APPENDIX 1
BACKGROUND INFORMATION DOCUMENT

1. INTRODUCTION

Alcatel Submarine Networks (ASN) has been contracted to supply and install the proposed 2AFRICA/GERA (East) Cable System connecting Africa to Europe and parts of the Middle East (Figure 1). One of the South African landings proposed at Amanzimtoti, KwaZulu-Natal on the East Coast of South Africa is to be operated by Liquid Telecom as the South African Landing Provider. Liquid Telecom aims to secure local permits to land the 2AFRICA/GERA (East) cable at Amanzimtoti and ACER (Africa) Environmental Consultants (ACER) has been appointed to obtain the required environmental authorisation and permits for this landing.

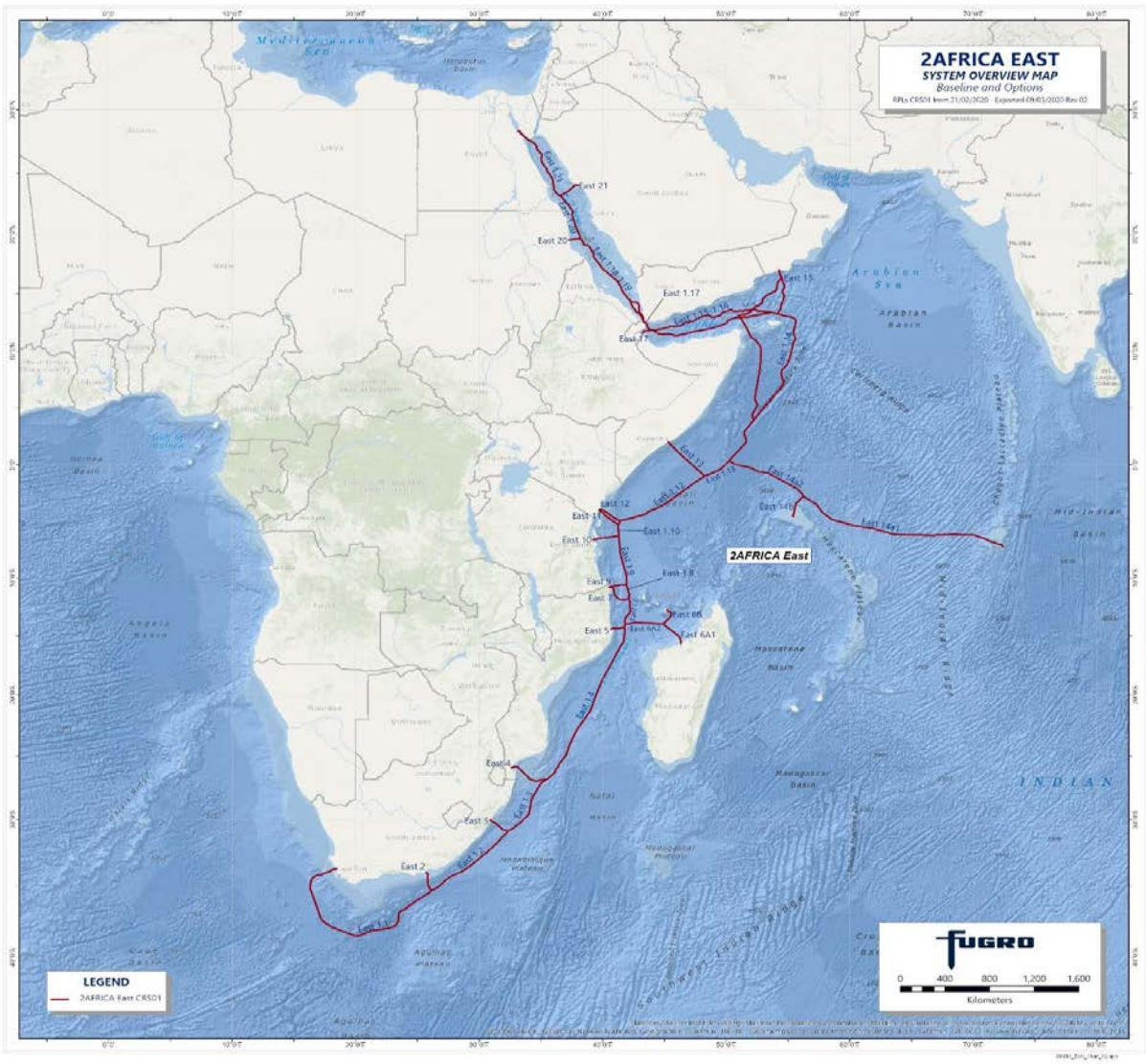

Figure 1 General overview of the proposed 2AFRICA/GERA (East) Cable System

1.1 Purpose of the 2AFRICA/GERA (East) Cable System

Submarine telecommunications cables are important for international telecommunications networks, transporting almost 100% of transoceanic Internet traffic throughout the world (www.iscpc.org). This is significant because it is widely recognised that access to affordable international bandwidth is key to economic development in every country.

Currently, Africa relies primarily on satellites to provide its international communications. Communication via submarine telecommunications 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 telecommunications cables is expected to remove one of the current key inhibitors to development in Africa and support economic growth and opportunities on the continent.

