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East Micronesian Cable Project (EMC)

Addendum to Original Environmental and Social Impact Assessment (ESMP) – Kosrae State FSM only

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FSM CIU Safeguard Team
Department of Finance and Administration

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Acronyms

AP	Affected People
APM	Administrative Project Manager
BMH	Beach Man Hole
CA	Conservation Area
CIU	Central Implementing Agency
CLS	Cable Landing Station
cm	Centimeters
DTC&I	Department of Transportation, Communication & Infrastructure – National Government
DFMR	Department of Fisheries and Marine Resources – Kosrae State
DRC	Development Review Commission
DR&D	Department of Resource and Development – FSM National Government
DREA	Division of Resource Economic Administration
EA	Environmental Assessment
ECBP	Environmental Code of Practices
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMC	East Micronesian Cable
ERP	Emergency Response Plan
ESA	Environmental and Social Assessment (WB)
ESIA	Environmental and Social Impact Assessment
EMP	Environmental Management Plan
ESMP	Environmental and Social Management Plan
FSM	Federated States of Micronesia
FSMTCC	FSM Telecommunications Cable Corporation
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
ha	Hectares
HSMP	Hazardous Substance Management Plan
HSP	Health and Safety Plan
IA	Implementing Agency
IP	Indigenous Peoples
IPP	Indigenous Peoples Plan
IPPF	Indigenous Peoples Planning Framework
KIRMA	Kosrae Island Management Resources Authority
KCSO	Kosrae Conversation & Safety Organisation
km	Kilometers
m	Meters
m^2	Meters squared
MC	Management Committee (EMC)
MPA	Marine Protected Area
MRD	Marine Resources Division FSM National Government
NBSAP	National Biodiversity Strategy and Action Plan
nm	Nautical Miles
NORMA	National Oceanic Resource Management Authority
OAE	Open Access Entity
OP	Operational Policy (WB)
PCR	Physical Cultural Resources
PIA	Project Influence Area

PMU	Project Management Unit
PPE	Personal Protective Equipment
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
TMP	Traffic Management Plan
TPM	Technical Project Manager
TOR	Terms of Reference
WB	World Bank
WWP	Waste Management Plan
WWII	World War Two
UXO	Unexploded Ordnances

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EXECUTIVE SUMMARY

The Governments of the Federated States of Micronesia (FSM), Kiribati and Nauru have secured their joint participation in a regional fibre optic cable system to link the FSM island state of Kosrae, and the island nations of Kiribati and Nauru, to the existing Hannon-Armstrong (HANTRU)-1 cable, which currently connects the FSM states of Pohnpei and Chuuk to Guam. The proposed multi-national cable system is known as the East Micronesia Cable (EMC).

The Government of FSM has received assistance from the World Bank (WB) through a grant "East Micronesian Cable" (EMC) project to provide a submarine telecommunication fibre optic cable. The Kosrae submarine cable alignment has been finalised and will originate from a submarine branch line connected to the EMC offshore from the island of Pohnpei southwest to Kosrae. The agreed submarine cable alignment for the island of Kosrae is to enter the natural deep water reef passage and channel through the islands outer barrier reef entering Lelu harbor. It then is to follow the channel veering south entering the shallow subtidal and intertidal waters on the southern side of the harbor. The cable will terminate (Beach Man Hole - BMH) on the southern shoreline at the Sansrit school ($5^0$19'13.27N and $163^0$01'33.04E), which is located on reclaimed state government land. The terrestrial component of the cable alignment will be deployed underground within the Kosrae state road easement to terminate at the projects Cable Landing Site (CLS) located within Tofol on government land within an existing building complex.

An Environmental and Social Impact Assessment (ESIA) was developed for the original project, including the three nations associated within the EMC that provided a preliminary assessment of the potential impacts and mitigation options associated with this project. Final site specific deep sea submarine, shallow water and terrestrial cable alignment locations were unknown at the time the assessment was undertaken. Subsequently, through further data collection and stakeholder discussion the cable alignment for Kosrae state has been finalised.

Thus this report provides an addendum to the projects original ESIA including site specific shallow water marine and terrestrial ecological and social data assessment which provides an updated Environmental and Social Management Plan (ESMP) that specifically addresses the potential risks associated with the delivery of this project. This information is reported herein and is to be read in conjunction with the EMC projects original ESIA report for the Kosrae component only. The original ESIA report structure and information relevant to the Kosrae Addendum has been included herein and up dated as required.

Information detailed within this addendum has been incorporated into a Kosrae specific Environmental Management Plan (EMP) based on the original projects EMP to further strengthen the environmental management of the open ocean (deep sea), shallow water and terrestrial ecological systems potentially impacted by the cable deployment.

The marine ecological assessment of Lelu harbor identified the potential of Unexploded Ordnances (UXO) resulting from World War Two (WWII) within the direct area of influence for the submarine cable alignment within the shallow water marine areas (Lelu channel through to BMH) and as such a professional assessment of their presence needs to be undertaken to ensure impacts from UXO are known and managed.

The EMC Kosrae subcomponent project will require limited land based infrastructure, resulting in minimal localized terrestrial and marine-based impacts, which are limited in scale (immediate footprint of the works) and extent and can be fully mitigated if the projects EMP compliance is maintained. There are no threats to the area's marine, coastal and terrestrial biodiversity associated with the project. As such the potential impacts of the works on these environment are considered to be minor, temporary, mitigatable and overall insignificant.

There will be no involuntary land acquisition and all land utilized within the project is government owned and/or leased and within designated official easements (road). The submarine cable will affect a corridor no more than 3 m wide on the sea floor in the open ocean and nearshore coastal zone.

Given the small-scale impact of the marine work, and the fact that nearly all of the work is on board a vessel at sea, no negative social impacts are expected. Sensitive deep water marine ecological sites such as sea mounts and hydrothermal vents will be avoided to protect the cable and avoid potential environmental impacts. Similarly, specific cable alignment corridor has been developed for the inshore shallow water to ensure impacts to the subtidal and intertidal coral reef and sea grasses ecosystems are negated.

The construction of the BMH facility on land and the deployment of the terrestrial component of the cable to the CLS will require a sub-contractor. Key potential impact relates to the disturbance to road users and adjacent land uses from the micro trenching of the cable within the Government owned road easement. Specific social and environmental mitigation and monitoring activities have been included in the updated EMP to ensure the management of these activities.

1. INTRODUCTION

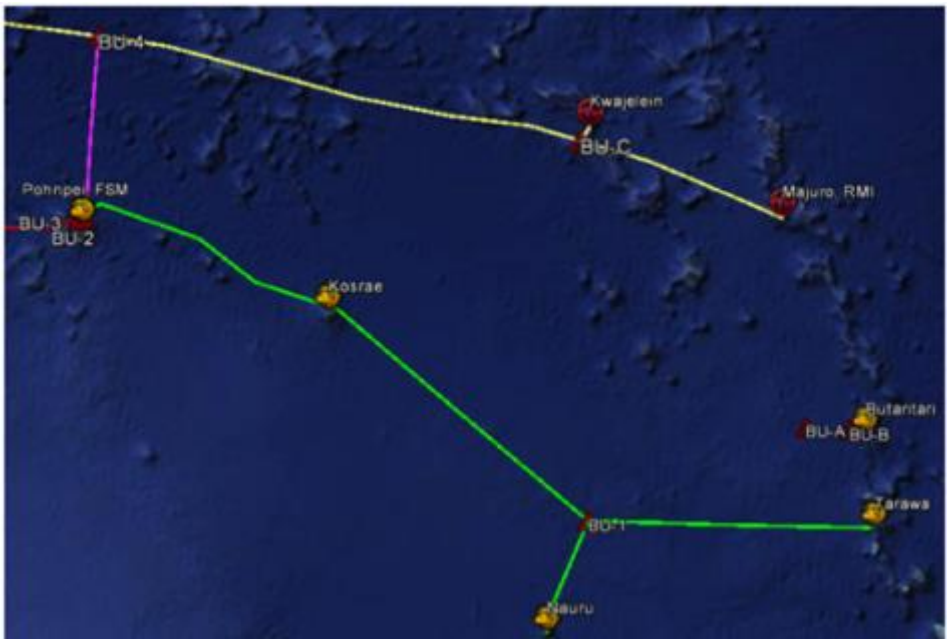
1.1 Proponent and Purpose of ESIA

The Government of the Federated States of Micronesia (FSM) has secured assistance with funding from the World Bank (WB) for a regional fibre optic cable to link the FSM State of Kosrae, and the island nations of Kiribati, and Nauru, to the existing Hannon-Armstrong (HANTRU)-1 cable (Figure 1) which currently connects the FSM States of Pohnpei and Chuuk to Guam.

The FSM Department of Transportation, Communication & Infrastructure (DTC&I) remains the Implementing Agency (IA) for the Kosrae component of the EMC. The newly developed FSM Telecommunications Cable Corporation (FSM TCC) known as the Open Access Entity (OAE) will implementation the project on behalf of DTC&I.

One of the main challenges facing the region is the need to overcome its remoteness and dispersed geography by developing infrastructure to connect people domestically and internationally. The EMC Project is intended to provide essential backbone infrastructure to promote and support social and economic development across all sectors in each country and within the region. The long term viability of the region hinges on domestic and international economic integration. The new fiber optic cable procured under the EMC project will connect the Pohnpei Spur to Kosrae and on to Nauru terminating in Kiribati. The length of the new cable will be approximately 2,000 kilometers (km). A significant portion of the cable is well beyond the territorial seas of the participating countries. The original Environmental and Social Impact Assessment (ESIA) and the Environmental and Social Management Plan (ESMP) addendum update (this report) have been prepared to identify all potential environmental and social impacts that may arise as a result of implementation of the project and to mitigate any impacts, with a focus on deep sea, nearshore marine, coastal zones and terrestrial systems which form the Project Influence Area (PIA). Terrestrial infrastructure is relatively limited in extent and utilizes existing government owned infrastructure, facilities and rood easements.

Figure 1: Proposed submarine cable alignment connection for the island nations of Kosrae (FSM), Nauru and Kiribati (adopted from the original ESIA).



1.2 Project Rationale

The proposed project will support investment in a submarine fibre optic cable that would connect Kosrae, with Pohnpei to Guam and from there to the rest of the world via the global Internet. At present, Kosrae relies entirely on satellite for Internet connectivity. The high cost, and the variable and limited availability of international bandwidth are major constraints to their ability to participate in the global Information age and the concomitant opportunities for economic and social development that arise when cheap and accessible high speed Internet services are made available.

The proposed project will contribute to improved public services (including online government services such as health, education and financial services), will support the tourism sector, and will facilitate better trade and communication among north Pacific island economies.

1.3 Project Status & Documentation

At the time of preparation of this document (addendum), a project plan for the delivery of the submarine cable to the island of Kosrae through to the terrestrial Cable Landing Site (CLS) has been agreed and finalized. As such this addendum has been designed to update the project original ESIA to reflect the updated project information. The addendum update uses the WB Environmental and Social Assessment (ESA) policy framework.

As identified in the original ESIA, a site specific marine benthic ecological assessment of the shallow waters associated with the Lelu harbor cable alignment (December 2019) was undertaken. This report documents the marine ecological and environmental parameters persisting at this proposed shallow water site and provides clear impact mitigation and management mitigation methods that have been incorporated into the projects updated ESMP to ensure the management and mitigation of these impacts. The report is presented separately to this addendum.

The original land due diligence assessment remains relevant to the project, albeit much of the previous information in not specifically relevant to the final alignment site.

Kosrae state government land ownership of the BMH and CLS are provided in Annex 1 and 2, respectively.

1.4 ESIA Methodology

The original ESIA included the following methodology:

- An initial evaluation of potential cable alignments was undertaken based on in country consultations with officials from the respective Governments. Then, further scoping activities were undertaken to evaluate these locations based primarily on eliminating the requirement for private or custom owned land acquisition and minimizing coastal zone environmental impacts. This initial scoping exercise identified a number of BMH sites and CLS that facilitated the completion of the evaluation for this ESIA.
- In addition, the original ESIA assessment included a review of relevant secondary information sources, site visits, key stakeholder interviews, and public consultations to determine existing environment conditions in the PIA corridor, at BMH sites and along landside routes where cables may be located. This was followed by an analysis of the potential impacts that the installation and operation of the fibre optic cable could have on the corridor's natural and socio-cultural environment. Data collected included the following:
  - Potential land acquisition requirements;
  - Sensitive environmental receptors within the PIAs, including Conservation Areas, Fish Attraction Devices (FADs) and special tourism sites, such as dive sites;
  - Marine ecology of the coastal zone and nearshore waters likely affected by the cable project, including benthic and coral reefs conditions along the PIA corridor;
  - Poverty and gender conditions in relation to the proposed work;
  - Social impacts of faster and more reliable Internet connections; and
  - Cultural heritage and archaeological sites within the PIA corridor.
- Preliminary evaluation of the marine and terrestrial ecological resources was undertaken in late October and early November 2016 and documented in an ecological assessment report. Information obtained was then used to assess potential environmental impacts and identify potential mitigation options during cable deployment and included in the original ESMP.

The methodology used to update the original baseline information and subsequent mitigation and management protocols have been included in this addendum. The resulting ESMP developed herein is based predominantly on the ecological and social baseline data collected during the addendum preparation, with a large proportion based on the marine ecological assessment undertaken in November 2019. The marine ecological assessment report is a standalone report and should be referred as required.

2. POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 Resource Management

The original ESIA provides a detailed account of the state government and as such is repeated below. Changes that have been made have been inserted directly into the text to reflect recent name changes of a number of agencies.

There are a considerable number of government and semi-government agencies involved with marine resource management at national and state levels in the FSM. Each State operates independently in fisheries matters within State territorial waters (shoreline out to 12 nautical miles).

The FSM Government's Marine Resources Division (MRD) of the Department of Resources and Development (DR&D) is responsible for providing the government (national and state) with technical information, advisory services and support for development and management activities in marine resources including fisheries, aquaculture and coastal resource management. It is additionally responsible for non-living marine resources within the 200 nautical mile (nm) Exclusive Economic Zone (EEZ). A major function is to liaise with foreign and international agencies concerning marine resources.

The FSM National Oceanic Resource Management Authority (NORMA) has been established to regulate the use of and to manage and conserve the resources within the nations 200 mile EEZ. One of the NORMA's key functions is to adopt and promulgate regulations for the conservation, management, and exploitation of all living resources in the EEZ.

In Kosrae, the Department of Fisheries and Marine Resources (DFMR) under the Division of Resource Economic Administration (DREA) is the state agency responsible for the management and development of marine resources. The Kosrae Island Management Resources Authority (KIRMA) is the state agency responsible for assessments relating to land usage, permitting for developmental programs, identification of Conservation Areas (CA), enforcement, development of environmental regulations, and development and implementation of environmental management plans. An Environmental Impact Assessment (EIA) is required to be

prepared (Section 19.104 of the State Code) if a development or activity affects "the environmental quality of fishery waters".

The Kosrae Conservation and Safety Organization (KCSO) is a non-governmental organization whose purpose is "*to further develop projects relating to awareness and protection of the natural environment and to public health and safety; to conduct community programs and related programs applicable to these projects within Kosrae* ..."

The Kosrae National Biodiversity Strategy and Action Plan (NBSAP) outlines the state of the nation's biological resources and the current biological and human-related threats that affect there continued existence.

2.2 Land and Tenure

The State Government controls a major part of the land in Kosrae, namely government owned lands, mangrove areas, nearshore areas, and lagoon areas. Primarily, government lands are of the interior, above the "Japanese line"[1] and foreshore areas. Kosraean's can own land but not outsiders (foreigners). The land is owned in "Fee Simple" with a certificate of title issued when the registration process is complete for individual landowners. However, if the land is inherited by multiple heirs or if customary family land is held in common, then a Tenancy in Common title is issued.

Accessing land through usufruct or access rights (customary practice) was common for hunting or gathering purposes. Nowadays, this is more common in the upland and government owned areas. Accessing land and use rights for productive lands, particularly in settled areas, is done through leasing agreements.

As a protectorate measure, foreign ownership of land is through leasing titles only. Kosrae state law allows locals and foreigners alike to lease for up to a 55-year term renewable for an additional 55 years. Although this provides secure access and use for the lease period, issues such as land ownership disputes, lack of certainty, poor surveying capabilities, absence of records, and uncertain parameters for customary usage often hinder foreign investment. As in other Pacific island land tenure systems, land transactions are often made under customary practice, which is frequently undocumented. This makes accurate determination of ownership rights and pricing of land difficult to determine.

The Kosrae constitution is the primary rule of law in the State of Kosrae. In its preamble, it declares "*Kosraean's are one, as people, in their language, in their traditions, and in their family and communal life*". The Preamble acknowledges the bounty and beauty of Kosrae pledging to preserve those natural riches. Thus the legal foundation for the State's environmental protection and conservation, both human and physical, is laid.

The Kosrae State Code Title 11, Land and Environment, sets out the requirements regarding the acquisition and use of land. Under Title 11, the Governor can transfer title or interest in public land on behalf of the State of the Government but only with the Legislature's resolution. The Governor also has the authority to designate suitable areas of the public land for homesteading to eligible persons.

[1] A line which sets aside the upper elevation of Kosrae Island; land above the line is designated as Government and the land below the line is where private owned designated begins.

In managing land and land use, the Kosrae State Code provides for land use planning, surveying practice, homesteading and establishment of the Land Court. The Land Court determines and registers land titles. Further, the deed of trust allows for the transfer of an estate in real property or freehold or leasehold interest in real property to secure an obligation. This practice allows land transactions for monetary or customary obligations.

2.3 Legal Framework

As described in Section 2.1, there is significant legal provision in existing law for managing and conserving the environment of Kosrae. Table 1 (Table 2.1 in the original ESIA) lists state and national laws relevant to the Kosrae portion of the EMC Project.

The state Development Review Commission (DRC) is a five-member body that reviews development proposals and is mandated to "*protect the environment ... balancing development with those of environmental quality ... ensuring that economic and social development is environmentally sustainable*". The DRC has the authority to enter, enforce, and issue injunctions, mandamus, or other remedies requiring compliance through the Attorney General. Further, the DRC has the authority to protect the environment and antiquities.

The State can acquire an interest in private land for public purpose. The Constitution and Article XI, Land and Environment, provides for fair compensation should there be a need for land acquisition for the purpose of resettlement. The process must be done in good faith with reasonable effort to avoid substantial hardship to the interested parties[2].

