures to reduce the potential for criminal activity include restricting working hours to daylight hours and ensuring that all staff on site wears the same construction overalls making it easy to identify workers associated with the project. During operation, there will be no construction staff on site and it is not anticipated that there will be an increase in crime during the operation phase of the project.

8.1.2 Anticipated economic impacts

Increased employment opportunities

During the construction phase of the proposed project there are likely to be limited employment opportunities created. While most of the work will need to be undertaken by skilled personnel and will thus be sourced from suitable contractors, it is likely that some activities (digging of trenches, traffic calming, etc.) could be undertaken by unskilled, local labour. While unemployment in the immediate area is low, potential temporary job opportunities for people from surrounding areas need to be seen in a positive light. It does however need to be considered that any opportunities will be temporary in nature, unlikely to last longer than a month or two, and only a limited number of positions will be available. No employment opportunities will be created during the operational phase of the project and as such direct employment opportunities associated with this development is considered relatively low.

Impact on tourism

Tourism is a significant contributor to the local economy within the study area. During the construction phase of the project there will be various visual impacts, an increase in noise and an exclusion area on the beach will be required. These impacts are likely to be unattractive for tourists and will detract from their experience. These impacts will however be temporary (construction activities between the beach and the BMH are expected to take 4 – 8 weeks and from the BMH to the CLS 6 – 12 weeks) in nature and will be highly localised affecting only those tourists and residents accessing the beach near landing Alternatives A and B. based on

observations made by the EAP and the appointed specialist it is understood that the area where the proposed landing sites are located (both Alternative A and Alternative B) is not heavily utilised by both residents and tourists alike. During discussions with the Resident Association Chairperson it was established that impacts on tourism are not a concern and that other projects of this nature have had no significant negative impacts on the tourism industry in town (La Grange, Per Comm, 2016). As such, the impact that the proposed project will have on tourism is considered negligible. There will be no impact during the operation phase of the project.

Disruptions to the offshore fishing industry

The fishing industry plays an important role in the economy of the Western Cape, with the deep-sea trawling industry estimated to employ 7050 people directly (http://www.sadstia.co.za/publication/sadstia-employment-factsheet). United Nations Convention on the Law of the Sea stipulates that fishermen are to avoid conduct likely to break subsea cables while South African legislation enforces an exclusion zone of one nautical mile on either side of a cable route within which trawling and anchoring is prohibited (Wilkinson and Japp, 2016). The presence of the proposed cable, during construction and operation, therefore has the potential to impact on both the demersal trawl and demersal longline sectors as they will either have to relocate to adjacent fishing grounds, or in the case of trawlers, lift their fishing gear as they traverse the exclusion zone (Wilkinson and Japp, 2016).

During discussions with representatives of the fishing industry it was established that of greatest concern is the cumulative impact of reduced fishing grounds. It was noted that as a result of Marine Protected Areas, the granting of exploration rights for phosphates and hydrocarbons, and exclusion zones such as those created by cables, the areas where fishing can take place are being reduced (Pope, J., and Augustyn, J., Per. Comm., 2016). As a result of this, there is the impact of reduced catches as well as increasing costs as alternative fishing grounds are sought further from port.

The result of reduced catches and increased costs is the loss of jobs in the industry. It is estimated that for every 1000 tons of lost catch, the industry sheds 10 jobs (Pope, J., and Augustyn, J., Per. Comm., 2016). A Fisheries Specialist Study undertaken as part of the EIA has confirmed that the proposed cable is unlikely to have a significant impact on the fishing industry as the new exclusion zone will account for less than 0.3% of the current trawling area[5]. Based on the estimations above and catch figures from 2016 provided in the Fisheries Specialist Study, the loss of 0.3% of the fishing grounds will equate to four jobs in the industry being lost.

However, the proposed route lies close to the existing submarine cables which land at Melkbosstrand. This makes the area where the proposed cable will be routed largely unusable to the trawling industry already. Considering this and the findings from the Fisheries Specialist Study undertaken as part of this EIA, impacts on the fishing industry are not considered significant and it is not anticipated that there will be any major job losses in the industry as a direct result of the proposed cable route.

5 Trawlers and long liners operate at a depth range between 200m and 750m. The affected area is calculated to be 1 nautical mile within this depth range.

8.1.3 Broader socio-economic impacts

Improved telecommunication network

At present Africa relies primarily on satellites to provide its international communications. Satellite connections are generally costlier, less effective and have a lower capacity than communication via submarine telecommunication cables. With an increasingly global world, it has becoming increasingly accepted that access to affordable bandwidth is imperative to economic development and thus the proposed new cable removes a perceived obstacle to development. While South Africa has the most developed telecommunications network in Africa, the proposed cable will further strengthen the network and increase the potential for growth and development. Importantly it needs to be highlighted that while the proposed cable is landing in Van Riebeeckstrand, the socio-economic benefits will be felt by the entire country through the further strengthening of the existing network and improving the telecommunications infrastructure of South Africa.

In the event of the proposed project not going ahead, South Africa will have lost an opportunity to increase the reliability and the capacity of its telecommunications network. As noted already, a reliable and cost efficient telecommunication network is considered vital to economic growth and development in South Africa. Thus, from a social perspective, while a no-go option is unlikely to have any significant impacts on the immediate receiving environment (Van Riebeeckstrand), a no-go alternative would be counterproductive to socio-economic development throughout South Africa as a whole.

8.1.4 Conclusion and mitigation measures

While negative social impacts may arise from the proposed project, generally nuisance impacts, most of these are temporary in nature and will only occur for a very limited period and are considered to be of low significance. The only long term negative impact is the potential impact that an additional permanent exclusion zone offshore may have on the fishing industry. However after considering the findings from the specialist fisheries study undertaken as part of the EIA as well as consulting with stakeholders in the industry it has been determined that the proposed new cable is unlikely to have anything more than a medium impact on the fishing industry and with suitable mitigation (i.e. aligning the cable close to the existing cable) this impact may become negligible.

The following mitigation measures have however been recommended by the appointed specialist for inclusion in the Environmental Management Programme (EMPr) for construction and operation of the proposed ACE Cable System:

- ❑ No construction activities should be undertaken outside of standard business hours (8 am – 5 pm).
- ❑ Residents adjacent to the areas where construction will be taking place should be informed a week prior to any construction activities taking place.
- ❑ Stock piles and/or exposed earth should be watered in order to reduce dust.
- ❑ Ensure that ‘good housekeeping’ is practised on the construction site.
- ❑ Ensure that suitable signage is erected.
- ❑ Prior to any construction activity that may cause damage to private property, ensure that there is a photographic record of all areas that may be damaged.
- ❑ Ensure that any damaged property is repaired immediately and returned to its previous condition.

- Construction teams should be clearly identified by wearing uniforms and/or wearing identification cards that should be exhibited in a visible place on their body.
- Instant dismissal and prosecution of any staff caught in criminal activities of any kind.
- Encourage contractors to make use of local labour as far as possible.
- Provide notice boards at beach access points detailing the construction period and a map with details of the working areas.
- Clearly demarcate the construction site and any temporary exclusion zones on the beach.
- Engage with the fishing industry representative prior to the commencement of the construction process in order to ensure that they are aware of the exclusion zones.
- Align the new cable as close as possible to the existing cables in order to prevent the exclusion zone from expanding and limiting potential cumulative impacts.

8.2 Vegetation and Ecological Specialist Assessment

The information in this section has been taken from the Vegetation and Ecological Assessment Report prepared by Simon Todd Consulting (2017).

8.2.1 Broad-Scale Vegetation Patterns

The initial section of the cable alignments from the proposed sites of the BMH at landing alternative A and B to the beach where the marine cable is proposed to land on shore, runs along a small section of Cape Flats Dune Strandveld vegetation type, according to the Threatened Ecosystems layer (2011). This vegetation type has an extent of 138 km^2 and occurs in several discontinuous patches on dune fields of the Western Cape. The largest patch spans the south coast of False Bay and penetrates deep into the Cape Flats as a broad wedge as far north as Bellville, the other patch spans Silverstroomstrand and Table Bay and includes the Atlantis dune plume, the third region is a series of small patches covering coastal dune pockets on the Cape Peninsula, while the last patch is on Robben Island.

Cape Flats Dune Strandveld typically consists of a flat to slightly undulating dune field landscape covered by tall, evergreen, hard-leaved shrubland with abundant grasses and annual herbs in gaps. This vegetation type is listed as Endangered and about 40% has been transformed by agriculture and urban sprawl. The narrow belt of vegetation along the seashore is referred to by Mucina & Rutherford (2006) as Cape Seashore Vegetation, and therefore the routes do not significantly impact the Cape Flats Dune Strandveld vegetation at any point.

The eastern section of both terrestrial cable alignments occurs in the transition between Cape Flats Dune Strandveld and Atlantis Sand Fynbos. Atlantis Sand Fynbos which has a total extent of 433 km^2 and occurs from Rondeberg to Blouberg on the West Coast coastal flats; along the Groen River on the eastern side of the Dassenberg-Darling Hills through Riverlands to the area between Atlantis and Kalbaskraal, as well as between Klipheuwel and the Paardeberg with outliers west of the Berg River east and north of Riebeek-Kasteel between Hermon Heuningberg.

Atlantis Sand Fynbos is associated with moderately undulating to flat sand plains with dense, moderately tall, ericoid shrubland dotted with emergent, tall sclerophyllous shrubs and an open short restiod stratum. Restioid and proteoid fynbos are dominant, with asteraceous fynbos and patches of ericaceous fynbos in seepages. The vegetation type is listed as Critically Endangered and any further fragmentation and loss of this vegetation type is highly undesirable (Figure 23). There is however a large amount of transformed habitat in the area and as a result, there is no need for the cable alignments to impact on this intact vegetation.

8.2.2 Listed & Protected Plant Species

More than 600 species are known from the quarter degree square which includes the site. Although this is in itself a high number which illustrates the high diversity of the area, the fact that very little of either of the cable route alignments traverses any natural vegetation means that very few species are likely to be impacted. Only one protected tree species the milkwood tree (*Sideroxylon inerme*) was identified along the proposed cable alignments and is located along Alignment A adjacent to Otto Du Plessis Drive. These trees can however be avoided by trenching activities if the cable trench is dug no closer than 1.5 m to the trees and preferably to the east of the trees.

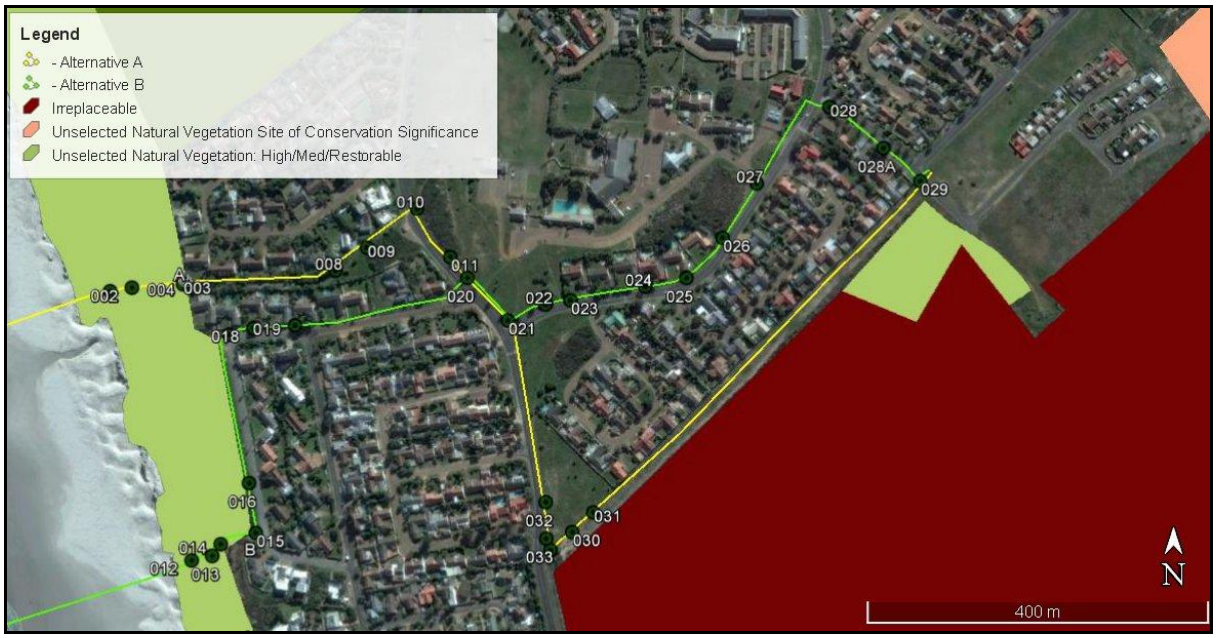


Figure 23 **City of Cape Town 2013 Biodiversity Network map for the study area, indicating protected areas and Critical Biodiversity Areas. A satellite image was used as a background in order to depict the large extent of transformed urban landscape across most of the route alignments. The waypoints indicate the points of sampling, described in specialist report**

8.2.3 Fauna

Mammals

The study area is likely to have relatively low mammalian species richness. Although the site falls within or near the edge of the distribution range of 42 terrestrial mammals and nine bats, the high degree of transformation within the study area means that only species tolerant of human development are likely to be present. Species which are known to be located within the study area include the Cape Gerbil (*Tatera afra*) and the Cape Molerat (*Georychus capensis*). Two listed terrestrial mammal species are described as potentially occurring within the study area, namely the Honey Badger (*Mellivora capensis*) and the White-tailed Mouse (*Mystromys albicaudatus*) (Endangered) but their presence at the site is highly unlikely given the extensive transformation of most habitats within the urban setting of the routes.

Reptiles

According to the Southern African Reptile Conservation Assessment (SARCA) database, 31 reptiles have been recorded within the study area. This includes three listed species, the Bloubergstrand Dwarf Burrowing Skink (*Scelotes montispectus*), Cape Dwarf Chameleon (*Bradypodion pumilum*) and Cape Sand Snake (*Psammophis leightoni*). Although the Cape Dwarf Chameleon might occur in residents' gardens, it is unlikely that these three species occur within the affected areas of the cable route as the habitat is not suitable either through the transformed nature of the urban context or through degradation of remnant vegetation along the route. In terms of the likely impacts of the development on reptiles, habitat loss is not likely to be highly significant as the cable alignment routes are not likely to create a large loss of habitat. Although the construction phase will generate some disturbance which may negatively impact reptiles, this would be temporary and in the long-term, impacts on reptiles are likely to be low.

Amphibians

The diversity of amphibians within the affected area is likely to be relatively low given the low diversity of frogs in the project area and the small terrestrial footprint of the cable system. Impacts on amphibians are likely to be low and, if any, concentrated in the construction phase.