With the landing of the 2AFRICA/GERA (East) Cable System, businesses and consumers will benefit from enhanced capacity and reliability for services such as telecommuting, HD TV broadcasting, Internet services, video conferencing, advanced multimedia and mobile video applications.

Broadband traffic is growing exponentially due to new applications like cloud computing and on-demand video. Furthermore, the demand for new connectivity reflects an end-user and business environment in which ultra-broadband access is essential for sustainable growth and development. In an African and local context, the cable will support the objectives set out by NEPAD and provide a means of fulfilling the South African Government's requirements in terms of digital television broadcasting.

2. PURPOSE OF THIS DOCUMENT

This Background Information Document (BID) provides information about the proposed 2AFRICA/GERA (East) Cable System and the Environmental Impact Assessment (EIA) required for environmental authorization to land the cable at Amanzimtoti in KwaZulu-Natal, South Africa. The BID covers:

- ❑ The purpose of the proposed 2AFRICA/GERA (East) Cable System.
- ❑ Applicable environmental legislation.
- ❑ Project activities.
- ❑ Route alignment and landing site alternatives.
- ❑ Potential issues associated with the proposed cable system.
- ❑ The Environmental Impact Assessment process.
- ❑ Information on how to register as an Interested and/or Affected Party.

3. APPLICABLE ENVIRONMENTAL LEGISLATION

In terms of the requirements of the Environmental Impact Assessment (EIA) Regulations of 2014 (as amended), published under the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA), the installation of the proposed 2AFRICA/GERA (East) Cable System and associated infrastructure triggers several listed activities in GN R. 325 and 327, as detailed in Table 1. This requires the undertaking of a full Scoping and EIA process.

3.1 Environmental Assessment Practitioner

In accordance with the EIA regulations, ACER (Africa) Environmental Consultants was commissioned as the Environmental Assessment Practitioner (EAP) to undertake the EIA for the 2AFRICA/GERA (East) Cable System landing at Amanzimtoti.

Table 1 Listed Activities potentially triggered by the proposed 2AFRICA/GERA (East) Cable System landing at Amanzimtoti

Activity	Reason
Listing Notice 1 (No. R. 327 of 2017)	
Activity 15 The development of structures in the coastal public property where the development footprint is bigger than 50 square metres, excluding - (i) […]; (ii) […]; (iii) […]; or (iv) […].	The project will entail the landing of a marine telecommunications cable at Amanzimtoti Beach. Landing infrastructure includes the cable trench across the beach and into the inter-tidal zone.
Activity 17 Development- a. in the sea; b. […]; 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. […]; ii. […]; iii. […]; iv. […]; or v. infrastructure with a development footprint of 50 square metres or more - but excluding- (aa) […]; (bb) […]; (cc) […]; or (dd) […].	The project will entail the landing of a marine telecommunications cable at Amanzimtoti Beach. This will require the digging of a trench along the beach into the intertidal zone and the installation of the telecommunications cable. Where possible the subsea cable will be buried in the substrate to a depth of 1 m (substrate dependant) up to a water depth of 1,500 m to provide additional protection.
Activity 18 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 […].	Rehabilitation of dune vegetation at Amanzimtoti Beach will be undertaken if construction activities associated with the laying of the underground telecommunications cable disturb vegetation on the shoreline.

Activity	Reason
Activity 19A 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) the seashore; (ii) 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; or (iii) the sea; — but excluding where such infilling, depositing, dredging, excavation, removal or moving - (a) […]; (b) […]; (c) […]; (d) […]; or (e) […].	The project will entail the excavation and deposition of more than 5 m^3 of material within 100 m of the high-water mark of the sea when trenching for, and backfilling of, the marine telecommunications cable takes place.
Listing Notice 2 (No. R. 325 of 2017)	
Activity 14 The development and related operation of- (i) […]; (ii) an anchored platform; or (iii) any other structure or infrastructure – on, below or along the seabed; excluding - (a) […]; or (b) […].	The 2AFRICA/GERA (East) Cable System will be placed on the seabed. In shallow waters (less than 1,500 m in depth) the cable will be buried under the seabed to provide extra protection.
Activity 26 Development-- i. in the sea; ii. […]; iii. within the littoral active zone; iv. […]; 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) […]; b) […]; c) inter- and sub-tidal structures for entrapment of sand; d) […]; e) […]; f) […]; g) […]; 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 trench for the marine cable may result in the entrapment of sand within the inter- and sub-tidal zones. In addition, the trench in which to bury the cable may be construed as an underwater channel.

Activity	Reason
Listing Notice 3 (No. R. 324 of 2017)	
Activity 12 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. d. In KwaZulu Natal (iv) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; (v) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (vi) 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.	Should the preferred Alternative 1 not be used, Alternative 2 may potentially result in clearance of indigenous vegetation within a Critical Biodiversity Area and/or within 100 m inland of the high-water mark of the sea.
Activity 14 The development of— (ii) structure or structures with a physical footprint of 10 square metres or more; where such development occurs— (a) .. (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; d. In KwaZulu Natal (vii) Critical biodiversity areas or ecological support areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; i. Inside urban areas: (aa) Areas zoned for use as public open space; (bb) Areas designated for conservation use in Spatial Development Frameworks adopted by the competent authority, zoned for a conservation purpose; or (cc) Areas seawards of the development setback line or within 100 metres from the high-water mark of the sea if no such development setback line is determined.	Should the preferred Alternative 1 not be used, Alternative 2 may entail development of infrastructure with a physical footprint of more than 10 square meters (Beach Man Hole and ducting towards the CLS) in public open space and/or within a Critical Biodiversity Area and/or within 100 m inland of the high water mark of the sea.