An EIA may be required particularly if any development or activity affects the environmental quality of fishery waters, which is determined following consultation with the Director of the DFMR. If an EIA is required then the Director has the right to submit comments before a decision is made by any State Government Authority such as the DRC.

Based on the initial and subsequent consultation regarding the marine and terrestrial scope of works of the Project an application has been submitted to determine whether an EIA is required for the installation and use of the cable and associated facilities, for State approval. This ESMP and associated projects documents (e.g. marine benthic assessment) will be substituted for the State EIA.

Table 1: Relevant National and State Legislation for Kosrae

NATIONAL LEGAL FRAMEWORK	
FSM Constitution	The supreme law and it establishes the national, state, and municipal governance.
FSM Environmental Protection Act 1984	Provides for the protection of the environment, culture, historic and natural aspects of Micronesian heritage.
Marine and Freshwater Quality Standards Regulations 1986	Identifies the uses for which waters of FSM shall be maintained and protected (water quality).
Trust Territory Solid Waste Regulations 1979	Establishes the minimum standards for the design, construction, installation, operation and maintenance of solid storage, collection, and disposal systems.
FSM Earthmoving	Earthmoving activity permits are issued by the Secretary of

[2] Palik vs Kosrae, 5 FSM Intrm. 147.152-154 (Kos. C. Ct. Tr. 1991)

Regulations 1988	Human Resources.
FSM EPA Environmental Impact Assessment Regulations 1989	Requires the National Government and its agencies to submit Environmental Impact Statement (EIS) to the Secretary of Human Resources prior to any "major" action significantly affecting the quality of the human environment.
FSMC Title 26 Historical Sites and Antiquities	Policy to protect and preserve the diverse cultural heritage of the people of Micronesia.
KOSRAE STATE LEGISLATION	
Constitution of the State of Kosrae	Primary rule of law in the state of Kosrae.
Kosrae State Code, Title 17, Chapter 4	Established the Kosrae EPA (known as KIRMA)
Kosrae Code, Section 11.201	Land use and subsidiary regulations
Kosrae Code, Section 14.1302	Foreign fishing agreement
Kosrae Code, Section 11.1601	Endangered species
Kosrae Code, Section 13.514	Water quality
Kosrae Code, 13.523	Unauthorized procuring of marine life
Kosrae Code, Section 13.524	Endangering a species
Kosrae Code, Section 11.1401	Protection of antiquities and traditional culture
Kosrae Code, Section 13.506	Littering

2.4 International and Regional Treaties

The original ESIA references the international treaties and conventions the FSM is a signatory to. Information detailed in this annex remains the same and no changes have been made. This information has not been repeated herein and the original ESIA report should be referred for clarification as required.

2.5 World Bank Safeguard Instruments

The Kosrae project remains a category B and the original safeguard Operational Policies (OP) and instruments – as described in the original ESIA remain the same.

The project triggers: OP 4.01 (Environmental Assessment); OP 4.04 (Natural Habitats); OP 4.11 (Physical Cultural Resources). The details as provided in the original ESIA and are repeated below. The original ESIA evaluation of compliance documented remains the same (Annex 8 in the original report). This annex has not been repeated herein and the original ESIA report should be referred for clarification as required.

Operational Policy 4.01 – Environmental Assessment

The WB requires an Environmental Assessment (EA) Category A and B Projects proposed for WB financing to ensure they are environmentally sound and sustainable, thereby improving decision-making. Operational Policy (OP) 4.01 requires (i) detailed

qualitative and quantitative analysis to determine project impacts, (ii) determination of tangible measures to prevent, minimise, mitigate or compensate for those adverse impacts, (iii) public consultation and disclosure as part of the EA process and (iv) requires an Environmental Management Plan (EMP) to address set mitigation along with monitoring and institutional measures to be taken during design, implementation, operation and maintenance phases of the project. This policy is triggered for the Kosrae project. Therefore project has been classified as a Category B, as the impacts are readily mitigatable and reversible. The original ESIA and update addendum ESMP satisfy the EA requirements of OP4.01.

Operational Policy 4.04 – Natural Habitats

OP 4.04 requires the conservation of natural habitats and specifically prohibits the support of projects that involve significant conversion or degradation of critical habitats, as defined by the policy. The policy further requires the EA to identify impacts on biodiversity and species and to determine endemism, endangered species and to determine project impacts on these species and to propose acceptable mitigation and monitoring measures. This OP is triggered as natural habitats may be disturbed temporarily during cable laying within the deep and shallow water marine ecosystems and neighboring terrestrial environments (e.g. streams and coastal shorelines). No Marine Protected Areas (MPA) and/or terrestrial Conservation Areas (CA) are located within the PIA.

The updated ESMP has benefited and been informed by the results of the submarine cable alignment assessment of the marine benthic ecological survey assessment of the subtidal and intertidal reef and foreshore in Kosrae undertaken in November 2019. This site specific marine assessment supersedes the preliminary assessment undertaken during the original ESIA. Although there are areas of sensitive habitat (i.e., corals and seagrass beds) adjacent to the proposed cable alignment they are not directly impacted and mitigation measures have been developed to avoid and minimise disturbance. Significant deep sea benthic habitats, such as hydro-thermal vents and seamounts, will be surveyed during the detailed design phase and avoided. There are no natural habitats in the footprint of the terrestrial infrastructure aspects of the project (e.g. cable is within the primary road easement).

Operational Policy 4.11 – Physical Cultural Resources

OP 4.11 seeks to avoid the disturbance and/or destruction of Physical Cultural Resources (PCR) as defined by this policy by the projects activities. PCR includes places of worship, buried artifacts, cemeteries, and archaeological assets, etc. The policy further requires; (i) EA to undertake an exhaustive desk review and/or site investigation to pre-identify and locate PCR's in the PIA; (ii) EA/EMP to propose management measures; and (iii) to include "chance find" clauses in civil works contracts during construction and maintenance stages.

No PCR were identified during the original ESIA baseline surveys, nor where there any PCR identified during the additional ESMP assessments. Due to the small infrastructure footprint, there is a low likelihood of PCR being discovered during construction. A chance find procedure was developed in the original ESIA and remains relevant to the project. The chance find procedure has been reviewed and included in Annex 3 of this report. The policy is triggered as a precautionary measure in case a PCR is discovered.

WB safeguard Operational Policy 4.10 – Indigenous People and Operational Policy 4.12 are not triggered by the scope of works for this project. The original ESIA assessment remains the same, this included:

Operational Policy 4.10 – Indigenous Peoples

OP 4.10 requires engagement in a process of free, prior and informed consultation with Indigenous Peoples (IP's), as described by the policy in situations where IP's are present in, or have collective attachment to, the project area and for the preparation of an Indigenous Peoples Plan (IPP) and/or Indigenous Peoples Planning Framework (IPPF). An assessment completed by the WB into the application of OP4.10 in Pacific Islands Countries concluded that the Kosrae projects do not trigger this policy. This remains relevant to the project and the updated ESMP.

Operational Policy 4.12 – Involuntary Resettlement

This policy addresses direct economic and social impacts from the projects activities that will cause (a) involuntary taking of land resulting in loss of income sources or of livelihoods and (b) involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons. This policy requires siting of project infrastructure to be chosen as to avoid these impacts altogether or to minimise them to the extent possible. Where these cannot be avoided, the policy requires the preparation of either or both of these instruments: (i) Resettlement Policy Framework (RPF), (ii) Resettlement Action Plan (RAP). The policy also requires meaningful consultations with potentially affected people. The policy prohibits community donations of lands for location-specific infrastructure.

All land acquisition associated with the project will be voluntary. All land required by the project is owned or leased by the Kosrae State government. The projects original land due diligence study (see Appendix 3 in the original ESIA) and the current updated ESMP has identified that all land to be used for this project will be government owned as such none of which will cause any involuntary resettlement. If private or custom-owned land is required (extremely unlikely), this will be acquired voluntarily, using lease or easement arrangements. Therefore this policy is not triggered.

The original ESIA Land Use Plan remains in part relevant to the project and as such this information has not been repeated herein. The original ESIA report should be referred for clarification as required.

3. PROJECT DESCRIPTION

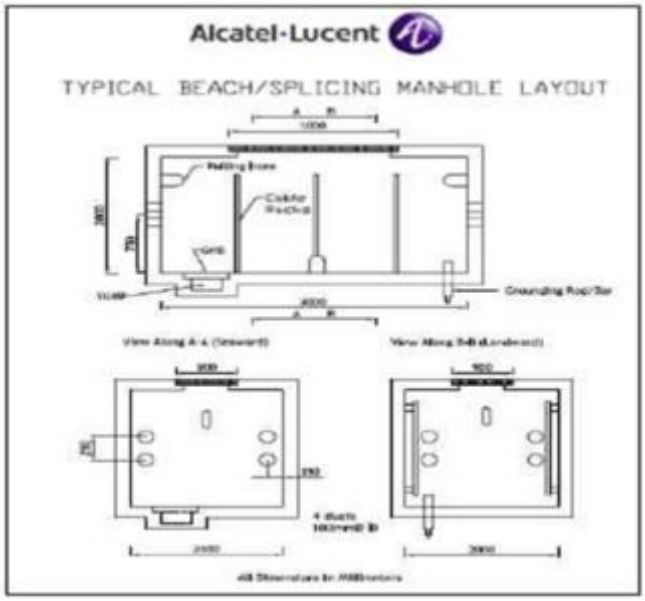
3.1 Project Components

The EMC Project involves installing a submarine fibre optic cable from Pohnpei to Kosrae (approximately 550 km) and to Kiribati (approximately 1,250 km) with either an intermediate landing or a spur to Nauru (approximately 250 km). The newly constructed portion of the EMC system will total over 2,000 km, much of it in deep ocean water (refer Figure 1).

The key components of the EMC subsea and terrestrial infrastructure for the Kosrae subcomponent includes:

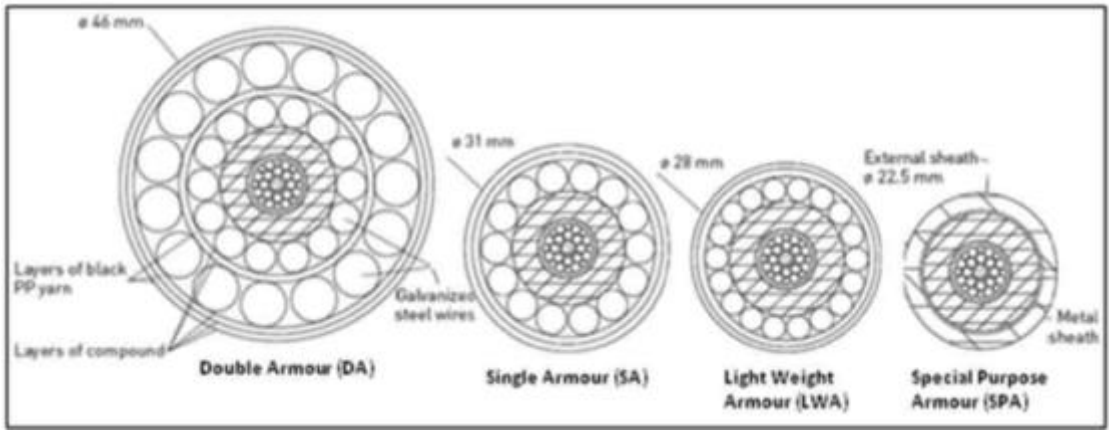
- Fibre optic cable and repeaters (approximately every 200 km) laid on the sea floor in deep ocean areas and use a combination of cable laying directly onto the benthic substrate (sea floor) and trenching in shall waters associated with Lelu harbor through to the BMH using a trenching machine in shallow waters.
- At the shoreward end of the cable entering Lelu harbor and terminating at the BMH, the cable will be covered with lightweight armor protection consisting of standard articulated piping and if hard substrate is available bolted to the substrate.
- A BMH landing facility will comprise a small concrete manhole approximately 2m x 2m x 2m (Figure 2) will be located within the state government owned land within Sansrit Elementary school adjacent to the intertidal reef flat.
- Terrestrial cable will be delivered within the existing primary road corridor easement from the BMH to the projects CLS.
- The Kosrae CLS has changed location from the original ESIA reported FSM Telecommunication Corporation earth station premises and is now located to the east of this site at the “old Telecom site” which is state government land (refer Figure 10 & 11).

Figure 2: Typical layout of a beach manhole landing facility.



The subsea cable, consisting of doubled armored cable to 200 m depth and single armored cable to 1,000 m depth (refer Figure 3), will range in diameter from 4-7.5 cm.

Figure 3: Fibre optic cable options.

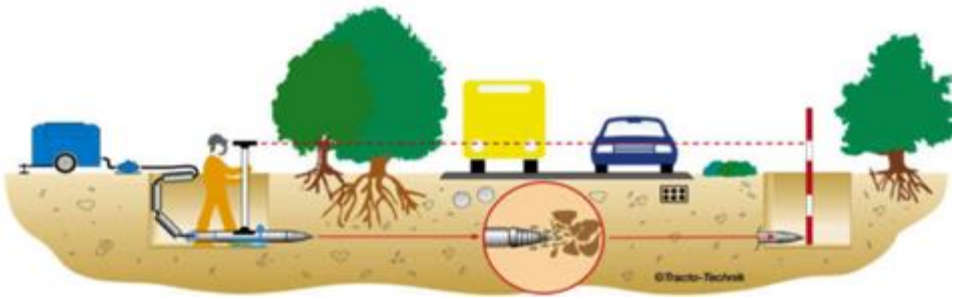


The subsea cable will be laid directly onto the sea floor in waters deeper than 200 m and either laid directly onto the sea floor (due to the cable weight will sink into the benthic substrate) or buried in a trench dug by a towed submarine plough in waters less than 200 m, which is inclusive of the sea floor from the entrance of Lelu harbor through to the BMH. The trench, which will be approximately 25 cm wide by 50-75 cm deep, is opened and then closed once the towed plough lays the cable into the trench (Figure 4). The trenching requires a corridor no more than 75 cm wide.

Figure 4: Examples of a submarine cable ploughs used in tropical waters.

The delivery of the cable between the BMH and the CLS will be deployed within the existing road easement associated with the primary road using several methods including trenching (which may require removal of vegetation where present) using a small excavator or thrusting, whereby cable conduit is pushed underground in advance of pulling the cable (see Figure 5). This technique is often used where there is sensitive infrastructure is present at the surface (i.e., road crossings, driveways, buildings, sensitive vegetation, etc).

Figure 5: Schematic showing typical conduit thrusting methodology.



3.2 Project Description

The projects final cable deployment alignment has been agreed and as such the information detailed in the projects original ESIA has been superseded. As such the original information detailed in the ESIA should be replaced with the information detailed below. The projects marine benthic ecological assessment undertaken in November 2019 provides the background information that has been used to finalize the shallow water cable alignment. This report should be referred for additional information.

Marine Waters Component: The submarine cable will be connected to the existing submarine cable approximately 20 km north of the island of Pohnpei and will be deployed directly onto the sea floor to pass north of the island of Kosrae (refer Figure 1) continuing further west to Nauru and Kiribati. A branch line will be connected to the main cable and laid directly onto the sea floor to enter Kosrae by passing directly through the Lelu channel (eastern side of the island) entering Lelu harbor (southern side) and landing at a BMH at the Sansrik Elementary School (Figure 6). This site corresponds to the BMH site number 6 reported in the original ESIA.

Figure 6: Proposed Shallow Water Marine Cable Alignment.

Terrestrial Component: The cables terrestrial alignment is to follow the islands main road (within the easement through to a new agreed CLS located to the east of the original suggested site (Figure 7). All cable terrestrial delivery system components will be placed underground and located within state owned/leased land and remain within the states road easement.

Figure 7: Proposed Terrestrial Cable Alignment

Beach Man Hole (BMH): The BMH is located within the grounds of the Sansrik Elementary school land parcel ($5^0$19'13.27N and $163^0$01'33.04E). The school is located on state government owned land and includes a small parcel of land that allows access through a road easement to the property and primary road (Figure 8). Land ownership documents for the elementary school are attached in Annex 1.

Figure 8: Proposed Location of the Cable Landing site and BMH.

The BMH site is located on the foreshore and intertidal reclaimed reef flat, fully fenced, contains 3 functioning school classroom buildings and associated infrastructure and has direct access to the main road via a gravel driveway with an approximately length of 30 m (33 yards). The fenced land parcel has a perimeter of 128 m (250 yard) and an approximate land area of 3,815 m^2 (3,190 $yard^2$).

The site has been reclaimed and cleared of original vegetation during the 1970's and remains highly disturbed land parcel. No natural flora and fauna exists (Figure 9).

Figure 9: Photos of the Proposed BMH Site.

Cable Landing Site (CLS):

The CLS no longer is to be located within the FSM Telecommunications Corporation Earth Station in Tofol as describe in the original ESIA, it is now to be located at the "old Telecom site' ($5^0$19'30.99N and $163^0$00'45.21E) located on state government owned land directly east of the states police-goal complex, within Tofol (refer Figure 10). Land ownership documents for the CLS are attached in Annex 2.

Figure 10: New Site Location for the projects Cable Landing Site.

The new CLS site is elevated, fully fenced, contains 3 main buildings in various levels of disrepair, an old currently unused satellite dish, various equipment currently stored on site and has direct access to the main road via a gravel driveway on government owned road easement land with an approximately length of 50 m (55 yards). The fenced land parcel has a perimeter of 155 m (170 yard) and an approximate land area of 1,492 m^2 (1,884 $yard^2$).

The site has been cleared of original vegetation during the 1960's and remains a highly disturbed land parcel. No natural flora and fauna exists (Figure 11).

Figure 11: Photos of the Proposed CLS Site.

The final location of the shallow water cable alignment, BMH position, road easement cable location and exact positions within the CLS will be determined once technical contractors have evaluated the project and provided final cable deployment sites. Precautionary notifications highlighted in the original ESIA and included herein are to be followed.

4. BASELINE DATA

The projects original ESIA provides a very general summary of the biological – ecological attributes of Kosrae (as required by the original Terms of Reference - TOR) and as such can be referred for general information as required. However, at the time the original ESIA report was developed the submarine shallow water and terrestrial cable alignment corridor were unknown and as such there is limited information provided on the preferred shallow water marine and terrestrial cable alignment within the Projects Influence Area (PIA) associated with the agreed final proposed cable alignment path. Thus very limited information was documented to ensure key significant biological resources (flora and fauna) and ecological systems are not impacted due to the scope of works. This is essential information to ensure WB safeguard requirements are met.

