



**Non Technical Summary
Fiber Optic Telecommunication
Infrastructure of (Cambodia) Fiber
Optic Communication Network Co., Ltd.**

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**Non Technical Summary Fiber Optic
Telecommunication Infrastructure of (Cambodia)
Fiber Optic Communication Network Co., Ltd.**

For and on behalf of
Envirosolutions & Consulting,

Approved by,



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Managing Director
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NON TECHNICAL SUMMARY

1. INTRODUCTION

The project company comprises investment of two fiber optic telecommunication networks which are the undersea fiber optic cable Asia-Africa-Europe 1 (AAE-1) and the land cable network (the 'Project'), as detailed in the following report.

The project will be developed by (Cambodia) Fiber Optic Communication Network Co., Ltd. ('CFOCN'), a subsidiary of HyalRoute Communication Group Limited. HyalRoute Communication Group Limited is a company which operates and invests in high-capacity optical fiber networks in Southeast Asia. It is a leading neutral provider of national fiber optic network in Cambodia with over 50 diversified clients including operators, ISPs, government and corporate.

This document is a Non Technical Summary ('NTS') of the Environmental Impact Assessment (EIA) of the project. An EIA for Land Cable Project in Khmer and an EIA for Submarine Cable Project in English have been prepared in accordance with Cambodia's Law of Environmental Protection and Natural Resource Management (1996). Additionally, CFOCN has developed an Environmental and Social Management Plan that details mitigation measures for minimizing negative impacts.

2. PROJECT DESCRIPTION

2.1 Undersea fiber optic cable AAE-1

The AAE-1 is a 25,000 km submarine communications cable system from South East Asia to Europe across Egypt, connecting Hong Kong, Vietnam, Cambodia, Malaysia, Singapore, Thailand, Myanmar, India, Pakistan, Oman, UAE, Qatar, Yemen, Djibouti, Saudi Arabia, Egypt, Greece, Italy, and France.

The AAE-1 consortium, which obtained the construction and maintenance contract in 2014, consists of over 17 carriers, including CFOCN. AAE-1 went into service in 2017, linking cable systems with the Cambodian network at a landing station in Cambodia's southwestern Preah Sihanouk province.