8.2.4 Assessment of terrestrial cable alignments

The assessment of the terrestrial cable alignments by the Vegetation and Ecological Specialist has shown that without mitigation Alternative B is the preferred alternative in terms of impacts on vegetation. With mitigation, however, Alternative A is the preferred alignment given that most of the impacts on vegetation can be mitigated and after mitigation Alternative B may be the least preferred alternative due to impacts on residential gardens and road verges along that alignment. Both of the alternative alignments considered are however not considered fatally flawed and either of the alignments could be selected for installation of the cable if the proposed mitigation measures are implemented. A breakdown of the impacts identified along each alignment is outlined below as well as the mitigation measures required to minimise impacts on vegetation and ecology along the proposed cable alignments.

8.2.4.1 Alternative A cable alignment

From the beach where the marine cable of the ACE Cable System makes landfall the proposed terrestrial cable route runs from the beach to the BMH and then on to the CLS site in Duynefontein. The following landforms and vegetation assemblages will be impacted on by the proposed development:

Beach to Beach Man Hole

Coastal fore dunes

- From the beach the cable alignment will cross the coastal fore dunes and secondary dunes which is vegetated with *Tetragonia decumbens* and *Artotheca populifolia* (Plate 6).

Plate 6 Coastal fore dunes vegetated with *Tetragonia decumbens* and *Artotheca populifolia*

Mitigation measures proposed

- If the cable alignment cannot go around these small dunes, then the dune must be reinstated and replanted with the species listed above.

Dune slack wetland

- From the fore dunes, the cable alignment traverses a dune slack wetland before reaching the proposed site for the BMH. The wetland edge supports *Dasispermum suffruticosum, Ficinia nodosa, Pelargonium capitatum, Tetragonia decumbens* and *Trachyandra divaricata.*
- An access path/track crosses this wetland to allow City of Cape Town staff access to stormwater infrastructure within this area (Plate 7). The wetland species occurring on either side of the access path/track include *Ficinia nodosa, Helichrysum sp., Pennisetum clandestinum, Phragmites australis* and *Senecio halimifolius.*

Plate 7 Wetland on each side of the access road located between the fore dunes and the suburb of Van Riebeekstrand

Mitigation measures proposed

- If the cable alignment is aligned to fall within the footprint of the access path/track then no impact on the surrounding wetland vegetation is expected. As such, the cable alignment should be positioned within the footprint of the access path/track.

Beach Man Hole to the Cable Landing Station in Duynefontein

BMH to Otto Du Plessis Drive

- From the BMH the cable alignment will follow an existing service corridor (Plate 8) to Otto Du Plessis Drive. The service corridor is lined with exotic trees on either side. The trees species include the invasive alien tree, *Metrosideros excelsa, Myoporum montanum* (*M. tenuifolium*) (NEMA Category 3), *Yucca flaccida* and *Schinus terebinthifolius*.

Plate 8 Service corridor from the BMH to Otto Du Plessis Drive

Mitigation measures proposed

- Cable alignment to be placed to avoid trees.
- The trench should be dug outside the tree drip line where possible.

Alignment along Otto Du Plessis Drive

- From where the service corridor meets Otto Du Plessis Drive the cable alignment will follow Otto Du Plessis Drive for a distance of 440 m. Much of the alignment is transformed and little impact is expected on vegetation along this section of the alignment. Four Canary Island data palms (*Phoenix canariensis*) and four planted milkwood trees (*Sideroxylon inerme*) are located along this section of the cable alignment.

Mitigation measures proposed

- Cable alignment should not be placed within 1.5 m of the trees and it is recommended that the cable be alignment on the east of the trees.
- Four Canary Island Date Palms6 are located along Otto du Plessis. These trees are mature, healthy specimens which should not be destroyed. Should the construction work,for whatever reason, lead to the loss of any of these trees, replacement of the affected tree (with similar specimens) will be required.
- Several Milkwood trees along the prefered alignment must be screened from construction activities and demarcated as a no-go area for construction activities.

Alignment from *Otto Du Plessis Drive to the Cable Landing Station*

- A dune system supporting intact Cape Flats Dune Strandveld occurs within this section of the alignment particularly in the south near Otto du Plessis Drive. Dominant species include *Asparagus capensis, Euphorbia mauritanica, Eriocephalus africanus, Osteospermum incanum, Salvia africana-lutea, Searsia laevigata, Thamnochortus spicigerus* and *Thesium sp*. This area must not be impacted and could be avoided by aligning the cable route on the west side of the fence line from point (S 33 41 49.29 E18 26 41.15) up to Otto du Plessis Drive.
- From Otto du Plessis Drive to the proposed CLS site the cable alignment is located in close proximity to Critical Biodiversity Area (CBA) as indicated on the City of Cape Town 2013 Biodiversity Network map for the study area (Plate 9).

Plate 9 Intact Cape Flats Dune Strandveld

[6] Exotic but of aesthetic value (condition of the City of Cape Town).

Figure 24 Proposed deviation (green line) to avoid the intact Cape Flats Dune Strandveld

Mitigation measures proposed

- Cable alignment should avoid the intact Cape Flats Dune Strandveld and be aligned on the western side of the fence line (green line on Figure 24 above).
- Ensure the cable alignment remains within the corridor of about 20 m between the housing development on the northwest and the CBA to the south.
- Ensure that no construction plant or workers enter the CBA. If this is enforced impacts on the CBA would be negligible.

8.2.4.2 Alternative B cable alignment

Coastal fore dunes

- From the beach the cable alignment will cross the coastal fore dunes and secondary dunes which is vegetated with *Arctotheca populifolia, Tetragonia decumbens* and *Cladoraphis cyperoides* (Plate 10). The vegetated dunes on either side of the beach access path are far enough apart to accommodate the cable trench. The dune system must be reinstated to the original contours. No vegetated areas must be impacted on.

Plate 10 Coastal fore dunes vegetated with *Tetragonia decumbens* and *Artotheca populifolia*

Mitigation measures proposed

- The dune system must be reinstated to the original contours.
- No vegetated areas should be impacted on where possible.

***Dune slack wetland*:**

- From the fore dunes, the cable alignment traverses a dune slack wetland before reaching the proposed site for the BMH. The wetland edge supports *Dasispermum suffruticosum, Ficinia nodosa, Pelargonium capitatum, Tetragonia decumbens* and *Trachyandra divaricata.* An additional species, namely pampas grass (Cortaderia selloana) (Invasive Alien Species: NEMA Category 1b) occurs along the pathway and edge of the wetland
- An access path/track crosses this wetland to allow City of Cape Town staff access to stormwater infrastructure within this area (Plate 11). The wetland species occurring on either side of the access path/track include *Ficinia nodosa, Helichrysum sp., Pennisetum clandestinum, Phragmites australis* and *Senecio halimifolius.*

Plate 11 Wetland located between the fore dunes on Alignment B and the suburb of Van Riebeekstrand

Mitigation measures proposed

- If the cable is aligned to fall within the footprint of the access path/track then no impact on the surrounding wetland vegetation is expected. As such, the cable alignment should be positioned within the footprint of the access path/track.

Beach Man Hole to the Cable Landing Station in Duynefontein

BMH to Dunker Street along De Bad Road

- From the BMH the cable alignment will follow road verge along De Bad Road (Plate 12). The vegetation along the road is highly transformed with no natural vegetation apart from a single a large *Lycium ferocissimum* bush at waypoint 016 (33°41'47.43"S; 18°26'26.42"E) (yellow arrow). The bush may require pruning to accommodate the cable trench.

Plate 12 Cable alignment from the BMH along De Bad Road

Mitigation measures proposed

- None.

Dunker Street to Otto du Plessis Drive

- The cable route continues along the northern side of Dunker Street and until Otto du Plessis Drive. A number of mature trees occur along this section of the cable alignment, including *Metrosideros excelsa* trees (Plate 13).

Plate 13 Cable alignment along Dunker Street to Otto Du Plessis Drive

Mitigation measures proposed

- The cable trench should be placed beneath the road within 1m from the road edge and located outside the drip-line of the trees to avoid damage to the tree roots.

Otto du Plessis Drive to Atlantic Avenue

The proposed cable Alignment B follows the same alignment as Alignment A along this section of the cable route and the same impacts apply as those described for Alignment A for the section *Alignment along Otto Du Plessis Drive*.

Atlantic Avenue along Napoleon Avenue to the CLS

- The cable route continues along the northern side of Atlantic Avenue and then along Napoleon Avenue to the Cable Landing Station (Plate 14). Along this section of alignment the cable will impact on a number of landscaped road verges and roadside trees would potentially be impacted. The landscaped verges and Canary Island date palm would be impacted if the cable trench is excavated through these areas. The cable trench should be aligned as close to the road verge as possible to avoid root damage.

Plate 14 Cable alignment along Dunker Street to Otto Du Plessis Drive

Mitigation measures proposed

- The cable trench should be placed as near to the road edge as possible and located outside the drip-line of the trees to avoid damage to the tree roots and landscaped road verges.

8.2.5 Findings and recommendations

Following a review of the Vegetation and Ecology specialist report and provided that the proposed mitigation measures put forward along Alignment A are implemented the impacts associated with Alignment A are considered to be lower than those associated with Alignment B which will have a significant impact on landscaped verges and trees along the proposed cable alignment. As such Alternative A is the preferred alignment once mitigation measures have been implemented.

It is the specialist's opinion that *"Since the development footprint is located within transformed habitat, it does not contribute significantly to cumulative impacts on fauna and flora. With the*

application of the suggested mitigation measures, the impacts associated with the development would be low and of a local nature only. As such, there are no reasons to oppose the development from the terrestrial ecological point of view".

8.3 Fisheries Specialist Assessment

The information in this section has been taken from the Fisheries Impact Assessment Report prepared by Capricorn Marine Environmental (Pty) Ltd (2017).

At each landing country associated with the ACE cable system, the proposed fibre-optic cable will transit coastal waters and be brought on shore using industry-standard installation methodologies. When selecting the route alignment for the ACE Cable System, the following criteria were taken into account by the engineering team in order to find the most practical and cost effective alignments:

- The placing of the cable close to and along existing alignments of submarine telecommunications cables entering South Africa's waters.
- Identification of a suitable landing beach that minimises on-shore environmental and infrastructure constraints and enables the cable to be linked to the proposed cable station.

8.3.1 Impact on the fishing industry

Marine telecommunications cables although having some direct negative impacts associated with the installation and operation of these cable systems, do offer protection to the marine benthic environment along their alignment through the implementation of the legislated buffer zone either side of the cable as defined in the Marine Traffic Act (Act No. 2 of 1981) read together with the Maritime Zones Act (Act No. 15 of 1994). This buffer zone effectively protects the benthos from bottom trawling and acts as a refuge for benthic fish species in this area. With these exclusion zones the proposed ACE Cable system will negatively impact on the fishing sector through loss of fishing grounds once the cable has been laid and the exclusion zones come into affect.

Of the approximately 14 fishing sectors that operate within South African waters, two are likely to be affected by the exclusion zone of the ACE Cable system as both of these fishing sectors deploy gear on the seabed and their grounds coincide with the proposed cable route.

8.3.2 Offshore demersal trawl fleet

The offshore demersal trawl fleet is based predominantly in the ports of Cape Town and Saldanha Bay and operate extensively off the West Coast. Trawl gear is towed along bathymetric contours and would be expected to cross the proposed cable route perpendicularly at a depth range of between 200 m and 750 m. The additional exclusion zone of the new cable would cover approximately 0.3% (187 km^2) of the total ground available to the fishery. Since trawling within the exclusion zone would not be permitted, vessels would either need to relocate fishing effort to the north or south of the cable routing, or they would maintain their bearing and lift gear over the exclusion zone. In both instances the result would be a loss in catch. Based on the high levels of effort recorded in the area, the probability that the impact would occur is definite and the duration of the impact would be long-term. The intensity of the impact is however considered to be medium and the overall significance medium due to the local extent of the impact.

8.3.3 Demersal longline fishery

The demersal longline fishery deploys gear that anchors to the seabed thus the exclusion zone would be applicable to this sector. Furthermore, in the unlikely event of gear breaks grapnel hooks may be used to retrieve lost lines and these could potentially snag and damage an exposed section of cable. An average of 40 lines per year was set directly across the proposed cable routing at a depth range of 260 m to 600 m. This amounts to less than 1% of the total effort expended by the fishery on a national level. The intensity of the impact is considered to be Low (where fishing may continue in a modified way) and the overall significance low due to the local extent of the impact. The duration of the impact would however be long-term.

8.3.4 Intensity and depth range of trawling effort in the vicinity of the proposed cable

The majority of the offshore cable route proposed for the ACE Cable system falls outside of the fishing grounds targeted by the demersal trawl sector. The route coincides with these grounds only where the cable route traverses shallower depths to make landfall at Van Riebeekstand. This is approximately between lines of longitude 17° 20´ E and 18° E. Trawlers would be expected to operate along the proposed cable route at a depth range of between 200 m and 750 m, with most of the activity focussed at the shelf break at a depth range of between 300 m and 550 m. Gear is towed along the seafloor contours and would therefore be expected to cross the proposed cable route perpendicularly.

The exclusion zone (1 nm) for the proposed routing would cover 187 km^2 or 0.3% of the ground available to the offshore trawl fishery. Over the period 2010 to 2014, an average of 845 trawls have crossed the proposed routing of the ACE cable each year (2.1% of the total effort expended by the fishery) (Figure 24).

The impact of the proposed cable on the demersal trawl fishery is expected to be of local extent, long-term duration, and of medium intensity (whereby fishing processes can continue in a modified way). The impact is assessed to be of overall medium significance. Mitigation measures would include burial of the cable along as much of the routing as possible (Table 6). This would provide a measure of protection of the cable against snagging but would be unlikely to result in a decrease in the significance of the impact on the fishery.

