

Annex 1. ESMP: Environmental and Social Impact Mitigation Table (ESMiT) Updated for Kosrae Component Only – Marine and Terrestrial cable alignment scope of works.

Environmental Parameters	Project Impact	Mitigation Measures	Location	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).	<ul style="list-style-type: none"> ▪ Acquire landowner approvals before work begins. ▪ Transfer of any entitlements & keep documentation. ▪ Identify other sites on other government land parcels. 	BMH & CLS sites identified in ESMP.	Prior to start of installation.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Air Quality – Pollution	Green House Gas emissions from vessels.	<ul style="list-style-type: none"> ▪ Require vessel emission certification (RE: SO₂, NO₂) 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.	Prior to start of installation.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Substrate	Use of foreign materials for filling cable trench, causing unknown pollution.	<p>Contractor's specification to include;</p> <ul style="list-style-type: none"> ➤ All backfill to be previously excavated material where possible. ➤ Only inert/stable materials are to be used in cable laying and anchoring. ➤ Be aware of unexploded WWII munitions. 	Inshore Coastal areas.	Low tide in intertidal areas.	FSM TCC-OAE DCT&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 and harbor) could lead to explosion, damage to the cable infrastructure and loss of life.	<p>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;</p> <ul style="list-style-type: none"> ➤ Instigate immediate appropriate health and safety arrangement of all workers and general public including notification of Kosrae Police and government agencies. <p>Secondary action to discussion requirements to finalize alignment, possible actions include;</p> <ul style="list-style-type: none"> ➤ Alternative route to be investigated within the projects agreed cable alignment pathway (direct and indirect area of influence); ➤ Removal of UXO (explosion in situ or translocate); and ➤ New submarine alignment outside of 	Inshore Coastal areas.	Prior to start of any cable laying activity.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.

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		proposed pathway – this may require additional marine and foreshore benthic assessment.				
Hydrothermal Vents	<ul style="list-style-type: none"> ▪ Physical damage to vents by cable or cable-laying equipment. ▪ Smothering by disturbing area sediments. ▪ Physical damage to cable, given the 300 C° vent water temperature. 	In construction contract specifications require 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.	During contract specification preparations.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Sea Mounts	Physical damage to habitat and possible impact on demersal fishery usage.	In construction contract specifications require 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.	During contract specification preparations.	FSM TCC-OAE DCT&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.	<ul style="list-style-type: none"> ▪ 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.	Preparing construction bid contract documentation.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Sensitive near shore ecological habitats and resources (coral reefs, sea grass, mangroves)	<p>Failure to plan route around coral communities.</p> <p>Damage seagrass & mangrove communities due to cable placement.</p>	<p>Prepare final alignment based on detailed design demonstrating avoidance of significant marine and terrestrial ecological systems. Including specifically in contract specifications;</p> <ul style="list-style-type: none"> ➤ Cable survey team to survey cable alignment 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. 	Inshore marine, coastal and terrestrial areas.	Prior to start of installation.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Conservation Areas (PA)	Disturbance of marine & terrestrial organisms and habitats in protected – managed areas.	<ul style="list-style-type: none"> ▪ Cable alignment to avoid all Conservation – management areas. ▪ Define in contract specifications, via GPS and survey markers, a cable route that provides ≥ 75m distance from CA boundaries, and requires all survey and cable laying vessels to maintain this distance at all times (limited by 	Offshore, Inshore, Coastal & Terrestrial areas.	Prior to start of installation.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.

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		the proximity of CAs to the shipping channel).				
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: <ul style="list-style-type: none"> ➤ 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.	Preparing construction bid contract documentation.	FSM TCC-OAE DCT&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 in the bid docs.	Ensuring safeguards monitoring are recruited 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.	At start of detailed design stage for the project duration.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Update EMP, bid & contract documentation, bid evaluation etc	Environmental responsible – procurement & compliance with CSS.	<ul style="list-style-type: none"> ▪ Update EMP to reflect the final scope of works and develop consent conditions included in bid document. ▪ Contractor prepares and submits CEMP for approval before works start. 	N/A	Before civil work starts.	FSM TCC-OAE DCT&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 specs 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: <ul style="list-style-type: none"> ➤ Notification of the roadside residents by letter & verbal providing details of the project, potential access restrictions and likely timing of activities; ➤ Follow-up communication to confirm letter receipt 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 	Residents with access to property affected by trenching and cable installation works.	Before civil work starts.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.