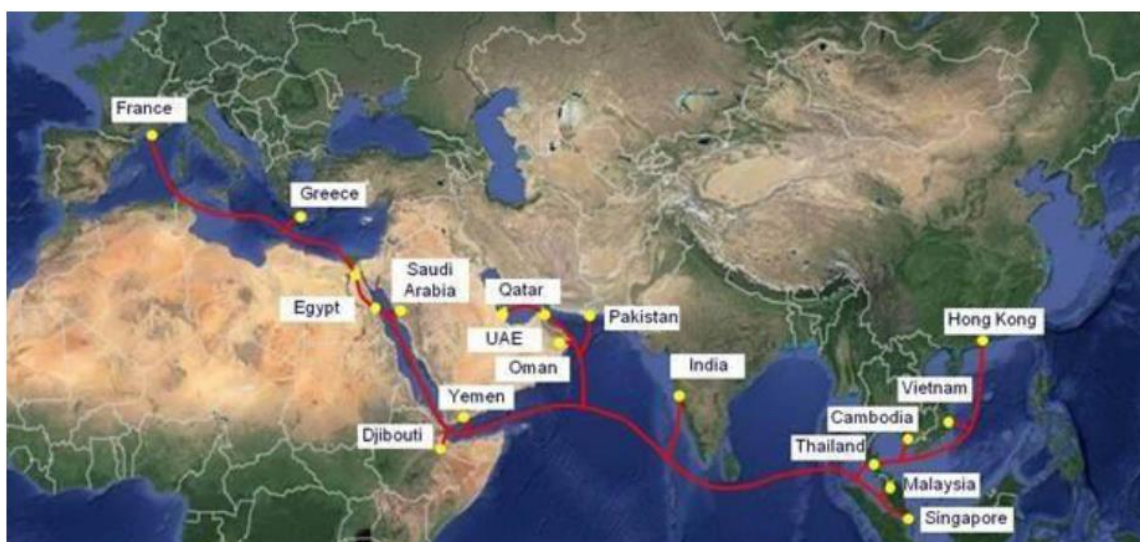


Figure 1 - Cambodia Telecommunication Network Project

Source: EIA Submarine Report

The Cable Landing Station (CLS) completed construction in March 2017. It was built on an area of 1,731m² equal to 40 x 43m on a private site. Manholes were built to setup a connection between offshore and inshore cables in order to provide convenience for distribution of monitoring and managing cable systems. This project built 11 manholes, linking between Damnak Sdech Beach and CLS location.

2.2 Land Cable Network

The Land Cable Network will include the construction of a 25,000 km of backbone fiber optic cable (FOC) network across Cambodia. The activities will include right-of-way (RoW) acquisition, land clearing and cable laying.

The backbone FOC expansion will be distributed nationwide connecting interstate provinces and regions. The final design and location will be based on the outcomes of routing studies, geotechnical and cadastral surveys.

The operation phase of the Project Area would require minimal maintenance as only periodic visual inspection of the towers and connectivity is expected. Anticipated project construction activities are briefly described below.

2.2.1 Mobilisation Activities

Mobilisation of equipment, materials, and construction personnel with final design will commence when all permits and approvals have been obtained. The activities during mobilisation will include establishing temporary offices and material storage areas, assembling equipment and procuring construction workforce and materials.

2.2.2 Construction of Backbone Network and Metro Duct

Construction of the FOC network involves digging a trench approximately 50 cm wide and 1.2 – 1.5 m deep, laying the FOC and then back filling the trench. In urban areas FOC is duct buried, and in urban outskirts and rural areas the FOC is directly buried.



Figure 2 - Cambodia Land Cable Network Development

Source: EIA Land Cable Report 2016

3. PROJECT BACKGROUND

3.1 Project Rationale

In Cambodia, the demand for broadband services has increased substantially, with the result that investment in the sector has increased. With regard to the demand for the telecommunication services market in Cambodia, the HyalRoute Communication Group Limited has established its subsidiary in Cambodia since 2006 through the (Cambodia) Fiber Optic Communication Network Co., Ltd. (CFOCN). HyalRoute Group provides telecommunication infrastructure to connect the Cambodian side to a 25,000 km optical submarine cable network, and through development of a land cable network across Cambodia.

3.2 Regulatory Consent

The Project will comply with the local Cambodian Laws and Regulations. A number of regulatory consents are required for the construction and operation of the project. Under the Law of Environmental Protection and Natural Resource Management (1996), the regulation requires the project to:

- Protect environmental quality and resident’s health by prevent, reduce, and monitor pollution;
- Assessment of environmental impact before the approval by the royal government on the proposed project;
- Ensure sustainable conservation, development, management of natural resources of Kingdom of Cambodia;
- Encourage and enable the public to participate in environmental protection and

management of natural resources; and

- Prevent all illegal actions which impact the environment.

Furthermore, an environmental impacts assessment shall be carried out on every project and activity, either private or public, and shall be examined and evaluated by the Ministry of Environment before it is submitted to the Royal Government for approval.

This assessment shall also be applicable for those existing activities and those for which the environmental impacts have not yet been assessed. Procedure for the environmental impact assessment shall be determined by Sub-decree following a proposal by the Ministry of Environment. Nature and size of the proposed project, as well as the existing activities, and activities under process, both private and public, which are subject to assessment, shall be determined by Sub-decree following a proposal by the Ministry of Environment.

3.3 Project Alternatives

Site selection and routing (Right of Way) studies were undertaken in 2007-2017 to identify preferred tower locations and a corridor for the underground FOC line. The main considerations during the selection were: the ease of access for construction and maintenance; the constructability of the tower and backbone route taking into account the topography; environmental constraints; and ground conditions, including areas prone to landslides.