As such a projects specific marine benthic ecological assessment was undertaken in November 2019 to detail the ecological and biological attributes of the proposed cable alignment and provide recommendations on the cable alignment corridor and environmental mitigation actions. This report was developed as a standalone document and with key recommendation reported herein. This report should be referred when additional background information is required. Similarly, a site specific terrestrial review of the proposed land based cable alignment path has been undertaken to provide site specific information pertaining to the environment and ecological systems associated with the road easement between the BMH and CLS sites.

Information detailed in these ecological – biological reports are summarized below. This information has been used to develop the projects suggested shallow water and terrestrial cable alignment and up dated marine and terrestrial Environmental and Social Management Plan (ESMP), which will guide the project contractors to ensure WB safeguard policies and the FSM National and Kosrae State environmental laws and regulations are maintained throughout the projects development cycle.

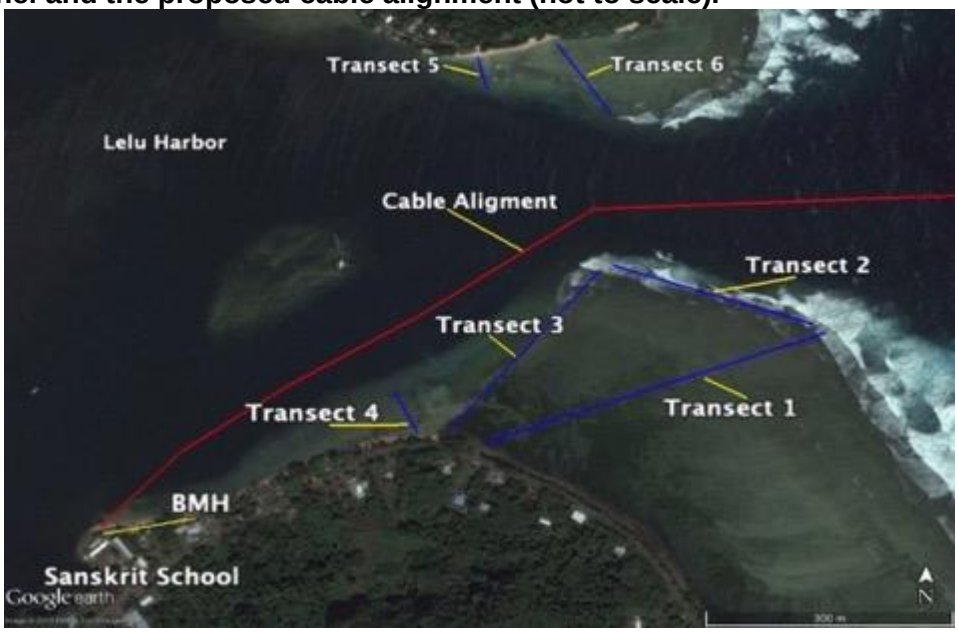
4.1 Marine Assessment

A marine baseline survey assessment was undertaken on the marine benthic abiotic and biotic habitats (intertidal and subtidal) and marine resources (vertebrate and invertebrate) within and adjacent to the proposed submarine cable alignment entering Lelu channel and terminating at Sansrit school on the southern side of Lelu harbor. The assessment undertaken was divided into three separate marine areas, (Figure 12 and 13) which include:

a. The marine benthic assessment of the intertidal and subtidal benthic ecosystems associated with the reef systems adjacent to the proposed submarine cable alignment corridor which included four free dives sites covering a total combined assessed area of 3.74 hectares (ha);
b. The marine benthic assessment of the sea substrate (floor) within the channel and harbor along the proposed submarine cable alignment corridor (Lelu harbor channel to shallow water adjacent to the BMH) which included six SCUBA dives site; and
c. The marine benthic assessment of the intertidal reef flat ecosystems located on the northern and southern reefs adjacent to the Lelu harbor channel, which included six transect sites covering a total linear length of 1.4 km and a total area assessed of 0.56 ha. This section includes a brief description of the submarine cable proposed terrestrial landing site (BMH – Sansrit School).

Figure 12: The location of the marine assessment survey sites including the 6 Dive Sites (SD) and the 4 specific Free Dive intertidal and subtidal reef systems (red) in relation to the Lelu channel and proposed cable alignment (not to scale).

Figure 13: The location of the 6 intertidal reef transects in relation to the Lelu channel and the proposed cable alignment (not to scale).



The northern and southern coastal waters adjacent to the Lelu channel and outer harbor possess an extensive and dynamic intertidal and subtidal coral reef ecosystem. This includes an expansive shallow water intertidal reef flat that is exposed during low spring tides and contain extensive inshore healthy sea grass beds, a distinctive outer reef crest and edge possessing spur and groove systems in

the southern and northern outer reef margins and upper and lower reef slopes that posses a steep vertical decline through to the seabed. Within the Lelu channel the reef slope on the southern side is almost vertical with a distinctive reef wall. Significant and diverse hard coral percent coverage, morphological form and species abundance are found predominately on the reef edge through to the lower reef slope at all sites assessed. Higher hard coral species diversity, abundance and variety of morphological forms were recorded within the Lelu channel than within the harbor reef systems. These parameters decrease rapidly once the harbor is entered.

The benthic substrate associated with the proposed cable alignment within Lelu channel and southern side of the harbor is relatively homogenous and almost exclusively dominated by soft substrate sediment composed of coral sand and terrigenous fine silt. Levels of silt on the sea floor increase further into the Lelu harbor. The substrate is devoid of sessile invertebrates, however supports in areas a healthy population of mobile burrowing marine worms and echinoderms. The key marine assessment findings include:

The Marine Substrate (sea floor):

- The seabed substrate associated with the proposed submarine cable alignment path is relatively homogenous throughout the area assessed, has a range of water depth between 14 and 45 m and is characterized by a bottom layer of coarse sand derived from terrigenous and coral reef origins with a fine silt top layer.
- The presence of coral fragments, rocks and boulders associated with the sea floor within the proposed cable alignment direct PIA are rare and most likely buried due to sedimentation deposition.
- The depth of the silt layer decreases towards Lelu harbor channel and is replaced predominately by sand towards the center of the channel and beyond, however fluctuations in the depth of the sediment sand silt layer and resulting water turbidity is directly related to tidal and weather conditions prevailing at any given time.
- The relatively high level of suspended silt and sand based substrate located at all assessment sites has a significant detrimental effect on the ability of sessile benthic marine resources to settle (recruit) and survive in these area.
- No sessile (non motile) benthic invertebrate species were recorded at any of the deepwater substrate dive assessment sites located within the proposed submarine cable alignment pathway.
- Mobile benthic invertebrates and vertebrates (including finfish) recorded very low population and species numbers throughout the areas assessed. Marine worm (Polycheate) burrows were located at all dive assessment sites. These invertebrate resources are highly mobile and adaptive to environmental disturbances. As such these invertebrates would be expected to self relocate if the benthic substrate and sediment profile is disturbed.
- Anthropogenic garbage, machinery parts and infrastructure equipment were located on the sea floor in all assessment sites.
- There is a possibility of UXO associated with the sea floor within the cable alignment pathway associated with WWII conflict. The likelihood of their presences in unknown. Investigations should be undertaken.

The Reef Systems:

- There are no coral reef systems nor hard coral communities located within the projects proposed cable alignment pathway (direct PIA).

- Coral reef systems are located adjacent to the proposed cable pathway (within the projects potential indirect PIA). These reef systems are healthy and maintain diverse invertebrate benthic sessile resource assemblages and are located on either side of the Lelu channel, along the margins of the outer sections of Lelu harbor and patch reefs within the harbor and as such are adjacent to the proposed cable alignment.
- These coral reef systems include a distinct zonation; shallow water intertidal reef flat that is exposed during low spring tides (varying in width 75 m – 280 m either side of the channel), subtidal reef flat (varying in width 10 - 30 m), distinctive reef edge and crest (3-10 m width), and upper and lower reef slope (5-10 m width) which for the most part have a vertical drop of between 30 - 80% (the southern side of Lelu harbor is almost vertical wall) that terminates directly onto a sand silt dominated seabed with depths ranging between 8 m in close proximity to the BMH through depths in excess of 45 m within the Lelu channel.
- Coral fragments, rocks and boulders are located in close proximity to the reef systems. They are all but absent within the channel and harbor associated with the proposed cable alignments PIA.
- All reef sites assessed possess a well developed intertidal and shallow water subtidal coral reef ecosystem.
- Hard coral percentage live coverage, morphological form, species diversity and abundance in general were similar throughout the sites assessed reflected the natural environmental forces affecting the different reef locations. A general decrease in these coral parameters was recorded from the entrance to the Lelu channel through to the inner harbor.
- The channels southern reef system recorded higher hard coral percent coverage, species diversity and a larger range of morphological forms than the northern channel reef site. Both channel sites recorded considerably higher live reef parameter levels that those recorded within the harbor patch reef and southern harbor reef margins in close proximity to the cable landing site (BMH).
- The cable marine landing site (adjacent to the BMH) is devoid of a hard coral reef system rather is dominated by a sand silt benthic substrate that does not support benthic sessile invertebrate or vertebrate populations.
- Hard coral percent live coverage for the northern and southern channel reef systems for the intertidal reef, reef crest and edge and reef slope varied between 0-2 % and 0–2%, 0-10 % and 0–25%, and 5-80 % and 10–50%, respectively. The patch reef assessed recorded 0-10%, 0-15%, 5-25% coverage for the above parameters.
- Hard coral sub massive and massive (e.g. *Porities sp.*, *Favites sp.*, *Monitipora sp., Lobophyllia sp., Goniopora sp.)* and to a lessor degree digitate (e.g. *Acropora sp., Pocillopora sp., Porities sp.*), small branching (e.g. *Acropora sp*., *Pocillopora sp, Millepora sp*), encrusting (e.g. Acropora sp., *Echinophora sp., Turbinaria sp.)* and solitary (e.g. *Fungia sp*. and *Heliofungia sp*.) morphological forms dominated the subtidal reef flat, reef edge, crest and upper and lower reef slope at all assessment sites.
- The large sub massive and massive hard coral “bommie or coral head” morphological forms (predominately *Porities sp*.) were abundant at all sites accessed with a number of large colonies in excess of 4 m circumference located along the southern channel reef slope. These are well outside the PIA of the proposed cable alignment.
- Both remnant and newly recruited hard coral colonies of varying sizes were located at all sites, albeit at a lower level within the patch reef, providing direct evidence of natural hard coral recruitment is active in these areas.

- There was an absence of soft corals at all sites assessed.
- The intertidal reef systems either side of the channel that extends into the harbor possessed extensive and healthy sea grass beds dominated by two species (*Enhalus acrorides* and *Thalassia hemprichii*). No sea grass was recorded within the PIA of the proposed submarine cable alignment.
- Marine macro algae density, coverage and diversity recorded low densities at all sites with the largest percent coverage recorded within the subtidal reef flat on top of the patch reef within the harbor. The dominant macro algae recorded at all sites was several species of calcium carbonate green algae (*Halimeda sp.*), whilst the patch reef possessed healthy populations densities of the green algae (*Caulerpa racemosa*) commonly known as sea grapes.
- The inner shoreline sections of Lelu harbor support an extensive and diverse mangrove forest, however these trees are well outside of the projects direct or indirect PIA and no impacts are expected from the project activities.
- Finfish population numbers and species diversity was low at all sites assessed. Species that were present were juveniles and include reef dwelling plankitvores (small fish), herbivores (e.g. Acanthuridae, Scaridae) and there was a noticeable lack of predator reef fish.
- Very low numbers of reef associated invertebrates (apart from corals) were recorded at all assessed sites. Those that were recorded have no or little subsistence or commercial value (e.g. non commercial sea cucumbers).
- Reasonable levels of rubbish (e.g. plastic and glass bottles), machinery and old equipment were located on the substrate throughout the marine areas assessed. These should be removed.
- Several adult individual Crown of Thorns starfish (COTS) and their distinctive hard coral feeding scars were located during the assessment. The southern reef system recorded the highest numbers (5), however as these species are cryptic and generally nocturnal it is likely that the population on these reefs is higher than recorded during the assessment.
- There was no hard coral bleaching, however there was small scale evidence of disease associated with the hard coral communities at both the northern channel reef and patch reef assessment sites.
- 5 marine green turtles (*Chelonia mydas*) were recorded swimming within the channel and outer harbor during the assessment. These individuals were sub adults and were most likely foraging on the reefs. These animals are highly mobile and as such they would not be negatively impacted during the deployment of the cable. There has been no recorded turtle nesting on the shoreline beach of Lelu harbor for well over 4 decades.
- There were no threatened, endangered or endemic hard coral species located during the assessment, nor any state, national or international endangered or protected species (apart from the turtle discussed above).
- There are no marine or coastal designated Marine Protected Areas (MPA) or areas of significant biodiversity within or in close proximity to the proposed submarine cable alignment. The patch reef assessed has been discussed by the state government as a potential site for fisheries management area but has yet to be formally designed. It is expected that the deployment of the submarine cable will have no direct or indirect impact on the benthic resources associated with this patch reef system.
- The proposed cable alignment will not impact any state or national sites of cultural, customary or heritage significance. The historical plane and vessel wrecks within Lelu harbor are located well outside the proposed cable alignment.
- The benthic substrate associated with the proposed cable alignment is dominated almost exclusively of sand and silt and as such the benthic habitat

within the projects direct PIA can be considered to have very low habitat and ecological value to the marine ecological systems of Lelu harbor and surrounding marine ecosystem.

The recommended shallow water cable alignment defined from the information detailed in the marine benthic assessment report includes the placement of the submarine cable directly onto the sea floor from the Lelu channel entrance through to the BMH. The cable needs to be delivered through the center of the channel and then south directly towards the BMH. The cable is to be placed well outside of the intertidal and subtidal reef flat and reef slope systems ensuring the cable is placed within the soft benthic substrate found throughout the harbor sea floor (refer Figure 6). The cable should not be placed anywhere near the living reef systems.

Key Environmental and Biological Impacts:

The proposed scope of works associated with the deployment of the submarine cable entering Lelu channel traversing through the southern side of Lelu harbor and terminating at the terrestrial landing site at Sansrit school will result in a very small marine environmental footprint both above and below the water.

Impacts on the marine environment and coastal waters associated directly with and surrounding the submarine cable alignment are expected to be very minor, localized to the immediate footprint of the works, and easily managed through standard deep sea cable laying engineering good practice mitigation measures. There are no threats to the area's marine and coastal biodiversity associated with the project. As such the potential impacts of the works on the marine environment are considered to be minor, temporary, easily mitigatable and overall insignificant.

The potential impacts of the project on the marine biological environment include:

(i) Localized and temporary increased suspended sediment levels adjacent to and either side of the submarine cable alignment areas potentially affecting marine habitats and associated resources during construction activities. Tidal fluctuations will predict the movement of sediment.
(ii) Spillage/leakage of oil and other pollutants into the marine environment from plant and equipment used during the deployment of the submarine cable (construction phase) of the project.

Benthic habitats associated with the environmental footprint directly within and adjacent to the proposed submarine cable alignment comprises almost exclusively of sand/silt substrate (some coral rubble and rock in shallow areas) with a paucity of benthic sessile invertebrates. As such the proposed scope of works will have a negligible potential impact on these habitats, its resources and is acceptable.

There is potential for localized and temporary increased suspended sediment levels in the marine environment during the disturbance of the sea floor as a result of the cable deployment. Such impacts are expected to be very minor due to; i) the low habitat value of the benthic environment; ii) prevailing high suspended sediment conditions in the area during periods of heavy rain and/or rough sea conditions; and iii) the limited physical construction activities proposed.

Potential Impact Mitigation Measures:

The potential impact of increased suspended sediment levels from the works can be further minimized through implementation of the following mitigation measures during the construction phase of the project:

(i) Deploy silt curtain/s around the termination location (shoreline adjacent to the BMH) of the submarine cable during all construction and redevelopment activities to directly manage and reduce the dispersion of benthic substrate (silt) disturbed during construction, and
(ii) Ensure due diligence when operating machinery during all work activities to prevent and manage petrochemical spillage and contamination of the waters associated with the project.

The contractor will be required to ensure all equipment is properly maintained and to follow all necessary precautions to prevent spillage of petrochemicals into the marine environment as set out in the hazardous materials section of the projects updated EMP. Provided such measures are properly implemented the potential impacts on the marine environment will be insignificant.

The overall potential impact of the works on the marine biological environment is expected to be very minor, localized and overall insignificant provided standard mitigation measures associated with good engineering practice as identified above are implemented. Furthermore due to the nature of potential minor impacts of the scope of works it is recommended that no specific marine monitoring program is required other than close supervision of the work to ensure that the above recommended mitigation measures are implemented and effective throughout the marine construction works.

Unexploded Ordnances – UXO

The project original ESIA identified the potential of UXO associated with the cable deployment in Kosrae and recommended that once the final alignment path is identified an UXO assessment maybe required. As such the project Marine Benthic Ecological Assessment details the past history (literature review and stakeholder conversations) of WWII activities within Lelu harbor and concluded that there is a potential risk issue with UXO within the submarine cable PIA – recommending a risk assessment be undertaken to identify this issue and mitigation activities developed. This assessment needs to be undertaken before the cable is deployed.

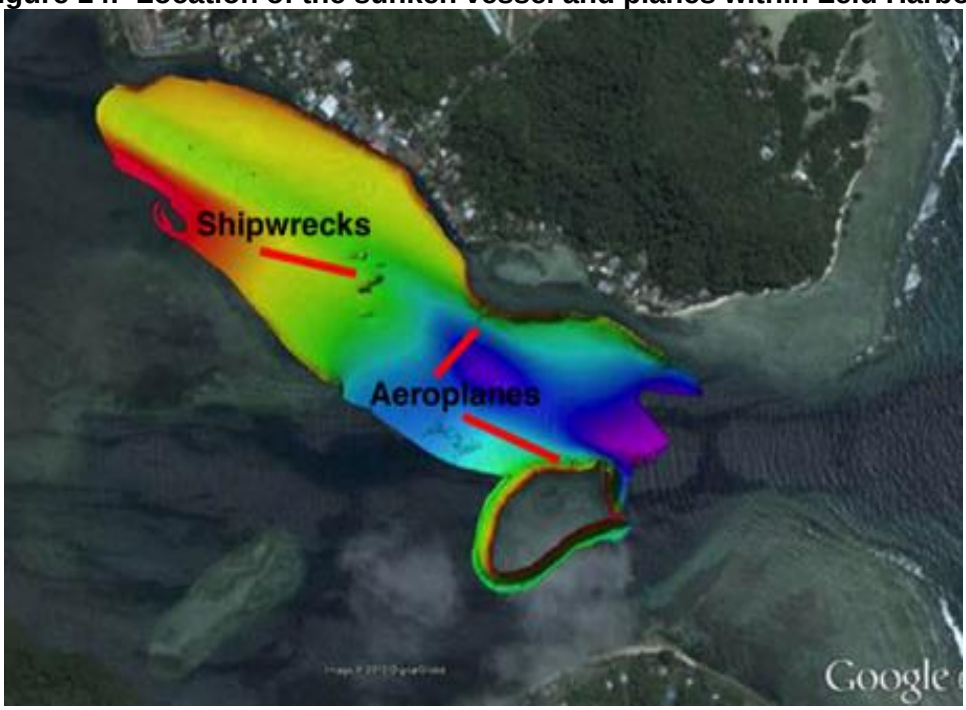
Background historical references and discussions with local dive industry, marine resources and stakeholders in Kosrae (November 2019) clearly indicated that Lelu harbor during WWII received in the order of 30 tons of bombs from American aircraft. The bombing of Lelu resulted in the island and foreshore demolished and included the sinking of the Japanese navy cargo ship “Ebon Maru” which remains resting on the bottom of the Lelu harbor. As such all anecdotal discussion with key stakeholders indicated that there is the possibility that UXO remain within the Lelu harbor area and that no past marine identification and removal has taken place within the harbor. WWII equipment including UXO has been removed from the Lelu Island shoreline and interior.