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		of work program, duration of access restriction and contact details in case of grievance.				
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.	During all stages of the project.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Community Grievances	Minor concerns/issues developing community resentments due to unaddressed project related concerns.	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 by the project.	Before civil works begin.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
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.	At start of detailed design stage for the project duration.	FSM TCC-OAE DCT&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.	At start of detailed design stage for the project duration.	FSM TCC-OAE DCT&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.	<ul style="list-style-type: none"> ▪ 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.	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: <ul style="list-style-type: none"> ➢ 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.	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	Oceanic deep-sea areas.	When work is under taken.	Contractor (s)	FSM TCC-OAE CIU safeguard team.

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		vents to protect the site(s).				
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.	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.	<ul style="list-style-type: none"> Ensure all vehicles and machinery used are; <ul style="list-style-type: none"> ➤ 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.	From the time vehicles and machinery work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
	Increase in dust levels on site and neighbouring land parcels from vehicles and machinery used.	<ul style="list-style-type: none"> ▪ 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 and dust (e.g. waste material transportation); ➤ All stockpiles to be covered to prevent dust dispersion through wind; ➤ Schedule/staging of proposed works to ensure no impacts from trenching and waste material. 	At all terrestrial work sites.	From the time vehicles and machinery work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
Noise & Vibration from construction equipment and machinery	Increase noise & vibration in community (residential & commercial). Impact on construction workers.	<ul style="list-style-type: none"> ▪ 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 weekdays. No work is to be undertaken on Sunday (Kosrae state law). ▪ Workers will be provided with noise abatement equipment as required. ▪ The contractor will deal with any complaints regarding noise in the first instance through the GRM. 	At all terrestrial work sites.	From the time vehicles and machinery work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
Sediment & erosion from construction.	Increase erosion and sedimentation in surrounding environment including stream and downside foreshore areas.	<ul style="list-style-type: none"> ▪ Preparation of sedimentation and erosion control plan as part of CEMP. ▪ All construction in areas of stream and coast to be undertaken with extreme care. ▪ Use of silt control devices and sediment 	At all terrestrial work sites.	From the time vehicles and machinery work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.

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	Increased turbidity of watercourses due to construction.	<p>traps/fences during all extraction activities, these to be cleaned and dewatered as required.</p> <ul style="list-style-type: none"> ▪ 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 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. 				
Construction waste material use and management.	<p>Introduction of foreign substances reacting with environment or introduced medium for introduced organisms.</p> <p>Waste material reused or disposed in approved sites.</p>	<p>A waste management Plan (WMP) is to be developed and included in the project CEMP. Contractor is to insure the WMP includes:</p> <ul style="list-style-type: none"> ➤ 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. ➤ All waste material dumped at a permitted (Kosrae - KIRMA) landfill site. ➤ Hazardous waste management plan prepared by contractor (in CEMP) including emergency response plan. ➤ Hazardous waste managed by contractor and disposed at approved site. 	At all terrestrial work sites.	From the time vehicles and machinery work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
Use, storage & transportation of Hazardous substances) e.g. fuel, oil etc)	<p>Pollution from use, storage & accidental spills of hazardous substances.</p> <p>Accidentally placing people and environment at risk.</p>	<ul style="list-style-type: none"> ▪ 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 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 	At all terrestrial work sites.	From the time vehicles and machinery work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.

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		<p>(lockable), weather proofed area including an impervious flooring and bund/containment walls (110% of largest volume) to contain spillage.</p> <ul style="list-style-type: none"> ▪ 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. ▪ All spills cleaned as per emergency response plan. ▪ Ensure any spills or accidents are reported and recorded in register. 				
<p>Construction activities affect road use and/or access to property including school (BMH).</p>	<p>Public access affected & traffic disruption during construction.</p>	<ul style="list-style-type: none"> ▪ 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 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, spoil, and any other material. ▪ All waste material to be disposed at approved 	<p>At all terrestrial work sites.</p>	<p>From the time vehicles and machinery work on this project.</p>	<p>Contractor (s)</p>	<p>FSM TCC-OAE CIU safeguard team.</p>