4. PROJECT ACTIVITIES

4.1 Submarine Cable Terminology

- **BU – Branching Unit** is a piece of equipment used in subsea systems that allows the cable to be split to serve more than one destination.
- **BMH – Beach Manhole** is a concrete utility vault where the marine portion of the cable is connected to the terrestrial portion. This is situated at the shoreline above the high-water mark. This is mostly buried with an access port at the ground surface.
- **CLS – Cable Landing Station** is a building that functions as a control centre for the cable system and where the submarine system connects to the domestic telecoms network.

4.2 Description

The proposed branch of the 2AFRICA/GERA (East) Cable System landing at Amanzimtoti extends from the north, running through South Africa's Exclusive Economic Zone and entering South African territorial waters approximately 22 km (12 Nm) from the seashore. The exact position of the final section of the marine portion of the cable will be identified based on a combination of engineering, environmental and economic factors and will require offshore and nearshore surveying of the seabed. However, the proposed general alignment runs roughly parallel to the coastline before veering south-eastwards towards the shore and making landfall at Amanzimtoti Beach. Consideration will be given to existing cable systems within the area.

The installation and operation of a submarine telecommunications cable typically involve the following project activities:

- A Marine Cable Route Survey to determine the suitability of the substrate and topography of the ocean floor. This includes a geophysical survey using echosounders and sonar techniques and a geotechnical survey involving cone penetrometer tests and core sampling and analysis.
- Laying of the cable in the offshore environment, preceded by route clearance and including cable burial to a water depth of 1,500 m.
- The laying of the cable within the shallow water environment is likely to involve a direct shore end operation where the shore end of the subsea cable is installed directly from the main subsea cable installation vessel and floated to the beach landing point using buoys and assisted by small boats and divers. It is then buried in the seabed using the diver jet burial technique.
- The cable will be buried in sediment wherever possible and the route will be adjusted to avoid obvious visible rock and reefs. The aim is to bury the cable to a depth of 1 m where possible.
- Excavations within the intertidal zone to bury the cable before it is anchored into the BMH which will be constructed (if required) directly inland of the beach at the preferred landing point. The BMH is a concrete utility vault where the marine portion of the subsea cable is connected to the terrestrial portion of the cable route.
- On the beach, the cable will be buried to a depth of 2 meters, substrate permitting.
- Construction of a BMH at the preferred landing point (if required). 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).
- Installation of the onshore cable section between the BMH and the CLS. The cable will be installed underground by trenching (if required). Typically, the trench required for cable burial will be 1 m in depth and have a width of approximately 0.5 - 0.7 m depending on the excavator bucket width. Ducting is provided with manholes and other infrastructure installed as required to install and maintain the terrestrial cables.
- Once installed and operational, the system will not require routine maintenance. However, damage of subsea cables is possible and inshore repairs would require divers to expose the cable and to re-bury it after repairs.

It is important to note that if the preferred landing alternative is selected, the 2AFRICA/GERA (East) cable will not require the construction of a BMH or CLS as the METISS[1] submarine cable landing

[1] The Melting Pot Indianoceanic Submarine System (METISS) is a new subsea fibre optic cable system that will connect Mauritius to South Africa. Environmental Authorisation was issued in November 2019 for the METISS landing at Amanzimtoti.

infrastructure will be used. Thus, once the 2AFRICA/GERA subsea cable has been installed into the METISS BMH, no further disturbance to the terrestrial environment will take place, as the 2AFRICA/GERA cable will be accommodated within existing cable sleeves from the METISS BMH to the METISS CLS. If a different landing alternative is selected, it will require construction of all infrastructure apart from the CLS and will result in environmental impacts that would not be incurred by the preferred alternative.

4.3 Project Phases

The project phases are Pre-installation, Installation, Operation and Decommissioning.

4.3.1 Pre-installation

A detailed survey of the sea bottom and geology will be undertaken to inform the proposed cable alignment. Also, a survey will be conducted at the landing site to determine the final alignment of the cable at the shore crossing to access the proposed BMH site at Amanzimtoti.

Route Clearance (RC) and Pre-Lay Grapnel Run (PLGR) operations will be conducted prior to the laying and burial operations 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 or the cable and burial equipment damaged.

A PLGR is required for all areas with planned burial to 1,000 – 1,500 m water depth prior to cable installation. This process will remove all debris on the seabed surface (for example, old fishing nets, ropes/wires and anchor chains) that may obstruct the ploughing process. The PLGR vessel will operate as close to shore as possible and out to sea to the extent of the plough burial depth. Divers will remove debris near shore or avoid debris by doing minor adjustments to the cable alignment in the near shore environment.

RC along the proposed cable route will be performed if necessary. Both the RC and PLGR operations will be performed prior to the main cable lay operation. The PLGR operation will be to industry standards employing towed grapnels; the type of grapnel being determined by the nature of the seabed. Any debris recovered during these operations will be discharged ashore on completion of the operations and disposed at a waste facility licensed to receive the waste.