Therefore, due diligence and careful consideration needs to be undertaken during all stages of cable deployment from the entrance of the Lelu harbor through to the BMH (Sansrit school) for the possible presence of unexploded WWII ammunition that may be present in the substrate.

It is recommended that a detailed assessment of the cable alignment be undertaken during the initial cable bathymetric survey assessment undertaken by the contractor to ensure unexploded ordnances are located and removed before the cable is deployed. This is essential if cable trenching will be undertaken within the harbor. Potential impacts decrease if the cable is laid on the sea floor if trenching is not undertaken.

Moreover, resting on the sea floor within Lelu harbor are two aircrafts (PBM Mariner crashed 1951 and a Navy plane (HU-16) crashed in 1972) and 3 ships including a whaling ship (they think was the "MV Waverly") reported sunk in 1836, Japanese cargo vessel (Ebon Maru) sunk in 1945 and an unknown vessel. Both planes and all vessels are located on the sea floor on the north western side of the harbor submerged coral reef in the center of the harbor – towards the Lelu dock (Figure 14). All are located well outside of the PIA and as such will not be impacted by the project.

Figure 14: Location of the sunken vessel and planes within Lelu Harbor.



4.2 Terrestrial Assessment

The original ESIA provided very limited information detailing the terrestrial flora and fauna adjacent to the primary road boundaries associated with the proposed cable alignment (Sansrit school BMH through to the new CLS). This is not significant to the updated ESMP (this report) as the fiber cable alignment will be buried within the road easement, which is periodically cleaned by the State government to ensure road usage and stakeholder access. There are however are a number of plants – trees (majority are grasses and introduced weeds) that have encroached onto the road easement in parts that may be required to be removed. There removal is directly related to the side of the road the cable will be deployed underground within the road easement.

Road easement cleaning of vegetation occurs periodically by the state (road cleaning), telecommunication, water, power utility providers and landowners and there is no compensation provided. Removal of this vegetation, predominately grass and weeds (non natives) encroaching on the road corridor is supported and is an

acceptable activity and as such general stakeholder discussion indicated that this is fully accepted as part of the road easement arrangements. If large vegetation (e.g. trees) are required to be removed then specific discussions need to be undertaken with the land owners adjacent to the road corridor to seek permission (Figure 15 a & b).

In addition, the terrestrial cable deployment route includes crossing several permanent streams (Figure 15 c & d) and there are several areas that the road corridor in located very close to the coastal shoreline (Figure 15 e & f). Consideration of the position of the underground cable within the road easement needs to be mindful of these habitats and long term potential negative impacts of climate change.

Figure 15: Representative photos of the road easement associated with the fiber cable terrestrial alignment, (a) road in close proximity to BMH, (b) road in close proximity to the CLS, (c and d) main bridge and (e & f) coastal shoreline.

The original ESIA Table 4.1 "*project influence areas delineations and conditions*" remains suitable for the project and as such has been included herein to be used to guide the ESMP update. The terms have been refined to ensure practicability and usability for the Kosrae submarine cable project. This is duplicated and presented below in Table 2.

Table 2: Project Area of Influence delineations and conditions.

Environment	Project Influence Area (PIA)
Offshore (3 nautical miles (nm) from the coastline)	The accuracy of the placement of the submarine cable on the sea floor reduces with depth and the increased influence of ocean currents. A 500 m corridor either side of the cable has been adopted as a precautionary limit for the PIA
Coastal Waters (<3 nm from the coastal line)	As the accuracy of the submarine cable placement increases, the PIA reduces. Taking a precautionary approach, a 100 m corridor either side of the cable (200 m total) has been used for the foreshore PIA.
Inshore Waters (subtidal & Intertidal reef systems)	10 m wide (5 m on either side of the cable) area when traversing the subtidal and intertidal reef systems approaching the shoreline.
Beach Man Hole (BMH)	A 10 m radius from the center point of the new terrestrial structure within existing state government easements for public works.
Terrestrial cable alignment route.	A 10 m corridor has been assessed for any terrestrial trenching activities.
Cable Landing Site (CSL)	A 10 m corridor around the perimeter of the new and or existing terrestrial structure within existing state government easements/land for public works.
Important Species Habitats – Marine	Offshore: ▪ A 2 km clearance of the submarine cable when encountering sea mounts and/or hydrothermal vents. ▪ Sonar usage to stop, once cetaceans are located within 2 nm of the ship. Inshore: ▪ 10 m minimum corridor for all benthic important habitats including coral reefs, sea grass beds and mangrove forests. ▪ A 50 m corridor from any Conservation Area and/or Marine Protected Area.
Important Species Habitats – Terrestrial	10 m corridor for all natural terrestrial ecological habitats and or riparian ecosystems.

5. ANALYSIS OF ALTERNATIVES

The original ESIA provides a full description and account of the processes undertaken for the Kosrae component project alternatives and remains relevant. The information detailed has led to the final cable alignment route. This information is not repeated rather the original ESIA report should be referred if this information is required.

6. ANTICIPATED IMPACTS AND MITIGATION MEASURES

This section developed in the original ESIA report provided a sound account of the Kosrae projects expected impacts and remains applicable and useful for the development of the updated ESMP. Thus the information detailed in the original report will not be repeated herein in its entirety, rather specific sections and information have been updated and included under the original ESIA headings. This includes additional site specific information resulting from the marine assessment to reflect actual impacts not perceived impacts as documented in the original ESIA.

6.1 Introduction

The EMC Project has the potential to create a variety of impacts, which can be positive, negative, negligible or neutral depending on the receptors involved. The impact of the Project on the physical, ecological and social environment has been assessed using methodology described in this chapter of the original ESIA report.

The impact assessment process initially involved the identification of the Project's activities and potential environmental and social impacts resulting from each activity during project phases. Project activities include preconstruction activities, cable installation (construction), operation, and ongoing maintenance. Within the original ESIA, and the updated ESMP (this document) impacts are defined as "*any change to the physical, biological or social environment, whether adverse or beneficial, wholly or partially resulting from an organization's activities, products or services*".

6.2 General Environment

6.2.1 Deep Ocean Waters

This section remains as reported in the ESIA. It includes:

The environmental issues associated with submarine cable deployment and maintenance has been identified in relevant international literature. Disturbances and impacts caused by cable laying and maintenance should be viewed in the context of the frequency and extent of these activities. The one off disturbance associated with cable placement is restricted mainly to a strip of seabed less than 5–8 m wide and unless a cable fault develops, the seabed will not be disturbed again within the system's design life (approximately 25 years).

By comparison, commercial bottom trawl and dredge fishing operations are repetitive and more extensive and a single bottom trawl can be tens of metres wide, sweep substantial areas of seabed in a single operation and is likely to be repeated at the same site frequently. A single impact, such as a cable placement or burial, is preferred to continuous, multiple or recurring impacts.

The United Nations Convention on the Law of the Sea (UNCLOS) advocates the freedom to lay, maintain and repair cables outside territorial seas, but these are not necessarily inconsistent with the need to protect deep-ocean habitats and ecosystems, described as follows:

- Cable deployment in the deep ocean, i.e. laying of a 17–20 mm diameter tube on the surface of the ocean floor, has a minor if not negligible one-off impact; and

- Cable repairs can result in substrate disturbance. However, cable failures in deep water are relatively rare and are mainly caused by major natural events.

In addition, the submarine cable industry, together with environmental regulators, attempt to reduce or avoid any impact on vulnerable deep-water ecosystems by:

- Utilizing modern seabed mapping and navigation systems that allow identification of benthic habitats in unprecedented detail and accuracy. Together with modern cable laying techniques, it is now possible to deploy cables to avoid ecologically and biologically sensitive areas; and
- Avoiding the deployment of cables on or through habitats such as seamounts, submarine canyons and hydrothermal vents, which are also unsuitable as cable routes due to the risk of natural hazards. For example, under water deep sea canyons are often swept by powerful currents that may abrade or break cables; and seamounts can be volcanically active and subject to landslides and hydrothermal venting.

Modern deep water submarine fibre optic cables are composed of several pairs of hair-like glass fibres, a copper power conductor and steel wire strength member, which are all sheathed in high density polyethylene. Where extra protection is required (as for areas of rocky seabed or strong wave and current action) additional steel wire armor is included. Of these materials, cable grade polyethylene is essentially inert in the ocean. Processes such as oxidation, hydrolysis (chemical breakdown in water) and mineralization are extremely slow; the total conversion of polyethylene to carbon dioxide and water would take centuries.

The effects of ultraviolet light (UV-B) (the main cause of degradation in most plastics) are minimized through the use of light-stabilized materials, burial into the seabed and the natural reduction in light penetration through the upper ocean, where the photic zone rarely extends beyond 150 m depth. Any mechanical breakdown of a cable's plastic sheathing to fine-grained particles on the energetic deep water reef systems associated with Kosrae, a potential hazard for marine life, is minimized by armouring and burial.

In addition, the diesel powered vessels used to survey the seabed and lay cable (as described in Section 3.1) will emit greenhouse gases. As the relative contribution of these ocean going vessels to overall greenhouse gas emission is so small it is considered insignificant "*de minimis*".

Offshore anchoring for fishing and/or commercial container vessels in the waters of the FSM and Kosrae State is limited due to significant water depths. Hence, the overall potential environmental impacts arising from the Project in the deep ocean are limited. Anchoring of ocean going commercial vessels offshore from the Lelu harbor (entry point of the submarine cable into Kosrae) is not used and as such it is extremely rare that a vessel will anchor in this area. The key potential environmental interactions resulting from the project are associated with the nearshore areas where cable requires burial to avoid potential entanglement with fishing activities and other human activities.

6.2.2 Intertidal Coastal Marine Areas

A range of potential impacts could arise between the submarine cable entering the shallow marine coastal environment through to the BMH. The key potential impacts to both reef and soft bottom benthic environment and resources include:

- Direct loss of habitat along the cable route;
- Physical effects of sedimentation on benthic communities as a result suspension of fine materials and off-site deposition during cable laying;
- Reduction in water clarity due to increases in water-borne suspended solids concentrations and potential impacts on fish communities; and
- Temporary restrictions to local villagers to fishing areas during the installation period only.

Overall the potential impacts are not expected to be significant due to:

- The area disturbed represents a very small proportion of the total intertidal habitat present;
- Minimal benthic ecosystems and resources (flora and fauna) interaction and impact:
- Ability of the marine benthic community to recolonize over time; and
- The short duration of the installation activities.

The UXO assessment of the cable alignment from the entrance of the Lelu harbor through to the BMH is required to ensure damage to the cable and personnel are managed (Figure 16).

Figure 16: Proposed cable alignment showing area that requires UXO assessment.

6.2.3 Terrestrial Areas

The proposed location of the CLS at the “old Telecom site” on the eastern outskirt of the in the township of Tofol, and is located approximately 2.6 km from the projects BMH (Sansrit Elementary School).

The terrestrial cable route is along the Kosrae primary road corridor and will be located within the road easement where the existing telecommunications infrastructure (copper cable) is installed. Evaluation of the potential route indicates it is comprised of a combination of minor vegetation that encroaches on the road corridor (easement) in parts and includes road intersection, business and personal driveway crossings, and several small stream crossings (concrete bridges). There are no activities of a particular sensitive nature along the proposed route access to

which would be unnecessarily impeded, however business and home road access may be interrupted during construction and as such appropriate stakeholder awareness, notification and timing requires agreement.

The design team will need to specify which side of the road (both sides have an easement) that the cable is to be deployed along the route between the BMH and CLS. As the shore side road easement roughly one km northwest of the BMH (refer Figure 15 e & f) is directly exposed to the shoreline and as such the road as well as the cable would require structure strengthening in terms of a rock revetment wall. The use of the inland side of the road to avoid the above issue is recommended for consideration.

Overall, the potential environmental impacts of cable installation are not expected to be significant due to the fact:

- The vegetation present is sparse and is typically comprised of a range of common species and there is nothing of particular conservation concern present (the road easement is cleaned periodically by the state government and or adjacent land owners); and
- The installation period is of short duration so disruption to traffic and home/business access will be temporary. All physical disturbances are to be replaced.

The use of methods (i.e., cable thrusting under sensitive areas) will mitigate any potential impacts. The proposed CLS itself has no ecological resources of any description on or immediately adjacent to the site that would be impacted.

6.3 Poverty and Gender Impacts

Section 6.3 of the Baseline Data Report in Appendix 6.3 of the original ESIA report describes the relevant poverty, vulnerable population and gender issues associated with the FSM and state of Kosrae. This information remains relevant and useful to the project and should be referred for additional background information.

In terms of potential impact overall, the Project will ensure lower cost Internet access for consumers, including low income households. As a result, the Project will contribute to improved social welfare, provide expanded access to information and services, and increase income-earning opportunities. In addition, the Project is expected to have a positive impact on women's access to affordable Internet services. This is important as access to affordable, high-speed Internet in employment particularly in the education and health sectors is known to be associated with economic and social empowerment. Improved Internet access can facilitate new livelihood opportunities for women who tend to stay on the island.

An added benefit is in the area of disaster risk management such as: (a) facilitating the deployment of disaster risk monitoring tools and applications that require large volumes of data transmission (including access to regional databases) by improving the quality and reducing the cost of Internet; (b) providing additional options/media for early warning systems and post-disaster communications.

6.4 Land Acquisition & Resettlement

The Land Due Diligence report addressing the issue of involuntary resettlement for Kosrae, is provided in Appendix 3 of the original ESIA report. A considerable proportion of the information detailed in this report, due to the final cable alignment

location is now out of date. However, information pertaining to land usage, management and access remains directly relevant to the project and should be referred to if additional information is required.

The report concludes that the BMH and CLS sites will be located on Government owned land, and as there will be no need for private or custom owned land to be used or accessed, nor is there any involuntary land acquisition required. The cable terrestrial routes will follow public road easement and as a result a project Resettlement Policy Framework (RPF) is not required.

6.5 Risk Assessment & Impact Identification Methodology

The original ESIA risk assessment methodology and associated tables (6.2 Qualitative Measures of Consequent and 6.3 Qualitative measures of Likelihood) remain relevant and useful to the project. These are not repeated herein and should be referred if additional information is required.

6.6 Outcome of Risk Assessment & Impacts Identification

The original ESIA risk assessment presented in Tables 6.4 and 6.5 remain relevant to the project and as such no changes are suggested. These are not repeated herein and should be referred if additional information is required.

The original risks determination using the ESIA described process remain the same with all risks identified and “extreme” and “High” have been determined as “low” following implementation of mitigation measures identified in the projects ESMP. No additional information is required and as such the original document should be referred for additional background information.

6.7 Other Potential Impacts & Benefits

6.7.1 Cumulative Impacts

The original ESIA indicated that no cumulative impacts are anticipated. This is consistent with the new assessment and as such remains the same. This includes:

- The submarine cable installation involves the placement of a small diameter solid cable (containing no liquids, and not needing transmission of electricity) in a narrow trench on the seabed and careful placed (via divers and/or a cable floated into place as required) in coastal waters over a short distance and a relatively short period of time. There are no other known activities occurring at the same time that the cable is to be placed on the seafloor.
- The installation of the terrestrial component of the cable requires the placement of a small diameter cable (containing no liquids, and not needing transmission of electricity) in a narrow trench within the road easement from the BMH through to the CLS, which is then backfilled, compacted and covered. The CLS requires the removal and/or refurbishment of an existing building resulting in minor construction activities, all of which is on state government land.

In addition, there are no expected cumulative social impacts due to the small project footprint, and the fact that it is not expected to cause permanent access and/or loss of communal inshore fishing grounds and local people’s livelihoods.

6.7.2 Irreversible & Irretrievable Impacts

The original ESIA concluded that there will be no irreversible or irretrievable impacts resulting from the project, this assessment remains valid. Implementation of measures outlined in the up dated ESMP will serve to mitigate any potential impacts.

6.7.3 Transboundary Impacts

The original ESIA identified transboundary impacts are likely to be limited to:

- Potential emission of greenhouse gases from the survey and cable laying vessels and machinery used to deploy the cable within the road easement; and
- Impacts on ecosystems, endangered species and habitats.

Concluding overall, the impacts of greenhouse gas emissions are expected to be no more than minor given the relative contribution of the vessels compared to other emitters, and no endangered species and habitats were identified that could be potentially adversely affected following implementation of mitigation measures. The conclusions remain relevant to the project.

6.7.4 Environmental & Social Enhancements/Benefits

The original ESIA findings remain relevant to the project and no changes are recommended. The Project will not only improve people's access to income and social services, but may also enhance social networks and contact with family members living abroad. Faster Internet is expected to facilitate regular and affordable connections among local and overseas-based groups, particularly women's organizations who rely on Internet for communication. A fibre optic system was installed on Pohnpei, FSM, in 2010 and improvements in health care and education services have been reported. Better Internet connections should also help with remote medical services and distance education.

7.0 INFORMATION DISCLOSURE, CONSULTATION & PARTICIPATION

7.1 Introduction

The original stakeholder consultations remain valid as documented (documented in the ESIA Appendix 6 and Appendix 7 details the attendees). Since this report has been completed a number of key stakeholder discussions and meetings have been undertaken to further discuss the projects development, at the national and state level. Details of these activities are documented with the OAE and/or WB (e.g. project missions) and should be referred as required.