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		designated sites.				
Construction activities affect school operations and access	School disruption during BMH construction.	<ul style="list-style-type: none"> ▪ Prior to commencement of works, the contractor will prepare and submit a construction plan 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 Sanskrit school site.	From the time work at this site is undertaken.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
Site earthworks (excavation & backfill)	Vegetation removal – minor ecosystem disruption during construction –limited to road corridor.	<ul style="list-style-type: none"> ▪ 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 or any other tree. ▪ Construction workers to be informed about general environmental protection, avoid unnecessary felling of trees and respect of local fauna. 	At all terrestrial work sites.	From the time vehicles and machinery work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
Relocation of or damage to existing utilities & services.	Disruption of, interference with and/or damage to existing infrastructure and/or services.	<ul style="list-style-type: none"> ▪ 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.	From the time vehicles and machinery work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
2.2 Ecological Environment						
2.2.1 Marine						
Marine Coastal Conservation Areas	Disturbance of marine organisms and habitats in CA.	<p>According to contract specifications the contractor(s) to insure that they:</p> <ul style="list-style-type: none"> ➤ Lay cable along surveyed route providing for a safe distance (≥ 50m) from CA s as per cable laying specifications. ➤ Keep all survey and support vessels at safe distances from CA areas. 	Inshore Coastal areas.	From the time the vessel begins work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.

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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; <ul style="list-style-type: none"> ➤ 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.	From the time the vessel begins work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
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; <ul style="list-style-type: none"> ➤ 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.	From the time the vessel begins work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
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.	From the time the vessel begins work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
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; <ul style="list-style-type: none"> ➤ All activities within designated road easement including lay down areas. ➤ Implement measures & controls to minimize impacts on surround habitats as per CEMP. ➤ 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 possible along entire length of the cable. 	Coastal foreshore & terrestrial areas.	From the time vehicles and machinery work on this project.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
Landowner's properties adjacent to road corridor.	Destruction of ecological terrestrial systems (natural and/or man made) and property owner resources	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.	From the time vehicles and machinery work on this	Contractor (s)	FSM TCC-OAE CIU safeguard team.

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	(flora – food crops and fauna domesticated animals).			project.		
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, <ul style="list-style-type: none"> ➤ 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 Fisheries authorities (DFMR) to advise local fishers of cable laying activities, dates, and avoidance measures. ➤ Consider placing warning markers 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.	When work is under taken.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
Coastal (domestic and International) shipping – commercial shipping and ports	Physical injury of cable by shipping. Disruption to shipping during cable laying.	<ul style="list-style-type: none"> ▪ Ensure a shipping notice is issued warning of cable laying, dates, and safe clearance for other activities. ▪ Request 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. ▪ Confine laying activities to as short a period as possible. 	Offshore and coastal areas.	When work is under taken.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
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.	During cable laying.	When work is under taken.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
	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.	When work is under taken.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
2.3.2 Terrestrial						

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Access	Temporary loss of access to property for local communities during laying of undersea cable.	Provision of electronic and print notices to local communities of construction schedule and contact person in case of inquiries.	During cable laying.	When work is under taken.	Contractor (s)	FSM TCC-OAE CIU safeguard team.
General Construction Activities – Risk to workers on road etc.	Risk of hazards to or accidents to workers during construction & spread of communicable diseases.	<ul style="list-style-type: none"> ▪ Contractor will provide to all workers: (i) health facilities, first aid kits, appropriate safety equipment and procedures for medical evacuation; (ii) adequate training and information to workers in relation to all health and safety issues, equipment and training; (iii) an approved service provider to conduct an STI and HIV/AIDS awareness and prevention program for workers and local community; and (iv) access to safe drinking water, mosquito management, sun/shade management, portable, septic latrines and garbage receptacles at all work sites and office compound. ▪ 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 a health post and 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 	During cable laying.	When work is under taken.	Contractor (s)	FSM TCC-OAE CIU safeguard team.

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		<p>facilities include sanitation and drinking water (at least 2 liters/day) is provided to all workers.</p> <ul style="list-style-type: none"> ▪ Septic tanks and garbage receptacles will be set up at work sites and office compound. 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. ▪ “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 are controlled codes of conduct are strictly observed (work sites and office compound) and Kosrae state specific requirement (restrictions on activities on Sunday). 				
<p>General construction activities - Presence of workers in the community.</p>	<p>Risk of hazards to or accidents to members of community & spread of communicable diseases.</p>	<ul style="list-style-type: none"> ▪ 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 	<p>During cable laying.</p>	<p>When work is under taken.</p>	<p>Contractor (s)</p>	<p>FSM TCC-OAE CIU safeguard team.</p>