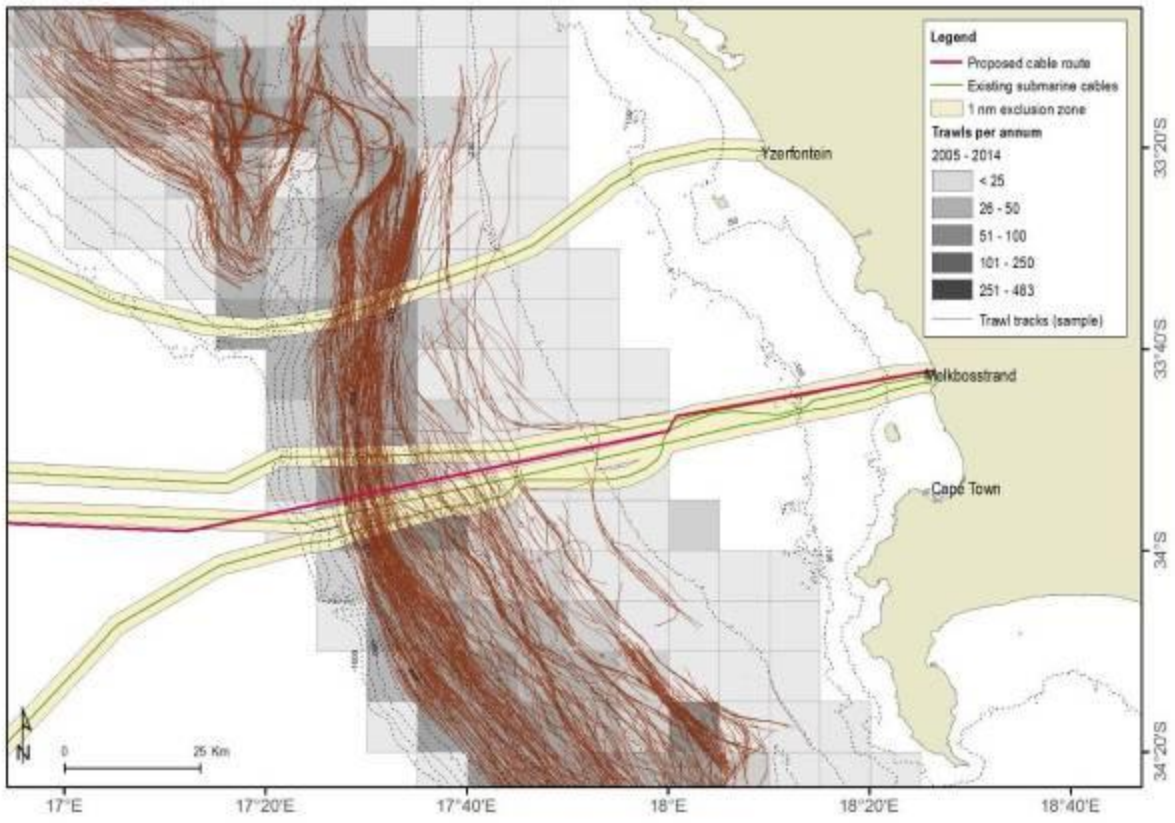


Figure 25 **Partial distribution of trawling effort expended by the South African hake-directed trawl sector in relation to the proposed and existing submarine cable routings. Fishing effort is displayed at a 5' x 5' grid resolution showing the average number of trawl start positions per annum (2005 – 2014). Note that although trawl tracks are shown to cross the existing cables, trawling with gear on the seabed is unlikely as skippers would lift gear off the seabed to avoid potential contact with the cables.**

Table 5 Summary table showing impact ratings of the proposed subsea cable routing on the demersal trawl sector both with and without mitigation measures in place. Mitigation measures assume burial of the cable over the full extent of the trawling grounds

	Impact on the Demersal Trawl Sector	
	Without Mitigation	With Mitigation
Extent	Local	Local
Duration	Long term	Long term
Intensity	Medium	Medium
Probability	Definite	Definite
Degree of Confidence	High	High
Degree to which impact can be mitigated	None	None
Reversibility	Fully Reversible	Fully Reversible
Loss of Resource	Low	Low
Significance	Medium	Medium

The cumulative impact of the proposed exclusion zone around the ACE cable, in addition to those around the three existing cables, could be reduced by placing the new cable within the exclusion zone of an existing cable. The currently-proposed routing does to some extent achieve this.

8.3.5 Trawling activity in the vicinity of the WACS, SAT3/WASC, SAFE and SAT-2 cables

Existing exclusion zones follow the routings of the SAT3/WASC, SAFE and SAT-2 cables which land at Melkbosstrand and the WACS cable which lands at Yzerfontein. The SAT-2 cable became operational in the early 1990s and has been out of service since 2013 (whereas the exclusion zone is still applicable). The SAT3/WASC and SAFE cable were completed at the end of 2001 and the WACS cable was completed in April 2011. In determining vessel behaviour subsequent to the installation of these cables trawling records for the years 2013 and 2014 were assessed since exclusion zones were applicable for all three cables.

Based on the trawling data recorded during this time, 819 trawls per year were reported to have started within these cable exclusion zones across a depth range of 210 m to 745 m. It would therefore seem that trawlers are not avoiding the exclusion zones of existing cables, unless they manoeuvre their gear to raise off the seabed when crossing this area.

It must also be noted that the South African demersal trawl fishery operates to a maximum depth of 1000 m and therefore the majority of the proposed ACE Cable System route lies beyond the operational range of the fishery (Figure 26).

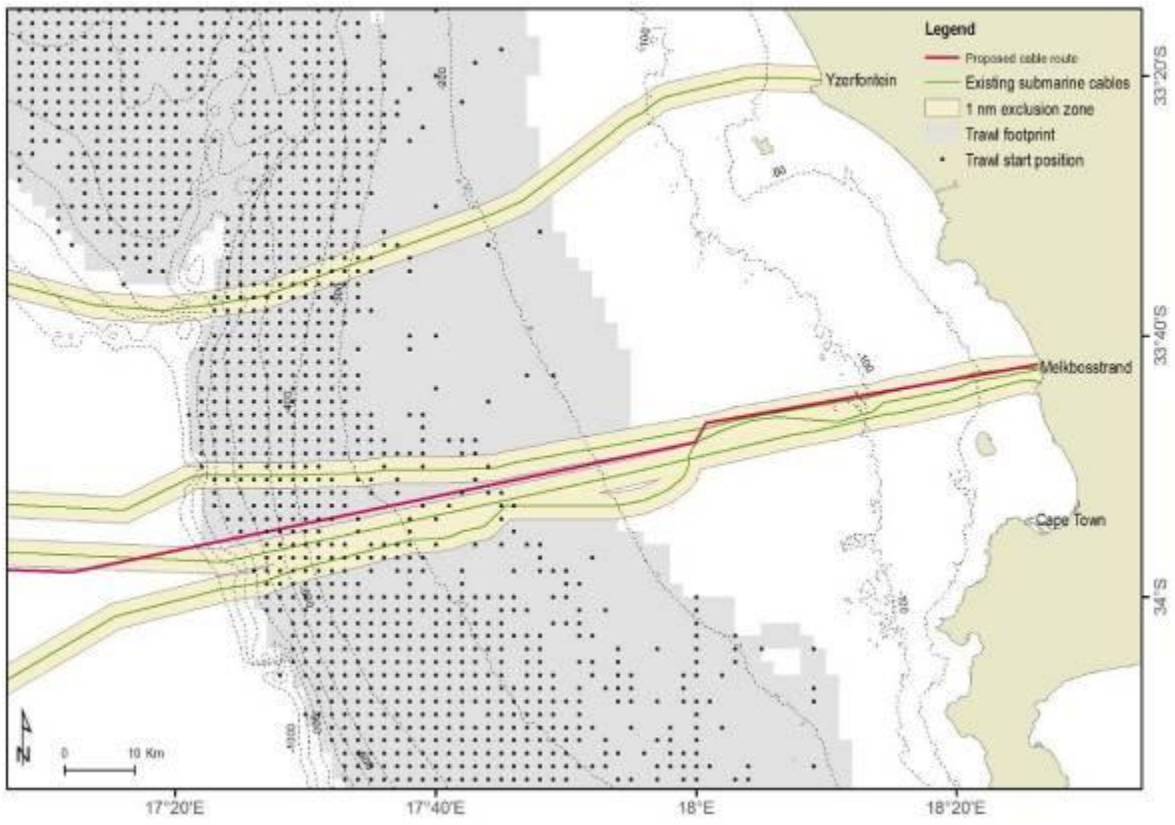


Figure 26 Trawling grounds (grey shading) and reported start of trawl positions (points) in relation to the 1 nm exclusion zones surrounding subsea cable routes. All reported start of trawl positions are shown for 2013 and 2014

8.3.6 Conclusion

Fishing activity in the vicinity of the cable routing is equivalent to less than 1% of the total effort expended by the fishery on a national level. Anchoring would be prohibited to a distance of one nautical mile on either side of the cable routing and the demersal longline fishery would therefore not be able to anchor gear within this area. The impact of this exclusion on the fishery is expected to be of low intensity (where fishing could continue in a slightly modified way) and of overall low significance due to the localised extent of the impact.

8.4 Heritage Assessment

The information in this section has been taken from the Heritage Impact Assessment prepared by ACO Associates cc (2017).

A Heritage Impact Assessment was undertaken in accordance with Section 38 (8) of the National Heritage Resources Act, No 25 of 1999 (NHRA) in the form of a controlled-exclusive surface survey, as well as a database and literature search.

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. A Notice of Intent to Develop (NID) was submitted to HWC who did not request any further studies.

Palaeontology within the region

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. Palaeontological material is currently known from sediments underlying Duynefontein and adjacent areas.

Archaeology

The well-known site of Duynefontein 2 (DFT2) is located to the north of the Koeberg power station (2 km north along the coast). Several Late Stone Age (LSA) sites have been recorded in the Melkbosstrand area. Dates for these sites, which are predominantly shell middens, range from 500 to 3000 years ago. 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.

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.

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. No records of human remains have been recorded for Van Riebeekstrand to date but the possibility of encountering human remains during the excavation of the cable trench through Van Riebeeckstrand cannot be ruled out.

8.4.1 Assessment of marine cable alignments

Two alternative shallow water alignments, a northern route and a southern route, starting about 50 km offshore 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 - The wreck on the database was a small fishing boat named Rooibok lost at sea on 21 December 1973) however, after a review of the side-scan sonar mosaic images, it was determined that the anomaly did not represent a wreck.

Based on the results of the survey results no impacts on heritage resources is expected for either of the offshore alignments proposed. The preferred shallow water offshore alignment is however the northern alignment as the southern shallow water alignment will require the ACE Cable System to cross the SAFE and SAT-2 Cable Systems which is not desirable from an installation and operational perspective.

8.4.2 Assessment of terrestrial cable alignments

While LSA shell middens may be buried under the surface within the residential development of Van Riebeekstrand and Duynefontein, no archaeological remains were identified on the surface at either landing site or the proposed cable alignments to the CLS site. From a surface survey of the onshore area (a distance of 1.5 km), it was determined that impacts to archaeological and palaeontological heritage are likely to be low.

Any sub-surface archaeological remains within the cable alignments will have been significantly disturbed by the construction of 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 to the CLS site.

8.4.3 Conclusion

In terms of the preferred cable alignment from a heritage point of view both alignments are not anticipated to have any significant impact on heritage resources and either alignment would be supported from a heritage perspective. It is however recommended that the following mitigation measures are implemented during the construction phase of the proposed development:

- If any heritage resources (particularly graves) are uncovered during construction, then work must stop, and HWC (Tel: 021 483 9685) must be notified.
- Excavations should be monitored by a palaeontologist or archaeologist with appropriate palaeontological knowledge. The frequency of these inspections must be worked out with the contractor to minimize time spent on site.
- If human remains are uncovered during the trenching for the cable, then work in that area must stop, and the ECO should notify HWC.

8.5 Beach and Coastal Dune Assessment

The information in this section has been taken from the Beach and Coastal Dune Assessment prepared by Sustainable Development Projects cc (2017).

8.5.1 Impacts on the frontal dune cordon

The route alignments for both of the proposed cable landing alternatives will traverse the wet dune slack and the frontal dune cordon. For both alternatives, the cable routes are proximal to existing semi-formal public access paths. Notably, the cable alignment for Alternative A aligns with that portion of the dune cordon that shows a singular large transverse dune. A dry to periodically inundated frontal dune slack is located just to the north of this transverse dune. Notably the longitudinal dune crest lies proximal to the wet slack, indicating a stable dune heel, but transgressive or inflated frontal dune form.

Comparatively the cable alignment for Alternative B aligns with two transverse dune structures and bisects a dry to periodically inundated frontal dune slack, while the longitudinal dune shows a more deflated state, at this point in time.

Based on these observations it follows from a geomorphological perspective that the cable alignment for Landing Alternative A would result in a lower level of geomorphological disruption to the dune cordon than at Landing Alternative B.

From an ecological perspective, habitat complexity and species diversity plays a significant role in determining the state of a dune form. Using SANBI data (Mucina and Rutherford 2006), the subject area comprises of three habitat types namely Cape Seashore Vegetation, Cape Flats Dune Strandveld and Atlantic Sand Fynbos. Of these veld types, Cape Seashore Vegetation is considered to be “least threatened” from a habitat conservation perspective, while Cape Flats Dune Strandveld is considered to be “endangered”. Atlantis Sand Fynbos is a more terrestrial, inland habitat and is considered to be “vulnerable” from a conservation perspective.

The frontal dune cordon and dune slack is considered to encompass two habitat forms, namely Cape Seashore Vegetation and Cape Flats Dune Strandveld. The frontal dune cordon conforms definitively with this veld type, exhibiting typical graminoid species including *Sporobolus virginicus* and *Ehrharta villosa*, with *Tertragonia decumbens* and *Didelta carnosa* being common. Presently the seashore vegetation is sporadically situated across the dune cordon and there is evidence of increasing sediment inundation onto vegetation, as well as blow outs or small scale "parabolic type dunes" arising in response to changing factors

The vegetation lying within the study area is subject to ongoing disturbance, primarily through pedestrian traffic moving through the slack and frontal dune cordon, across semi-formal structures and pathways, as well as on account of the establishment of stormwater infrastructure and the clearance of vegetation. The latter is evident where there are attempts within the slack to facilitate the flow of water. Notably, there is evidence of informal attempts to stabilise the frontal dune cordon through *ad hoc* brush wood packing and occasional plantings.

Cable route B shows a more even distribution of species across the cable route within the dune cordon and slack, with more mesic and psammoseral species being evident. While this route may generally be considered to be disturbed, evidently cable route B, at a preliminary level of evaluation, shows an improved diversity, comparative to cable route A.

Given the above, it is apparent that Cable Route A is to be considered the more appropriate route for the establishment of the cable on account of the less complex dune morphology at this point and the lower species diversity. Table 6 below, provides a qualitative and comparative evaluation of the impacts arising from the utilisation of the identified cable routes.

Table 6 Review of ecological impacts arising from utilisation of alternative cable alignment routes at Van Riebeeckstrand

Beach Node	Spatial extent	Duration	Probability	Significance	Status	Confidence
Cable Route A	Local	Long term	Definite	Low	Low	High
Cable Route B	Local	Long term	Definite	Moderate	Moderate	High

The coastal dune cordon at Van Riebeekstrand has been shown to presently be a mobilising system where engulfment by sediments of the formerly vegetated dunes is seeing a leeward migration of dunes and some engulfment of vegetation. Such transgression of the dune structures has arisen since 2010 and may be a response to changing maritime and meteorological factors. The proposed landing of a sub-surface cable at Van Riebeekstrand will require the trenching of portions of the intertidal, back beach and dune cordon, in order to allow for the cable to connect with land based infrastructure. It has been suggested that horizontal drilling could also be utilised as a technology alternative and is discussed below.