4.3.2 Installation

The 2AFRICA/GERA (East) Cable System, comprising a marine fibre optic cable, will be installed using a purpose-built cable ship (Figure 2), 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.

Figure 2 Typical Cable Laying Ship

During cable laying, an automatic log of all critical operational parameters will be kept including navigational data, speed, tension, slack, cable counter and plough. The burial technique used depends on the seabed conditions and other site-specific factors. At the shore crossing, a narrow trench to the BMH will be dug to bury the cable. Where necessary, the cable will be placed in a conduit or articulated pipes to protect it from external damage that may be caused by abrasion or other physical contact.

4.3.3 Operation

Once installed and operational, the cable will not require routine maintenance. If the cable is damaged or needs repair, the damaged portion of the cable can be retrieved and repaired or replaced.

4.3.4 Decommissioning

At the end of the cable lifetime (approximately 25 years) it is likely that the cable will remain in place, or in some places it may be removed. The terrestrial components, such as the BMH and CLS, may be reused for a new submarine cable or an alternate purpose.

4.4 Cable Composition and Properties

At each landing country associated with the 2AFRICA/GERA (East) Cable System, the proposed fibre optic cable will transit coastal waters and be brought on shore using industry-standard installation methods. Submarine cables, such as the one proposed for the 2AFRICA/GERA (East) Cable System, have an inner core structure that supports the optic fibres used to transport the communication signals via light (Figure 3). This cable core will be encased with steel-wire armour protection in areas where the risks of physical damage are highest (for example, from anchors and/or trawler nets). The cable will not contain any insulating oil or other hazardous substances. The cable, including armouring, resembles a garden hose with an approximate diameter of 35 mm (unarmoured, the cable diameter is approximately 25 mm).

Since the light signal loses strength en-route along the fibres, undersea repeaters (amplifiers) are installed along the cable to boost the signal. These repeaters are located many kilometres offshore.

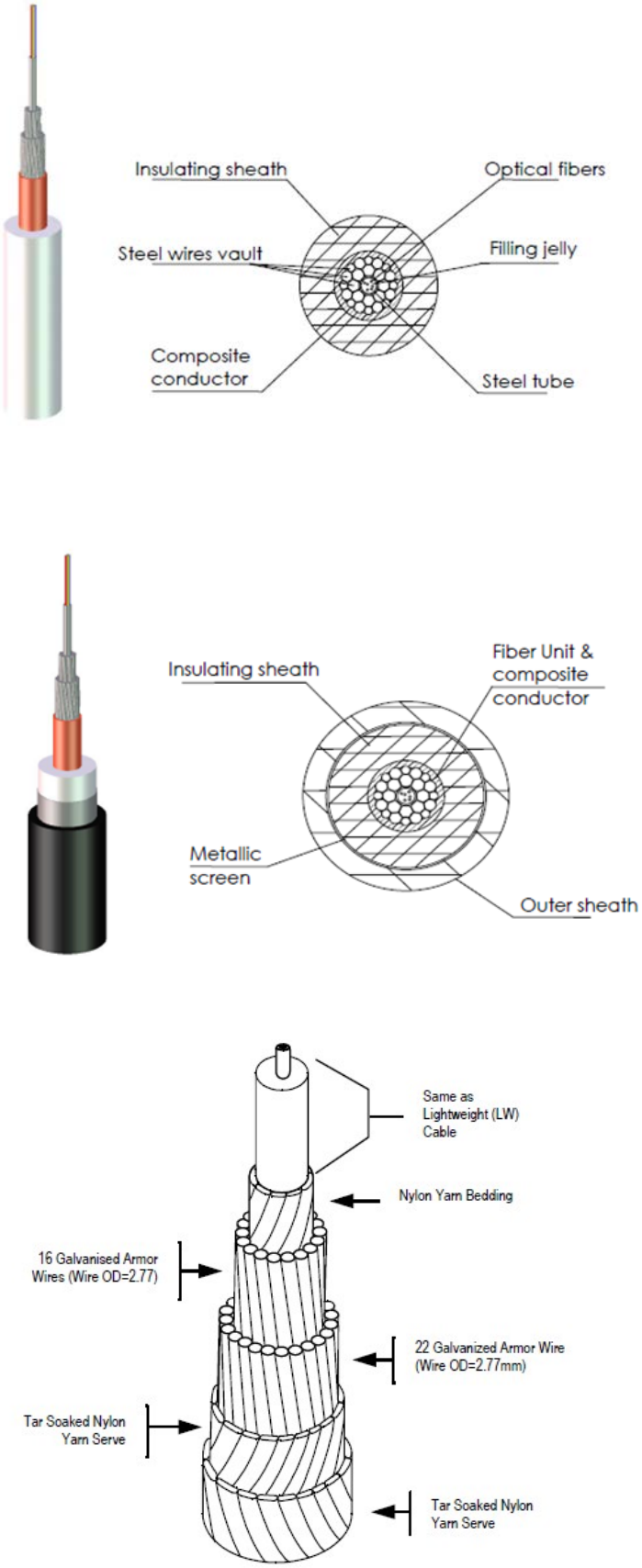

Figure 3 **Schematic diagram of a typical lightweight fibre-optic telecommunications cable for deep water showing an unprotected cable (top) and a protected cable (middle) and an armoured cable used in shallow waters (bottom)**

5 ROUTE ALIGNMENT AND LANDING SITE ALTERNATIVES

5.1 Alignment of the 2AFRICA/GERA (East) Cable System Offshore

The cable route runs along the East Coast of Africa in deep water (generally parallel to the coastline) and approaches South African coastal waters from the north (i.e. from Mozambican waters). The general alignment will run well clear of the iSimangaliso Marine Protected Area (MPA) and the Tugela Banks MPA before making landfall at Amanzimtoti Beach to the north of the Aliwal Shoal MPA (Figure 5).