Environmental Parameters	Project Impact	Mitigation Measures	Location	Timing/ Duration	Implementation	Supervision
		<p>compound. Consideration of signs in English and Kosraean.</p> <ul style="list-style-type: none"> 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. 				
Inadequate information disclosure	Failure to include stakeholders & communities in final alignment planning & decision development.	Prior to start of work present draft cable alignment plan to stakeholders, seek input and obtain agreed finalize plan.	Key project location.	When work is under taken.	Contractor (s)	FSM TCC-OAE 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.	Prepare a completion report and deliver to the Engineer. Final contract payments directly linked to report submission and clearances.	N/A	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 (CEMP) 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.	½ - 1 day.	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.	All	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.	FSM TCC-OAE And/or cable service provider.	FSM TCC-OAE
Perceived marine pollution.	Local communities fear of potential damage to marine life and other	Establishment of a grievance redress committee to address community concerns-issues.	Kosrae	As concerns arise	FSM TCC-OAE And/or cable service provider.	FSM TCC-OAE

Environmental Parameters	Project Impact	Mitigation Measures	Location	Timing/ Duration	Implementation	Supervision
	resources.					
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.	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.	Inshore Coastal areas.	After cable is in place.	Cable service provider	Cable owner

Annex 2. ESMP: Environmental and Social Impact Monitoring Table (ESMiT) Updated for Kosrae Component Only – Marine and Terrestrial cable alignment scope of works.

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	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).	<ul style="list-style-type: none"> ▪ Acquire landowner approvals before work begins. ▪ Transfer of any entitlements & keep documentation. ▪ Identify other sites on other government land parcels. 	Confirm land access agreements are finalized and met approval process.	Prior to start of installation.	Written and signed documents inspected. Placed on file.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Air Quality – Pollution	Green House Gas emissions from vessels.	<ul style="list-style-type: none"> ▪ Require vessel emission certification (RE: SO₂, NO₂) 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. 	Confirm contract specifications and compliance certification.	Prior to start of installation.	Written and signed documents inspected. Placed on file.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Substrate	Use of foreign materials for filling cable trench, causing unknown pollution.	Contractor's specification to include; <ul style="list-style-type: none"> ➤ All backfill to be previously excavated material where possible. ➤ Only inert/stable materials are to be used in cable laying and anchoring. ➤ Be aware of unexploded WWII munitions. 	Confirm contract specifications and compliance certification.	Prior to start of installation.	Written and signed documents inspected. Placed on file.	FSM TCC-OAE DCT&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	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;	Conform and obtain documentation of UXO benthic assessment (sweep) completed. Follow up on assessment findings – as required.	Prior to start of installation.	Written and signed documents inspected. Placed on file.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
	waters (Lelu channel and harbor) could lead to explosion, damage to the cable infrastructure and loss of life.	<ul style="list-style-type: none"> ➤ Instigate immediate appropriate health and safety arrangement of all workers and general public including notification of Kosrae Police and government agencies. <p>Secondary action to discussion requirements to finalize alignment, possible actions include;</p> <ul style="list-style-type: none"> ➤ Alternative route to be investigated within the projects agreed cable alignment pathway (direct 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° vent water temperature.	In construction contract specifications require 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.	Confirm adequate specifications are presentation in bid documents.	When bid documents are being prepared.	Written and signed documents inspected. Placed on file.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Sea Mounts	Physical damage to habitat and possible impact	In construction contract specifications require survey team to identify a cable route that	Confirm adequate specifications are presentation in bid	When bid documents are being prepared.	Written and signed documents	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
	on demersal fishery usage.	maintains a minimum clearance of 2 Km from base of seamounts and specify this route in the cable-laying specification.	documents.		inspected. Placed on file.		safeguard team.
1.2 Ecological Environment							
Coastal marine and deep ocean habitats	Accidental discharge of pollutants from vessel and vessel grounding.	<ul style="list-style-type: none"> 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. 	Confirm adequate specifications are presentation in bid documents.	When bid documents are being prepared.	Written and signed documents inspected. Placed on file.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Sensitive near shore ecological habitats and resources (coral reefs, sea grass, mangroves)	Failure to plan route around coral communities. Damage seagrass & mangrove communities due to cable placement.	<ul style="list-style-type: none"> Prepare final alignment based on detailed design demonstrating avoidance of significant marine and terrestrial ecological systems. Including specifically in contract specifications; Cable survey team to survey cable alignment 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. 	Confirm adequate specifications are presentation in bid documents.	When bid documents are being prepared.	Written and signed documents inspected. Placed on file.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Conservation Areas (PA)	Disturbance of marine &	<ul style="list-style-type: none"> Cable alignment to avoid all Conservation – management 	Confirm adequate specifications are	When bid documents are	Written and signed	FSM TCC-OAE DCT&I.	FSM TCC-OAE