In addition, the FSM National Department of Financial Administration (DoFA) Central Implementation Unit (CIU) marine safeguard team undertook a number of key stakeholder discussions pertaining to the methodology and logistical arrangements associated with the marine benthic assessment. These are documented in the annex section of the marine benthic assessment stand along report and should be referred as required.

Further stakeholder engagement, awareness and information exchange will be undertaken as the project is initiated to ensure key stakeholders are fully briefed on the project. Specific community awareness information exchange will be undertaken with all community members whom maybe directly impacted by the scope of works, the majority of which are land owners (private and business) adjacent to the cable terrestrial alignment.

The original ESIA stakeholder discussions include:

- Stakeholder meetings and public consultations were held during the site visit to Kosrae by the safeguards team from 14th to 23rd October, 2016.
- Overall, stakeholder feedback during meetings and public consultation was very encouraging and positive. Primarily, people just wanted information on the nature and timeframe for the project. In fact, the limited connectivity in Kosrae prompted a lot of people to demand quicker implementation of the Project. The desire to obtain better Internet and communication services at an affordable rate was high. This sentiment remains high on community's aspirations.
- Government and non-government organizations indicated the aspiration to offer more products and better services particularly private businesses and financial institutions (banks). In addition, there is a high rate of emigration from Kosrae in search of better economic opportunities. Better communication will be welcomed by Kosraean families with loved ones living abroad, whom wish to keep close contract with family members at home.
- A key issue raised related to land access and ownership. However, it was mentioned that the priority was locating the BMH and CLS sites on Government land. Further, it was highly likely that the existing utility corridor (telephone and electricity lines) would be used for the fibre cable networking on land. The purpose provision in the Government easement lease, which clearly identifies the 60 feet wide easement, will accommodate the duct route of the fibre cable from the BMH to the CLS. However, an issue was raised that landowners may potentially claim that land on the seaward side of the road, which has been eroded in recent times, belongs to them when in fact it is within the road easement. To avoid the issue of ownership and to ensure

long term viability of the cable in these areas, it is proposed that the cable be installed on the inland side of the road.

- The issue of accessing inappropriate information specifically by children was raised by women. The response was described as an issue of managing the risk. Education will need to be provided on how to manage access to Internet content at home.

7.2 Disclosure

The original ESIA was publicly disclosed on the Implementing Agency (IA) website Department of Transportation, Communication, & Infrastructure (DTC&I) and was available in hard copy at government office. A public notice was released to let stakeholders know that the documents are available to view. In addition the WB disclose this document on their websites.

The updated ESMP (this document) once finalized will be publically disclosed on the FSM IA website (DCT&I), DOFA – CIU and the WB.

7.6 Ongoing Consultation & Participation

Throughout the projects implementation (pre construction, construction and operational phases) the project's IA (DTC&I and OAE) will be responsible for keeping the public and stakeholders informed of progress. Further consultation will be undertaken before and during the detailed submarine and terrestrial cable deployment. The projects IA will develop a consultation plan for their project and will be supported by an in-country Project Management Unit (PMU) and an individual Project Coordinator (PC) to implement the plan. The DOFA CIU Safeguard team will assist all project partners to ensure the up dated ESMP is managed and monitored throughout the life of the project.

The projects specific Grievance Redress Mechanism (GRM) has been up dated and has been disclosed on the FSM IA website (DTC&I), DOFA – CIU web sites. Understanding and access to the projects GRM will be included in the stakeholder awareness program. The up dated GRM is attached in Annex 4.

8 ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN

8.1 Introduction

The original ESIA Environmental & Social Management Plan (ESMP) was organized into two cross-referenced tables, namely the Environmental and Social Mitigation table (ESMiT) and Environmental and Social Monitoring table (ESMoT). Through internal discussion the projects updated ESMP has been upgraded to include:

i. Reduced to one single table, which includes mitigation and monitoring aspects; and
ii. Additional requirements for the terrestrial scope of works (pre-construction, construction and operational phases) to be more user friendly and to reduce repetition.

The updated table details the mitigation measures and monitoring actions that the Implementing Agency (IA) has committed to implement, from the planning through to the operating period of the project. This approach makes for an ESMP that is practical and can be easily used. The ESMP will inform the terrestrial Contractor's ESMP which will be prepared following detailed design. These tables are to be included in the respective bid documents.

The up dated ESMP table is included in Annex 5.

8.2 Performance Indicators

The original ESIA performance indicators and their justification remain applicable to the project and as such only minor changes have been made to reflect the known cable alignment path, including marine and terrestrial components. The indicators included:

Given that nearly all of the potential negative impacts could arise during cable installation, and that robust environmental contract clauses will be able to avoid all impacts, key performance indicators will be as follows:

i. Confirmation that the ESMP tasks are defined as specific individual or grouped environmental and social clauses in the contract bid documents for cable laying (marine and terrestrial);
ii. Confirmation that environmental management criteria are included as part of the cable laying contractor/s selection process, including their experience preparing and implementing ESMPs, working in sensitive tropical locations such coral reefs, seagrass meadows, mangrove forests, coastal and riparian ecosystems and offshore seamounts;
iii. The DOFA CIU Safeguard team have marine – terrestrial ecology and social expertise and will support the Implementing Agency (IA) by providing assistance with ESMP implementation, contractor briefing on marine and terrestrial habitat protection, contractor ESMP supervision (including observations during cable laying within the reef), and participation in community consultation;
iv. A written record of the briefing on safeguards and inspection of vessels/machinery, according to the tasks as they are defined in the ESMP and contract specification, completed with the survey and cable placement contractors, as soon as the contractors have been selected.
v. Compliance monitoring checklists prepared and being used by the contractor and safeguards consultant and due diligence notes, completed as defined in

the ESMP, and making the notes available in an easily accessible file for the contractor, PC, PMU, and others to use.

vi. A written mitigation and monitoring completion report, listing all mitigation and monitoring measures defined in the ESMP, their implementation timing, monitoring and any follow up actions; and,

vii. A written record of interviews with local fishers, farmers and landowners adjacent to the terrestrial cable alignment discussing any cable placement issues.

The DOFA CIU Safeguard team will be responsible for preparing a performance indicator report on behalf of that party's PMU, by listing the seven items above and providing a short text to indicate how these items were implemented and their success as of the start of the operating period of the project.

8.3 Implementation Arrangements

8.3.1 Overview

The original ESIA report included all three EMC countries as required. The below describes the up to date country arrangements and details the requirements of the Kosrae component.

The EMC Project involves three countries (FSM, Kiribati and Nauru), each with their own project funding supported by either the World Bank (FSM) or ADB. The development and implementation of the joint components of the EMC Project are administered through the East Micronesia Cable Management Committee (MC), which is comprised of one members from each of the participating countries and functions as the projects overall central Project Management Unit (PMU). The MC will hire an Administrative Project Manager (APM) who's role is to support the MC and is responsible for the management of all project components that are jointly own by the three nations (in general everything under water) and essentially functions as the project coordinator.

Each of the three project recipient nations is individually responsible for project development and management requirements within their own territory, which includes the BMH, CLS and front, haul cable. To manage the FSM and Kosrae component sections of the EMC, two Technical Project Manager (TPM) positions are to be recruited to manage the technical requirements of the marine and terrestrial components, respectively of the project. The TPM will report to and be managed by the OAE. The implementing agency for the Kosrae (FSM) component of the project is the FSM DTC&I, whilst the OAE will manage the EMC project.

The IA is responsible for implementing the ESMP and complying with the safeguards policies of the WB. Two cable laying contractors will be contracted by the OAE on behalf of the IA to supply; i) all undersea components of the project up to the BMH and; ii) all terrestrial components including the BMH through to the CLS. The projects IA will be responsible for day-to-day project delivery including the supervision of the cable laying contractors. The OAE will continue this role once the project is completed for the purpose of owning and operating the long term interest in both the undersea and terrestrial components of the EMC. The IA through discussions with relevant project contractors is responsible and has identifying the final location of land based infrastructure (BMH, CLS and cabling), securing land access (lease or easement), and will procuring contractors, supervise the marine and land-based works, in association with the DoFA CIU Safeguard team deliver and

manage the projects stakeholder consultations and manage complaints and grievances.

8.3.2 ESMP Implementation Arrangement

The original ESIA suggested implementation arrangements have under gone minor changes and are updated in the below section. The key change includes the inclusion of the DOFA CIU Safeguard team (International Safeguard Advisor and National Safeguard Coordinator) as the Safeguard Advisor role and the inclusion of a Kosrae based safeguard assistant to assist in the day-to-day management of safeguard compliance issues during the implementations of the project (near shore and terrestrial construction phases).

ESMP activities relating to cable laying will be coordinated and managed by the IA OAE on behave of DTC&I, which may delegate some/all responsibility to the DoFA CIU Safeguards team as needed for the duration of the implementation period. ESMP activities during undersea cable laying are to include:

- Ensure safeguards clauses (EMP) are included in the cable laying bid documents;
- Review and clearance of the terrestrial cable laying Contractor's CEMP;
- Review and comment on detailed design, detailed marine surveys and other technical outputs;
- Remote and site-based supervision of the cable laying contractor, particularly when the cable is being laid in the nearshore / foreshore environments;
- Updates to the ESMP, if required; and
- Reporting safeguards activities and progress on a quarterly basis.

ESMP activities during the terrestrial cable laying include:

- Ensuring land acquisition and resettlement is voluntary and is carried out in accordance with WB safeguards policies (if required);
- Ensuring land access documentation is obtained before construction starts;
- Managing consultation, disclosure of information, keeping records of consultations and providing feedback to relevant agencies;
- Receiving and recording grievances and complaints, and managing their resolution;
- Remote and site-based supervision of local contractors for compliance with the ESMP, including managing any non-compliances and incidents;
- Obtaining local permits or environmental approvals, including preparing any documentation and communications with environment agency staff; and
- Reporting safeguards activities and progress on a quarterly basis.

Training, oversight, support and capacity building to the IA and/or OAE as required, but particularly for consultation, voluntary land acquisition, management of non-compliances and incidents, and obtaining local permits and approvals.

A DOFA CIU safeguard team serves as additional support to Kosrae States Kosrae Island Resource Management Authority (KIRMA) to monitor and manage the project.

8.4 Institutional Capacity Assessment

The projects original assessment of the capacity of the FSM and Kosrae state to manage the safeguard requirements of the project remains valid and is supported. The original narrative included:

Kosrae State appears to have competent staffs that work in the various environmental consenting agencies, which have had some experience with processing EIAs associated with infrastructure projects support by developing partners, including the WB. Therefore, in light of the fact that the impacts of this project are expected to be minor in nature and extent, the capacity within the environmental agencies appears adequate, and there is not considered to be any need for changes to related institutional or organizational arrangements, capacity development or training measures. The IA have indicated that they have capacity to take on the responsibilities required to implement the Project subject to provision of technical assistance offered by the WB.

The DOFA CIU Safeguards team has extensive experience in the implementation of WB safeguards associated with submarine cables and other infrastructure projects. The IAs and their respective project implementation teams will coordinate with the DOFA CIU Safeguards team to ensure that the contractor/s complies with ESMP requirements, which will be incorporated into contract(s). In addition, the cable supplier, installation contractor and building contractors will be required to have sufficient ESMP implementation skills and resources within their team for the duration of their contract.

The WB will support the IA and DoFA CIU safeguard team as needed (requested), and will provide ongoing safeguards support for the duration of the project. No specific training is proposed.

8.5 Mitigation & Monitoring

8.5.1 Environmental

The original ESIA ESMP identified mitigation and monitoring actions have been up dated to reflect the development of the project. These now include:

Marine: Monitoring will be required during cable installation in the field (likely to be less than one week), when the cable placement is ongoing nearshore. For the deep ocean work the oceanographic survey is expected to be completed several weeks ahead of the cable placement operation.

Terrestrial: Monitoring will be required during cable installations in the field (likely to be up to 3 weeks) on a part time basis.

It is also expected that the DoFA CIU Safeguard team will actively participate in stakeholder awareness activities needed to ensure community understanding and compliance of the cable delivery, for both the marine and terrestrial safeguard components.

As the safeguard team works for DoFA CIU and as such costs are funded through other FSM projects, safeguard costs to this project have been reduced. However the Safeguard team is based in Pohnpei and as such would require additional travel associated costs to be provided by the project. This is expected to be up to US$10,000. In addition, funds need to be considered for the engagement of a Kosrae based local safeguard assistant for the duration of the cable construction period and

additional time before and after to assist in stakeholder awareness and information exchange programs. Expected costs would be up to US$6,000.

8.5.2 Social Development Programs & Resettlement Costs

The original ESIA estimated activities remain valid whilst the costs to deliver these activities has been estimated at a maximum of US$5,000, a lower value than originally costed. Justification for this includes:

- Social mitigation and monitoring will involve at least five tasks as identified in the projects up dated ESMP (Annex 5). Cost of community awareness activities such as community meetings/public consultations and information materials prior to construction, during and after construction is expected to be up to US$5,000 for the complete development period. As access on Government or State land will be voluntarily donated, there is no land acquisition required for the project and therefore no budget allocated.

8.5.3 Total costs

The estimated total project costs for the environmental and social mitigation and monitoring activities is estimated to be US$21,000 inclusively. This figure does not include the DOFA CIU Safeguard teams costs as these are provided under separate funding package.

8.6 Reporting & Monitoring Requirements

All updated reporting requirements are specified in the ESMP (see Annex 5). In summary quarterly progress reports from the DOFA CIU Safeguards team to the projects IA (DCT&I and OAE) is required, and 6 monthly project report to WB (as per normal reporting requirements under funding agreements).

At the end of the construction period the DOFA CIU Safeguard team in conjunction with the OAE will prepare mitigation and monitoring completion report for the IAs to submit to the WB as required. The contractor will be required to submit progress reports to the IAs, in addition to the oceanographic survey findings and a semi-annual summary of ESMP implementation. The DOFA CIU Safeguard team in conjunction with OAE through its respective IA will prepare and submit a semi-annual compliance monitoring summary report, as well as the construction period mitigation and monitoring completion reports, once the facilities are fully installed. Monitoring requirements are detailed in the ESMP.

8.6.1 Environmental Codes of Practice

Through previous submarine cable development projects an international Environmental Code of Practices (ECBP) for the deployment and installation of submarine cables have been developed. The projects original ESIA refers to this document and has acknowledged that these codes are relevant to this project. The conclusions drawn remain valid and as such these codes remain as reported in the original ESIA.

The ECBP lists many of the items defined in the updated ESMP and adds further detail on boundaries and restriction to be adhered to by contractors conducting work in the marine and coastal environment. These codes had been prepared as a companion volume to the original ESIA. These codes have not been repeated herein

and reference to the original ESIA annex document should be undertaken as required.

9.0 GRIEVANCE REDRESS MECHANISM (GRM)

The original ESIA GRM proposed was a generic framework system applicable for each of the three nations involved in the EMC project. The GRM was scaled to the risks and adverse impacts of the project. If promptly addressed, concerns and complaints of potentially affected people using a clear and transparent process that is gender responsive, culturally appropriate, and at no costs and without retribution, can be resolved. The mechanism will not impede access to national or state judicial or administrative procedures. The projects management unit will inform Affected People (AP) about this GRM before commencement of any civil works, as part of the consultation process. A grievance redress committee will be established to:

- Record, categorize and prioritize the grievances;
- Settle the grievances in consultation with complainant(s) and other stakeholders;
- Inform the aggrieved parties about the solutions; and
- Forward the unresolved cases to higher authorities.

The Kosrae specific component GRM has been further developed since the original submission of the ESIA through consultation with key national government (DTC&I), projects management entity (OAE), Kosrae state government departments and semi autonomous entities within the state (KIRMA). The agreed updated GRM is included in Annex 4 and has been disclosed on all required websites and is currently operating.

10.0 CONCLUSIONS & RECOMMENDATIONS

Overall, the proposed Kosrae component of the EMC Project will require very limited land based infrastructure (BMH and CLS connected terrestrially via a cable alignment path buried within a state road easement) with minimal marine and terrestrial based impacts which are limited in scale and extent and can be fully mitigated, requiring no involuntary land acquisition.

The project will impact a marine corridor of no more than 3-4 m wide (including the footprint of the submarine water-jet trenching machine on the sea floor if used and to a maximum depth of 0.75 m beneath the sediment) and a terrestrial corridor width of less than 1.0 m within the states road easement. The cable, about 4 cm in diameter at its largest in the shallow water areas of Lelu harbor through to the BMH, will be buried in nearshore areas and for all terrestrial connections.

The marine cable route will be resurveyed by the cable laying contractor but is to follow, as closely as possible the suggested alignment route identified by the project marine benthic assessment, which will ensure avoidance of sensitive marine habitats. The cable placement is to be guided by experienced divers who will place the cable according to instructions from a marine ecologist based on the findings of the marine benthic assessment report. These measures will serve to mitigate any potential negative impacts on the marine environment.

The inclusion of UXO survey to ensure the shallow water marine cable alignment is free from these items is recommended. It is thus recommended that the marine cable consultants include this in their planning of the alignment when entering the Lelu channel through to the BMH.

All priority land options to be traversed by the cable and associated infrastructure are either government owned or leased, including all shallow water marine seafloor areas.

Given the small scale impacts of the work within the marine and terrestrial environment no negative social impacts are anticipated during any stage of the project if the projects up dated ESMP is adhere to. The majority of the marine activities take place on board a vessel at sea with specially trained crew, and such no negative social impacts are anticipated during any stage of the project associated with the deployment of the cable to the BMH.

The construction of the BMH, CLS facilities and the cable connection between the two facilities on land will require a local sub-contractor. In Kosrae, a key potential impact relates to possible minor disturbance due to micro trenching of the cable within the road easement and entry and exit points along this corridor. To address these minor impacts the reinstatement of the disturbed areas is required as specified in the projects up dated ESMP.

The updated ESMP defines a full set of working area boundaries, work restrictions and timing limits, which will be included in the construction contract specifications which the contractor/s are required to comply with. The projects technical manager in conjunction with the DOFA CIU safeguard team will monitor compliance with assistance of a local contractor in Kosrae.

11.0 REVIEW OF THE ORIGINAL ESIA ANNEXES

Table 3 below provides a brief summary of the continued relevance of the annex's provided in the original ESIA. These annexes are not included within this report and as such the original documentation should be referred. Their continued relevance to the project includes:

Table 3: Summary and continued relevance of the original ESIA annexes.