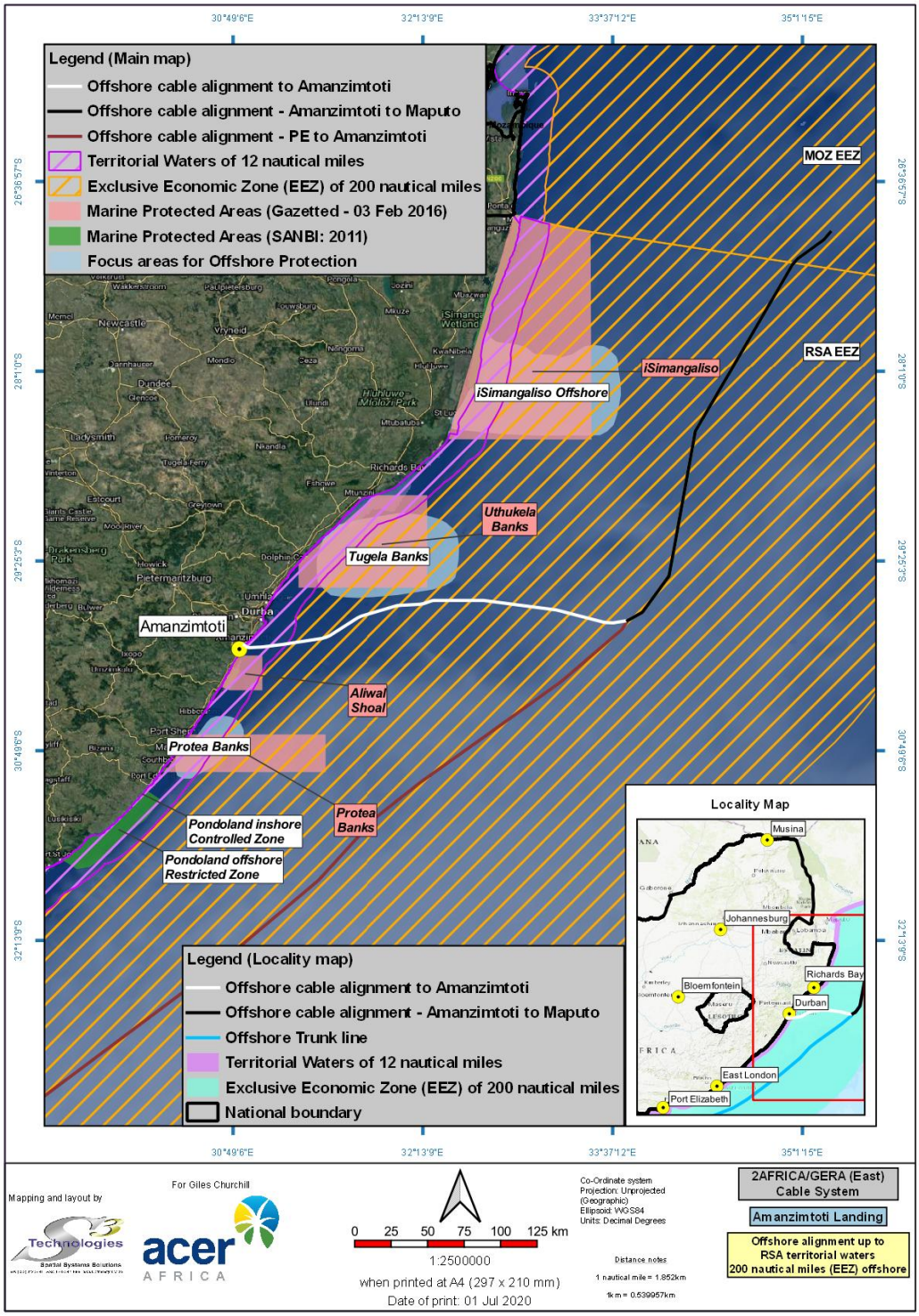

Figure 5 Proposed alignment of the 2AFRICA/GERA (East) Cable System to be landed at Amanzimtoti, south of Durban, KwaZulu-Natal, on the east coast of South Africa

As the cable route changes direction to approach the coastline of Amanzimtoti, the cable will be buried beneath the sandy seabed of the 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 - 1.5 metres. This burial is intended to provide protection to the cable from the hazards posed by ships' anchors, fishing activities and the like (Figure 6).