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
	terrestrial organisms and habitats in protected – managed areas.	<p>areas.</p> <ul style="list-style-type: none"> Define in contract specifications, via GPS and survey markers, a cable route that provides $\geq 75\text{m}$ 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). 	presentation in bid documents, as detailed in the ESMP.	being prepared.	documents inspected. Placed on file.		CIU safeguard team.
Species potentially at risk (cetacean, turtles, endangered species etc)	<p>Ocean sonar survey affecting cetaceans.</p> <p>Entanglement in cable by deep diving cetaceans such as the sperm whale.</p>	<ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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. 	Confirm adequate specifications are included in bid and contract documents.	When bid and contract (CEMP) documents are being prepared.	Placed on file.	FSM TCC-OAE DCT&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 in the bid docs.	Ensuring safeguards monitoring are recruited for the duration of the project (especially construction phase) to help in implement and monitor the delivery of the ESMP.	Confirm safeguard staff/s are recruited and fully briefed at start of the project.	At start and through to completion of the project.	Placed on file.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Update EMP, bid & contract	Environmental responsible –	<ul style="list-style-type: none"> Update EMP to reflect the final scope of works and develop 	Confirm adequate specifications are	When bid and contract (CEMP)	Placed on file.	FSM TCC-OAE DCT&I.	FSM TCC-OAE