Annexes. There is confusion in the original ESIA documents between the main report annexes and its final appendices document (separate document) in terms of annex numbering and activity. For the below summary review the final appendices documented in the original separate document (Final) has been reviewed and annex numbers used in this report are reflected below.
Annex 1: Baseline Data Report. Baseline data was relevant to the original report. Information detailed can be used as secondary supporting information to the updated Baseline data developed within this up dated ESMP report.
Annex 2: Land Due Diligent Report. Much of the information detailed relating to the Kosrae component is sound background information and has been superseded in the updated ESMP Addendum report based on the final cable alignment entering the Island of Kosrae. Information detailed pertaining to the land usage, management, ownership and usage remains relevant and should be used as background information as required. Cable alignment specific land use information has been updated within the main body of this report and as such no changes are required to this original annex.
Annex 3: International Conventions & Treaties. This section remains relevant and should be referred as required. No changes are suggested.
Annex 4: Evaluation of Compliance with WB Standard Policy & ADB Safeguard Policy Statement (SPS) Environmental Requirements. The compliance assessment of the WB requirements for the Kosrae component remains relevant to the project – no changes are required. This annex should be referred as required.
Annex 5: Chance Finds Procedure. This remains relevant to the Kosrae component and is included in this report (Annex 3).
Annex 6: Potential Cable Alignment and BMH sites. This information is relevant to the original report and has been superseded by new information detailing the final cable alignment path presented within the body of the updated ESMP Addendum report.
Annex 7: Consultation Summaries. This information is directly relevant to the original ESIA assessment, however provides background information on the stakeholders who where engaged during the initial assessment and as such remain relevant to this document. The development of the ESMP addendum update was based on the DOFA CIU Safeguard teams marine and terrestrial assessments and has included discussions and input from OAE staff. Stakeholder discussions were undertaken with the Governor and Lieutenant Governor, Kosrae state ICT working group during a FSM – WB ICT mission in 2019.

The Kosrae state, Department Fisheries and Marine Resources (DFMR) staff participated in the project marine assessment fieldwork and as such were an integral component of this work. The marine assessment draft report was provided to the OAE, DTC&I, Division of Resource Economic Administration (DREA), DFMR and Kosrae Island Resource Management Authority (KIRMA) for review and comment. All responses were integrated into the final report. The project including the ESMP will be presented and discussed during the initiation of the project in Kosrae state with specific stakeholder engagement undertaken with all communities, families, individuals and business that are in close proximity to the cable alignment. This will be undertaken by OAE and DOFA CIU safeguard team in conjunction with Kosrae state stakeholders.
Annex 8: List of Attendees. This information is directly relevant to the original ESIA assessment, however provides background information on whom where engaged during the initial assessment and as such remain relevant to this document. All future stakeholder attendees will be listed during the project development Activities.
Annex 9: Environmental Mitigation (ESMiT) and Monitoring (ESMoT) Tables: These tables have been reviewed (CIU Safeguard team, OAE, WB) and redeveloped/updated to reflect the information pertinent for the Kosrae Component only. The new tables include additional terrestrial impacts (BMH – CLS) and mitigation methods. Through consultation the original two tables have been combined into one table only to reduce the size of the documents and increase the practicability of their use. The tables are presented in Annex 5 of this report and provided to OAE in a separated document (word and pdf) for ease of use when attaching to contracts. NB: This was Annex 8 in the EMC – Project – ESIA – Final document.
Separate Document: Submarine Cable Environmental Codes of Practice. This document remains useful and applicable to the Kosrae component and as such is retained. It has been attached separately in its original form and in the same format as original attached in the ESIA.

11.0 APPENDICES – UPDATED ESMP

ANNEX 11.1 Ownership Documents of the Proposed Beach Man Hole (BMH), Sansrit School, Kosrae.

GOVERNMENT OF KOSRAE
Office of the Governor
Post Office Box 158
Kosrae, Federated States of Micronesia 96944
Telephone: 691-370-3002/3003..Facsimile: 691-370-3162

December 06, 2019

Mr. Gordon Segal
FSMT Cable Corp

SUBJECT: Authorization and land identification for Beach Manhole and CLS building use.

PROJECT: FSMTCC/EMC Submarine Project

ENCLOSURE: (1) Cadastral Plat No. 056 K 00
(2) Land Lease Sketch No. TELSAT-1
(3) Location Map of Cadastral Parcel No. 068K05

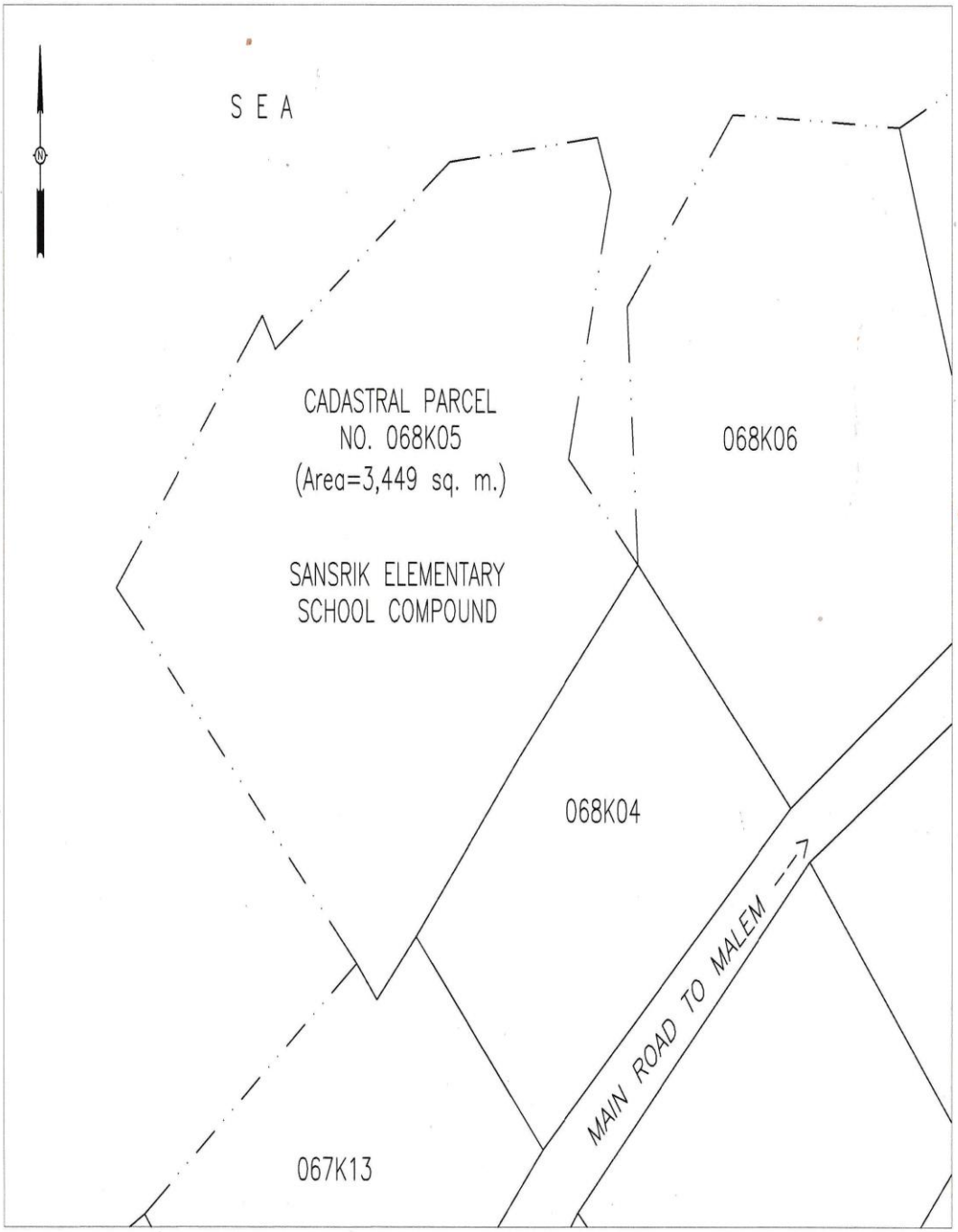
Dear Mr. Segal,

As per your e-mail dated December 04, 2019 to our Director of the Department of Transportation & Infrastructure about your request for the documentation and letter of approval of the land parcels that will be used for the EMC submarine fiber project. This is to confirm that the land parcels mentioned above is belongs to Kosrae State Government.

Thank you and we hope people of Kosrae will be of great benefit for this project.

Approval is granted by,

CARSON K. SIGRAH
Governor


S E A
CADASTRAL PARCEL
NO. 068K05
(Area=3,449 sq. m.)
SANSRIK ELEMENTARY
SCHOOL COMPOUND
068K06
068K04
MAIN ROAD TO MALEM
067K13

ANNEX 11.2 Ownership Documents of the Proposed Cable Landing Site (CLS) in Kosrae.

GOVERNMENT OF KOSRAE
Office of the Governor
Post Office Box 158
Kosrae, Federated States of Micronesia 96944
Telephone: 691-370-3002/3003..Facsimile: 691-370-3162

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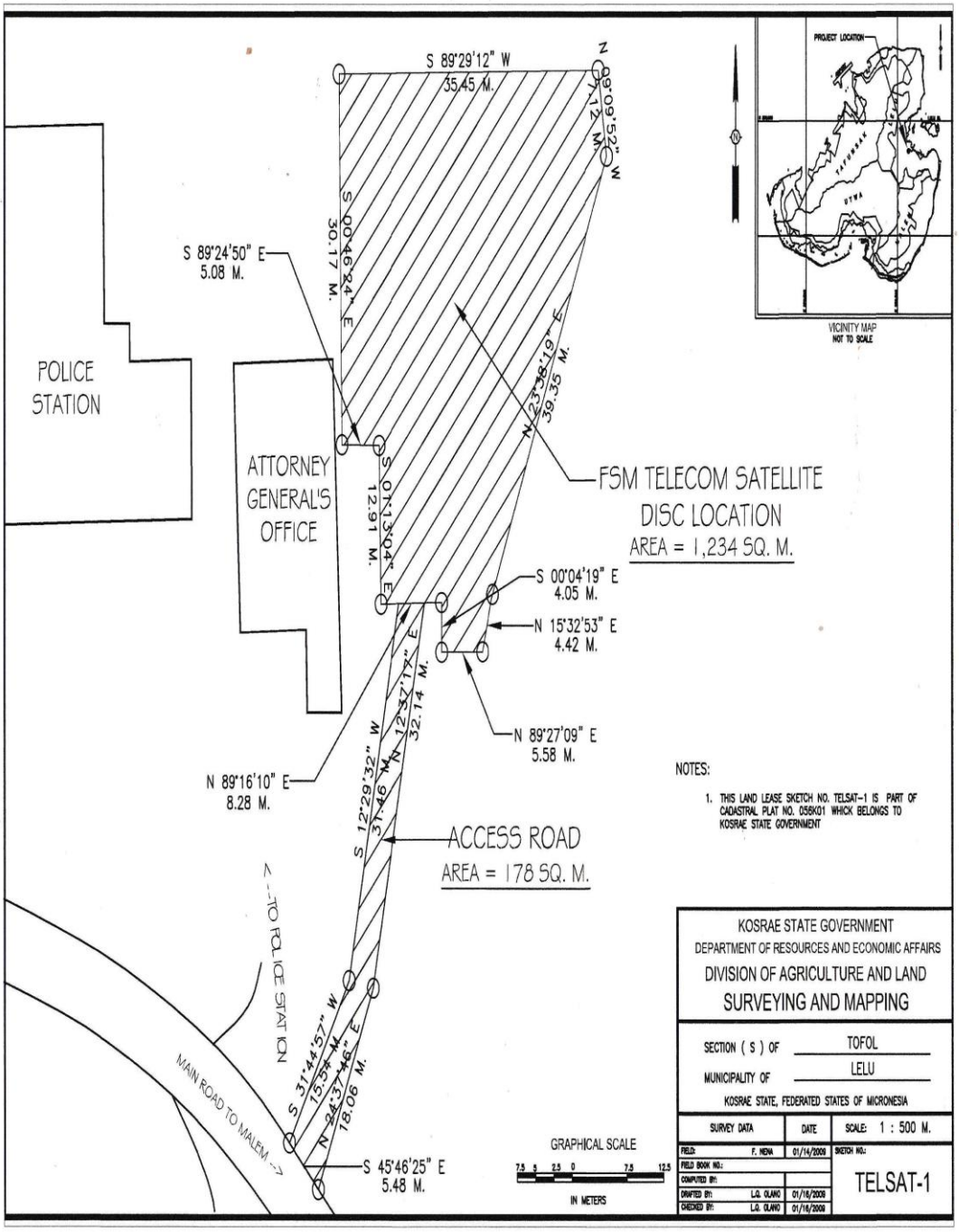
Governor


S 89°29'12" W
35.45 M.
N 08°09'52" W
1.12 M.
S 00°49'24" E
30.17 M.
S 89°24'50" E
5.08 M.
POLICE STATION
ATTORNEY GENERAL'S OFFICE
S 01°13'04" E
12.91 M.
N 23°38'19" E
39.35 M.
FSM TELECOM SATELLITE DISC LOCATION
AREA = 1,234 SQ. M.
S 00°04'19" E
4.05 M.
N 15°32'53" E
4.42 M.
N 89°27'09" E
5.58 M.
N 89°16'10" E
8.28 M.
S 12°29'32" W
31.46 M.
N 12°37'17" E
32.14 M.
ACCESS ROAD
AREA = 178 SQ. M.
S 31°44'57" W
15.54 M.
N 24°37'46" E
18.06 M.
S 45°46'25" E
5.48 M.
MAIN ROAD TO MALEM -->
<-- TO POLICE STATION
PROJECT LOCATION
VICINITY MAP
NOT TO SCALE
NOTES:
1. THIS LAND LEASE SKETCH NO. TELSAT-1 IS PART OF CADASTRAL PLAT NO. 056K01 WHICK BELONGS TO KOSRAE STATE GOVERNMENT
GRAPHICAL SCALE
7.5 5 2.5 0 7.5 12.5
IN METERS
KOSRAE STATE GOVERNMENT
DEPARTMENT OF RESOURCES AND ECONOMIC AFFAIRS
DIVISION OF AGRICULTURE AND LAND
SURVEYING AND MAPPING
SECTION (S) OF TOFOL
MUNICIPALITY OF LELU
KOSRAE STATE, FEDERATED STATES OF MICRONESIA
SURVEY DATA
DATE
SCALE: 1 : 500 M.
FIELD: F. NENA 01/14/2009
FIELD BOOK NO.:
COMPUTED BY:
DRAFTED BY: L.Q. OLANO 01/16/2009
CHECKED BY: L.Q. OLANO 01/16/2009
SKETCH NO.:
TELSAT-1

ANNEX 11.3 Chance Find Procedure.

When a person working on the project discovers a cultural heritage site or item, the following procedures should be followed:

- Stop the activities in the area of the chance find;
- Delineate the discovered site or area (e.g. fencing);
- Secure the site to prevent any further disturbance, damage or loss. In cases of human remains, arrange for a guard to watch the site until the police, local government and/or National/State Cultural Commission representative or person with delegated authority arrives and take over the responsibility of the site;
- Prohibit the collection of objective by any person;
- Notify the local government and Historic Preservation Offices (where available) within 24 hours (and police if it is human remains);
- Any objects that are found must be handed over to the Historic Preservation Office.
- Project works can resume only after instruction is provided from the Historic Preservation Office.

ANNEX 11.4 The Kosrae Components Grievance Redress Mechanism (GRM).

FEDERATED STATES OF MICRONESIA PACIFIC REGIONAL CONNECTIVITY PROGRAM (ICT) Kosrae Component

Environmental and Social Management Plan

Grievance Redress Mechanism (Projects Complaint Process)

June 2020

1. Principles of the Complaints Process (GRM)

- The Complaints process is for people seeking satisfactory resolution of their concerns and/or complaints on the environmental and social performance of the East Micronesian Cable Project based at the Department of Transport, Communications and Infrastructure (DTC&I) at the FSM national government in the Federated States of Micronesia (FSM) in conjunction with the FSM Telecom Cable Corporation.
- This Process is consistent with the Project's Environmental and Social Management Framework (ESMF), Environmental Management Plan (EMP) and projects Grievance Redress Mechanism (GRM) and is directly related Kosrae ICT State project.
- The mechanism will ensure the following:
  - Basic rights and interests of every person affected by the projects environmental performance or social management of the project are protected; and
  - Their individual concerns arising from the performance of the projects environmental and social performance during the project phases of design, construction and operation activities are effectively and timely addressed.

2. How to get in Touch with the Project

Anyone can ask for information on the project, express a concern, make a complaint (grievance) or get in touch with the project for any reason. Complaints/concerns can be anonymous and the various ways to get in touch with the project include:

National Contacts:

Department of Transport, Communications & Infrastructure (DTC&I)
All correspondence to: Assistant Secretary, Mr. Mark DeOrio.

1. By Phone: (691) 320- 2865
2. By email: mark.deorio@gmail.com copy to beulah.FSM@gmail.com and wkilmete@yahoo.com
3. By mail: Post Office Box PS-2, Palikir, Pohnpei, FSM 96941
4. In person: DTC&I Office National Government, Palikir, Pohnpei, Federated States of Micronesia. Given to the Departments Office Secretary.
5. Website: www.ict.fm/contact

FSM Telecom Cable Corporation
All correspondence to: Mr Pieter Bakker, Chief Executive Officer and Mr. Gordon Segal Manager Operations and Chairman Management Committee (EMCS).

1. By Phone: (691) 320- 2602
2. By email: pieter.bakker@fsmcable.com, gsegal@fsmcable.com or info@fsmcable.com copy to beulah.FSM@gmail.com and wkilmete@yahoo.com
3. By mail: Post Office Box 2202, Kolonia, Pohnpei, FSM 96941
4. In person: Ocean View Plaza (East Wing) Suite 15, Kolonia, Pohnpei, Federated States of Micronesia. Give to the Office Secretary.
5. Website: www.fsmcable.com

Kosrae State Project Sites:
All correspondence to: Mr. Gordon Segal Manager Operations and Chairman Management Committee (EMCS). Mr Segal will manager the project until a Kosrae project manager is appointed. This will be undertaken before the commencement of works.