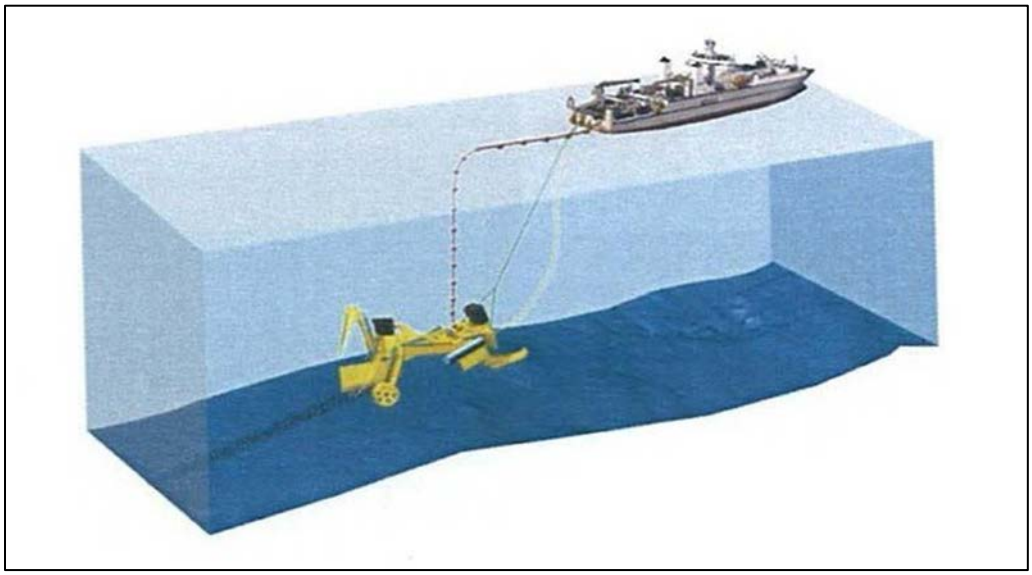

Figure 6 Cable-laying ship feeding the cable to the plough on the seabed

Once waters are too shallow for vessel access, the remainder of the cable is manually guided to shore with the use of buoys, small boats, and divers (Figure 7). The cable will then be pulled via a winch into the BMH and secured. The divers then re-enter the shallow waters with handheld water jetting machines, which facilitate burial of the cable within the surf zone.

Figure 7 Example of a cable being guided to shore by divers and small boats

The final alignment will be selected taking into consideration any existing cables and their buffers, potential trawling grounds, reefs, and offshore exploration and mineral concessions to mitigate potential effects on other users of the seabed.

5.2 Alignment of the 2AFRICA/GERA (East) Cable System Onshore and Landing Alternatives at Amanzimtoti

From the surf zone, the cable will be buried along a route up to the beach (by manual labour or excavating machinery) (Figure 8) until it links into the BMH (Figure 9). Once installed in the pipe conduit on the beach, no further disturbance to the terrestrial environment is anticipated as the 2AFRICA/GERA (East) cable will be accommodated within the METISS BMH and sleeves along the front haul alignment to the METISS CLS. An alternative BMH site (Alternative 2) has been identified approximately 1 km south of the METISS BMH. This would require construction of a new BMH and front haul alignment to terminate at the METISS CLS.

Figure 8 Example of excavations across the beach to bury the submarine cable

Figure 9 Example of an existing Beach Manhole

The shore landing points being considered for the 2AFRICA/GERA (East) Cable System at Amanzimtoti are illustrated in Figure 10 and described below:

- **The Amanzimtoti Pipeline Beach landing point (Alternative 1),** which is located on the beach in front of the car park next to the Pipeline Aquatic Centre, a public beach facility at Amanzimtoti.
- **The Amanzimtoti Main Beach landing point (Alternative 2),** which is located on the beach in the vicinity of the Strandburg Holiday Flats, approximately 1 km south of Alternative 1.