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
documentation, bid evaluation etc	procurement & compliance with CSS.	<p>consent conditions included in bid document.</p> <ul style="list-style-type: none"> ▪ Contractor prepares and submits CEMP for approval before works start. 	included in bid and contract documents.	documents are being prepared.			CIU safeguard team.
Access during terrestrial trenching & cable installation works	Failure of contractors to delivery trenching works with minimal damage & access restrictions to property.	<ul style="list-style-type: none"> ▪ 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: <ul style="list-style-type: none"> ➤ Notification of the roadside residents by letter & verbal providing details of the project, potential access restrictions and likely timing of activities; ➤ Follow-up communication to confirm letter receipt 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. 	Confirm adequate specifications are included in bid and contract documents.	When bid and contract (CEMP) documents are being prepared.	Placed on file.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
Community Information Engagement	Misconceptions raising people’s misunderstanding (fears) regarding project footprint	Conduct of series of government and non-government community stakeholder consultations prior to commencement of civil works, during construction and after	Confirm adequate stakeholder consultations have been undertaken and stakeholders aware.	When bid and contract (CEMP) documents are being prepared.	Placed on file.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
	and potential damages to marine food supply, land usage & land loss.	project completion.					
Community Grievances	Minor concerns/issues developing community resentments due to unaddressed project related concerns.	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.	Confirm GRM requirements are included in bid and contract documents.	When bid and contract (CEMP) documents are being prepared, implemented before detailed design stage starts.	Placed on file.	FSM TCC-OAE DCT&I.	FSM TCC-OAE CIU safeguard team.
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.	Confirm adequate specifications are included in bid and contract documents.	When bid and contract (CEMP) documents are being prepared.	Placed on file.	FSM TCC-OAE DCT&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.	Confirm adequate specifications are included in bid and contract documents.	When bid and contract (CEMP) documents are being prepared.	Placed on file.	FSM TCC-OAE DCT&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	Contractor to provide emissions test results.	Prior to start of work.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
		5 days of notice.					
Substrate	Introduction of foreign substances reacting with environment or introduced medium for introduced organisms.	Contractor to insure that: <ul style="list-style-type: none"> ➤ 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. 	Site inspections to ensure compliance to CEMP.	During installation.	Placed on file.	Contractors (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).	Hydrothermal vents detected during initial ocean floor survey, periodic check cable alignment to ensure it complies with ESMP specifications.	When detailed design is complete & cable placement is to take place.	Compliance checklist signed. Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
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.	Seamounts identified during initial & detailed design, periodic check cable alignment to ensure it complies with ESMP specifications.	When detailed design is complete & cable placement is to take place.	Compliance checklist signed. Placed on file.	Contractors (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; <ul style="list-style-type: none"> ➤ 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. 	Vehicle inspections to ensure compliance to CEMP mitigation measures.	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
	Increase in dust levels on site and neighbouring land	<ul style="list-style-type: none"> ▪ Ensure dust management measures are implemented at all construction site including; 	Periodic vehicle and site inspections to ensure compliance to	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
	parcels from vehicles and machinery used.	<ul style="list-style-type: none"> ▪ Restrict speed on roads when works being undertaken; <ul style="list-style-type: none"> ➤ Cover all vehicles to prevent load spillage and dust (e.g. waste material transportation); ➤ All stockpiles to be covered to prevent dust dispersion through wind; ▪ Schedule/staging of proposed works to ensure no impacts from trenching and waste material. 	CEMP mitigation measures.				safeguard team.
Noise & Vibration from construction equipment and machinery	<p>Increase noise & vibration in community (residential & commercial).</p> <p>Impact on construction workers.</p>	<ul style="list-style-type: none"> ▪ 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 weekdays. No work is to be undertaken on Sunday (Kosrae state law). ▪ Workers will be provided with noise abatement equipment as required. ▪ The contractor will deal with any complaints regarding noise in the first instance through the GRM. 	Periodic vehicle and site inspections to ensure compliance to CEMP mitigation measures.	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
Sediment & erosion from	Increase erosion and	<ul style="list-style-type: none"> ▪ Preparation of sedimentation and erosion control plan as 	Confirm sediment and erosion plan is	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
construction.	sedimentation in surrounding environment including stream and downside foreshore areas. Increased turbidity of watercourses due to construction.	<p>part of CEMP.</p> <ul style="list-style-type: none"> ▪ 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 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. 	<p>compliant to bid documents.</p> <p>Periodic site inspections to ensure compliance to CEMP mitigation measures.</p>				CIU safeguard team.
Construction waste material use and management.	Introduction of foreign substances reacting with environment or	A waste management Plan (WMP) is to be developed and included in the project CEMP. Contractor is to insure the WMP includes:	<p>Confirm WMP is compliant to bid documents.</p> <p>Periodic site</p>	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
	<p>introduced medium for introduced organisms.</p> <p>Waste material reused or disposed in approved sites.</p>	<ul style="list-style-type: none"> ➤ 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. ➤ All waste material dumped at a permitted (Kosrae - KIRMA) landfill site. ➤ Hazardous waste management plan prepared by contractor (in CEMP) including emergency response plan. ➤ Hazardous waste managed by contractor and disposed at approved site. 	<p>inspections to ensure compliance to CEMP mitigation measures.</p>				
<p>Use, storage & transportation of Hazardous substances) e.g. fuel, oil etc)</p>	<p>Pollution from use, storage & accidental spills of hazardous substances.</p> <p>Accidentally placing people and environment at risk.</p>	<ul style="list-style-type: none"> ▪ 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 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. 	<p>Confirm HSMP is compliant to bid documents.</p> <p>Periodic site inspections to ensure compliance to CEMP mitigation measures.</p>	<p>During installation.</p>	<p>Placed on file.</p>	<p>Contractors (s).</p>	<p>FSM TCC-OAE CIU safeguard team.</p>

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
		<ul style="list-style-type: none"> ▪ 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. ▪ All spills cleaned as per emergency response plan. ▪ Ensure any spills or accidents are reported and recorded in register. 					
<p>Construction activities affect road use and/or access to property including school (BMH).</p>	<p>Public access affected & traffic disruption during construction.</p>	<ul style="list-style-type: none"> ▪ 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 	<p>Confirm TMP is compliant to bid documents.</p> <p>Periodic site inspections to ensure compliance to CEMP mitigation measures.</p>	<p>During installation.</p>	<p>Placed on file.</p>	<p>Contractors (s).</p>	<p>FSM TCC-OAE CIU safeguard team.</p>