The study considered ecological and social issues in order to minimize the impacts on biodiversity and nearby communities. Much of the RoW will be located parallel to major highways. The RoW route itself has been chosen to avoid settlements and their associated infrastructure as well as tourist areas.

4. PROCESS

4.1 Environmental Impact Assessment

Environmental Impact Assessment (EIA) is a process to identify the potential environmental impacts resulting from a project. An EIA is a thorough assessment that predicts and evaluates the potential physical, biological, and socio-economic impacts the proposed project may have. It also documents the mitigation measures to be implemented to eliminate or reduce adverse impacts and, where practicable, to enhance benefits.

The EIA process involves surveys, consultation and analysis that together will form a comprehensive document that enable the project proponent to identify and implement mitigation measures to avoid adverse environmental impacts.

4.2 Why Does the Project Require an EIA?

Undertaking an EIA is a prerequisite requirement to assess the potential project environmental impacts. Moreover, the EIA is a requirement under Cambodian Laws and Regulations. The legislation defines the type and scale of the project that require an EIA.

4.3 EIA Process

In accordance with Cambodian law certain project must be the subject of a process of environmental and social assessment due to their size, nature and the likelihood that they will have significant impacts on the environment. Identification, assessment, evaluation and mitigation are included in the EIA process to identify likely significant environmental impacts of a project and how they might be reduced or avoided through mitigation measures. The environmental assessment process

involves the following stages and activities:

- Definition of the geographical scope and timescales are defined during the EIA process;
- Environmental impact topics agreed are included in the EIA;
- Existing environmental conditions description, through a combination of desk studies, site visits, detailed surveys and consultation;
- Assessment and prediction of impacts for different phases of submarine and land cable network project;
- Identification of measures to avoid or reduce adverse environmental impacts, by considering design changes, or management strategies; and
- Reporting of the EIA.

4.4 Information Disclosure and Stakeholder Engagement

Public consultations were conducted as part of the EIA process. Project relevant stakeholders were engaged in the public consultation process. Stakeholders engaged include:

- Government agencies such as CDC, Ministry of Posts and Telecommunications, Ministry of Public Works and Transport, Ministry of Environment, Ministry of Interior;
- Regional Authorities from the Phnom Penh City Hall, and 25 provinces;
- Non-Governmental Organisations (NGOs) active in Cambodia;
- Customers and corporate clients of CFOCN;
- Communities in the vicinity of the sites; and
- Phone and internet operators in Cambodia.

Public participation was included during the EIA process to evaluate positive and negative socio-economic, natural environment, and community project impacts. In addition, it focused on advertising, surveying and discussing with involved departments, stakeholders/institutions, local authorities and residents, who are living in and around the project area in order to attain constructive criticism, ideas, detailed information and recommendations related to the existing environment, which are the key sources for decision making.

The EIA carried out for the project was disclosed in Khmer or English and will be available to interested parties through the Group Company's website. This NTS has also been disclosed on the website.

CFOCN has developed a Stakeholder Engagement Plan, including a grievance mechanism. Grievance channels are published in a corporate calendar, which is distributed by 30 maintenance teams nationwide. The calendars are delivered house-to-house along the network route.

5. SUMMARY OF ENVIRONMENTAL BENEFITS, POTENTIAL ADVERSE IMPACTS, MITIGATION AND MANAGEMENT MEASURES

The project will result in both negative and positive impacts to the surrounding environment. These are described in the following section.

5.1 Air quality

The air quality will mostly be affected during the construction phase. This topic is concerned with the effects of vehicle emissions, exhaust from stationary equipment, and dust generated from construction activities such as trench digging and project transportation.

Vehicles and machinery used during Project construction and operation will be maintained according to manufacturers' specifications to reduce atmospheric emissions. A maintenance log for all maintenance activities carried out for Project related vehicles and machinery will be kept. In addition, all vehicles operated for Project activities are equipped with appropriate emissions control equipment, such as catalytic convertors.