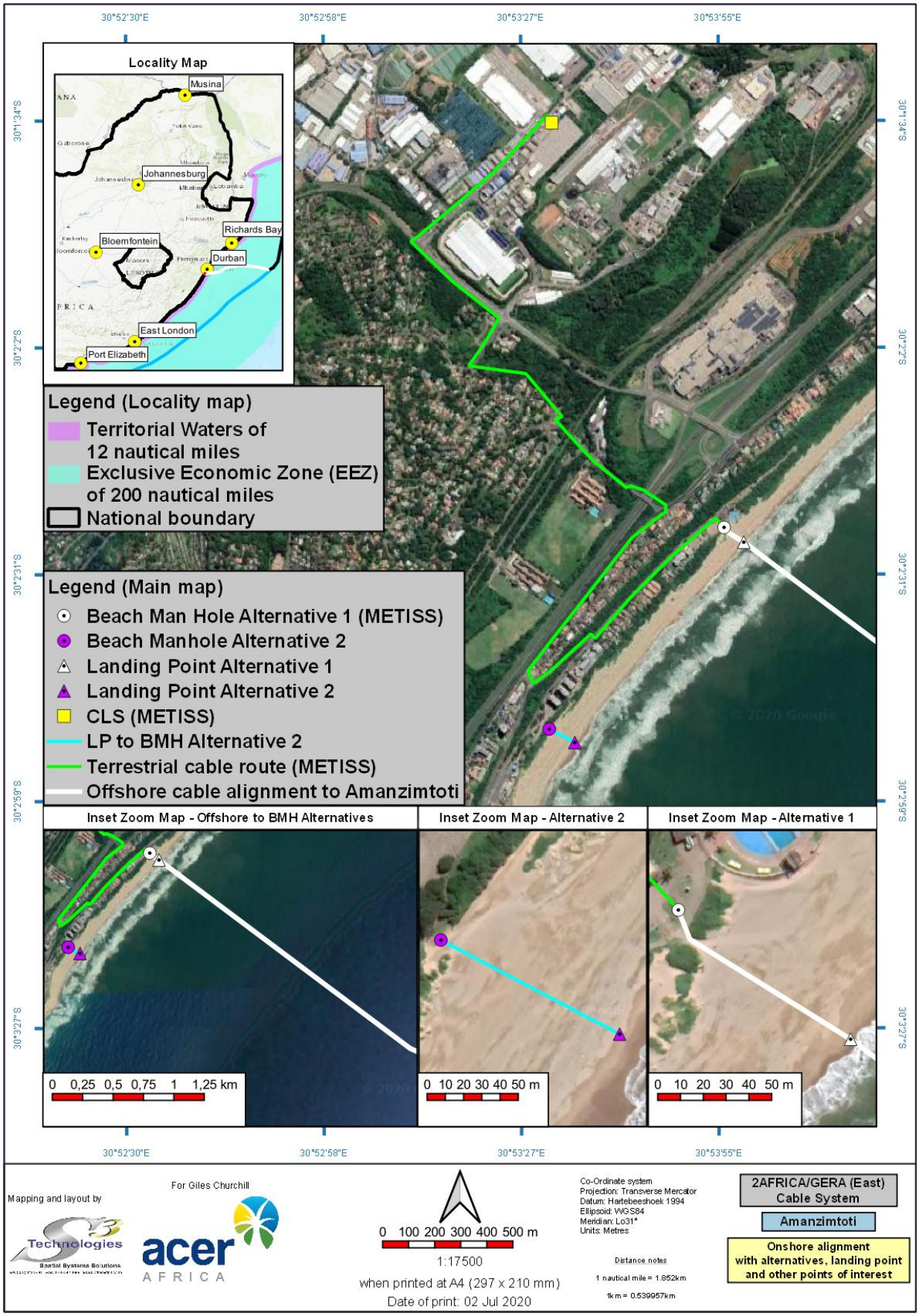

Figure 10 Proposed 2AFRICA/GERA (East) Cable System landing alternatives at Amanzimtoti. The preferred Alternative 1 will make use of existing METISS cable landing infrastructure

6 POTENTIAL ISSUES ASSOCIATED WITH THE PROPOSED CABLE LANDING AT AMANZIMTOTI

Outlined below is a preliminary list of the potential environmental issues associated with a cable landing at Amanzimtoti on the KwaZulu-Natal coast:

- *Effect on marine seabed environments.* Laying of the cable in deep marine waters, including the ploughing and burial of the cable in shallower waters, could disturb and/or degrade sensitive marine environments off the KwaZulu-Natal Coast.
- *Effect on marine ecology and fisheries.* The cable has the potential to cause disruption to marine ecology, and commercial and recreational fisheries during its installation and operation.
- *Effect on intertidal and beach ecology.* During construction, trenching of the cable may disturb or threaten the local fauna and flora within the beach and dune environment.
- *Effect on Cultural Heritage Resources.* The proposed activity may impact on offshore (and onshore if Alternative 2 is selected) cultural heritage resources along the proposed cable alignment.
- *Disturbance to the beach and dunes.* The beach will be disturbed, and coastal dunes could be disturbed during construction/installation activities.
- *Disturbance to coastal vegetation.* Indigenous coastal grassland and forest vegetation between the BMH and CLS can potentially be negatively affected (this does not, however, apply to the Preferred Alternative 1).
- *Disturbance to water resources and wetlands.* Rivers and wetlands between the BMH and CLS may be impacted should Alternative 2 be selected.
- *Disturbance to residents and beach visitors during construction.* The beaches at Amanzimtoti are public beaches used for bathing, surfing, shore-angling, etc. and are also lined with recreational and residential facilities. The installation of the cable in the nearshore environment is estimated to take two weeks to complete (landing and anchoring of the submarine cable) which will affect residents and visitors to the beach at the landing site.
- *Offshore mining and exploration*. Approximately 98% of South Africa's EEZ is subject to a right or lease for offshore Oil and Gas (O&G) exploration or production. To mitigate impacts on the offshore O&G industry, Liquid Telecom will engage with concession holders and draw up Memoranda of Understanding (MoU) which clearly outline the roles and responsibilities of both parties in terms of financial obligations, protection of subsea infrastructure, insurance, rights and obligations and principles of co-operation.

As required in terms of NEMA, the cumulative impacts of the project will also be assessed. Further to the above, additional issues may be identified during Scoping.

7 THE EIA PROCESS

The Environmental Impact Assessment Regulations, 2014 (as amended), apply to this project. Scoping and an Impact Assessment are required, which must be completed within 300 days of acceptance of the Application for Authorisation by the Department of Environment, Forestry and Fisheries (Figure 11).

7.1 Technical Activities

In support of the Environmental Impact Assessment, it is anticipated that the following specialist input will be required:

- Ecology (Vegetation) Assessment.
- Cultural Heritage Assessment (Onshore and Offshore).
- Fisheries and Marine Assessment.
- Beach and Dune Dynamics Assessment.
- Benthic Assessment (deep water).
- Shallow Water Benthic Assessment/Survey (including diver surveys).
- Wetland Assessment.