Following due consideration of the state of the two site options for the landing of the cable at Van Riebeeckstrand, it is evident that Cable Alignment Option A is the preferred on account of the following:

- Alignment with Cable Route Alternative A, will result in limited disturbance to the prevailing dune morphology.
- Cable Route Alternative B, at a preliminary level of evaluation, shows improved botanical species diversity and range, across the route, compared to Cable Route Alternative A and as such, should be avoided.

8.5.2 Proposed mitigation measures

A number of management interventions have been proposed to limit impacts on the coastal dune cordon and include the following:

- A detailed survey should be undertaken of the route in order to identify the extent of the wet dune slack and the topography of the affected dune environment, in order to allow for the reinstatement of these systems to mimic the present morphology, once the cable has been laid.
- It may be preferable to align the cable with the present semi-formal walkway, than to excavate through the slack. Where not possible, it is recommended that the cable be aligned immediately adjacent to the said walkway.
- Horizontal drilling has been proposed to allow for the establishment of the cable, without the necessity to trench through dunes and other habitats. While this option may be applicable to other habitats, such actions may generally be ineffective or impractical in the context of the dune cordon. This is evident on account of the fact that horizontal drilling will:
  - Serve to disturb the lamellae and hydrological regime below the surface of the dune form, in a similar manner to trenching, thus negating the benefits that may be attributed at a cursory level to such operations; and that
  - Dune systems are inherently dynamic and are inter related across the sub tidal to supra tidal environment. So long as a change is instituted within the sand sharing system of a coastline, change will arise in one or more components of the system.
  - It follows that the option of horizontal drilling may be utilised in the establishing of the cable, however, the benefits of utilising this method is rudimentary and superficial.
- The route should be cordoned with possible shuttering being applied within the trench to reduce the need to establish a wider excavation to meet the abovementioned minimum depth.
- Trenching and excavation to a depth greater than 5 m (and as deep as 10 m) should apply at points above the high-water mark (back beach, frontal dune cordon and dune heel) during the establishment phase to avoid exposure where dune mobility arises.
- Once all trenching and backfilling has been completed, following the laying of the cable, it is proposed that the dune be reinstated and sculpted to mimic the pre-construction state.
- An alternative pedestrian walkway should be established during the restoration stage of the project to prevent foot traffic across the destabilised area of dune.
- Stabilisation of the dune should be undertaken on a temporary basis utilising geofabric or related materials (Figure 27). Limited planting of materials is proposed.

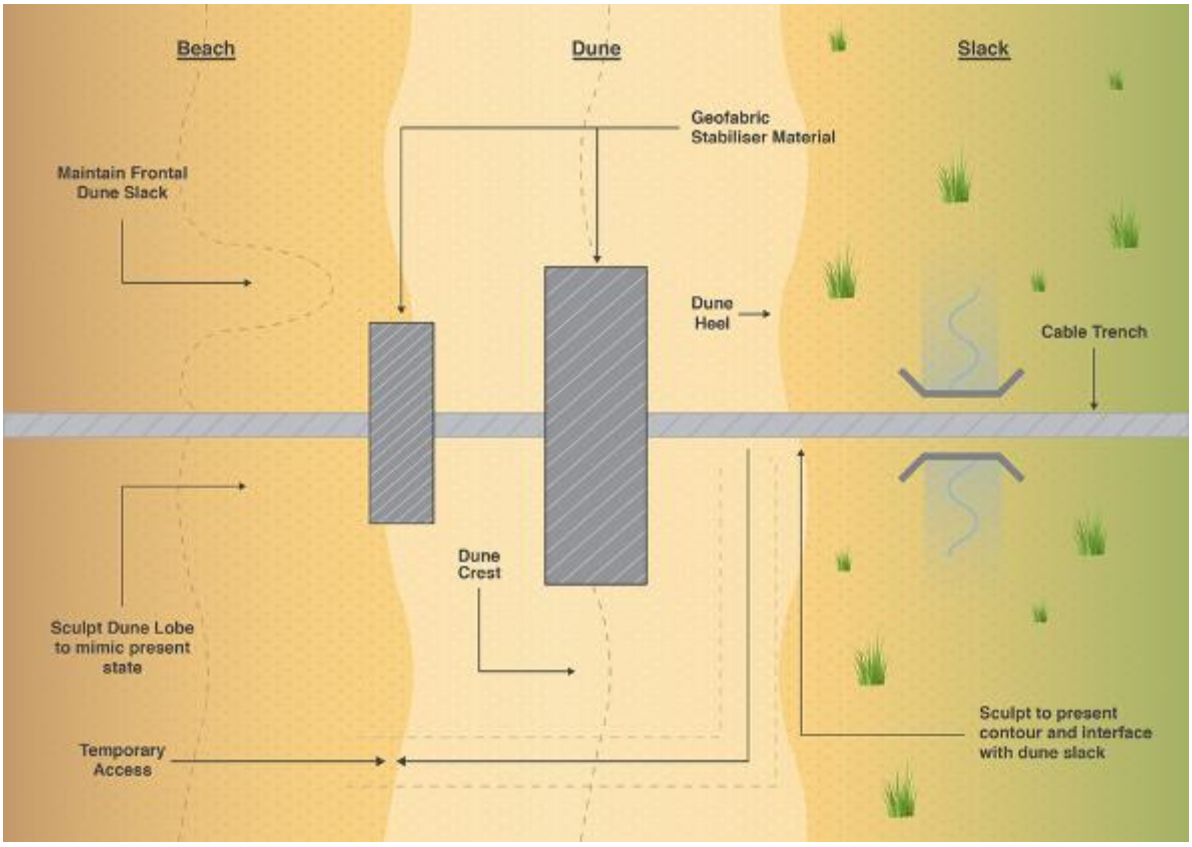


Figure 27 Stylised image of post trenching measures required

8.6 Wetlands Assessment

The information in this section has been taken from the Wetlands Specialist Assessment prepared by the Freshwater Consulting Group (2016).

The potential impacts of the proposed cable installation on freshwater ecosystems were assessed using the criteria outlined in DEA&DP's Guideline for Biodiversity Specialist Studies (Brownlie 2005) and a protocol developed by FCG for rating the significance of impacts on freshwater ecosystems. According to the NFEPA project and it's map products, there are no Freshwater Ecosystem Priority Areas (FEPAs) in the study area, but the study area does form part of a Fish Sanctuary Area associated with the Lower Berg sub WMA.

The study area falls within the Southern Western Coastal Belt Aquatic Ecoregion. This ecoregion is characterised by plains and a moderate to low relief, with gentle slopes (<5% gradient) occurring over more than 80% of the region. The coefficient of variation associated with annual precipitation is moderate to high throughout most of the South Western Coastal Belt Ecoregion, which means that there is a relatively high degree of year-to-year variability in the amount of precipitation. The study area falls into Köppen climate zone "Bsk", indicative of cold semi-arid climates according the Köppen- Geiger system.

The study area is located within the Berg Water Management Area (WMA), specifically the Lower Berg sub-WMA, falling within Quaternary Catchment G21B, as delineated by the Department of Water and Sanitation (DWS). The calculated Mean Annual Precipitation (MAP) of the Quaternary Catchment is 332 mm, with a Mean Annual Evaporation (MAE) of 1445 mm and a Mean Annual Rainfall (MAR) of 7.7 million m3.

According to the relevant 1:250 00 scale geology map of South Africa (3318 CB Cape Town), the surface geology along the coast at Van Riebeekstrand is dominated by Quaternary sediments, overlying metasediments of the Tygerberg Group. The Quaternary sediments grade from those associated with the Langebaan Formation (consisting of limestone and calcrete, partially cross-bedded with calcified parabolic dune sand) immediately inland of the coastline to those associated with the Witzand Formation (consisting of unconsolidated calcareous sand of marine origin), with the more acidic light-grey to pale-red sandy soils of the Springfontyn Formation occurring further inland, to the east.

8.6.1 Wetlands identified

Two wetlands were identified to be present along the proposed cable routes – these were a "dune slack wetland" behind the primary dunes of the beach, near to the proposed landing points (A and B) and what appears to be an artificially created wetland near the proposed Cable Landing Station site at the eastern end of the cable routes (Figure 28). Both wetlands were classified as depressions (following the national classification system for inland aquatic ecosystems of Ollis *et al*. 2013), but the areal extent of the dune slack wetland (approximately 2.1 ha) is significantly greater than that of the artificial wetland (estimated to be less than 0.1 ha in size).

The dune slack wetland that was identified and delineated is situated along the eastern edge of the beach at Van Riebeekstrand, between two lines of dunes (Figure 29). It is an inter-dune depression that would presumably, in its natural state, have been fed predominantly by groundwater (through the seasonal rising of the water table, which is probably relatively close to the ground surface based on the landscape setting of a coastal plain). At present, however, a substantial portion of the current-day extent of the dune slack wetland at Van Riebeekstrand consists of features developed for the transport and attenuation of stormwater runoff from the adjacent residential area. In addition, two berms (with pipe culverts running through them) have been constructed across the wetland / stormwater pond to allow for pedestrian access to the beach. These features have substantially transformed the area from its presumed natural reference state.

Figure 28 Wetlands identified within the study area

Figure 29 Dune slack wetland at Van Riebeeckstrand

8.6.2 Present ecological state

Dune slack wetland

As stated above, the dune slack wetland is by no means in pristine ecological condition due to the stormwater infrastructure and pathways that have been routed through the wetland. A substantial area of the dune slack wetland has been excavated for the establishment of stormwater infrastructure and a number of stormwater pipes have been directed into the stormwater attenuation area that has been created, which ultimately discharges onto the beach via an outlet pipe. The result of these physical alterations of the dune slack area, together with what appears to be regular clearing of vegetation within the dune slack wetland, is that the wetland area is more continuous and probably more extensive than it would have been in its presumed natural state. In addition, the wetland is deeper than it would have been naturally (due to the extensive excavation within the system and the input of stormwater runoff), with water depths of up to between 0.5 and 1 m observed during the specialist site visit.

Based on observations on site the hydrological regime appears to have shifted from a highly seasonal regime to a more permanent one, with substantial areas that are now permanently inundated, or at least permanently saturated, where it is presumed they would have totally dried out on a seasonal basis under natural conditions. After large rainfall events, the peak flows entering the wetland from the largely hardened, urbanised catchment would also be significantly greater now than they would have been before the transformation of the catchment, especially with the direct input of stormwater runoff via pipes that have been directed into the wetland.

Besides the hydrological impacts associated with the changes that have occurred within the dune slack wetland and its catchment, these changes have resulted in significant alterations to the landform characteristics of the wetland (which would presumably have consisted of a number of small, very shallow depressions in its natural state, as opposed to the continuous and relatively deep depression that is currently present). These changes have also altered the sediment dynamics associated with the wetland, making it subject to substantially more erosion and deposition than it would it would have been in its presumed natural state. Most of the vegetation within the dune slack wetland has been transformed from Cape Flats Dune Strandveld or Cape Seashore Vegetation to a mix of *Typha capensis* (bulrush) and *Phragmites australis* (common reed) within the area that has been transformed through the establishment of stormwater infrastructure in the wetland (see map of “disturbance units” in Figure 30).

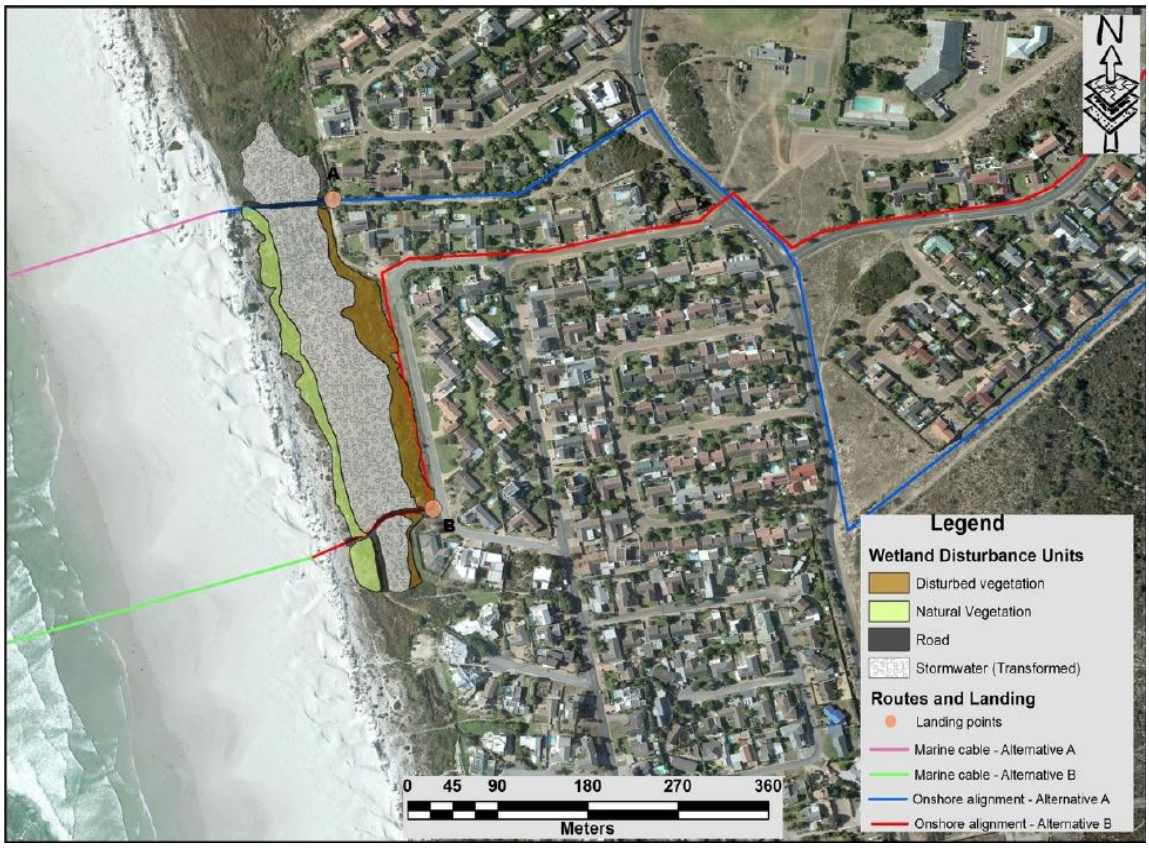


Figure 30 Disturbance within the dune slack wetland within the study area

Within the wetland and immediate surrounds there are only small pockets of relatively undisturbed natural vegetation as delineated on the "disturbance map" (Figure 29). A summary of the PES assessment results for the dune slack wetland are presented below, as based on the WET-Health "Level 2" assessment and the catchment landuse/water quality assessment undertaken. The results of the PES assessments indicate that there has been a significant alteration to the natural habitat and biota within the wetland, relative to the presumed natural ecological state. The PES of most components were rated to be largely to seriously modified (Ecological Category D or E) (Table 8), with the overall rating being Ecological Category E (i.e. seriously modified).