During the construction of the Project, dust may be generated as a result of vegetation clearance, trench excavation, and vehicle and machinery movement and loading activities. During the construction phase of the Project, appropriate control measures will be implemented if an activity carried out at the Project site will introduce unacceptable levels of dust.

The air quality assessment has confirmed that concentrations for the baseline year are below the National Air Quality Strategy objective levels. Furthermore, CFOCN has prepared a Pollution Prevention and Resource Efficiency Plan that includes air emissions management, focusing on mitigation to reduce vehicle emissions, stationary air emissions, and dust. Therefore, the project is not expected to result in significant air quality impacts.

5.2 Biodiversity and nature conservation

This topic is concerned with the effects of Project on the sensitive habitats and wildlife species. The location of the project has been chosen to avoid direct loss of valuable and sensitive habitats. A baseline study and a range of surveys have been undertaken to determine whether sensitive or protected species of wildlife are present or could directly be impacted by the project (e.g. the damage to or loss of their habitat). The assessment process involved evaluation of the importance of the ecological receptors based on relevant regulatory and guidance, and prediction of the effects on these potential receptors.

CFOCN has developed a Biodiversity Management Plan that includes the following commitments in relation to the management of biodiversity and ecosystem services:

- Reduce impacts of CFOCN project areas on biodiversity values by first avoiding, minimising where possible, and then restoring. Offsetting impacts is to be conducted as a last resort;
- Assess and manage the values of nature for people at the project areas in conjunction with the community;
- Implement a zero tolerance policy against poaching and hunting for all CFOCN Staff and Contractors;
- Implement a policy of "anti-illegal logging" in conjunction with the community and Cambodia Government;
- Respect the requirements of legally designated protected areas;

- Assess and manage Critical Habitats and Natural Habitats within CFOCN controlled and managed areas in line with IFC PS6 requirements;
- Adopt practices that are practical and easily implementable whilst meeting the objectives of sustainably managing biodiversity; and
- Work with local communities and key stakeholders to restore biodiversity values.

5.3 Consistency with policy, law and other plans

This section considers the proposed scheme's compliance with national, regional and local planning policy. In principle, the development of fiber optic telecommunications is supported through the local planning policy and various other national policy guidance documents. This policy assessment finds the proposed project to be compliant with the majority of the relevant policies. There are no potential non-compliances identified that could cause any significant issues. The major relevant policies are stated in the following:

- The Constitution of Kingdom of Cambodia (1993);
- Law on Environmental Protection and Natural Resource Management (1996);
- Law on Nature Protected Area (2008);
- Law on Land Management, Urban Planning and Construction (1994);
- Law on Water Resource Management of Kingdom of Cambodia (2007);
- Fishery Law (2006);
- Land Law (2001);
- Labor Law (1997);
- Law on Mineral Resource Management and Exploitation (2001);
- Law on Telecommunication (2015);
- Law on Social Security Schemes for Persons Defined by the Provisions of the Labor Law;
- Sub-decrees on Water Pollution Control (1999);
- Sub-decrees on Solid Waste Management (1999);
- Sub-decrees on Control of Air Pollution and Noise Disturbance (2000);
- Sub-decrees on the Management of Urban Garbage and Solid Waste;
- Sub-decrees on the Establishment of Environmental and Social Funds;
- Guideline of the Development of Cambodian Coastal Area;
- Development and Construction on Island not for Residing Purpose; and
- General Guidelines for Conducting IEIA and EIA.

The documentation produced by CFOCN which include environmental impact assessments and environmental and social management system documentation are in line with the relevant Cambodian Laws and Regulations. Moreover, the project will comply with the Cambodian Laws and Regulations. The identified impacts and mitigation measure proposed in the documentation are considered sufficient to satisfy the local regulations.