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
		<p>time and temporary access arrangements made.</p> <ul style="list-style-type: none"> ▪ Use of signage, spotters and flaggers, safety barriers 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, 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.	<ul style="list-style-type: none"> ▪ Prior to commencement of works, the contractor will prepare and submit a construction plan 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. 	<p>Confirm construction plan is compliant to bid documents – specifically outlining schedule and timing of work – no disruptions to school.</p> <p>Periodic site inspections to ensure compliance to CEMP mitigation measures.</p>	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
Site earthworks (excavation &	Vegetation removal – minor	<ul style="list-style-type: none"> ▪ Vegetation clearance during construction activities, 	Confirm landowner's discussions undertaken	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
backfill)	ecosystem disruption during construction – limited to road corridor.	<p>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.</p> <ul style="list-style-type: none"> ▪ Under no circumstances is the contractor permitted to fell or remove mangroves or any other tree. ▪ Construction workers to be informed about general environmental protection, avoid un-necessary felling of trees and respect of local fauna. 	<p>and project awareness is fully understood.</p> <p>Periodic site inspections to ensure compliance to CEMP mitigation measures.</p>				CIU safeguard team.
Relocation of or damage to existing utilities & services.	Disruption of, interference with and/or damage to existing infrastructure and/or services.	<ul style="list-style-type: none"> ▪ 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. 	<p>Confirm service providers have been engaged and plans develop in compliance to bid documents.</p> <p>Periodic site inspections to ensure compliance to CEMP mitigation measures.</p>	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
2.2 Ecological Environment							
2.2.1 Marine							
Marine Coastal Conservation Areas	Disturbance of marine organisms and habitats in CA.	<p>According to contract specifications the contractor(s) to insure that they:</p> <ul style="list-style-type: none"> ➤ Lay cable along surveyed route providing for a safe distance ($\geq 50m$) from CA s as per cable laying 	Inspect cable laying operation in coastal areas to confirm compliance to CEMP mitigation measures (minimum distance from CA is maintained).	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
		<p>specifications.</p> <ul style="list-style-type: none"> ➤ Keep all survey and support vessels at safe distances from CA areas. 					
Coastal and Deep Ocean Habitats	Accidental discharge of pollutants from vessel.	<p>Adhere to contract specifications and national laws the contractor (s) to insure that they;</p> <ul style="list-style-type: none"> ➤ 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. 	Inspect cable survey & laying vessels to confirm compliance to CEMP mitigation measures.	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
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).	<p>Contractor(s) to adhere to specifications and lay cable along proposed surveyed route, as per cable-laying specification to ensure;</p> <ul style="list-style-type: none"> ➤ 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. 	Inspect cable laying operation in coastal areas to confirm compliance to CEMP mitigation measures (minimum distance from sensitive habitats is maintained).	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
Species of special Interest – Cetaceans	Entanglement in cable risk for deep diving	Control cable tension so that laid cable conforms to undulations of seabed as per cable laying	Ensure cable laying company aware of cetacean sensitivities	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
	cetaceans	specification and-or provide anchors if needed.	and confirm compliance to CEMP mitigation measures.				safeguard team.
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; <ul style="list-style-type: none"> ➤ All activities within designated road easement including lay down areas. ➤ Implement measures & controls to minimize impacts on surround habitats as per CEMP. ➤ 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 possible along entire length of the cable. 	Inspect cable laying operation to confirm compliance to CEMP mitigation measures.	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
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.	Inspect cable laying operation and undertake stakeholder discussions to confirm compliance to CEMP mitigation measures.	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
2.3 Socio-Economic Environment							
2.3.1 Marine							
Coastal Resource Users– subsistence and artisanal fisheries	<p>Displacement of activities during cable laying.</p> <p>Entanglement of fishing gear.</p> <p>Damage to ecosystem integrity and fishery productivity.</p>	<p>As per the contract specifications,</p> <ul style="list-style-type: none"> ➤ 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 Fisheries authorities (DFMR) to advise local fishers of cable laying activities, dates, and avoidance measures. ➤ Consider placing warning markers 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. 	<p>Inspect cable laying operation to confirm compliance to CEMP mitigation measures.</p> <p>Interview fishers – stakeholders to determine contractor’s compliance.</p> <p>Installation of warning signs adjacent land areas.</p>	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
Coastal (domestic and International) shipping – commercial shipping and ports	<p>Physical injury of cable by shipping.</p> <p>Disruption to shipping during cable laying.</p>	<ul style="list-style-type: none"> ▪ Ensure a shipping notice is issued warning of cable laying, dates, and safe clearance for other activities. ▪ Request 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 	Ensure shipping notice is published.	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
		<p>followed by the project vessels at all times.</p> <ul style="list-style-type: none"> 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.	Ensure project construction notifications are published and confirm compliance to CEMP mitigation measures (including GRM).	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
	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 of cable alignment.	Undertake stakeholder meetings to confirm compliance to CEMP mitigation measures.	During installation.	Record meetings and place on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
2.3.2 Terrestrial							
Access	Temporary loss of access to property for local communities during laying of undersea cable.	Provision of electronic and print notices to local communities of construction schedule and contact person in case of inquiries.	<p>Confirm construction plan is compliant to bid documents – specifically outlining schedule and timing of work to inform community.</p> <p>Periodic site inspections to ensure compliance to CEMP mitigation measures.</p>	During installation.	Record meetings and place on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
General Construction	Risk of hazards to or accidents to	<ul style="list-style-type: none"> Contractor will provide to all workers: (i) health facilities, first 	Confirm construction plan is compliant to bid	During installation.	Record meetings	Contractors (s).	FSM TCC-OAE