Table 7 Summary of the Present Ecological State (PES) % scores and Ecological Categories for the potentially affected dune slack wetland area

PES component	PES % Score	Ecological Category
Hydrology	30%	E (Seriously modified)
Geomorphology	56%	D (Largely modified)
Water Quality	59%	D/E (Largely to seriously modified)
Vegetation	23%	E (Seriously modified)
Overall PES	36.5%	E (Seriously modified)

The dune slack wetland was rated by the appointed specialist to be of moderate conservation importance as it provides the following:

- Fulfils some functional roles within the catchment, with at least some of the indirect regulating and supporting ecosystem services likely to be provided to an intermediate extent by the wetland.
- Provides habitat to some indigenous flora and fauna, especially in the more natural pockets of the wetland that are still ecologically intact.
- Represents a degraded but threatened habitat type, namely a dune slack wetland within an Endangered vegetation type (Cape Flats Dune Strandveld)
- Is of a reasonable size, forming part of a more extensive, discontinuous “string” of dune slack wetlands along the coastal dune field.

From a faunal importance perspective, up to eight species of frogs could be associated with the dune slack wetland but only one of these species is currently noted to be of conservation concern by the IUCN, namely *Cacosternum capense* (Cape Caco), which is listed as Near Threatened. The likelihood of finding this species in the dune slack wetland is, however, very limited because the wetland does not provide optimal breeding or foraging habitat (the Cape Caco typically breeds in very shallow, temporary 'pans' in clay soils). Therefore, from a faunal perspective, at least with respect to amphibian fauna, the dune slack wetland does not hold significant conservation value. This was confirmed in the faunal specialist study for the by Todd (2016), who concluded that the diversity of amphibians within the affected area is likely to be relatively low and that the impacts on amphibians that could result from the proposed cable installation, if any, are likely to be of low significance.

Depression wetland near the CLS site

A small depression wetland was identified to be present on the proposed site for the CLS. It is presumed that this wetland, which is underlain by clay subsoil and infill material, was artificially created when the roads and other infrastructure for the residential suburb of Duynefontein were established. When the site visit was undertaken by the appointed specialist (at the end of August 2016), no standing water was present in the wetland but soil auger samples revealed that the upper soil layer consisted of saturated loamy material with distinct orange mottles against a grey-brown matrix, overlying a clay layer and/or indeterminable hard material (presumably infill) at a depth of 20 to 30 cm. No assessment of

the PES was undertaken for the artificial wetland, as this is not a natural feature and does not thus have a natural reference condition to use as the basis for such an assessment. Assessments of the functional importance and conservation value of this wetland were, however, completed by the appointed specialist who found that the artificial wetland had a very low to negligible conservation importance due to the following:

- Fulfils very few functional roles within the catchment, with no ecosystem services likely to be provided to any level of significance by the wetland.
- Does not provide ecological significant habitat or support indigenous flora and/or fauna that are characteristic of the region.
- Is an artificial wetland feature of very limited extent (<0.1 ha in size).
- Is not linked to natural (aquatic or terrestrial) areas, due to being surrounded by intense urban development, and thus does not serve as an ecological corridor.

8.6.3 Assessment of cable alignment alternatives

All of the potential construction and operational related impacts associated with implementation the proposed ACE Cable System were rated to be of low to very low significance without mitigation, largely due to the short-term nature of most of these impacts. With mitigation, all of the impacts would be of very low significance or would be avoided altogether.

The only impact that was given a different significance rating for Landing Alternative A versus Landing Alternative B was the potential loss of vegetation and associated habitat within the dune slack wetland and surrounding buffer area, through excavation of a trench for the proposed cable, which was assessed to be a negative impact of very low to negligible significance in the case of Alternative A and of low significance for Alternative B. The reason for this minor difference was that the impact was predicted to be probable but of very low to negligible intensity for the Alternative A routing, versus a low intensity and high probability in the case of Alternative B. The extent of natural vegetation on the seaward side of the dune slack wetland is greater along the Alternative B routing compared to Alternative A (as can be seen on the map of “disturbance units”) and the natural vegetation that could be affected is in a significantly more pristine condition than the vegetation along the Alternative A routing.

Furthermore, the existing pathway to the beach is a lot straighter for the Alternative A routing than it is for Alternative B, particularly near the seaward edge of the dune slack wetland, so there is thus a greater probability that the cable route along Alternative B will not follow the pathway precisely and cut through a patch of natural vegetation. For this reason, Alternative A is marginally preferable to Alternative B for the protection of the few remaining patches of intact natural vegetation associated with the dune slack wetland.

The direct loss of the artificial wetland at the proposed site for the CLS at the eastern end of the proposed cable routes, which would result from the construction of the CLS facility over the wetland, would be a permanent impact. This negative impact is, however, considered to of low significance (and thus acceptable from a freshwater ecosystem perspective) because of the artificial nature and low to negligible conservation importance of the wetland.

No cumulative impacts of any significance to freshwater ecosystems were identified by the appointed wetland specialist for the proposed ACE Cable System irrespective of which route alternative is followed. This is because of the low to very low significance of most of the potentially negative impacts on freshwater ecosystems, especially with the implementation of

the recommended mitigation measures, and because the only direct loss of wetland that could result from the proposed development would be of an artificial system rated to be of very low conservation importance

8.6.4 Proposed mitigation measures

The following mitigation measures are suggested to be included in the Environmental Management Programme (EMPr) for the project in order to reduce impacts on wetlands during construction and operation:

- Existing pathways must be used for the section of the cable route that passes through the dune slack wetland, to avoid the destruction of natural vegetation.
- Any areas of intact natural vegetation within the dune slack wetland or its adjacent buffer area that are unavoidably disturbed when the cable is laid should be rehabilitated, under the guidance and supervision of a botanist with knowledge of wetland and Strandveld rehabilitation.
- The site office and construction camp, and all temporary toilets and solid waste disposal facilities, should be located at least 20 m from the edge of the dune slack wetland.
- The dune slack wetland outside of the development footprint should be treated as a "no-go" area and appropriately demarcated as such (using "danger tape", for example) when construction work is carried out. No vehicles, machinery, personnel, construction material, cement, fuel, oil, bitumen or waste should be allowed into this area, unless express permission is granted by the Environmental Control Officer (ECO) for specific activities and such work is carried out under close supervision of the ECO.
- Mechanical diggers and all other machinery and vehicles that are to be used in close proximity to the dune slack wetland should be checked for oil and fuel leaks every day, *before* they are allowed to enter the wetland or a buffer area of 10 m around the edge of the wetland. If any machinery or vehicles are found to have an oil or fuel leak, they must not be allowed to enter within 10 m of the edge of the dune slack wetland until the leaks have been rectified.
- No fuel storage, refuelling, vehicle maintenance or vehicle depots should be allowed within 20 m of the edge of the dune slack wetland.
- Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, should be located on impervious bases and should have bunds around them (sized to contain 110% of the tank capacity) to contain any possible spills.
- Vehicles and machinery should not be washed within at least 20 m of the dune slack wetland.
- No discharge of effluents or polluted water, including sediment-laden water from the dewatering of trenches (if carried out), should be allowed to enter into the dune slack wetland.
- No spoil material, including excavated soil, should be temporarily stockpiled within at least 10 m of the dune slack wetland. Where this is unavoidable, soil stockpiles should be covered (e.g. with geotextile or plastic sheeting) and shored up with wooden structures to prevent slumping and blowing of soil into the wetland, following a Method Statement that has been approved by the ECO.

- The dune slack wetland should be inspected on a regular basis (at least weekly) by the ECO for signs of disturbance, sedimentation and pollution during the construction phase. If signs of disturbance, sedimentation or pollution are noted, immediate action should be taken to remedy the situation and, if necessary, a freshwater ecologist should be consulted for advice on the most suitable remediation measures.

8.6.5 Required licenses

Activities that modify the bed, banks or characteristics of a watercourse, or which impede or divert the flow of water in a watercourse, normally require a Section 21 Water Use Licence from the Department of Water & Sanitation (DWS) in terms of the National Water Act (Act No. 36 of 1998) (NWA). In the case of the proposed ACE Cable System development the applicant has applied for a Water Use License under the recently revised General Authorisation (GA) for Section 21 (c) and (i) water uses (Government Notice of 26 August 2016), to avoid a full Water Use License Application.

For this application, it must be demonstrated that proposed activities within the "regulated area of a watercourse" (including a 500 m radius from the delineated boundary of any wetland) would be of low risk to the resource quality of the watercourse through the completion of a "Risk Matrix" by a suitably qualified professional registered with SACNASP. The applicant must also verify that adequate provision has been made for the management, rehabilitation and monitoring of the affected watercourses, amongst other provisions.

9. DESCRIPTION OF ENVIRONMENTAL ISSUES AND ASSESSMENT OF THEIR SIGNIFICANCE

The key issues identified during Scoping and carried through to the Impact Assessment were formulated as seven key questions, within which potential impacts are identified and described:

- What are the potential social and socio-economic impacts associated with the construction and operation of the proposed ACE Cable System?
- What impacts will the construction and operation of the ACE Cable System have on the terrestrial environment (flora and fauna)?
- What impacts will the construction and operation of the ACE Cable System have on the fishing industry?
- What impacts will the construction and operation of the ACE Cable System have on wetlands within the study area?
- What impact will the construction and operation of the ACE Cable System have on the beach and dune cordon at Van Riebeeckstrand?
- What impact will the construction of ACE Cable System have on cultural and heritage resources, including any paleontological resources (if any are identified during the study)?
- What cumulative impacts will the construction of the ACE Cable System have?

Potentially significant impacts associated with each of the above issues are discussed in the sections below. The assignment of significance ratings to impacts, according to the assessment conventions, is provided in the relevant tables taking into consideration the expected impacts before mitigation and following mitigation as per the recommendations of the specialists provided in Chapter 8 of this report.

9.1 What are the potential social impacts associated with the construction and operation of the proposed ACE Cable System?

Submarine telecommunication cables are important for international telecommunication networks as they transport almost 100% of transoceanic Internet traffic throughout the world (www.iscpc.org). It is widely recognised that access to affordable international bandwidth is key to economic development in every country. Although the national advantages of having submarine telecommunications cables is known, there are some potential social and socio-economic impacts related to the actual landing of the ACE Cable System.

Findings from the social assessment undertaken have identified that there will be some negative social and socio-economic impacts associated with the proposed development but these impacts are considered negligible given the short construction period and highly localised impacts associated with the implementation of the proposed development. If the Alternative A landing site and cable alignment alternative are selected these impacts are mitigated by a large degree by avoiding the need to disturb surrounding landowners and their properties as the Alternative A alignment generally follows existing service corridors and existing servitudes to the CLS site.

Damage to property

It must be noted however, that the Alternative A alignment will impact on a recently constructed paved walkway between Dunker Street and Edward Crescent (Figure 31) as highlighted in the comment received from the City of Cape Town.

Figure 31 Recently completed walkway between Dunker Street and Edward Crescent which will be impacted on by the proposed cable alignment

It is the EAP's opinion, however, that the overall impact of Alignment B on private and municipal property outweighs those of Alternative A, and that construction of the cable along this alignment is the preferred alternative with respect to damage to properties. It will however be a prerequisite that MTN enter into negotiations with the City of Cape Town to ensure that any disturbance to the paved walkway between Dunker Street and Edward Crescent is repaired to a level acceptable to the City of Cape Town. Once construction and installation of the cable is complete no further damages to property are anticipated during the operational phase of the proposed development.

Localised impacts such as dust and noise

For both noise and dust related impacts Alternative A is considered the preferred alternative due to the fact that the cable is routed through existing servitudes with fewer sections along the alignment needing to cross roads or property entrances. Alternative A is also a shorter alignment than Alternative B and as such will require a shorter construction period which reduces the exposure time of residents to construction related impacts. Both noise and dust are not considered to be significant impacts and with some mitigation, the impacts associated with noise and dust, are considered negligible. Mitigation measures proposed to limit noise and dust related impacts are explained in detail in Chapter 10 of this report.

Disruption to traffic

During the laying of the cable in the terrestrial environment two roads will need to be crossed along the Alternative A cable alignment, namely Atlantic Avenue and Otto du Plessis Drive which are major arterial roads within Van Riebeeckstrand and Duynefontein. At the time of the specialist study it had not been determined if the cable will be pipe jacked beneath these roads or whether the trenching would cross the roads thus disrupting traffic along these roads.

Trenching across Otto du Plessis Drive and Atlantic Avenue is anticipated to disrupt traffic for up to two weeks at each road crossing. This disruption to traffic is not advisable given that these roads are a major evacuation routes within the PAZ of Koeberg. As such, the project technical team has indicated that pipe jacking will be the preferred construction method to pass the cable underneath these roads allowing the free movement of traffic along these roads during construction. If pipe jacking is employed to pass the cable under these roads the proposed construction works are not anticipated to have any significant impact on traffic along Otto du Plessis Drive and Atlantic Avenue or impact on the emergency evacuation plans for the PAZ around Koeberg during construction. The impacts on traffic associated with this development can to a large extent be avoided entirely if pipe jacking is used.

During construction, it is also anticipated that there will be an increase in the number of construction vehicles in the suburbs of Van Riebeeckstrand and Duynefontein. This increase in traffic is however not considered to be significant and an impact on traffic due to these construction vehicles is anticipated to be negligible. If the mitigation measures proposed by the specialists relating to working hours are enforced, no construction vehicles will be using these quiet suburban roads outside of working hours which reduces traffic disruptions to residents and decreases noise and visual related impacts simultaneously.

Increased criminal activity

During the construction phase of the proposed project there will be a slight increase in the number of people in the area. The presence of construction workers in an area makes it easier for criminal opportunists to move through areas less conspicuously, therefore increasing the probability of criminal activity. In the case of the proposed development criminal activity is likely to include potential house break-ins and/or petty theft. As confirmed by the appointed specialist following discussions with the local police captain (Captain Van der Toorn from the Melkbosstrand police station) it was noted that this was unlikely to be a significant concern (Per. Comm, 2016). Regardless however, steps should be taken to ensure that there are no incidents that can be considered a direct result of the proposed project. Mitigation measures to reduce the potential for criminal activity include restricting working hours to daylight hours and ensuring that all staff on site wear the same construction overalls making it easy to identify workers associated with the development. During operation there will be no construction staff on site and it is not anticipated that there will be an increase in crime during the operation phase of the project.

