

Annex I
Terms of Reference

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BELIZE

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**Department of the Environment
10/12 Ambergris Avenue
Belmopan, Belize, C. A.**

October 29, 2008

Copied

Mr. Glen Dawson
Belize Telemedia Limited
St. Thomas Street
P.O. Box 603 Belize City Belize

208

Dear Mr. Dawson:

Kindly be informed that in accordance with the Environmental Impact Assessment (EIA) (Amendment) Regulations, 2007 (SI 24 of 2007), Belize Telemedia Limited (Telemedia) is required to conduct an Environmental Impact Assessment (EIA) for the Installation of approximately ± 20 kilometers of fiber optic cable from mainland Belize to Ambergris Caye.

Please find enclosed a copy of the draft Terms of Reference (TOR) developed by the Department of the environment (DOE) for an Environmental Impact Assessment Study to be conducted for the Installation of the Fiber Optic Cable from Maskall Village to Bomba Village to Ambergris Caye, Belize District. Kindly review the document and submit either comments or acceptance of the TOR to the Department at your convenience.

Kindly contact the Department if there are any questions.

Sincerely

[Signature]
for → Martin Alegria
Chief Environmental Office
Department of the Environmen

Terms of Reference

For a Environmental Impact Assessment to be conducted for Belize Telemedia Limited for Installation of the Fiber Optic Cable from mainland Belize to Ambergris Caye via underground cable from Maskall to Bomba Village and a submarine Fiber Optic Cable from Bomba Village to Ambergris Caye, Belize District

Background

This draft Terms of Reference (TOR) has been developed pursuant to the EIA Regulations 1995 and subsequent Amendment of 2007. The Terms of Reference has been prepared following a scoping of the most critical issues associated with the placement of Submarine Cables and its related activities.

Terms of Reference

The most critical issues that the Fiber Optic Cable installation and its related activities will focus on are as follows:

- i. The potential impacts to marine flora and fauna, particularly benthic organisms as a result of trenching at sea;
- ii. The potential impacts to terrestrial flora and fauna and habitat alteration as a result of trenching both on mainland Belize and Ambergris Caye;
- iii. The potential impacts of longshore sediment transport;
- iv. The potential impacts to navigation, pre and post, installation of the Submarine Fiber Optic Cable;
- v. Impacts to coastal marine ecosystems from the landing of cable.

Scoping of these issues speeds up the process, cuts down its cost, improves the quality of the development, and ensures that environmental concerns are clearly addressed.

The TOR has been divided into three (3) areas, which are as follows:

- A. PROJECT DESCRIPTION AND PHYSICAL ENVIRONMENT
- B. ENVIRONMENTAL ISSUES
- C. MITIGATION AND MONITORING PLAN AND

ALTERNATIVES

A: PROJECT DESCRIPTION AND PHYSICAL ENVIRONMENT

This section of the document is related to the background of the proposed project and the physical environment within which the project is to take place and upon which it is likely to impact. The Department of the Environment recognizes that the Environmental Impact Assessment (EIA) to be conducted for the Installation of the Fiber Optic Cable is to include all the relevant technical

assessments and associated information in regards to the ecology of the proposed route and immediate areas.

Maps at appropriate scales must be provided with proper labels and legends to illustrate the proposed route at all stages of the installation as well as areas likely to be environmentally affected. These maps shall include where available location of major surface water, roads, parks or reserves and existing land use.