1. By Phone: (691) 320-2602
2. By email: gsegal@fsmcable.com and copy to beulah.FSM@gmail.com and wkilmete@yahoo.com
3. By mail: Post Office Box 2202, Kolonia, Pohnpei, FSM 96941
4. In person: C/O Ocean View Plaza (East Wing) Suite 15, Kolonia, Pohnpei, Federated States of Micronesia. Give to the Office Secretary.
5. Website: www.fsmcable.com

This information, and a brief summary of the process for answering queries and managing grievances, will be published on the DCT&I, FSM cable and Department of Finance and Administration (DoFA).

3. Roles and Responsibilities:

The following are persons involved in the complaints process and their supporting roles and responsibilities.

- Focal Point for managing the FSM ICT projects Complaints Process: Mr. Gordon Segal, Manager of Operations for the ICT cable Project (gsegal@fsmcable.com).
- Person who will manage the database and record keeping: Mr. Wilmer Kilmete in coordination with Mr. Steve Lindsay and Ms. Beulah Daunakamakama at the Central Implementation Unit (CIU) of the FSM Government Department of Finance & Administration.
- Person who will answer simple queries and manage simple complaints: Mr. Gordon Segal, Manager of Operations for the ICT cable Project (gsegal@fsmcable.com).
- Person who will manage difficult complaints or grievances: Mr. Gordon Segal, and/or Mr. Pieter Bakker for the ICT cable project and Mr. Mark DeOrio, Acting Secretary DCT&I with support from CIU.
- Person/organization who will prepare report/s for World Bank reporting: CIU safeguard team.
- Grievance Committee will be formed on an ad hoc basis for complex or significant grievance management. This will be made up of appropriate senior officials (Assistant Secretary level or above) from the following:
  - Department of Finance & Administration (DoFA) with support from CIU Safeguards Specialist; and
  - Department or Office managing the project at which the complaint is aimed (FSM Telecom Cable Corporation).

4. The Complaints Process:

- All complaints or grievances will be entered into an assigned database that tracks progress of each complaint/grievance. Complaints records (letter, email, record of conversation etc.) are stored both electronically and in hard copy. Each record has a unique number reflecting year and sequence of received complaint (i.e. 2019-01, 2019-02 etc.).
- Each complaint/grievance is assigned a specific person responsible for its management and close out.
- Each complaint or grievance will have a plan for addressing and closing out:

- If the complaint/grievance relates to a contractor activity, the project will ensure the Contractor remedies any damage, pays compensation for damage or loss, etc.
- Use of community leaders and customary methods of conflict resolution is encouraged and utilized if and when appropriate – on a case-by-case basis.
- If an issue/complaint cannot be resolved on site, it is elevated to the Project Manager for resolution (with support from the Safeguards Specialist in the CIU). If the Project Manager and Safeguards Specialist cannot resolve the issue, it is referred to the ad hoc Grievance Committee.
- If a resolution cannot be found through the Grievance Committee, the next course of action is the courts of FSM or an independent mediator.

➢ All simple complaints and grievances must aim to be closed out within 1 month.
➢ Complex complaints should aim to be closed out within 3 months or deferred to the Grievance Committee.
➢ All complainants have the right to use the courts of FSM at any time to seek resolution, if and when required.
➢ The ICT Project Manager will make adjustments to consultations, the GRM, community engagement, project implementation and other aspects as necessary to avoid future complaints and grievances if and when required.

5. Reporting and Evaluation:

➢ Complaints shall be reported in the regular project reporting to the World Bank. It should contain:
- Total number of complaints/grievances received.
- Total number resolved.
- Total number under investigation/not yet resolved.
- Total number not yet resolved and also exceeds the recommended close out time of 1 month or 3 months.

➢ Short paragraph on any significant grievances currently not yet resolved and any risks to project implementation.
- If there are more than 30 complaints/grievances recorded, the Project Manager may decide to investigate any patterns or repetition of issues that need addressing. The Project Manager may decide to get an independent consultant to review and provide advice.

ANNEX 11.5 Environmental and Social Impact Mitigation and Monitoring Table Updated for Kosrae Component Only – Marine and Terrestrial Cable Alignment - Scope of Works.

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
1.0 PRE-CONSTRUCTION PERIOD (Planning and design actions to prevent impacts)							
1.1 Physical Environment							
Land Access	Unable to secure access to sites identified for the cable alignment (marine & terrestrial).	▪ Acquire landowner ownership and approvals before work begins. ▪ Transfer of any entitlements & keep documentation. ▪ Identify other sites on other government land parcels.	BMH & CLS sites identified in ESMP.	Confirm land access ownership and agreements are finalized and meet approval process.	Prior to start of installation.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.
Air Quality – Pollution	Green House Gas emissions from vessels.	▪ Require vessel emission certification (RE: SO_2, NO_2) to be submitted in contract specifications to meet USEPA or equivalent emissions standards. ▪ A smoke stack density test is required to ensure compliance to USEPA or equivalent emissions standards.	Entire cable route.	Confirm contract specifications and compliance certification.	Prior to start of installation.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.
Substrate	Use of foreign materials for filling cable trench, causing unknown pollution.	Contractor's specification to include; ➢ All backfill to be previously excavated material where possible (marine & Terrestrial). ➢ Only inert/stable materials are to be used in cable laying and anchoring. ➢ Be aware of unexploded WWII munitions.	Inshore Coastal & Terrestrial areas.	Confirm contract specifications and compliance certification.	Prior to start of installation.	FSM TCC (OAE) DTC&I	FSM TCC (OAE) & CIU safeguard team
UXO	Failure to complete an unexploded ordinance (UXO) sweep of the cable route as it enters the coastal waters (Lelu channel – harbor - BMH) could lead to explosion, damage to the	Conduct a UXO survey of the cable alignment as it passes through barrier reef, Lelu channel and Lelu harbor through to the landing site. (Sansrit school). IF UXO is located immediate action required includes; ➢ Instigate immediate appropriate heath and safety arrangement of all workers and general public including notification of Kosrae Police and government agencies (including Governors office). Secondary action to discuss requirements to finalize alignment, possible actions include; ➢ Alternative route to be investigated within the projects agreed cable alignment pathway (direct	Inshore Coastal areas.	Conform and obtain documentation of UXO benthic assessment (sweep) completed. Follow up on assessment findings – as required.	Prior to start of any cable laying activity.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
	cable infrastructure and loss of life.	and indirect area of influence); ➢ Removal of UXO (explosion in situ or translocate); and ➢ New submarine alignment outside of proposed pathway – this may require additional marine and foreshore benthic assessment.					
Hydrothermal Vents	Physical damage to vents by cable or cable- laying equipment. Smothering by disturbing area sediments. Physical damage to cable, given the 300 C^{o} vent water temperature.	In construction contract - specifications requiring survey team to identify a cable route that maintains a minimum clearance of 2 Km from active hydrothermal vents and specify this route in the cable-laying specification.	Deep sea marine areas.	Confirm adequate specifications are presentation in bid documents.	During contract specification preparations	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.
Sea Mounts	Physical damage to habitat, resources and possible impact on demersal fishery usage.	In construction contract - specifications requiring survey team to identify a cable route that maintains a minimum clearance of 2 Km from base of seamounts and specify this route in the cable-laying specification.	Deep sea marine areas.	Confirm adequate specifications are presentation in bid documents.	During contract specification preparations	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.
1.2 Ecological Environment							
Coastal marine and deep ocean habitats	Accidental discharge of pollutants from vessel and vessel grounding.	▪ In bid documentation, require bidders to provide specifications of the fuel and lubricant management equipment and storage on vessels used during the survey and cable laying operations and certify that the installations in in compliance with national regulations and-or MARPOL specifications for fuel management. ▪ Maintain a contingency plan to address spills.	Offshore and inshore coastal areas.	Confirm adequate specifications are presentation in bid documents.	Preparing construction bid contract documentation.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.
Sensitive near shore ecological habitats and resources (coral reefs, sea grass,	Failure to plan route around coral communities.	Prepare final alignment based on detailed design demonstrating avoidance of significant marine and coastal ecological systems. Including specifically in contract specifications; ➢ Cable survey team to survey cable alignment	Inshore marine, coastal areas.	Confirm adequate specifications are presentation in bid documents.	Prior to start of installation.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
mangroves)	Damage seagrass & mangrove communities due to cable placement.	around all coral reefs, avoiding all coral outcrops, and following defined shipping channels as detailed in marine benthic assessment report, and ➢ Cable`s placement must be confined to a narrow path as possible.					
Conservation Areas (PA)	Disturbance of marine & terrestrial organisms and habitats in protected – managed areas.	▪ Cable alignment to avoid all Conservation Area (CA) – Management – Protected Areas. ▪ Define in contract specifications, via GPS and survey markers, a cable route that provides ≥ 75 m distance from CA boundaries, and requires all survey and cable laying vessels to maintain this distance at all times (limited by the proximity of CAs to the shipping channel).	Offshore, Inshore, Coastal & Terrestrial areas.	Confirm adequate specifications are presentation in bid documents, as detailed in the ESMP.	Prior to start of installation.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) CIU safeguard team.
Marine species potentially at risk (cetacean, turtles, endangered species etc)	Ocean sonar survey affecting cetaceans. Entanglement in cable by deep diving cetaceans such as the sperm whale.	Contract specifications to include reference to best practices for operating vessels in proximity to marine mammals as included in Environmental Code of good Practice document, including: ➢ Survey timing outside whale presence/migration season, namely between May and October. ➢ Post a watch for whales and suspend activities when whales are within 1 Km of vessel. ➢ Multi-beam and/or side-scan sonar only – No Air Guns.	Oceanic deep-sea and coastal marine areas.	Confirm adequate specifications are included in bid and contract documents.	Preparing construction bid contract documentation.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.
Vegetation clearance	Disturbance &/or removal of vegetation within the cable alignment (road easement).	Prepare final alignment based on detailed design demonstrating avoidance where possible to reduce and/or eliminate removal of road side vegetation (e.g. trees). Including specifically in contract specifications; ➢ Cable survey team to survey cable alignment within the road easement to avoid vegetation impacts and/or removal, and ➢ Cable`s placement must be confined to a narrow path as possible.	Terrestrial areas.	Confirm adequate specifications are presentation in bid documents, as detailed in the ESMP.	Prior to start of installation.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.
1.3 Socio-Economic Environment							
ESMP safeguard implementation & monitor	Inexperienced technician leading to delayed or failed implementation of ESMP items, e.g. no clauses	Ensuring safeguards monitoring is undertaken for the duration of the project (especially construction phase) to help in implement and monitor the delivery of the ESMP.	FSM and on site Kosrae.	Confirm safeguard staff/s are engaged and fully briefed at start of the project.	At start of detailed design stage for the project duration.	FSM TCC (OAE) DTC&I.	CIU safeguard team & FSM TCC (OAE)

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
	in the bid docs.						
Update EMP, bid & contract documentation, bid evaluation etc	Environmental responsible – procurement & compliance with CSS.	▪ Update EMP to reflect the final scope of works and develop consent conditions included in bid document. ▪ Contractor prepares and submits terrestrial CEMP for approval before works start.	N/A	Confirm adequate specifications are included in bid and contract documents.	Before civil work starts.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.
Access during terrestrial trenching & cable installation works	Failure of contractors to delivery trenching works with minimal damage & access restrictions to property.	Contract specifications to include instruction RE: full rehabilitation immediately after completion of trenching works. Develop notification protocol to provide notice of access restrictions, comprising the following steps: ➢ Notification of the roadside residents by community workshop/s & individual verbal information exchange providing details of the project, potential access restrictions and likely timing of activities; ➢ Follow-up communication to confirm awareness – understanding and offer further consultation; ➢ On-site meetings with affected residents individually or group; and ➢ "Door-knock" notifications of residents 48 hours prior to trenching to provide details of work program, duration of access restriction and contact details in case of grievance.	Residents with access to property affected by trenching and cable installation works.	Confirm adequate specifications are included in bid and contract documents.	Before civil work starts.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.
Community Information Engagement	Misconceptions raising people's misunderstanding (fears) regarding project footprint and potential damages to marine food supply, land usage & land loss.	Conduct of series of government and non-government community stakeholder consultations prior to commencement of civil works, during construction and after project completion.	Kosrae and residents directly impacted by the project.	Confirm adequate stakeholder consultations have been undertaken and stakeholders aware.	During all stages of the project.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.
Community Grievances	Minor concerns/issues developing community resentments due	Establish GRM prior to commencement of civil works for use throughout the life of the project and ensure project stakeholders are aware of it usage.	Kosrae and residents directly impacted	Confirm GRM requirements are included in bid and contract documents.	Before civil works begin.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
	to unaddressed project related concerns.		by the project.				
Cultural Heritage	Possible damage to cultural heritage site/s due to placement of the cable.	Cable alignment (marine and terrestrial) and other scope of works to be assessed for cultural heritage implications in collaboration with communities/landowners before proceeding with cable deployment.	Coastal and terrestrial areas.	Confirm adequate specifications are included in bid and contract documents.	At start of detailed design stage for the project duration.	FSM TCC (OAE) DTC&I.	FSM TCC (OAE) & CIU safeguard team.
Coastal Resource Users - subsistence and artisanal fisheries	Damage to ecosystem integrity and fishery productivity through loss or damage to local fishing grounds.	Using the data on design recommended in this ESMP prepare contract specifications defining trenching/cable laying activities to be limited to a narrow corridor and trenching to be followed by immediate burial.	Oceanic deep-sea, coastal and harbor marine areas.	Confirm adequate specifications are included in bid and contract documents.	At start of detailed design stage for the project duration.	FSM TCC-OAE DTC&I.	FSM TCC (OAE) & CIU safeguard team.
2.0 CONSTRUCTION PERIOD: Impacts associated with the work							
2.1 Physical Environment							
2.1.1 Marine							
Air Quality - Pollution	Emissions from survey and cable placement vessels.	▪ Zero tolerance and immediate repair required—as specified in Contract specifications (stack emissions & stack smoke tests). ▪ Vessel fined and shut down within 5 days of notice.	At all marine vessel work sites.	Contractor to provide emissions test results.	From the time the vessel begins work on this project.	Contractor (s)	FSM TCC (OAE) & CIU safeguard team.
Substrate	Introduction of foreign substances reacting with environment or introduced medium for introduced organisms.	Contractor to insure that: ➢ All backfill use only original material as per cable laying specifications. ➢ Use only inert/stable materials in cable laying and anchoring as per cable laying specifications.	Inshore Coastal areas.	Site inspections to ensure compliance to ESMP.	All seafloor trenching operations.	Contractor (s)	FSM TCC (OAE) & CIU safeguard team.
Hydrothermal Vents	Physical damage to vents or cable.	As per contract specifications, lay cable along surveyed alignment, which has identified any hydrothermal vents and maintains a minimum clearance of 200 m from active hydrothermal vents to protect the site(s).	Oceanic deep-sea areas.	Hydrothermal vents detected during initial ocean floor survey, periodic check cable alignment to ensure it	When work is under taken.	Contractor (s)	FSM TCC (OAE) & CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
				complies with ESMP specifications.			
Sea Mounts	Physical damage to habitat and possible fishery usage.	As defined in the contract specifications, lay cable align designated survey route, which maintains a minimum clearance of 2 km from the base of seamounts.	Oceanic deep-sea areas.	Seamounts identified during initial & detailed design, periodic check cable alignment to ensure it complies with ESMP specifications.	When work is under taken.	Contractor (s)	FSM TCC (OAE) & CIU safeguard team.
2.1.2 Terrestrial							
Air Quality - Pollution	Emissions from all vehicles and machinery used to deploy the cable.	Ensure all vehicles and machinery used are; ➢ Maintained and operated in accordance to design standards and specifications; ➢ Turned off when not in use; ➢ Only vehicle and machinery undertaking work are on site.	At all terrestrial work sites.	Vehicle inspections to ensure compliance to CEMP mitigation measures.	From the time vehicles and machinery work on this project.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).
	Increase in dust levels on site and neigbouring land parcels from vehicles and machinery used.	Ensure dust management measures are implemented at all construction site including; ▪ Restrict speed on roads when woks being undertaken; ➢ Cover all vehicles to prevent load spillage, dust & sludge (e.g. waste material transportation); ➢ All stockpiles to be covered to prevent dust dispersion through wind; and ➢ Schedule/staging of proposed works to ensure no impacts from trenching and waste material.	At all terrestrial work sites.	Periodic vehicle and site inspections to ensure compliance to CEMP mitigation measures.	From the time vehicles and machinery work on this project.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).
Noise & Vibration from construction equipment and machinery	Increase noise & vibration in community (residential & commercial). Impact on construction workers.	▪ Construction vehicles and equipment to maintained in good working order and regular equipment maintenance will be undertaken. ▪ Construction vehicles and machineries will be fitted with mufflers and other noise abatement equipment as necessary. ▪ Limit noisy construction activities to be between 7am and 5pm on Monday to Saturday. No work is to be undertaken on Sunday (Kosrae state law). ▪ Workers will be provided with noise abatement equipment (PPE) as required. ▪ The contractor will deal with any complaints regarding noise in the first instance through the GRM.	At all terrestrial work sites.	Periodic vehicle and site inspections to ensure compliance to CEMP mitigation measures.	From the time vehicles and machinery work on this project.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).
Sediment &	Increase erosion	▪ Preparation of sedimentation and erosion control	At all	Confirm sediment and	From the	Contractor (s)	CIU safeguard

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
erosion from construction.	and sedimentation in surrounding environment including stream and downside foreshore areas. Increased turbidity of watercourses due to construction.	management plan as part of CEMP (complaint to the ESMP specifications). ▪ All construction in areas of stream and coast to be undertaken with extreme care. ▪ Use of silt control devices and sediment traps/fences during all extraction activities, these to be cleaned and dewatered as required. ▪ Avoid clearing areas during wet (rainy) season where possible. ▪ Natural stream/river water flows in river will not be interfered with. ▪ Use of heavy machinery in aquatic environments minimized (used only if no other alternative). ▪ Gabion baskets, rock rip-rap or bio-engineering measures to be used for all stream and foreshore for stabilization if or as required. ▪ No discharge to rivers, surface water, intertidal or coastal areas. ▪ No dumping, disposal or storage of spoils in or close to streams and rivers. ▪ Placement of diversion ditches around stockpiles.	terrestrial work sites.	erosion plan is compliant to bid documents. Periodic site inspections to ensure compliance to CEMP mitigation measures.	time vehicles and machinery work on this project.		team & FSM TCC (OAE).
Construction waste material use and management.	Introduction of foreign substances reacting with environment or introduced medium for introduced organisms. Waste material reused or disposed in approved sites.	A Waste Management Plan (WMP) is to be developed and included in the project CEMP. Contractor is to insure the WMP is compliant to the ESMP including: ➢ All backfill used only original material as per cable laying specifications. ➢ Use only inert/stable materials in cable laying and anchoring as per cable laying specifications. ➢ All waste material dumped at a permitted (KIRMA) landfill site. ➢ Hazardous Waste Management plan to be included in the CEMP and an emergency response actin plan. ➢ Hazardous waste managed by contractor and disposed at approved site.	At all terrestrial work sites.	Confirm WMP is compliant to bid documents. Periodic site inspections to ensure compliance to CEMP mitigation measures.	From the time vehicles and machinery work on this project.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).
Use, storage & transportation of Hazardous substances) e.g.	Pollution from use, storage & accidental spills of hazardous	▪ Contractor to prepare hazardous substances management plan (HSMP) and emergency response plan (ERP) (as part of the CEMP). ▪ Spill kits to be provided at work sites and works	At all terrestrial work sites.	Confirm HSMP is compliant to bid documents.	From the time vehicles and machinery	Contractor (s)	CIU safeguard team & FSM TCC (OAE).