Existing telecommunications networks

The proposed ACE Cable System will follow a similar alignment to the other marine telecommunication cable systems running on the same west coast route (SAT-3/WASC/SAFE and WACS). As a member of the International Cable Protection Committee (ICPC) MTN must abide by a number of guidelines and standards to ensure that new cable systems do not negatively impact on existing marine telecommunications systems. As per the recommendations of the ICPC, MTN will engage directly with Telkom SA and other cable operators to reach formal agreements with regards to the installation and operation of the

ACE Cable System. Given the guidelines and standards in place to ensure that new cable systems do not negatively impact on existing marine telecommunications systems it is not anticipated that the ACE Cable System will negatively impact on existing marine telecommunications cables. In addition to the above Telkom SA has voiced their support of the proposed development as it will aid as a driver of Africa's economic growth and support NEPAD's goals. In addition, Telkom SA welcomes an additional cable on the west coast of South Africa as it allows South Africa to maintain access to Europe should the WACS (operated by Telkom SA) fail.

Table 8 Impact assessment of social impacts associated with the construction of the ACE Cable System

Description and Nature of Impact	**Mitigation**	**Nature** (Positive, Negative, Neutral)	**Spatial Extent** (Low, Medium, High)	**Duration** (Very low, Low, Medium, High)	**Intensity** (Low, Medium, High)	**Frequency** (Once off, Intermittent, Periodic, Continuous)	**Irreplaceable loss of resources** (Low, Medium, High)	**Reversibility of impacts** (Low, Medium, High)	**Probability**	**Significance** (Low, Medium, High)	**Confidence** (Low, Medium, High)
Increased noise (Landing Alternative A and cable alignments A & B)	Unmitigated	Negative	Local	Short-term	Low	Intermittent	Low	High	Definite	Low	High
	Mitigated	Negative	Site specific	Short-term	Low	Intermittent	Low	High	Highly probable	Low	High
Increased dust (Landing Alternative A and cable alignments A & B)	Unmitigated	Negative	Local	Short-term	Low	Intermittent	Low	High	Probable	Low	High
	Mitigated	Negative	Site specific	Short-term	Low	Intermittent	Low	High	Improbable	Low	High
Visual impact (Landing Alternative A and cable alignments A & B)	Unmitigated	Negative	Local	Short-term	Low	Intermittent	Low	High	Highly probable	Low	High
	Mitigated	Negative	Site specific	Short-term	Low	Intermittent	Low	High	Probable	Low	High
Disruption to traffic (Alternative A & B)	Unmitigated	Negative	Local	Short-term	Low	Intermittent	Low	High	Improbable	Low	Medium
	Mitigated	Negative	Site specific	Short-term	Low	Intermittent	Low	High	Improbable	Low	Medium
Damage to properties (Cable alignment Alternative A)	Unmitigated	Negative	Local	Short-term	Low	Intermittent	Low	High	Improbable	Low	Medium
	Mitigated	Negative	Site specific	Short-term	Low	Intermittent	Low	High	Improbable	Low	Medium
Damage to properties (Cable alignment Alternative B)	Unmitigated	Negative	Local	Short-term	Low	Intermittent	Low	High	Probable	Medium	Medium
	Mitigated	Negative	Site specific	Short-term	Low	Intermittent	Low	High	Probable	Low	Medium

Increased criminal activity (Landing Alternative A and cable alignments A & B)	Unmitigated	Negative	Local	Short-term	Low	Intermittent	Low	High	Probable	Low	Medium
	Mitigated	Negative	Site specific	Short-term	Low	Intermittent	Low	High	Improbable	Low	Medium
Impacts on existing marine telecommunications cables	Unmitigated	Negative	National	Short-term	High	Intermittent	Low	Low	Probable	High	High
	Mitigated	None	Site Specific	Short-term	Low	Intermittent	Low	Low	Improbable	Low	High
Increased employment opportunities (Landing Alternative A and cable alignments A & B)	Unmitigated	Positive	Local	Short-term	Low	Intermittent	Low	High	Improbable	Low	Medium
	Mitigated	Positive	Local	Short-term	Low	Intermittent	Low	High	Probable	Low	Medium
Impact on tourism (Landing Alternative A and cable alignments A & B)	Unmitigated	Negative	Local	Short-term	Low	Intermittent	Low	High	Probable	Low	Medium
	Mitigated	Negative	Site specific	Short-term	Low	Intermittent	Low	High	Improbable	Low	Medium

Table 9 Impact assessment of social impacts associated with the operation of the ACE Cable System

Description and Nature of Impact	**Mitigation**	**Nature** (Positive, Negative, Neutral)	**Spatial Extent** (Low, Medium, High)	**Duration** (Very low, Low, Medium, High)	**Intensity** (Low, Medium, High)	**Frequency** (Once off, Intermittent, Periodic, Continuous)	**Irreplaceable loss of resources** (Low, Medium, High)	**Reversibility of impacts** (Low, Medium, High)	**Probability**	**Significance** (Low, Medium, High)	**Confidence** (Low, Medium, High)
Disruptions to the offshore fishing industry	Unmitigated	Negative	National	Permanent	Medium	Continuous	Low	High	Definite	Medium-Low	Medium
	Mitigated	Negative	National	Permanent	Low	Continuous	Low	High	Definite	Low	Medium
Improved telecommunication network	Unmitigated	Positive	National	Long-term	Medium	Continuous	Low	High	Definite	High	High
	Mitigated	Positive	National	Long-term	Medium	Continuous	Low	High	Definite	High	High

9.2 What impacts will the construction and operation of the ACE Cable System have on the natural environment (flora and fauna)?

Marine Environment

The proposed marine cable is expected to have some direct impact on flora (sea weeds, benthic organisms, etc.) within the study area during construction of the cable system through cable burial activities. These impacts are, however, limited mainly to the seabed (benthos) and will be limited to the actual cable alignment (less than 5 m wide corridor). The long term impacts of the marine telecommunications cable on the benthic environment (both fauna and flora) is, however, expected to be positive due to the implementation of the legislated buffer zone (500 m either side of the cable) as defined in the Marine Traffic Act (Act No. 2 of 1981) read together with the Maritime Zones Act (Act No. 15 of 1994). This buffer zone effectively protects this environment from disturbance due to bottom trawling activities, mineral exploration and the anchoring of vessels. As such, the long term direct benefits to the marine environment is expected to outweigh the short term negative impacts associated with the laying and burial of the marine cable.

Terrestrial Environment

The study area has been extensively modified by anthropogenic impacts in the form of urban development. Much of the terrestrial environment within the study area falls within the residential settlements of Van Riebeeckstrand and Duynefontein, with a small section of the project footprint falling within a natural area between the coastline and the residential areas of Van Riebeeckstrand.

Given that most of the study area occurs within the urban environment and highly modified natural environments the impacts on fauna and flora are expected to be low. Findings from the specialist studies commissioned have confirmed the above and with mitigation the impacts on fauna and flora within the study area is considered to be minimal. The preferred landing alternative and cable Alignment A has been shown to have the least impacts and as such the alternative supported by the specialists. One possible mitigation measure not considered by most specialists is the technology alternative of horizontal drilling to pass the cable from the BMH underground to the beach environment. The EAP did however mention this technology alternative to the appointed specialists and feedback from the specialists have shown that although less visually intrusive horizontal drilling does not have any significant advantage over trenching given the highly modified state of the dune slack wetland and the continuous movement of the primary dune cordon. Provided the proposed mitigation measures put forward by the specialists are implemented on site the impacts of both trenching and horizontal drilling is expected to be low and not have a significant impact on fauna and flora within the project area.

From the preferred cable landing site at Alternative A the proposed cable alignment to the CLS site does not have any potential fatal flaws associated with the proposed alignment. Similarly, no fatal flaws were identified along the Alternative B cable alignment which intersects the Alternative A alignment near Otto du Plessis Drive. As such, from Otto du Plessis Drive two possible cable alignments can be utilised to reach the CLS site as shown below (Figure 32). Although the impacts of the alignment on vegetation along Atlantic Avenue is higher than the Alternative A which follows an existing servitude from Otto du Plessis Drive to the CLS site, this alternative is not considered to have a significant impact on vegetation and with the proposed mitigation measures put forward most of the impacts can be mitigated. The advantages of having two possible alignments from Otto du Plessis Drive to the CLS site are that it provides MTN with two possible cable alignment alternatives to reach the CLS site from Otto du Plessis Drive.

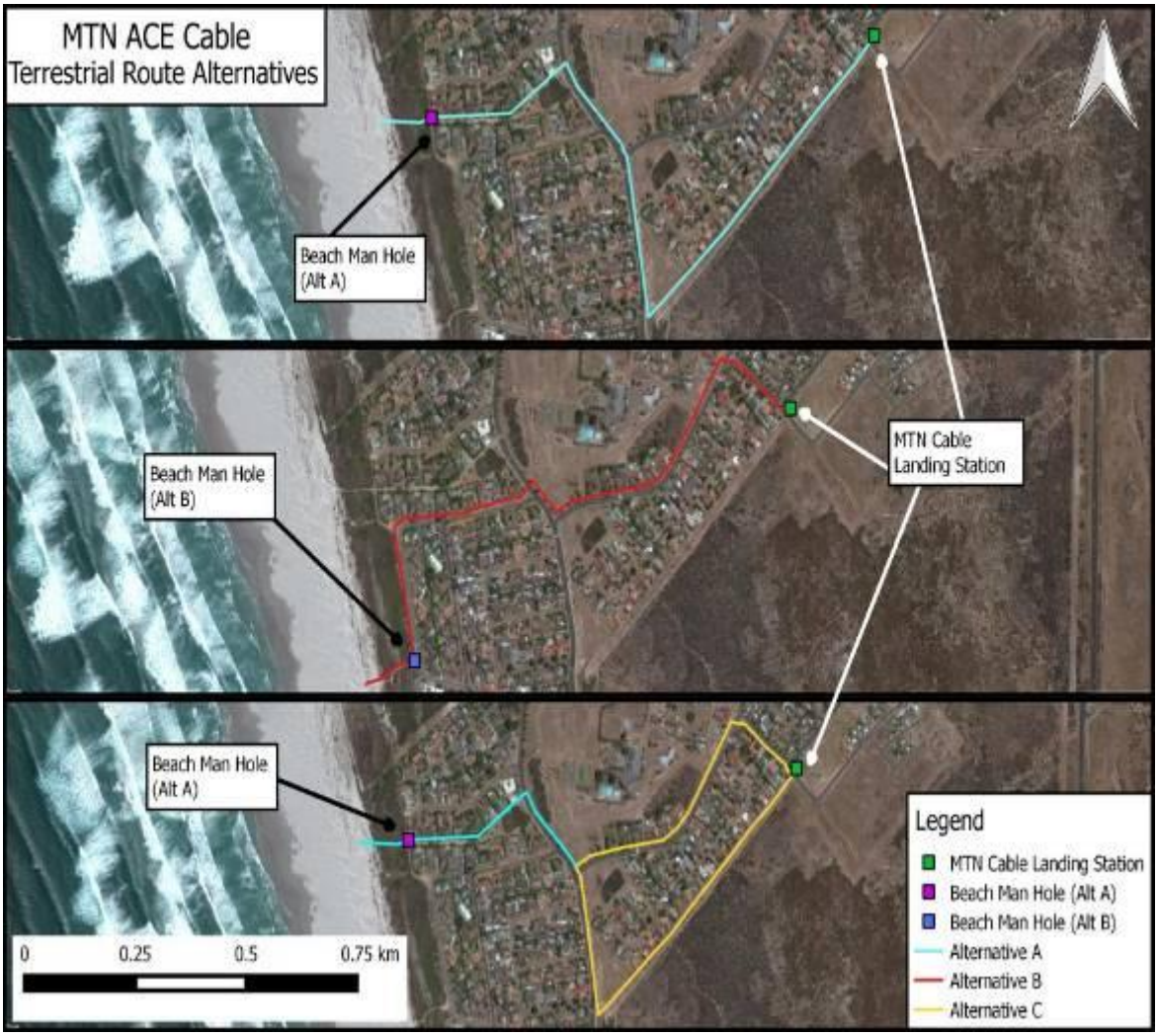


Figure 32 **Preferred landing Alternative A and the possible cable alignments to the CLS site in Duynefontein (Alternative C above)**

Table 10 Impact assessment on fauna and flora associated with the construction of the ACE Cable System

Description and Nature of Impact	**Mitigation**	**Nature** (Positive, Negative, Neutral)	**Spatial Extent** (Low, Medium, High)	**Duration** (Very low, Low, Medium, High)	**Intensity** (Low, Medium, High)	**Frequency** (Once off, Intermittent, Periodic, Continuous)	**Irreplaceable loss of resources** (Low, Medium, High)	**Reversibility of impacts** (Low, Medium, High)	**Probability**	**Significance** (Low, Medium, High)	**Confidence** (Low, Medium, High)
Loss of vegetation and habitat at Landing Alternative A and along cable Alignment A	Unmitigated	Negative	Site-specific	Medium-term	Low	Once-off	Moderate	Low	Highly probable	Low	High
	Mitigated	Negative	Site-specific	Short-term	Negligible	Once-off	High	Low	Probable	Low	High
Loss of vegetation and habitat at Landing Alternative A and along cable Alignment B from Otto du Plessis Drive	Unmitigated	Negative	Site-specific	Medium-term	Low	Once-off	High	Low	Highly probable	Medium-Low	High
	Mitigated	Negative	Site-specific	Short-term	Negligible	Once-off	High	Low	Probable	Low	High
Impacts on Fauna at Landing Alternative A and along terrestrial cable alignments	Unmitigated	Negative	Site-specific	Short-term	Low	Once-off	High	Low	Probable	Low	High
	Mitigated	Negative	Site-specific	Short-term	Negligible	Once-off	High	Low	Improbable	Low	High

During operation, no impacts on the natural terrestrial environment (flora and fauna) are anticipated.

9.3 What impacts will the construction and operation of the ACE Cable System have on the fishing industry?

The offshore alignment of the proposed ACE Cable System passes through the trawling grounds of the demersal trawling industry and will impact on the fishery through the restriction of fishing activities either side of the telecommunications cable (the requirement for a "no-fishing" (exclusion) zone on either side of submarine cables is defined in the Marine Traffic Act (Act No. 2 of 1981) read together with the Maritime Zones Act (Act No. 15 of 1994)). It must be noted that, although MTN has made every effort to follow existing cable alignments and their exclusion zones, the ACE Cable System will result in some additional exclusion areas which could have an impact on the fishing industry. It must be noted however that the additional exclusion zone is not expected to have an impact on the total amount of fish caught as it is envisaged that more effort will be spent trawling in other areas within the fishing grounds to make up the allocated fish quotas.

An investigation into the possible impacts these additional exclusion zones will have on the demersal trawling industry has shown that of the approximately 14 fishing sectors that operate within South African waters, two are likely to be affected by the exclusion zone of the ACE Cable system namely the demersal and long line fisheries as both of these fishing sectors deploy gear on the seabed and their grounds coincide with the proposed cable route.