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
Activities – Risk to workers on road etc	workers during construction & spread of communicable diseases.	<p>aid kits, appropriate safety equipment and procedures for medical evacuation; (ii) adequate training and information to workers in relation to all health and safety issues, equipment and training; (iii) an approved service provider to conduct an STI and HIV/AIDS awareness and prevention program for workers and local community; and (iv) access to safe drinking water, mosquito management, sun/shade management, portable, septic latrines and garbage receptacles at all work sites and office compound.</p> <ul style="list-style-type: none"> ▪ 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 responsibility 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 a health post and first aid facilities at the office compound and mobile first aid kits in vehicles and at work 	<p>documents – specifically outlining management of risks to workers.</p> <p>Periodic site inspections to ensure compliance to CEMP mitigation measures.</p>		and place on file.		CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
		<p>sites.</p> <ul style="list-style-type: none"> ▪ 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. 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. ▪ “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 					

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
		<p>at all sites to ensure that disease vectors such as stagnant water bodies do not form.</p> <ul style="list-style-type: none"> ▪ Contractor to educate and ensure worker's actions are controlled codes of conduct are strictly observed (work sites and office compound) and Kosrae state specific requirement (restrictions on activities on Sunday). 					
<p>General construction activities - Presence of workers in the community.</p>	<p>Risk of hazards to or accidents to members of community & spread of communicable diseases.</p>	<ul style="list-style-type: none"> ▪ 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. 	<p>Confirm construction plan is compliant to bid documents – specifically outlining management of risks of workers on communities.</p> <p>Periodic site inspections to ensure compliance to CEMP mitigation measures.</p>	<p>During installation.</p>	<p>Record meetings and place on file.</p>	<p>Contractors (s).</p>	<p>FSM TCC-OAE CIU safeguard team.</p>

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
		<ul style="list-style-type: none"> ▪ 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. 					
Inadequate information disclosure	Failure to include stakeholders & communities in final alignment planning & decision development.	Prior to start of work present draft cable alignment plan to stakeholders, seek input and obtain agreed finalize plan.	Confirm construction plan is compliant to bid documents – specifically outlining schedule and timing of work to inform community.	During installation.	Record meetings and place on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
Environmental Mitigation	Contractor fails to prepare a	Prepare a completion report and deliver to the Engineer.	Confirm completion report is completed and	During installation.	Placed on file.	Contractors (s).	FSM TCC-OAE

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
Measure/s Completion Report	summary report defining the mitigation & monitoring actions completed & what needs to be continued during the Operating period.	Final contract payments directly linked to report submission and clearances.	is compliant to bid documents.				CIU safeguard team.
Contractor Awareness Raising	Contractor with little understanding of ESMP (CEMP) initiates work & causes significant damage, impacts and complaints.	Conduct a contractors CEMP implementation workshop (briefing) reviewing mitigative, monitoring and reporting project requirements.	Confirm completion of implementation workshop and it's delivery was compliant to bid documents.	Before installation work begins.	Record workshop and place on file.	Contractors (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 (H&SP).	Confirm contractors H&SP (detailed in CEMP) is compliant to bid documents.	During installation.	Record meetings and place on file.	Contractors (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.	As part of periodic maintenance checks of cable.	As required – ensure undertaken if volcanic activity is reported.	Record meetings and place on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
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.	Review and record operation of GRC and prepare inspection reports.	As concerns arise.	Record meetings and place on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.

Environmental Parameters	Project Impact	Mitigation Measures	Monitoring Action Details	Timing Duration	OUTPUT	Implementation	Supervision
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.	Examine and record steps taken to inform public. Measure effectiveness of consultation.	Once service becomes operational.	Record activities and place on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.
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.	Confirm through meetings with fishers that steps necessary to prevent impacts have been taken.	Once cable is deployed.	Record activities and place on file.	Contractors (s).	FSM TCC-OAE CIU safeguard team.