5.4 Cumulative impacts

This section considers the potential cumulative impacts of the proposed project. CFOCN has not conducted any cumulative impact assessment of the project. However, cumulative impacts of the project will be minimal. As the development is nationwide and no single aspects will cause any cumulative impacts. The cumulative impacts will not occur due to the small scale and limited spatial extent of the project and the large separation distances between the project and other projects, cumulative impacts are not considered to be significant. No significant adverse cumulative effects have been identified as a result of the proposed development.

5.5 Induced (indirectly consequential) impacts

All potential environmental impacts have been assessed in the EIA documents. No other indirect impacts will result from the project.

5.6 Land use planning and changes

The project will be located nationwide in Cambodia. The project will use Right of Way (ROW). Moreover, Right-of-way of landlines are approved by “the Ministry of Public Construction and Transportation” and “the Ministry of Interior”. Submarine cable right-of-way is approved by the “Ministry of Transportation and Communications”, “Ministry of Interior” and “Ministry of Construction”. Due to this condition, there will be no land use changes required for the project. The construction of the fiber optic telecommunications networks will be localized and temporary. As such, no land use changes will occur due to the project development.

5.7 Landscape and visual impacts

The project will not result in any visual changes on views from buildings, outdoor public areas and local roads. Visual impacts typically occur where a receptor is close to the proposed project. The impacts would be associated with physical and visual aspects of the proposed scheme itself or with traffic. Visual impacts will be limited to some extent for the fiber optic telecommunication development in Cambodia.

5.8 Raw material sourcing and transportation

This section presents an assessment of the potential impacts associated with the use and consumption of material resources. As the project is the development of fiber optic telecommunication, there will be no raw material sourcing for the project.

5.9 Road safety

The potential traffic and traffic impacts will mainly be from construction activities. CFOCN has developed a Traffic Management Plan (TMP) for managing the movement of all traffic associated with the Project for each of the three phases (construction, operation, and closure), in order to minimise associated key internal and external risks associated with Project traffic. The specific objectives of the TMP are to:

- Provide a safe environment for all road users;
- Provide protection to pedestrians and workers from traffic hazards that may arise as a result of vehicle movements;
- Provide adequate parking areas for vehicles.

5.10 Noise and vibration

Noise and vibration will be managed through the CFOCN Pollution Prevention and Resource Efficiency Plan. Noise pollution will be minimised through techniques such as:

- Using modern, quiet tools and equipment;
- Fitting mufflers on vehicle exhausts, machinery and heavy equipment;
- Use of acoustic barriers; and
- Routing heavy vehicles away from densely populated areas.

5.11 Waste management

The waste generated will be mainly from construction activities, which will be managed through the CFOCN Waste Management Plan. The type of waste generated as results from the activities is non hazardous waste. CFOCN and its contractors are required to develop and implement a waste minimisation programme as part of the waste management measures in line with Project Waste Management Hierarchy. The waste minimisation programme will be developed to address the following concerns:

- Align with the relevant Project procurement plan to minimise waste through procurement practices, and return of surplus materials to vendors;
- Provide training and awareness programmes to employees covering onsite and offsite waste minimisation opportunities and benefits;
- Use onsite waste minimisation techniques, such as composting; and
- Continuously explore opportunities to reuse and recycle wastes and reduce the amount of waste sent for disposal.

During the construction phase, all the wastes will be collected from the backbone network RoW, and the appropriate containers will be available at the main work sites for the first-level segregation to be performed by workers who have generated or first collected the waste from the RoW.

Locations for waste collection and storage along the RoW shall be determined by contractors and the appropriate containers deployed to contain the wastes. All waste containers shall be emptied on a daily basis before leaving a working location, and contents shall be moved to the designated waste transfer location approved by CFOCN.

To ensure good waste segregation practices, all waste containers or bins will be labelled and place at designated locations within the Project facilities, such as construction camp sites, storage yards, maintenance facilities, etc.

All wastes entering temporary storage areas for more than 30 days shall be recorded in a waste inventory.

5.12 Water resources

The use of water will be limited for this project. The project will not utilize any water body or ground water.