1.0 Detailed Description of the Proposed Project

- 1.1 Provide justification(s) for the proposed project including possible alternative in comparative form, exploring each alternative, including the no-action alternative. Include rationale for the siting of all proposed infrastructure and routes.
- 1.2 Describe the following characteristics of the project:
 - (a) Provide legible maps at appropriate scales to illustrate the general route of the proposed Fiber Optic Cable (FOC) with UTM coordinates, for the underground cable from Maskall Village to Bomba Village, from the South End of Ambergris Caye to the Telemedia Exchange, inclusive of the landing sites, beach manholes, and the Submarine Fiber Optic Cable (SFOC) from mainland Belize (Bomba Village) to the South End of Ambergris Caye. These maps should include nearby communities, bathymetric profiles and the position of transport channels and conservation areas, where applicable.
 - (b) Consult with the Lands and Surveys Department with respect to the proposed route of the FOC installation.
 - (c) Provide detailed description, of all landing sites. Indicate land tenure, if applicable, and a description of the immediate ecosystems and the region of transition, highlighting any flora and fauna of conservational value.
 - (d) Provide a physical description of the cable that makes it suitable for use underground and as a submarine cable; the characteristic of the coating material to ensure protection of the Fiber Optics and thus resulting in less maintenance work.
 - (e) Provide design schematics for trenches (if applicable) and beach manholes to be constructed. Include descriptions of the construction materials (types, sources, transportation) and methods in relation to their environmental impacts.
 - (f) Collect and provide information of boat traffic along the proposed marine route. Identify the impacts on boat traffic associated with the installation works.
- 1.3 Provide legible maps at appropriate scales overlaying the proposed route of Telemedia SFOC with the existing Belize Electricity Limited (BEL) submarine power cable, inclusive of distance from BEL cable.

1.4 Detail the time-frame of the project in terms of:

- (a) The time-frame over which the proposed undertaking is to take place, including starting date and conclusion;
- (b) The various phases of the project and the time-frame within which each phase is to be accomplished.

1.05 Describe any measures to be implemented to protect the environment, as well as to safeguard human health and safety, including:

- (a) the installation of navigational aids and terrestrial markers (if any);
- (b) the deployment of engineering containment devices to arrest and/or ameliorate turbidity influences and sedimentation from trenching
- (c) initiatives to educate the public about the proposed undertaking.

2.0 The Physical Environment

2.01 Provide a description of the physical environment to be affected by the proposed project, including:

- (a) A description of the marine environment of the proposed route to be impacted by the proposed activity, including bathymetric profiles and water quality parameters, including: dissolved oxygen, salinity, turbidity, temperature, macro-nutrients and heavy metals, as well as sediment characteristics including origin, distribution and composition, including stratigraphy or sub-bottom profiles; and meteorological features.
- (b) A description of the habitat and the flora and fauna in the vicinity of the projected path of cable, including seagrass beds and coral reefs, as well as fin-fishes, marine mammals, reptiles, amphibians, seabirds and macro-invertebrates, particularly those of commercial importance.
- (c) A description of the physical oceanography of the area, including current speed and direction, tidal amplitude and frequency, and water temperature, and salinities including seasonal variations.
- (d) A description of the terrestrial environment of the proposed route to be impacted by the proposed activity, including topography, current land use and adjacent communities, vegetation, hydrology (if applicable), geology and immediate ecosystems and the region of transition, highlighting any flora and fauna of conservational value.

B: ENVIRONMENTAL ISSUES

This section relates to the impact of the installation of the FOC on the various environmental

variables, ecosystem functions and economic activities.

The EIA will need to address:

1.0 Assessment of Impacts of the installation of the Fiber Optic Cable on the Ecology of the Proposed Route:

- 1.1 Conduct an assessment of the impacts of the proposed installation of the FOC on the ecology of the area (terrestrial and marine), including critical habitats, threatened and endangered species, and foraging and migration routes for manatees and dolphins.
- 1.2 Conduct an assessment during and post installation of:
 - i. Underground fiber optic cable on nearby communities and pre-existing use of the area.
 - ii. Submarine fiber optic cable on marine traffic, and pre-existing uses of the area;
- 1.3 Conduct an assessment of the impacts of the installation of the FOC on the water quality of the area, including dissolved oxygen, suspended solids, turbidity, temperature, and salinity.
- 1.4 Provide an inventory of the activities associated with the project including terrestrial and aquatic activities and identify any potential impacts associated with the activities.
- 1.5 Provide details on the methodology for the installation of the FOC on mainland Belize, the sea floor and Ambergris Caye. This methodology should include but not be limited to the depth of the water, depth that cable will need to be buried, methodology for excavation and trenching and anchoring of cables. Identify the potential impacts of these activities and their respective mitigation measures.
- 1.6 Identify mitigation measures to reduce or ameliorate the impacts associated with the activities mentioned above.

