Appendices

Appendix 1 Baseline Data Report

EAST MICRONESIA CABLE PROJECT

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BASELINE DATA REPORT

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1. Introduction

1.1 Background

The Government of the Federated States of Micronesia (GoFSM) is seeking 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 to Guam,. Concurrently, the Kiribati Government is seeking financing from the WB to finance Kiribati's participation, and the Nauru Government is seeking financing from the Asian Development Bank (ADB). This Project is otherwise known as the East Micronesia Cable (EMC) Project.

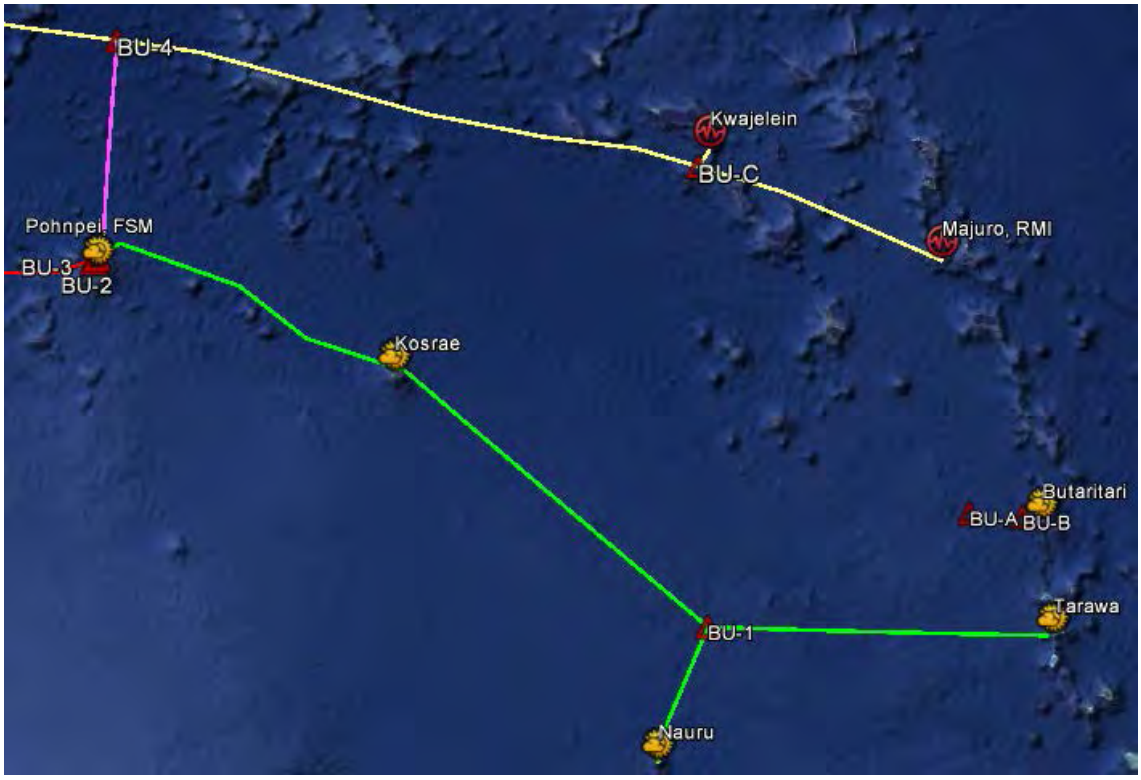


Figure 1: Proposed subsea cable route

This report presents the results of an assessment of the coastal marine (habitat and fish communities) and terrestrial ecological resources of the adjacent coastal marine area potentially impacted as a result of the proposed works. This study has been undertaken to allow the potential impacts of the proposed works on these resources to be determined.

1.2 Proposed Cable Project

The proposed works are described in detail in the Project ESIA[1]. In summary, the installation works will likely consist of the following:

- A subsea cable located on the seafloor between Pohnpei and Kosrae, and on to Kiribati, with a spur extending to Nauru.
- The landward end of the cable, which will extend across the intertidal zone between the subtidal zone and a beach manhole structure located above the intertidal, and will be either buried or covered with lightweight protection consisting of standard articulated piping bolted to the substrate.

[1]Argo 2016. Environmental & Social Impact Assessment. KKN Cable Project. December 2016.