6. SUMMARY OF SOCIAL BENEFITS, POTENTIAL ADVERSE IMPACTS, MITIGATION AND MANAGEMENT MEASURES

The project will have both negative and positive community and social impacts. These are described in the following section.

6.1 Community impacts

As the project is nationwide and the construction of the project will be localised and temporary, the project will not have significant impacts on the community. There are potential positive impacts of the project as stated in the following:

- Job creation;
- Strengthening skills;
- Trade opportunities and business in the region; and
- Impact of services provided by the Labour Inspectorate.

6.2 Contractor management, including the siting and management of worker camps

CFOCN is committed to avoiding, minimising and mitigating potential environmental and social risks and impacts associated with the Project, as well as protecting the health and safety of employees, contractors, visitors and communities where CFOCN operates. To ensure the realization of the CFOCN E&S Policy, contractors and all parties who are directly or indirectly involved in the Project shall implement and adhere to the requirements stated in the CFOCN E&S Policy and other applicable requirements in the CFOCN ESMS.

Contractor management is the process to be followed through the contractual relationship between CFOCN and its contractors. Contractor requirements are defined in the contract documents that integrate CFOCN's and the contractors' work performance outcomes. A "successful outcome" is directly dependent on numerous performance requirements that are identified and addressed in the planning, development and executions stages in line with the Contractor E&S Requirements and other applicable local and/or international regulatory requirements for each contract.

The Contractor Management Plan (CMP) of CFOCN outlines the process for defining E&S performance expectations for Contractors engaged by CFOCN and for oversight of Contractors' activities while performing work for CFOCN. The process applies to all types of work being executed by Contractors on behalf of the CFOCN and covers all contract phases from pre-qualification to project closeout. This process does not apply to suppliers and vendors, who generally do not perform onsite work/services at the Project working site.

6.3 Cultural heritage

A variety of screening and detailed surveys have been conducted by CFOCN during the process of selecting the routes of the CFOCN Fiber Optic Cable Backbone and the locations of core facilities and towers. These surveys have helped the Project to avoid crossing areas with known or suspected materials of an anthropogenic nature on or around the footprint of the Project. Two types of anthropogenic materials require special consideration:

- Munitions, or munitions-related materials; and
- Cultural heritage materials or sites.

Known occurrences of munitions or items of cultural heritage will be avoided where possible, or appropriately managed. While CFOCN has conducted, and continues to conduct, surveys to

identify these two types of materials in particular, the potential to make unexpected finds ('Chance Finds') of anthropogenic materials cannot be entirely discounted. As such, CFOCN has developed a chance find procedure in case cultural heritage.

6.4 Public health and safety during construction

Public health and safety risks during construction will not be significant. In any case, CFOCN has developed an Emergency Preparedness and Response Plan that applies to all activities and processes at all project sites and to off-site project-related emergencies (e.g. road accidents involving project vehicles) throughout the project lifecycle (construction, operation and decommissioning).

6.5 Impacts on businesses and employment

The company will help promoting national economic growth via taxing on net-profit and other taxations during construction and operation phases based on the contract between Royal Government and Investment Company.

The Royal Government will be able to attract more investors after this development project has been inaugurated, as the project offers faster, premier internet services for investment firms. Those investment firms will have lower internet fees as a result.

6.6 Impacts to existing infrastructure and public services

The project will not disrupt access of local communities to existing public services, and the local community will still be able to access existing infrastructure and public services during the project development. No significant issues were identified with regard to accessing existing infrastructure and public services of the project.

6.7 Labour issues and standards

All employees and workers of CFOCN are engaged under a standard working contract. The contract covers aspects as stated in the following:

- Working days;
- Working hours;
- Paid and unpaid holidays;
- Leave;
- Salary;
- Disclosure of information;
- Termination;
- Work Regulations;

Through the working contract, it is expected that the working conditions will be fair and the provision of working conditions will be in line with Cambodian Laws and Regulations.