Following a review of the trawl and fishing records for the period 2005 – 2014 an average of 40 long lines per year were set directly across the proposed cable routing at a depth range of 260 m to 600 m. This amounts to less than 1% of the total effort expended by the fishery on a national level. Similarly, within the trawling fishery the exclusion zone for the proposed routing would cover 187 km^2 or 0.3% of the ground available to the offshore trawl fishery. Over the period 2010 to 2014, an average of 845 trawls has crossed the proposed routing of the ACE Cable system each year (2.1% of the total effort expended by the fishery).

The impact of the proposed cable on the demersal trawl fishery is expected to be of local extent, long-term duration, and of medium intensity but can be mitigated to some extent by burying as much of the cable as possible and by following as best possible the alignment of existing marine cables so as to consolidate the exclusion zones into one area and not randomly bisect the fishing grounds. The current offshore alignment of the proposed ACE Cable System does to a degree achieve the above with its proposed alignment closely following that of the SAT-2 cable (currently out of service) and the South Atlantic 3/West Africa Submarine Cable (SAT3/WASC) which both land at Melkbosstrand on the West Coast of South Africa. This alignment was followed in order to minimise the impact of the ACE Cable System to other seabed users especially the trawling industry.

Based on discussions between the social specialist and the fishing association it is estimated that for every 1000 tons of lost catch, the industry sheds 10 jobs (Pope, J., and Augustyn, J., Pers. Comm., 2016). A Fisheries Specialist Study undertaken as part of the EIA has confirmed that the proposed cable is unlikely to have a significant impact on the fishing industry as the new exclusion zone will account for less than 0.3% of the current trawling area. Based on the estimations above, and catch figures from 2016 provided in the Fisheries Specialist Study, the loss of 0.3% of the fishing grounds will equate to four jobs in the industry being lost. Considering the above, and the potential macro benefits associated with improved telecommunications infrastructure in South Africa, the impact on the fishing industry is not considered to be a significant negative impact which could potentially halt the approval of the proposed development.

Table 11 Impact assessment on the offshore fisheries sector associated with the construction and operation of the ACE Cable System

Description and Nature of Impact	**Mitigation**	**Nature** (Positive, Negative, Neutral)	**Spatial Extent** (Low, Medium, High)	**Duration** (Very low, Low, Medium, High)	**Intensity** (Low, Medium, High)	**Frequency** (Once off, Intermittent, Periodic, Continuous)	**Irreplaceable loss of resources** (Low, Medium, High)	**Reversibility of impacts** (Low, Medium, High)	**Probability** (Low, Medium, High)	**Significance** (Low, Medium, High)	**Confidence** (Low, Medium, High)
Impact on the demersal trawling and long-line fisheries	Unmitigated	Negative	Site-specific	Long-term	Low	Continuous	Low	High	Definite	Low	High
	Mitigated	Negative	Site-specific	Long-term	Low	Continuous	Low	High	Definite	Low	High

9.4 What impacts will the construction and operation of the ACE Cable System have on the wetlands within the study area?

The proposed ACE Cable System will have an impact on two wetlands within the terrestrial environment, namely the dune slack wetland between the beach and residential areas of Van Riebeeckstrand and a small artificial depression wetland near the CLS site. Both wetlands have been extensively modified and impacted through urban development and the management of storm water, with the dune slack wetland having a PES rating of E (highly disturbed) and the artificial wetland not being considered to play any important ecological function.

Although the dune slack wetland has a PES rating of E (highly modified) it still provides essential ecological services within the area and has been rate to be of moderate conservation importance due to the following:

- ❒ The wetland fulfils some functional roles within the catchment, with at least some of the indirect regulating and supporting ecosystem services likely to be provided to an intermediate extent by the wetland.
- ❒ The wetland provides habitat to some indigenous flora and fauna, especially in the more natural pockets of the wetland that are still ecologically intact.
- ❒ The wetland represents a degraded but threatened habitat type, namely a dune slack wetland within an Endangered vegetation type (Cape Flats Dune Strandveld)
- ❒ The wetland is of a reasonable size, forming part of a more extensive, discontinuous “string” of dune slack wetlands along the coastal dune field.

From a faunal importance perspective, the dune slack wetland does not hold significant conservation value. This was confirmed in the faunal specialist study for the by Todd (2016), who concluded that the diversity of amphibians within the affected area is likely to be relatively low and that the impacts on amphibians that could result from the proposed cable installation, if any, are likely to be of low significance.

Of the two landing alternatives assessed Alternative A has been identified by the wetland specialist as the preferred landing alternative as the distance from the dune cordon to the proposed BMH is shorter than the alternative landing site B. Alternative landing site A and the proposed alignment of the cable to the BMH through this section of the wetland will also result in less disturbance to the surrounding vegetation as compared to alternative landing site B where vegetation is in a better condition (pockets of natural vegetation) than the vegetation found within the dune slack wetland near alternative landing site A.

Given the level of disturbance in the dune slack wetland and the limited impacts associated with the trenching and placement of the cable through this wetland it is the EAPs opinion that no significant negative impact will result from the proposed development should the project be authorised. In addition to the above, the mitigation measures proposed by the appointed wetland specialist and those incorporated in the EMPr should mitigate any impacts on the wetland associated with this development. As stipulated by the specialist it is advisable that any rehabilitation works required be overseen by a botanist with knowledge of wetland and Strandveld rehabilitation.

Table 12 Impact assessment on fauna and flora associated with the construction of the ACE Cable System

Description and Nature of Impact	**Mitigation**	**Nature** (Positive, Negative, Neutral)	**Spatial Extent** (Low, Medium, High)	**Duration** (Very low, Low, Medium, High)	**Intensity** (Low, Medium, High)	**Frequency** (Once off, Intermittent, Periodic, Continuous)	**Irreplaceable loss of resources** (Low, Medium, High)	**Reversibility of impacts** (Low, Medium, High)	**Probability**	**Significance** (Low, Medium, High)	**Confidence** (Low, Medium, High)
Direct loss of artificial wetland at CLS site	Unmitigated	Negative	Site-specific	Permanent	**Not applicable (no loss of wetland with mitigation of avoidance)**						High
	Mitigated	Negative	Site-specific	Permanent	**Not applicable (no loss of wetland with mitigation of avoidance)**						High
Loss of vegetation and associated habitat within dune slack wetland and surrounding buffer area	Unmitigated	Negative	Site-specific	Short-term	Low	Once-off	Low	High	High	Low	High
	Mitigated	Negative	Site-specific	Short-term	Negligible	Once-off	Low	High	Low	Low	High
Sedimentation of open water areas within dune slack wetland	Unmitigated	Negative	Site-specific	Medium-term	Low	Once-off	Low	Low	Low	Low	High
	Mitigated	Negative	Site-specific	Short-term	Negligible	Once-off	Low	High	Improbable	Very Low	High
Destruction and/or damage to wetland areas, as a result of construction-related activities	Unmitigated	Negative	Site-specific	Short-term	Low	Once-off	Low	Low	Low	Low	High
	Mitigated	Negative	Site-specific	Short-term	Negligible	Once-off	Low	Low	Improbable	Very Low	High
Pollution of wetlands, as a result of contaminated runoff from construction areas	Unmitigated	Negative	Site-specific	Short-term	Low	Once-off	Moderate	Low	Low	Low	High
	Mitigated	Negative	Site-specific	Short-term	Negligible	Once-off	High	Low	Improbable	Very Low	High

Contamination of soils and underlying sub-surface water through infiltration of construction related pollutants	Unmitigated	Negative	Site-specific	Short-term	Low	Once-off	Moderate	Low	Probable	Low	High
	Mitigated	Negative	Site-specific	Short-term	Negligible	Once-off	High	Low	Improbable	Very Low	High

9.5 What impact will the construction and operation of the ACE Cable System have on the beach and dune cordon at Van Riebeeckstrand?

The dune cordon at Van Riebeeckstrand lies leeward of a wide dissipative beach. The cordon comprises of a number of dune structures and a wide, permanently wet dune cordon. Recent imagery indicates that previously stable portions of dune have become more transgressive in nature and that the dune slack is an important stabilising feature within the area.

Dunes are formed as a result of a number of drivers in the near shore and supra tidal environment which are driven by bio-physical processes. These processes are often interdependent and when changes in any one of following drivers occurs the morphology of the coastal dune cordon can change drastically:

- Wind and wave regimen.
- Climate state.
- Beach morphology.
- Vegetation cover.

Due to the dynamic nature of dune systems and the numerous factors at play which influence the morphology and function of these dune systems, the construction of the ACE Cable System may have an impact on the dune cordon at Van Riebeeckstrand. However, impacts on the dune cordon are only expected to be temporary in nature, limited to the construction phase of the proposed development and highly localised.

Findings from the specialist study undertaken have identified landing alternative A as the preferred land site for the ACE Cable System due to the fact that the cable alignment for Alternative A aligns with a section of the dune cordon that shows a singular large transverse dune and is considered more stable than the dune cordon at landing alternative site B where the dune cordon consists of two transverse dune structures. The dune cordon at alternative landing site A is also un-vegetated which reduces the impacts on dune vegetation associated with the excavation and placement of the cable through the dune cordon.

Following discussions with the appointed specialist with regards to possible technology alternatives for installing the cable through the dune cordon two technologies were assessed namely trenching and horizontal drilling. When considering the two technologies it was found that there were no significant benefits for selecting one construction method over the other and that both construction methods would result in impacts deemed to be of low significance which can be mitigated. Given that horizontal drilling is a very expensive construction method, does not result in any significant benefit in terms of impacts and that construction is likely to take longer than if the cable was installed through trenching this construction method has been deemed to be unnecessary. As such, the preferred construction method to install the cable through the dune cordon is trenching with rehabilitation and shaping taking place immediately after construction has been completed.

Table 13 Impact assessment on the dune cordon associated with the construction of the ACE Cable System

Description and Nature of Impact	**Mitigation**	**Nature** (Positive, Negative, Neutral)	**Spatial Extent** (Low, Medium, High)	**Duration** (Very low, Low, Medium, High)	**Intensity** (Low, Medium, High)	**Frequency** (Once off, Intermittent, Periodic, Continuous)	**Irreplaceable loss of resources** (Low, Medium, High)	**Reversibility of impacts** (Low, Medium, High)	**Probability**	**Significance** (Low, Medium, High)	**Confidence** (Low, Medium, High)
Impact on the dune cordon at Landing Alternative A	Unmitigated	Negative	Site-specific	Short-term	High	Once-off	Low	High	High	Low	High
	Mitigated	Negative	Site-specific	Short-term	Medium	Once-off	Low	High	High	Low	High
Impact on the dune cordon at Landing Alternative B	Unmitigated	Negative	Site-specific	Short-term	High	Once-off	Low	High	High	Medium	High
	Mitigated	Negative	Site-specific	Short-term	Medium	Once-off	Low	High	High	Low	High

9.6 What effects will the construction of ACE Cable System have on cultural and heritage resources, including any paleontological resources (if any are identified during the study)?

In terms of the National Heritage Act, it is necessary to appoint a heritage practitioner to determine if any cultural heritage resources occur along the proposed alignment of the ACE Cable System or if there are any in the vicinity which may need to be avoided by the cable alignment.

Terrestrial infrastructure and cable alignments

In terms of the preferred cable alignment from a heritage point of view both of the terrestrial cable alignments assessed are not anticipated to have any significant impact on heritage resources and either alignment would be supported from a heritage perspective. No archaeological remains were identified on the surface at either of the proposed beach landing sites or the proposed cable alignments to the CLS site. From a surface survey of the onshore area (a distance of 1.5 km), it was determined that impacts to archaeological and palaeontological heritage are likely to be low.

In addition to the above, any sub-surface archaeological remains within the cable alignments will have been significantly disturbed by the construction of 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 to the CLS site.

Offshore cable alignments

Offshore two alternative shallow water alignments, a northern route and a southern route, starting about 50 km offshore 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 - The wreck on the database was a small fishing boat named Rooibok lost at sea on 21 December 1973) however, after a review of the side-scan sonar mosaic images, it was determined that the anomaly did not represent a wreck

Based on the results of the survey results no impacts on heritage resources are expected for either of the offshore alignments proposed. The preferred shallow water offshore alignment is however the northern alignment as the southern shallow water alignment will require the ACE Cable System to cross the SAFE and SAT-2 Cable Systems which is not desirable from an installation and operational perspective

Findings of the heritage assessments undertaken have been submitted to the 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). A Notice of Intent to Develop (NID) was submitted to HWC who did not request any further studies as part of the EIA process. It is the EAPs opinion that provided the mitigation measures put forward to protect heritage resources are implemented during construction no significant impact on heritage resources are anticipated to be associated with the installation and operation of the ACE Cable System.

Table 14 Impact assessment on the dune cordon associated with the construction of the ACE Cable System

Description and Nature of Impact	**Mitigation**	**Nature** (Positive, Negative, Neutral)	**Spatial Extent** (Low, Medium, High)	**Duration** (Very low, Low, Medium, High)	**Intensity** (Low, Medium, High)	**Frequency** (Once off, Intermittent, Periodic, Continuous)	**Irreplaceable loss of resources** (Low, Medium, High)	**Reversibility of impacts** (Low, Medium, High)	**Probability**	**Significance** (Low, Medium, High)	**Confidence** (Low, Medium, High)
Impact on onshore heritage resources	Unmitigated	Negative	Site-specific	Long-term	Low	Once-off	High	Low	Low	Low	High
	Mitigated	Negative	Site-specific	Long-term	Low	Once-off	High	Low	Low	Low	High
Impact on offshore heritage resources	Unmitigated	Negative	Site-specific	Long-term	Low	Once-off	High	Low	Low	Low	High
	Mitigated	Negative	Site-specific	Long-term	Low	Once-off	High	Low	Low	Low	High

9.7 What cumulative impacts will the construction of ACE Cable System have?

A cumulative impact is an incremental impact upon the environment that results from the impact of a proposed action when added to past, existing and reasonably foreseeable future actions which can be both positive and negative in nature. In the case of the proposed ACE Cable System the cumulative impact associated with the proposed development is expected to be positive overall with the cable system unlocking potential investment in South Africa through increased band width and internet connectivity to the rest of the world.

One negative cumulative impact associated with the proposed development is the loss of fishing grounds to the deep sea demersal trawling and long lining industry due to the exclusion zone to be implemented around the offshore cable alignment. This impact is however not considered to be a significant cumulative impact as studies have shown that trawling still takes place within these cable exclusion zones and the impact associated with the proposed development on the trawling industry is expected to only result in a small reduction in catches and fishing effort within the cable exclusion zone. In addition to the above, annual fish quota allocations to the fishing industry are defined by the permits issued to the fisheries participants and as such, it is envisaged that the proposed ACE Cable System will not impact on the amount of fish caught but rather the level of fishing effort expended in certain areas within the fishing grounds.

Based on the potential negative impacts expected on the fishing industry and the potential for future development in South Africa through the provision of additional band width and data connectivity it is the EAPs opinion that the potential future investment and job creation opportunities in South Africa associated with the ACE Cable System far outweighs the negative cumulative impacts associated with the proposed development on the fishing industry.