- A beach manhole (BMH) landing facility likely to comprise a small concrete manhole approximately 2m x 2m x 2m.
- A cable landing stations (CLS) to be located at an existing Government managed telecommunications facility.
- A secure DC power feed facility (including back up diesel generator and battery supply, earth mat, control systems, etc) at Kiribati to power the cable repeaters to be located as close as possible to the CLS to minimise the risk of human contact with the buried or conduited power supply cable.

A number of potential BMH and CLS sites were initially identified, of which a subset were investigated in more detail and determined the focus of this study.

The key points to note in terms of the potential impacts of the Project on ecological resources are as follows:

- Direct loss of a small area of subtidal marine habitat
- Direct loss of a small area of intertidal marine habitat in the cable footprint which will be recolonised over time.
- A potential increase in sediment load from exposed work areas affecting adjacent coastal marine flora / fauna.
- Potential loss of terrestrial habitat at BMH locations, along the cable route in the road corridor between the BMH and the CLS.

2. Physical Environment

2.1 Introduction

This section of the report describes the physical environment in Kosrae, Kiribati and Nauru. The location of the Islands is shown in Figure 2.

2.2 Location & Geography

Kosrae

Kosrae Island is a high island of volcanic origin situated in the Caroline Islands, a little over 5°N of the equator, with a total area of approximately 112 km^2. The steep mountainous interior, which has four peaks ranging in height from 465-620m above MSL, is covered with lush tropical rainforest. Around much of the island there are continuous mangrove swamp forests and seaward coastal strands. The island is surrounded by a broad shallow carbonate platform much of which is covered by freshwater swamps, mangrove forests and low coral land and beach strand[2].

A coastal road circles two-thirds of the island, built largely on the coastal strand at the seaward edge of the mangrove forest, from Otwe in the south through to the Airport at Okat in the north west.

Kiribati

The Gilbert Island chain of the Republic of Kiribati straddles the equator in the west-central Pacific. This NW-SE trending chain of 11 atolls and five reef islands rises from oceanic floors ~4,000 m deep.

South Tarawa comprises a series of islets with a total area of approximately 15.8km2, oriented east-west and connected by causeways, and a recently upgraded road that links Bonkiri Airport in the east to Betio in the West. South Tarawa adjoins North Tarawa which also consists of a series of islets, orientated approximately north-west south-east to form Tarawa atoll. The atoll lies at a latitude 10°20' North and 172°–173° East, approximately 150km north of the equator.

The atoll developed from a volcano which appeared between 55 million and 65 million years ago (during the Palaeocene geologic epoch)[3]. Over time, the peak of the volcano sank below sea level as a result of subsidence of the ocean floor.

Nauru

The Republic of Nauru, one of the world's smallest independent nations, is located approximately 50 km south of the equator at 0°31'S and 166°56'E.

[2] US Army Engineers 1989. Kosrae Coastal Resource Inventory. Prepared by US Army Engineers, Honolulu.
[3] Richmond, B.M., 1993. Reconnaissance geology of the Gilbert Group, western Kiribati. SOPAC Technical Report 77, 65 p.