6.8 Land acquisition and resettlement

According to the design of the fiber optic cable backbone network, the majority of the FOC backbone will be routed within the existing Rights of Way (ROW) along existing public utilities, e.g. roads, water pipelines, as well as energy transmission and distribution lines. Land acquisition is not currently anticipated as part of the project. However, a Land Acquisition and Management Plan (LAMP) has been developed by CFOCN to manage and mitigate potential environmental and

social risks relevant to land acquisition arising from any future development.

During route selection, the Technical Planning Department will plan the routes to avoid land clearance and unnecessary land acquisition. When the avoidance of land acquisition is not possible, the Technical Planning Department should prepare a drawing, which sets out the boundaries of the land proposed to be acquired and submit it to the relevant authority for approval.

CFOCN has developed the LAMP that sets out procedures to identify, communicate, manage and compensate land acquisition required by the Project, as well as any asset damage due to the construction of the Project. The procedure includes commitments and actions required for different departments within CFOCN to manage and monitor land acquisition and compensation related activities.

Upon completion of the route selection, if land acquisition is deemed necessary, the Market Department will publish a notification for at least 30 days in the Gazette and at convenient locations in/near the affected area(s) with local communities. Content of the notification will follow requirements from the Land Acquisition Act and relevant local regulatory authorities as well as methods for stakeholders to file objections to the proposed land acquisition.

CFOCN will compensate for loss or damage to crops, orchards, trees, irrigation systems, fences, houses, buildings and other structures or assets caused by the Project. The Marketing Department will confirm inventories of assets and statistics provided by relevant stakeholders and calculate the relevant compensation based on average values and market prices of these assets (usually only related to agricultural products). Where no market data is present, an authorised evaluator will be engaged by CFOCN to complete an assessment.

6.9 Local traffic and access impacts

The levels of traffic during the construction phase are greater than those associated with the operational and decommissioning phases, as compared with existing traffic volumes. However, there will be no significant predicted impact to the traffic conditions as a result of project development. Disruption of traffic during the development will be minimal.

Fiber optic telecommunications development impacts related to traffic can be classified as minor or negligible and these are limited to the construction phase of the project. Detailed consideration of mitigation measures in the Traffic Management Plan during construction could reduce them further.

6.10 Occupational and public health and safety issues

The Occupational Health and Safety Plan (OHSP) provides a framework and guidance to CFOCN's Project management staff and Contractors on the management of occupational health and safety (OHS) related issues and for achieving occupational health and safety objectives in line with the Project E&S Requirements. In addition, this document outlines control arrangements in terms of managing OHS risks throughout the Project duration. The OHSP has been developed to:

- Ensure that the Project is compliant with the Project E&S Requirements;
- Ensure the Project staff and Contractors fully understand CFOCN's expectations on OHS management;
- Implement Good International Industry Practice (GIIP) throughout the Project duration;
- Manage occupational health and safety (OHS) related issues in an integrated and active manner;

- Ensure clear divisions of roles and responsibilities among Project management staff and Contractors; and
- Ensure high standards of OHS management.

6.11 Socio-economic impacts; including vulnerable groups

There are no predicted adverse socio-economic impacts resulting from the project. However, there may be positive socioeconomic impacts during the project operational phase. Overall, the socio-economic impacts of the proposed development will be positive; this is attributed to the significance of increased employment, the positive inputs to Cambodia and improvement to the immediate economy of the area surrounding the site.

7. COMMUNICATION

CFOCN has made environmental and social information on the Project available, in an accessible manner, and in a form and language(s) understandable to affected people and other stakeholders. The environmental and social documentation has been disclosed on the Group Company's website.

8. CONCLUSION

In the EIA for both the submarine and land cable network projects, no impacts were identified that could not be avoided or reduced to acceptable levels through mitigation measures in the Environmental Management Plan (EMP). Moreover, CFOCN will conduct activities in an environmentally and socially responsible manner. There are no significant issues identified with regard to the CFOCN environmental and social capabilities in managing the project in an environmentally and socially responsible manner through establishment of an environmental and social management system.



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