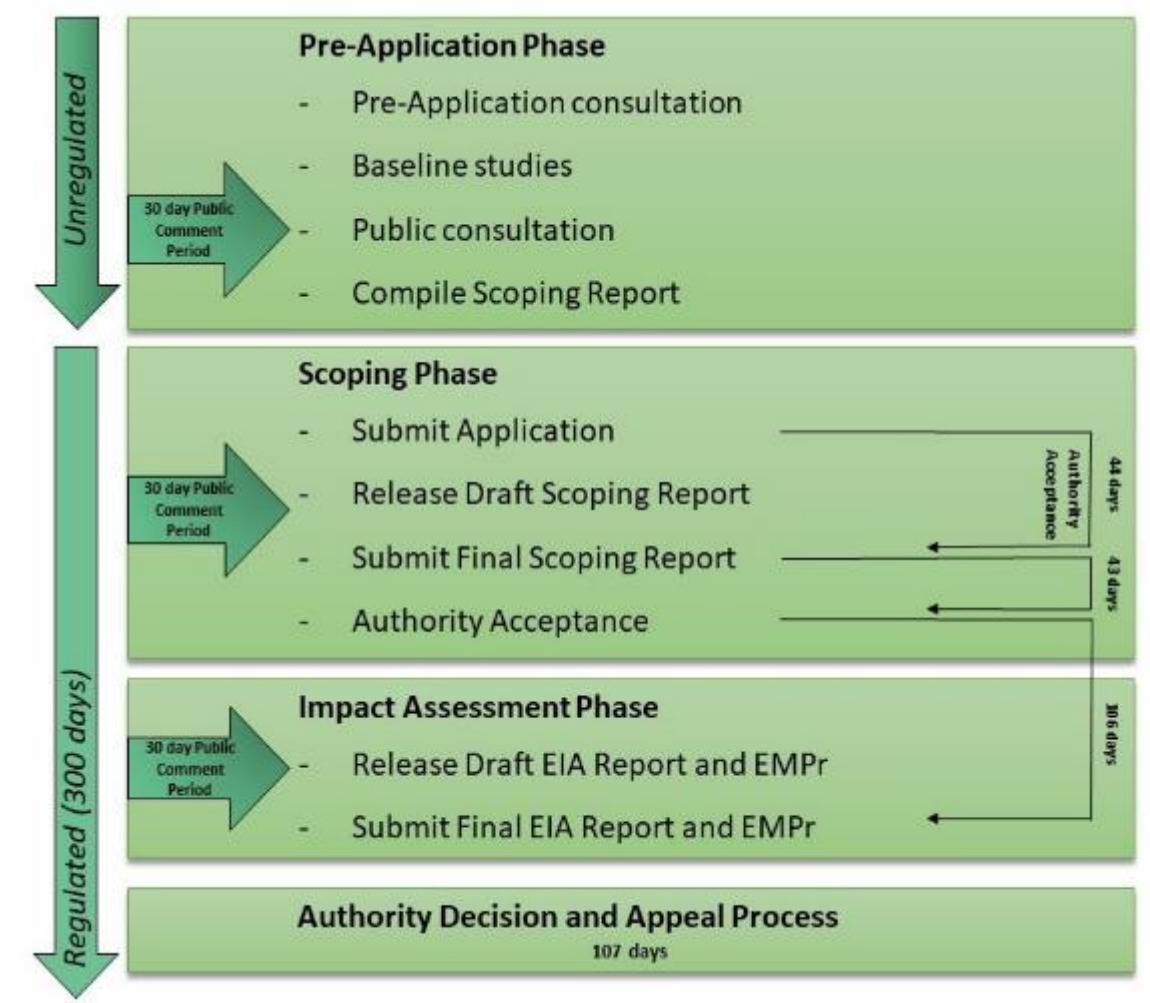

Figure 11 Outline of the Environmental Impact Assessment process and legislated timeframes

Findings will be used in the assessment of impacts and the identification of mitigation and management measures.

7.2 Public Participation

Public participation is an important component of the EIA process and aims to identify and proactively involve all parties that may have an interest in the project or be affected by it. This ensures that throughout the EIA process, the assessment is transparent, and it enables I&APs to comment on the project and/or raise concerns. This information is included in the Scoping and Environmental Impact Assessment Reports and is taken into consideration during the competent authority's review and evaluation of the application for environmental authorization.

8 REGISTRATION AS AN INTERESTED AND AFFECTED PARTY

Should you wish to learn more about the proposed 2AFRICA/GERA (East) Cable System and wish to register as an I&AP, please contact ACER as per the details provided below or complete and return the comment sheet provided herewith.

ACER (Africa) Environmental Consultants
Carina Boonzaaier or Ashleigh McKenzie
P O Box 503, Mtunzini, 3867
Tel: 035 340 2715
E-mail: **2africatoti@acerafrica.co.za**

Please note that consistent with GNR 326, 42(a), 44(1) and 19(1)(a) (7 April 2017), all comments received will be captured in a Comments and Responses Report which will be made available to the competent authority and which will be placed in the public domain as part of the public review process of the EIA reports.