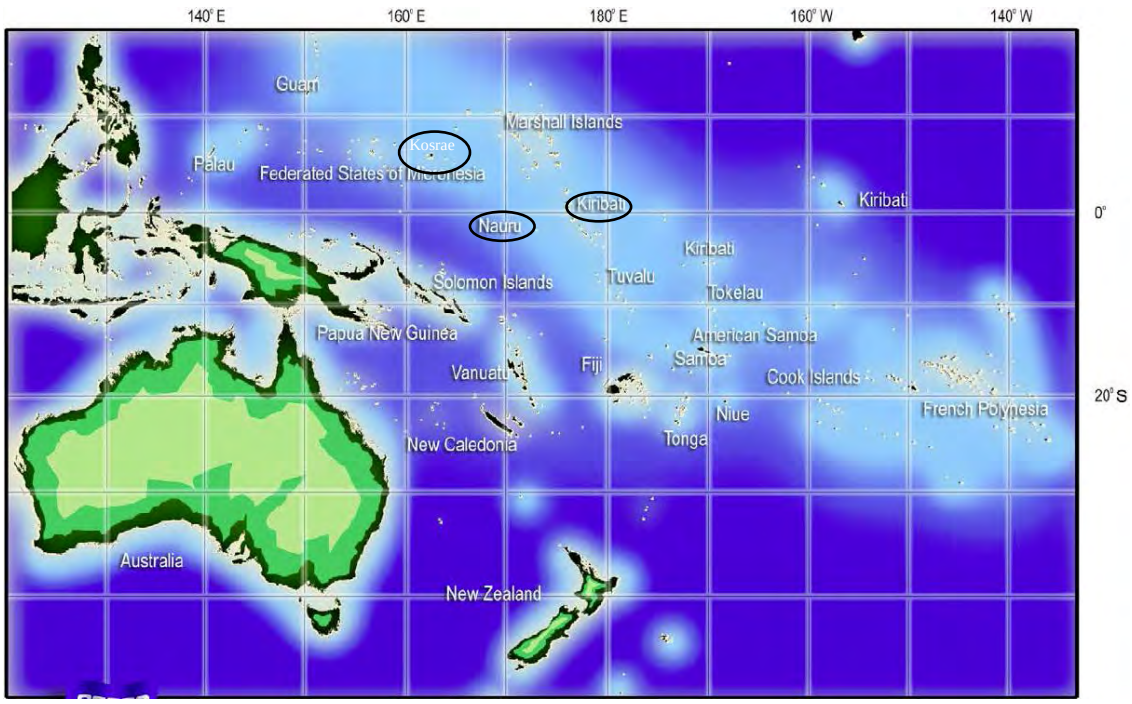


Figure 2: Approximate location of Kosrae, Kiribati and Nauru in the wider Pacific.

2.3 Climate

2.3.1 Kosrae

The climate of Kosrae is tropical marine with daily temperatures ranging from about 24C to 29 C with little average variation throughout the year. Annual rainfall exceeds 1,016 cm in the mountains[4]. Northeast trade winds prevail from about November to May when conditions may be drier on western islands of the FSM. The region is affected by storms and typhoons which are generally more severe in the western islands, and by periods of drought and excessive rainfall associated with the "El Nino" (ENSO) phenomena. In recent times, the droughts of 1982-1983 and 1997-1998 were especially severe.

2.3.2 Kiribati

Tarawa has a maritime tropical climate. Two seasons occur, characterised mainly by prevailing wind patterns but also by rainfall. Between October and March, easterly tradewinds predominate and rainfall is generally higher, while between April and September, more variable winds occur including westerlies, which can be strong and rainfall is generally lower.

Temperature generally vary between 28°C and 32°C, averaging 31°C, though monthly averages remain very constant between 26°C (February) and 28°C (September).

Rainfall averages 2,027 mm annually; however this varies widely, between 398mm and 4,333mm. Rainfall patterns are influenced by the convergence patterns of tradewinds. El Niño events bring higher rainfall to Tarawa while during La Niña events the reverse happens. The island is subject to intermittent droughts, when the drier season can extend well beyond the months of April to September. Unlike many other Pacific islands, Tarawa rarely experiences cyclones.

[4]Wortel *et al.* 2003. Federated States of Micronesia. Fourth National Report 2010. Implemnetation of Articale 6 of the Convention on Biological Diversity.

Climate change in Kiribati, which is expected to increase the incidence and severity of droughts, is of concern due to increased risk of higher sea surges, greater variation in temperature, loss of land area and constriction of freshwater lenses. South Tarawa could lose between 25% and 54% of its land mass by 2050[5], and it is predicted that the thickness of the freshwater lenses below South Tarawa may be reduced by 18-19%[6].

2.3.3 Nauru

Nauru is located in the dry belt of the equatorial oceanic zone, with diurnal temperatures ranging from 26 - 35°C[7]. Annual rainfall is extremely variable, averaging 2,126 mm, with a range of 280 to 4,590 mm. Rains are more frequent between December and April. Prolonged droughts are common and cause severe stress on native ecosystems and species. During the drier months of May to November, the prevailing wind direction is generally easterly at 5 to 10 knots. During the wetter months, the winds are generally from the west at 10 to 18 knots. Nauru does not experience tropical cyclones, although it is occasionally subject to strong winds.

2.4 Topography, Geology, Soils & Hydrology

2.4.1 Kosrae

Kosrae is a volcanic high island with relatively flat and narrow coastal plains extending from the foothills to the shore. Soils are typically brownish red in colour, mostly fine granular clay depending on the bedrock and can be deep in places. The parent rock is mostly Olivine or Benhaline basalt, and in places is porous and slaggy. Carbonates compose the majority of reef environments which include fringing reefs, lagoon floor, barrier reef, and deep passes.