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
fuel, oil etc)	substances. Accidentally placing people and environment at risk.	yards and staff trained in their deployment. ▪ Locate storage areas for all petrochemical products from coastline and 100 m from stream/rivers. ▪ Chemicals including fuel stored in secured (lockable), weather proofed area including an impervious flooring and bund/containment walls (110% of largest volume) to contain spillage. ▪ Used oil and other hazardous materials will be disposed of in an authorized facility off-site. ▪ Spill waste will be disposed at disposal sites approved by local authorities (KIRMA). ▪ All spills cleaned as per emergency response plan. ▪ Ensure any spills or accidents are reported and recorded in register.		Periodic site inspections to ensure compliance to CEMP mitigation measures.	work on this project.		
Construction activities affect road use and/or access to property including school (BMH).	Public access affected & traffic disruption during construction.	▪ Prior to commencement of works, the contractor will prepare and submit a Traffic Management Plan (TMP) detailing controls, diversions and management/safety measures for clearance. ▪ The contractor and OAE will inform commuters, providers of transport services and adjacent community/business of duration and scope of works and any alternative arrangements. ▪ Clauses will be included in the contract specifying that; (i) care must be taken during the construction period to ensure that disruptions to access and traffic are minimized and (ii) access to residences/business along the road will always be maintained. ▪ Stakeholders and potentially affected people will be consulted if access to specific areas will be disrupted for any time and temporary access arrangements made. ▪ Use of signage, spotters and flaggers, safety barriers suitable to the scale of the project to control and regulate traffic flow and ensure safety for workers and all users. ▪ Ensure public safety across and around work site(s) including barriers to prevent entry to high risk areas (e.g. excavations, area with heavy machinery being used) and ensure safe passages are provided through work sites. ▪ At all times, the road will be kept free of debris,	At all terrestrial work sites.	Confirm TMP is compliant to bid documents. Periodic site inspections to ensure compliance to CEMP mitigation measures.	From the time vehicles and machinery work on this project.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
		spoil, and any other material. ▪ All waste material to be disposed at approved designated sites.					
Construction activities affect school operations and access	School disruption during BMH construction and cable deployment.	▪ Prior to commencement of works, the contractor will prepare and submit a BMH Construction Plan (included in CEMP) detailing timing and management/safety measures for the work. Plan to be developed in conjunction with state Education Department and school officials. ▪ Limit construction activities to designated school holiday periods if possible otherwise restricted to weekend (Saturday only) or after school hours.	Work undertake within - near Sansrit school site.	Confirm BMH construction plan is compliant to bid documents – specifically outlining schedule and timing of work – no disruptions to school. Periodic site inspections to ensure compliance to CEMP mitigation measures.	From the time work at this site is undertaken.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).
Site earthworks (excavation & backfill)	Vegetation removal – minor ecosystem disruption during construction – limited to road corridor.	▪ Vegetation clearance during construction activities, especially of trees along the roadside corridor, will be kept to a minimum and trees removed will be discussed with landowners and an approved plan to be developed. ▪ Under no circumstances is the contractor permitted to fell or remove mangroves. ▪ Construction workers to be informed about general environmental protection including and respect of local (native and human) flora and fauna.	At all terrestrial work sites.	Confirm landowner's discussions undertaken and project awareness is fully understood. Periodic site inspections to ensure compliance to CEMP mitigation measures.	From the time vehicles and machinery work on this project.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).
Relocation of or damage to existing utilities & services.	Disruption of, interference with and/or damage to existing infrastructure and/or services.	▪ Consult infrastructure and services providers (e.g. FSM telecom, Kosrae Water and Power providers) before construction to identify on plans the location of utility lines and pipes. ▪ Relocation plans, as required, to be agreed and implemented. ▪ Any incidental damage to be immediately notification and repaired as agreed with the utility provider.	At all terrestrial work sites.	Confirm service providers have been engaged and plans develop in compliance to bid documents. Periodic site inspections to ensure compliance to CEMP mitigation measures.	From the time vehicles and machinery work on this project.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).
2.2 Ecological Environment							
2.2.1 Marine							
Marine Coastal Conservation Areas	Disturbance of marine organisms and habitats in CA.	According to contract specifications the contractor(s) to insure that they: ➢ Lay cable along surveyed route providing for a safe distance (≥ 50m) from CA s as per cable laying specifications.	Inshore Coastal areas.	Inspect cable laying operation in coastal areas to confirm compliance to ESMP mitigation measures (minimum	From the time the vessel begins work on this	Contractor (s)	CIU safeguard team & FSM TCC (OAE).

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
		➢ Keep all survey and support vessels at safe distances from CA areas.		distance from CA is maintained).	project.		
Coastal and Deep Ocean Habitats	Accidental discharge of pollutants from vessel.	Adhere to contract specifications and national laws the contractor (s) to insure that they; ➢ Containing all fuel, lubricants and transmission fluids in double walled tanks on vessels and if in drums, store below deck, as specified in contract specifications. ➢ Maintain a contingency plan to address spills and storm events.	Inshore Coastal areas.	Inspect cable survey & laying vessels to confirm compliance to ESMP mitigation measures.	From the time the vessel begins work on this project.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).
Sensitive near shore ecological habitats and resources (coral reefs, sea grass, mangroves)	Destruction of sensitive marine ecological habitats and resources (e.g. corals, sea grass, mangroves).	Contractor(s) to adhere to specifications and lay cable along proposed surveyed route, as per cable-laying specification to ensure; ➢ Avoidance of coral reefs, sea grass beds, and mangroves habitats. ➢ Contractor to adhere to designated cable alignment and map showing coral areas on route from passage to landing. ➢ Restrict cable footprint to as narrow a path as possible along entire length of shallow water cable.	Inshore Coastal areas.	Inspect cable laying operation in coastal areas to confirm compliance to ESMP mitigation measures (minimum distance from sensitive habitats is maintained).	From the time the vessel begins work on this project.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).
Species of special Interest – Cetaceans	Entanglement in cable risk for deep diving cetaceans	Control cable tension so that laid cable conforms to undulations of seabed as per cable laying specification and-or provide anchors if needed.	Oceanic deep-sea areas.	Ensure cable laying company aware of cetacean sensitivities and confirm compliance to ESMP mitigation measures.	From the time the vessel begins work on this project.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).
2.2.1 Terrestrial							
Sensitive terrestrial ecological habitats and resources (streams, mangroves, birds).	Destruction of sensitive terrestrial ecological habitats and resources (e.g. stream, mangroves).	Contractor(s) to adhere to cable laying specifications along proposed surveyed route to ensure; ➢ All activities within designated road easement including approved lay down areas. ➢ Implement measures & controls to minimize impacts on surround habitats. ➢ Avoidance of impacts to streambed, riparian habitats and mangroves habitats. ➢ Resource extraction (flora and fauna) prohibited by contracted. ➢ Restrict cable footprint to as narrow a path as	Coastal foreshore & terrestrial areas.	Inspect cable laying operation to confirm compliance to CEMP mitigation measures.	From the time vehicles and machinery work on this project.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
		possible along entire length of the cable.					
Landowner's properties adjacent to road corridor.	Destruction of ecological terrestrial systems (natural and/or man made) and property owner resources (flora – food crops and fauna domesticated animals).	Contractor (s) and workers under no circumstances are permitted to enter and remove resources (flora & fauna) from properties adjacent to the road corridor.	All terrestrial areas.	Inspect cable laying operation and undertake stakeholder discussions to confirm compliance to CEMP mitigation measures.	From the time vehicles and machinery work on this project.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).
2.3 Socio-Economic Environment							
2.3.1 Marine							
Coastal Resource Users– subsistence and artisanal fisheries	Displacement of activities during cable laying. Entanglement of fishing gear. Damage to ecosystem integrity and fishery productivity.	As per the contract specifications: ➢ Confine trenching activities to as narrow a corridor as possible and restore site when finished. ➢ Confine trenching/laying activities to as short a period as possible; ➢ Request Kosrae authorities (DFMR & KIRMA) to advise local fishers of cable laying activities, dates, and avoidance measures. ➢ Consider placing warning markers (no anchoring) along cable line in shallow (<10 m) waters within Lelu harbor. ➢ Consider placing warning signs on the mainland adjacent to the cable alignment to inform community of cable presence.	Inshore Coastal areas.	Inspect cable laying operation to confirm compliance to ESMP mitigation measures. Interview fishers – stakeholders to determine contractor's compliance. Installation of warning signs adjacent land areas.	When work is under taken.	FSM TCC (OAE) and/or Contractor (s)	CIU safeguard team & FSM TCC (OAE).
Coastal (domestic and International) shipping – commercial shipping and ports	Physical injury of cable by shipping. Disruption to shipping during cable laying.	▪ Ensure a shipping notice is issued warning of cable laying, dates, and safe clearance for other activities. ▪ Request state and national Port Authorities & Marine Authorities (NORMA) to advise shipping of laying activities and avoidance measures. ▪ Ensure that marine navigation lights and other national maritime measures are closely followed by the project vessels at all times.	Offshore and coastal areas.	Ensure shipping notice is published.	When work is under taken.	FSM TCC (OAE) And/or Contractor (s)	FSM TCC (OAE) & CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
		▪ Confine laying activities to as short a period as possible.					
Coastal Access and usage.	Temporary loss of access to fishing grounds for local communities during laying of submarine cable.	Provision of electronic (social media) and print notices to local communities/fishers of construction schedule and contact person in case of inquiries (GRM).	During cable laying.	Ensure project construction notifications are published and confirm compliance to CEMP mitigation measures (including GRM).	When work is under taken.	FSM TCC (OAE)	CIU safeguard team & FSM TCC (OAE).
	Straying of agreed cable alignment into communal resource area. Community perception of cable encroachment to 'no-go' marine protected areas.	Conduct a series of stakeholder consultations with government, private sector, NGO and community on progress and cable alignment.	At any location where this error occurs.	Undertake stakeholder meetings to confirm compliance to ESMP mitigation measures.	When work is under taken.	FSM TCC (OAE) & CIU safeguard team.	CIU safeguard team & FSM TCC (OAE).
2.3.2 Terrestrial							
Access	Temporary loss of access to property for local communities during laying of cable.	Provision of electronic and print notices to local communities of construction schedule and contact person in case of inquiries.	During cable laying.	Confirm construction plan is compliant to bid documents – specifically outlining schedule and timing of work to inform community. Periodic site inspections to ensure compliance to CEMP mitigation measures.	When work is under taken.	FSM TCC (OAE) & CIU Safeguard team.	CIU safeguard team & FSM TCC (OAE).
General Construction Activities – Risk to workers on road etc.	Risk of hazards to or accidents to workers during construction & spread of communicable diseases.	▪ Contractor will provide to all workers: (i) health facilities, first aid kits, appropriate safety equipment and procedures for medical treatment; (ii) adequate training and information to workers in relation to all health and safety issues, equipment and training including STI and HIV/AIDS awareness and prevention program and (iv) access to safe drinking water, mosquito management, sun/shade	During cable laying.	Confirm construction plan is compliant to bid documents – specifically outlining management of risks to workers. Periodic site inspections to ensure compliance to	When work is under taken.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
		management, portable, septic latrines and garbage receptacles at all work sites and office compound as required. ▪ The contractor will prepare a health and safety plan (HSP) as part of their CEMP. The HSP is to include key components of the World Bank Environmental, Health and Safety Guidelines (EHSG). ▪ The contractor will ensure they take full responsible for the implementation of the CEMP and to liaise with the residences/businesses in the subproject area, as required. ▪ The contractor will provide adequate health care facilities including first aid facilities at the office compound and mobile first aid kits in vehicles and at work sites. ▪ The contractor will provide construction workers training on health and safety matters, specific hazards of their work, basic sanitation, hygiene and health care issues and awareness and prevention of communicable diseases (including STIs and HIV/AIDS). ▪ The contractor will be responsible for providing safety equipment and appropriate personal protective equipment (PPE) to workers, including instructions on how and when to use the equipment. ▪ The contractor will ensure safe and clean facilities include sanitation and drinking water (at least 2 liters/day) is provided to all workers. ▪ Septic tanks and garbage receptacles will be set up at work sites and office compound as required. These facilities to be regularly cleaned by the contractors to prevent outbreak of diseases. Garbage will be dumped only at a site approved by Kosrae State (KIRMA). ▪ "No smoking zone" signage will be posted throughout work sites and the office compound (e.g. fuel storage areas). ▪ The contractor will ensure that there is adequate water manage at all sites to ensure that disease vectors such as stagnant water bodies do not form. ▪ Contractor to educate and ensure worker's actions		CEMP mitigation measures.			

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
		are controlled codes of conduct are strictly observed (work sites and office compound) and Kosrae state specific requirement (restrictions on activities on Sunday).					
General construction activities - Presence of workers in the community.	Risk of hazards to or accidents to members of community & spread of communicable diseases.	▪ Before construction commences the contractor will conduct training for all workers on their requirements to engage the local community and ensure national & State laws are respected, special consideration and respect for women, elderly and children (including the school) are to be strictly followed. Code of conduct protocols will be discussed and worker awareness as part of mobilization process including STI and HIV/AIDS education. ▪ Child and/or trafficked labor will be strictly prohibited for any activities associated with the project and children will be prohibited from entering the worker's accommodation, works area/construction zone and prohibited from playing on any equipment or machinery associated with the project. ▪ The contractor will implement relevant elements of the GRM. ▪ Adequate signage and security will be provided at work sites for prevention of unauthorized people (including children) entering any work site(s) or the office compound. Consideration of signs in English and Kosraean. ▪ The public will be adequately protected near work sites, including advanced notice of commencement of works, installation of safety barriers and fences (no go areas) and signage or marking areas where works will be carried out. ▪ Provision of safe access across the works site(s) to people whose residential or business access is temporarily affected during road rehabilitation activities. ▪ The contractor will implement the Traffic Management Plan that will include traffic control and pedestrian safety measures.	During cable laying.	Confirm construction plan is compliant to bid documents – specifically outlining management of risks of workers on communities. Periodic site inspections to ensure compliance to CEMP mitigation measures.	When work is under taken.	Contractor (s)	CIU safeguard team & FSM TCC (OAE).
Inadequate information	Failure to include	Prior to start of work present draft cable alignment plan to stakeholders, seek input and obtain agreed finalize	Key project	Confirm construction plan is compliant to bid	When work is under	FSM TCC (OAE) & CIU Safeguard	FSM TCC (OAE) &

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
disclosure	stakeholders & communities in final alignment planning & decision development.	plan.	location.	documents – specifically outlining schedule and timing of work to inform community.	taken.	team.	CIU safeguard team.
Environmental Mitigation Measure/s Completion Report	Contractor fails to prepare a summary report defining the mitigation & monitoring actions completed & what needs to be continued during the Operating period.	Contractor to prepare a completion report and deliver to the project Owners Engineer.	N/A	Confirm completion report is completed and is compliant to bid documents.	Complete within the last 4 months of the construction period.	Contractor (s)	FSM TCC (OAE) & CIU safeguard team.
Contractor Awareness Raising	Contractor with little understanding of ESMP initiates work & causes significant damage, impacts and complaints.	Conduct a contractors CEMP implementation workshop (briefing) reviewing mitigative, monitoring and reporting project requirements.	Key project location.	Confirm completion of implementation workshop and it's delivery was compliant to bid documents.	½ - 1 day.	FSM TCC (OAE) & CIU Safeguard team in conjunction with Contractor (s)	FSM TCC (OAE) & CIU safeguard team.
Contractors (workers) Health and Safe	Injury or death to contractors during contracted works.	Contractors to prepare (CEMP) and implement Health and Safety Plan (HSP).	All	Confirm contractors HSP (detailed in CEMP) is compliant to bid documents.	Submission prior to works being undertaken.	Contractor (s)	FSM TCC (OAE) & CIU safeguard team.
3.0 OPERATING PERIOD							
3.1 Physical and Ecological Environment							
Oceanic habitat – Hydrothermal vents.	Physical impact on cable from hydrothermal vents.	New vents can appear in proximity to the cable and re-routing of cable may be required to maintain safe clearance.	Offshore deep water environment.	As part of periodic maintenance checks of cable.	As part of periodic maintenance checks.	FSM TCC (OAE) and/or cable service provider.	FSM TCC (OAE).

Environmental Parameters	Project Impact	Mitigation Measures	Location	Monitoring Action	Timing/ Duration	Implementation	Supervision
Perceived marine pollution.	Local communities fear of potential damage to marine life and other resources.	Establishment of a Grievance Redress Committee (GRC) to address community concerns-issues.	Kosrae	Review and record operation of GRC and prepare inspection reports.	As concerns arise	FSM TCC (OAE) and/or cable service provider.	FSM TCC (OAE).
3.2 Socio-Economic Environment							
Impact associated with improved Internet—better access to harmful sites	Failure to adopt measures and continue mitigation actions defined in the Construction Period Environmental Completion report.	Make communities aware of 'internet site blocking" features available to every subscriber.	When in use.	Examine and record steps taken to inform public. Measure effectiveness of consultation.	At all times	FSM TCC (OAE) and/or cable service provider.	FSM TCC (OAE).
Marine coastal resource users	Impacts on fishing activities and possible fishing gear snagging on cable.	Clearly advertise location of undersea cable and alert local fishers and dangers of gear snagging (which will actually be minor, as it will be buried 3 feet below the seafloor) in shallow water coastal areas (Lelu harbor).	Inshore Coastal areas.	Confirm through meetings with fishers and general community that steps necessary to prevent impacts have been taken.	After cable is in place.	FSM TCC (OAE) and/or cable service provider.	FSM TCC (OAE).