2.0 Waste Generation

- 2.1 Determine the projected types and volumes of waste to be generated.
- 2.2 Evaluate options for the collection and disposal of these wastes, including possible storage and transportation and final disposal.
- 2.3 Identify the preferred option for the disposal of these materials: This should be based on environmental grounds, and should specify any residual impacts, their significance and the mitigation measures that are to be implemented.

3.0 Geology

- 3.1 Provide information on geology (soil type) and seafloor sediments along the projected path of the cable installation to the maximum depth of trenches, if applicable.

Evaluate the potential impacts of excavation/trenching on flora, fauna (aquatic and terrestrial) and human beings (if applicable) including information of sub-tidal habitats such as sea grass beds and surrounding environments of the projected route and the necessary mitigation measures to address said impacts.

- 3.2 Determine the sourcing, type and volumes of landfill materials to be used in abutments and provide details of any sediment containment structures, if applicable.
- 3.3 Consult with the Geology and Petroleum Department over fulfilling any requirements which may be required before any excavation/trenching at sea commences (if applicable).

3.0 Social and Cultural Impacts

3.01 Provide information on other related issues such as the following:

- i. Employment and other economic opportunities associated with the project;
- ii. Occupational health and safety;

4.0 Public Interest

- 4.1 Conduct Consultations with different stakeholders i.e. local NGOs, public interest groups and relevant government departments regarding the proposed project.
- 4.2 Provide a copy of the questions/answers used for the report including the name and organization.

C: MITIGATION/MONITORING PLAN and ALTERNATIVES TO DEVELOPMENT

- 1.0 Based on the assessment conducted above of the potential impacts of the project, provide a mitigation plan to ameliorate all significant negative environmental impacts, the details of which should include the preferred mitigation measures.
- 2.0 This plan should also include a Contingency Plan for any navigational accident, or chemical/fuel spills.
- 3.0 Present all reasonable alternatives for the project. Alternatives shall be examined with some orientation to the merit(s) and demerit(s) of the various possible options, as well as a justifying and confirming the preferred option. These alternatives should look at the following components:
 - 3.1 Siting of the necessary infrastructure.
 - 3.2 Installation methodologies
 - 3.3 Proposed route
- 4.0 Characterize the extent and quality of available data, explaining significant information deficiencies and any uncertainties associated with the prediction of such impacts.

June 30, 2008

Our Ref:- LOC/CTO/G11/3-08

Mr. Jeavon Hulse
Acting Sr. Environmental Officer
1012 Ambergris Avenue.
Belmopan

Dear Mr. Hulse,

Re: Bomba to San Pedro Submarine Fiber Project

Belize Telemedia Limited (Telemedia) presently has fiber optic cable installed from Belize City to Maskall Village. The intention is to extend this cable all the way to San Pedro passing near Bomba Village. From there Telemedia proposes to install approximately 20 kilometers of Submarine cable under the sea to a landing near the South End of San Pedro. This has become necessary to increase capacity due to the continuing development of San Pedro that keeps expanding to the south and north side daily. This would also create some sort of redundancy to San Pedro for the future.

The average depth of the sea surrounding the area we proposed to work is approximately ten feet with mostly sandy bottom. The plan is to lay the submarine fiber optic cable about two feet below the sea bed and locate a route parallel to and at a reasonable distance from, existing BEL power cable. The landings will be determined and agreed upon by the contractor and Telemedia.

The plans are in process but before we proceed to order the cable we would need to obtain Environmental Clearance from the Government of Belize (GOB). To this end Telemedia hereby submits drawings and a copy of the works proposed to complete the job. With your requisite approval, the Company looks forward to commencing this project hopefully by October 2008. Your early positive response would therefore be very much appreciated since Telemedia will still need to order cables, prepare and sign contracts.

Yours respectfully
BELIZE TELEMEDIA LIMITED

Glen Dawson
External Plant Planning Engineer

Telemedia... it's all about you!!!