2.4.2 Kiribati

Kiribati atoll sediments have been formed by successive coral deposits around the old and now submerged volcano. The atolls of North and South Tarawa, and the surrounding reef delineate the edges of the lagoon which occupies the site of the former volcanic core. The atolls and the lagoon cover the peak of the former volcano, which rises sharply from the sea bed. The rock is variable in consistency, reflecting the growth patterns of the coral, which forms the harder rock and large voids which have filled with coral derived fragments forming softer rock.

The atolls have soils derived exclusively from coral deposits which are predominantly sandy in texture, with a significant silt component formed from abrasion of the sand deposits. Depth to the groundwater or freshwater lenses varies between 1 and 4 m. Over much of the island, deposition and breakdown of organic matter has led to the formation of a very thin layer of topsoil. The soils are free draining when uncompacted, have poor nutrient status and are generally alkaline.

Surface relief is extremely low, attaining a maximum of 3m above sea level. Measurements show that gradual uplift is taking place, as a result of the dynamics of ocean floor movements, in the order of 1mm per year[8].

[5] World Bank 2000. Cities, Seas and Storms: Managing Change in Pacific Island Economies. Vol IV: Adapting to Climate Change, World Bank, Washington
[6] South Pacific Sea Level and Climate Monitoring Project 2009. Pacific Country Report on Sea Level and Climate Change: Their Present State for Kiribati.
[7] SPREP 2013. Rapid biodiversity assessment of Republic of Nauru.
[8] Geoscience Australia 2009. South Pacific Sea Level and Climate Monitoring Project (SPSLCMP) Survey Report February/March 2009: EDM Height Traversing Levelling Survey.

2.4.3 Nauru

Nauru has a total land area of approximately 21 km^2 with a maximum elevation of 71 m. It is considered unique as it consists of a single raised phosphatic island presumed to have been created by hotspot volcanism during the mid-Eocene to Oligocene period. It is estimated that the seamount is capped by about 500m of limestone, with uplift and sub-aerial exposure of the carbonate platform during the Pleistocene[9].

The majority of the land area (70%) has been utilized for phosphate mining. The remaining 30% is used for domestic, commercial, industrial and government purposes, with the international airport occupying a sizeable area on the south eastern side of the island.

The only significant freshwater resource is a lens of often slightly brackish water hydrostatically 'floating' on high density sea water.

2.5 Seismology & Earthquakes

Earthquakes can impact on fibre optic cables when there are significant geological plate movements that stress the cable and or when this movement creates deep sea landslides. Based on data from the website http://earthquaketrack.com the areas around Kosrae, Kiribati and Nauru have not experienced any earthquake activity in recent times with the majority of activity centred around the Marianas Trench some 2,000km to the north west of Kosrae.

2.6 Oceanographic characteristics

The basic tide parameters in Kosrae are semi-diurnal (2 tides a day) with a strong diurnal inequality and a maximum tidal variation of just over 1.5 m (meso-tidal)[10]. Small seasonal and daily tidal fluctuations have been recorded related to sea conditions associated with prevailing weather patterns. Storm systems impact tidal height and can cause increased coastal erosion when coinciding with high water levels.

Kiribati tides are semi-diurnal. Spring tidal amplitude can exceed 2 m. Sea level in Tarawa also varies 40 cm with ENSO shifts (higher during El Nino phases), and even seasonally, related to variations in the strength of ocean currents11. Higher sea-levels and larger waves during El Nino phases likely have a marked impact on shorelines.

Ocean currents are influenced by both the westward northern equatorial current, the eastward equatorial counter current and, particularly at shallower depths, wind patterns.

Nauru tides are semi-diurnal. Mean sea level (MSL) is 1.57 m above Chart Datum Level (CDL). The high neap-tide water level is 0.24 m above MSL, the high spring-tide water level is 0.85 m above MSL, and the highest high water is 1.07 m above MSL.