Table 15 Cumulative Impact assessment associated with the construction of the ACE Cable System

Description and Nature of Impact	**Mitigation**	**Nature** (Positive, Negative, Neutral)	**Spatial Extent** (Low, Medium, High)	**Duration** (Very low, Low, Medium, High)	**Intensity** (Low, Medium, High)	**Frequency** (Once off, Intermittent, Periodic, Continuous)	**Irreplaceable loss of resources** (Low, Medium, High)	**Reversibility of impacts** (Low, Medium, High)	**Probability**	**Significance** (Low, Medium, High)	**Confidence** (Low, Medium, High)
Cumulative impact on the offshore demersal and long line fisheries	Unmitigated	Negative	Local	Long-term	Low	Continuous	Low	High	Definite	Low	High
	Mitigated	Negative	Local	Long-term	Low	Continuous	Low	High	Definite	Low	High
Cumulative impact on the South African socio-economic environment	Unmitigated	Positive	National	Long-term	High	Continuous	Low	Low	Definite	High	High
	Mitigated	Positive	National	Long-term	High	Continuous	Low	Low	Definite	High	High

10. ENVIRONMENTAL MANAGEMENT PROGRAMME

This has been prepared as a stand-alone document and is provided in Appendix 8.

11. ENVIRONMENTAL IMPACT STATEMENT

Over the past two years MTN (Pty) Ltd (MTN) has investigated various options of a submarine telecommunications cable, referred to as the Africa Coast to Europe (ACE) Cable System, linking South Africa, the West Coast of Africa and Europe with key international telecommunication hubs in Europe. 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.

Submarine telecommunication cables are important for international telecommunication networks as they transport almost 100% of the transoceanic Internet traffic throughout the world. It is widely recognised that access to affordable international bandwidth is key to economic development in every country. As such, the improvement in Africa's information technology infrastructure via telecommunication cables will remove one of the current key inhibitors to development in Africa and support economic growth and opportunities on the continent.

While the ecological impact of marine telecommunications cables is known to be minimal, low-level environmental effects must be taken into consideration prior to construction commencing as both marine and terrestrial impacts will be caused by the installation of the cable system and caution must be exercised to ensure there will be no damaging impact on the local ecology or civil infrastructure. Following Scoping and the distillation of issues and associated potential impacts, six Specialist Studies were undertaken during the Environmental Impact Assessment Phase to further investigate the key issues, identify and assess potential impacts and the mitigation thereof.

Terrestrial Environment

The Vegetation and Ecology, Wetland and Beach and Coastal Dune Dynamics Assessments identified sensitive areas within the proposed development footprint including a dune slack wetland, Dune Strandveld vegetation type and a Critical Biodiversity area adjacent to the proposed project area. Other than the dune slack wetland the other sensitive areas can be avoided entirely by the proposed development and no impacts on these sensitive areas are expected. Land use over the majority of the terrestrial component of the project area consists typically of urban areas which has significantly altered the natural ecological processes and vegetation cover within the area. Disturbances include formalised urban developments, service infrastructure, roads and storm water management infrastructure.

Disturbance to the dune slack wetland through construction and implementation of the proposed ACE Cable System is not anticipated to have any significant impact on the dune slack wetland given its current condition and that it is routinely impacted upon through the maintenance of storm water management infrastructure located within the wetland and dune cordon at Van Riebeeckstrand. The dune slack wetland was rated by the appointed specialist to be of moderate conservation importance as it provides the following:

- Fulfils some functional roles within the catchment, with at least some of the indirect regulating and supporting ecosystem services likely to be provided to an intermediate extent by the wetland.
- Provides habitat to some indigenous flora and fauna, especially in the more natural pockets of the wetland that are still ecologically intact.
- Represents a degraded but threatened habitat type, namely a dune slack wetland within an Endangered vegetation type (Cape Flats Dune Strandveld)

- Is of a reasonable size, forming part of a more extensive, discontinuous "string" of dune slack wetlands along the coastal dune field.

Although considered a sensitive environment all of the potential construction and operational related impacts associated with implementation the proposed ACE Cable System were rated by the specialist to be of low to very low significance even without mitigation, largely due to the short-term nature of most of these impacts. With mitigation, all of the impacts on the dune slack wetland would be of very low significance or would be avoided altogether.

Heritage resources within the proposed study area are known to occur but following an assessment by the Heritage specialist it was found that while LSA shell middens may be buried under the surface within the residential development of Van Riebeekstrand and Duynefontein, no archaeological remains were identified on the surface at either landing site or the proposed cable alignments to the CLS site. From a surface survey of the onshore area (a distance of 1.5 km), it was determined that impacts to archaeological and palaeontological heritage are likely to be low. Any sub-surface archaeological remains within the cable alignments will have been significantly disturbed by the construction of 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 to the CLS site. If this occurs work must stop and Heritage Western Cape must be notified immediately. No impacts on heritage resources within the marine environment are anticipated.

The coastal dune cordon at Van Riebeekstrand has been shown to presently be a mobilising system where engulfment by sediments of the formerly vegetated dunes is seeing a leeward migration of dunes and some engulfment of vegetation. Such transgression of the dune structures has arisen since 2010 and may be a response to changing maritime and meteorological factors. The proposed landing of a sub-surface cable at Van Riebeekstrand will require the trenching of portions of the intertidal, back beach and dune cordon, in order to allow for the cable to connect with land based infrastructure. Following due consideration of the state of the two site options for the landing of the cable at Van Riebeeckstrand, landing Alternative A is the preferred landing alternative as it will result in limited disturbance to the prevailing dune morphology and has less vegetation cover. With mitigation, the impacts on the coastal dune cordon due to construction is considered not to be significant.

<u>Marine Environment</u>

The offshore demersal trawl fleet is based predominantly in the ports of Cape Town and Saldanha Bay and operate extensively off the West Coast. Trawl gear is towed along bathymetric contours and would be expected to cross the proposed cable route perpendicularly at a depth range of between 200 m and 750 m. The additional exclusion zone of the new cable would cover approximately 0.3% (187 km^2) of the total ground available to the fishery. Fishing activity in the vicinity of the cable routing is equivalent to less than 1% of the total effort expended by the fishery on a national level. The impact of this exclusion on the fishery is expected to be of low intensity (where fishing could continue in a slightly modified way) and of overall low significance due to the localised extent of the impact.

Although impacts on the benthic environment will occur during cable installation the long-term impact on the benthic environment is considered to be positive as the exclusion zones around marine telecommunications cables act as refuges for fish species and benthic organisms where fishing and disturbance to the benthos is not permitted by fishing vessels. Overall the ACE Cable system will ensure that an additional 187 km^2 of ocean floor is offered some level of protection over the next 25 years (approximate lifespan of a marine telecommunications cable).

Conclusion

Provided mitigation measures as recommended in this report are implemented and construction is undertaken in accordance with specifications contained within the EMPr, no significant negative environmental impacts are anticipated from the construction and operation of the ACE Cable System. A summary of the key impacts is provided in below, which describes the nature, intensity, duration, extent and significance of the key impacts, with mitigation.

Assessment of key impacts of the proposed ACE Cable System on the environment

Description of Impact	Nature of Impact	Intensity	Duration	Extent	Significance without Mitigation	Significance with Mitigation
Improved bandwidth and telecommunications capacity in South Africa	Positive	Medium	Long - Term	National	High	N/A
Potential damage to existing infrastructure (pathway between Dunker and Edward Crescent)	Negative	High	Long - Term	Local	High	Low
Disruption of access to local residents	Negative	High	Short - Term	Local	Medium	Low
Employment creation	Positive	Medium	Short - Term	Local	Low	Low
Disturbance to local residents (construction)	Negative	High	Short - Term	Local	High	Low
Impact Heritage resources	Negative	High	Long - Term	Local	Medium - Low	Low
Cumulative effects on the biophysical environment (Construction)	Negative	High	Short - Term	Local	Medium	Low
Cumulative effects on the biophysical environment (Operations)	Negative	Low	Long - Term	Local	Low	Low
Cumulative impacts on the social environment (Construction)	Negative	High	Short - Term	Local	Medium	Low
Impact on the fishing industry	Negative	High	Long - Term	Regional	Medium	Low
Impact on dune slack wetland	Negative	High	Short - Term	Local	Low	Low
Impact on beach and coastal dunes	Negative	High	Short - Term	Local	Medium	Low
Impact on Critical Biodiversity Areas and Cape Flats Dune Strandveld	Negative	High	Short - Term	Local	Medium	Low

12. RECOMMENDATION OF THE EAP

It is the professional opinion of the Environmental Assessment Practitioner that the proposed construction and operation of the ACE Cable System should be granted environmental authorisation by the Department of Environmental Affairs.

After investigations and assessment, the key issues identified during this study are the potential impacts on the natural environment, potential impacts on primary dunes, potential impacts on the fishing industry, potential impacts on wetlands and potential social and socio-economic impacts and benefits. Provided mitigation measures, as recommended in this report, are implemented and construction is undertaken in accordance with specifications contained within the Environmental Management Programme (EMPr), no significant negative environmental impacts are anticipated from the construction and operation of the ACE Cable System.

Based on the above authorisation for the following project components are recommended for the ACE Cable System:

Marine Environment

- ❑ The proposed deepwater cable alignment.
- ❑ The proposed northern shallow water cable alignment.

Terrestrial Environment

- ❑ Proposed cable landing Alternative A
- ❑ Proposed Beach Man Hole at Alternative A
- ❑ Proposed cable alignment from landing Alternative A to the Cable Landing Station (CLS) in Duynefontein. From Otto du Plessis drive to the CLS the Alternative B alignment can also be authorised as an alternative to the Alternative A alignment (refer Figure 31)

It is the opinion of the Environmental Assessment Practitioner that the activity should be authorised, with the following conditions included in the Environmental Authorisation issued:

PROTECTION OF PROPERTY

- ❑ The City of Cape Town must be consulted with regards to the removal and replacement of paving along the paved walkway between Dunker Street and Edward Crescent.
- ❑ Prior to the commencement of any construction activities, a rehabilitation plan (as required by the City of Cape Town) must be drafted by the applicant and approved by the City of Cape Town for the reinstatement of the construction footprint. This rehabilitation plan must outline the rehabilitation activities to be undertaken and the method in which city infrastructure will be reinstated should construction impact on any structures, roads and pathways.
- ❑ The Contractor must identify and demarcate the extent of the site and associated work areas. Appropriate barriers and easily understood signage must be in place to block public access to unsafe areas.
- ❑ If the construction footprint and construction activities block a regularly used public access route/s, then a suitable alternative/s public access route/s must be identified and demarcated accordingly.

- ❑ The size of the construction footprint must be kept to a minimum by constructing suitable boundaries to avoid infringement of the development on the natural habitat.
- ❑ All no-development areas must be clearly demarcated (e.g. fencing or hazard tape). The type of demarcation used must be robust enough to remain intact during the entire construction phase.

EMERGENCY EVACUATION FROM SITE

- ❑ The emergency evacuation plan as required by the City of Cape Town for construction within the PAZ of Koeberg must be issued to each contractor on site and the ECO and RE must ensure that all contractors are aware of and understand the contents of the emergency evacuation plan.

PROTECTION OF WETLANDS, BEACH AND COASTAL DUNE ENVIRONMENT

- ❑ A detailed survey should be undertaken of the route in order to identify the extent of the wet dune slack and the topography of the affected dune environment, in order to allow for the reinstatement of these systems to mimic the present morphology, once the cable has been laid.
- ❑ The route should be cordoned with possible shuttering being applied within the trench to reduce the need to establish a wider excavation to meet the required minimum depth.
- ❑ Trenching and excavation to a depth greater than 5 m (and as deep as 10 m) should apply at points above the high-water mark (back beach, frontal dune cordon and dune heel) during the establishment phase to avoid cable exposure where dune mobility occurs.
- ❑ Once all trenching and backfilling has been completed, following the laying of the cable, it is proposed that the dune be reinstated and sculpted to mimic the pre-construction state.
- ❑ Stabilisation of the dune should be undertaken on a temporary basis utilising geofabric or related materials.
- ❑ An alternative pedestrian walkway should be established during the restoration stage of the project to prevent foot traffic across the destabilised area of dune.

OFFSHORE FISHERIES

- ❑ Align the new cable as close as possible to the existing cables in order to prevent the exclusion zone from expanding and limiting potential cumulative impacts.

PROTECTION OF FAUNA AND FLORA

- ❑ Construction work must be confined to the construction sites and interference with indigenous plant and animal species must be avoided.
- ❑ Any plants or trees of value, close to or within the cable servitude that will remain, must be marked and must not be disturbed, defaced, destroyed or removed.
- ❑ Cable alignment must avoid the intact Cape Flats Dune Strandveld identified to the south of the proposed CLS site.

- Four Canary Island Date Palms are located along Otto du Plessis. These trees are mature healthy specimens which should not be destroyed. Should the construction work,for whatever reason, lead to the loss of any of these trees, replacement of the affected tree (with a similar specimen of similar maturity) will be required.
- Several Milkwood trees along the prefered alignment must be screened from construction activities and demarcated as a no-go area for construction activities.

PROTECTION OF HERITAGE RESOURCES

- If any heritage resources (particularly graves) are uncovered during construction, then work must stop, and HWC (Tel: 021 483 9685) must be notified
- Excavations should be monitored by a palaeontologist or archaeologist with appropriate palaeontological knowledge. The frequency of this to be worked out a priority with the contractor to minimize time spent on site.
- If human remains are uncovered during the trenching for the cable, then work in that area must stop, and the ECO should notify HWC.

DISTURBANCE TO SURROUNDING RESIDENTS AND SECURITY MATTERS

- No construction activities should be undertaken outside of standard business hours (8 am – 5 pm).
- Residents adjacent to the areas where construction will be taking place should be informed a week prior to any construction activities taking place.
- Prior to any construction activity that may cause damage to private property, ensure that there is a photographic record of all areas that may be damaged.
- Ensure that any damaged property is repaired immediately and returned to its previous condition.
- Construction teams should be clearly identified by wearing uniforms and/or wearing identification cards that should be exhibited in a visible place on their body.
- Provide notice boards at beach access points detailing the construction period and a map with details of the working areas.
- Clearly demarcate the construction site and any temporary exclusion zones on the beach.

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APPENDIX 1: APPLICATION FOR AUTHORISATION

APPENDIX 2: PUBLIC PARTICIPATION DOCUMENTS

APPENDIX 3: COMMENTS AND RESPONSE REPORT

APPENDIX 4: EAP CURRICULUM VITAE

APPENDIX 5: SPECIALIST REPORTS

APPENDIX 6: EMERGENCY EVACUATION PLAN

APPENDIX 7: SUPPORTING MAPS

APPENDIX 8: ENVIRONMENTAL MANAGEMENT PROGRAMME