2.7 Deep Ocean features

There is a paucity of information describing the deep ocean features surrounding Kosrae, Kiribati and Nauru. However, using google earth imagery it appears that, apart from the potential seamounts located between Pohnpei and Kosrae, the abyssal plain is relatively flat and featureless (see Figure 1). This is in stark contrast to the western islands of the FSM

[9] Jacobsen, G., Hill, P.J. and Ghassemi, F. 1997. Geology and hydrogeology of Nauru island. In: Vacher, H.L. and T. Quinn (eds). Geology and hydrogeology of carbonate islands. Developments in Sedimentology 54: 707–742

[10] Wolanski E, Furukawa K (2007) The oceanography of Palau. Pp. 59–72 in Kayanne H., Omori M., Fabricus K., Verheij E., Colin P., Golbuu Y., Yukihira H. (eds.), Coral Reefs of Palau. Palau International Coral Reef Center, Palau, 238 pp.

[11] Solomon, S., 1997, Assessment of the vulnerability of Betio (South Tarawa, Kiribati) to accelerated sea level rise: SOPAC Technical Report 251, 67 p.

where there are significant deep ocean ridges, trenches, seamounts and thermal vents present.

Further consideration of hydrothermal vents and seamounts potentially present along the proposed cable route is provided below.

2.7.1 Hydrothermal Vents

There are very few studies and resulting information available detailing hydrothermal vents along the proposed cable alignment corridor. Hydrothermal vents occur when volcanically heated water is discharged from cracks in the earth's crust. Typically, water from these vents exceeds 300°C and is prevented from boiling by the large overlying hydrostatic pressure. Within a few meters of the discharge the water cools to around 2.5°C. The water can also be extremely acidic, thus corrosive, and is capable of leaching out minerals from the surrounding rock.

Individual vent structures are usually small, measuring only a few tens of metres across, and stand a similar height off the surrounding sea floor. Typically, individual vents exist within fields. These fields, which can measure in the order of a few kilometres across, are sites where hydrothermal activity is closest to the surface. Vents are ephemeral and could occur at any site along the proposed cable alignment at any point in time, replacing sites that become dormant or are destroyed by volcanic activity.

Deep sea thermal vents can support unique ecosystems consisting of densely populated organisms occurring within a few hundred square metres of the vent[12]. Deep sea vents generally occur near volcanic activity ranging from 500m depth to the deep ocean[13].

2.7.2 Seamounts

Seamounts generally originate as volcanoes and are generally associated with intraplate hotspots, mid ocean ridges or island arcs. They can support unique ecosystems with high biodiversity and act as important aggregations sites for pelagic and demersal fish resources, and invertebrates. They have also been reported to act as important navigational 'waypoints' for oceanic migratory species[14]. Recent studies have shown that the pelagic biodiversity around seamounts is far greater than in open ocean areas, and even in coastal reefs. On average, 15% of benthic species found associated with seamounts in the Pacific are endemic either to that specific seamount or to a cluster of seamounts[15].

The main cause of this increased diversity is up-welling currents and oceanographic phenomena that drive primary productivity and create additional ecosystem niches that support more species associated with sea mounts.

Benthic areas not associated with hydrothermal vents, sea mounts and active spreading zones, such as the abyssal plains and ridges, also support a diverse albeit less dense populations of invertebrates[16].

[12] Llodra R, Billett D 2006. Deep-sea ecosystems: pristine biodiversity reservoir and technological challenges. In: Duarte CM ed. The exploration of marine biodiversity: scientific and technological challenges. Bilbao, Spain, Fundacion BBVA. Pp 63–92.
[13] See https://php.radford.edu/~swoodwar/biomes/?page_id=1027 for further detail
[14] Rodgers, A., (2012). An Ecosystem Approach to Management of Seamounts in Southern Indian Ocean. Volume 1. Overview of Sea mount Ecosystems and Biodiversity. IUCN Global Marine and Polar Programme.
[15] Alder, J. & Wood, L., 2004. Managing and protecting seamount ecosystems. In: Morato T, Pauly D eds Seamounts: biodiversity and fisheries. Fisheries Centre Research Report 12(5). Pp. 67– 73.
[16] Llodra R, Billett D 2006. Deep-sea ecosystems: pristine biodiversity reservoir and technological challenges. In: Duarte CM ed. The exploration of marine biodiversity: scientific and technological challenges. Bilbao, Spain, Fundacion BBVA. Pp 63–92.

Benthic organisms associated with the deep water along the proposed cable route have no current national economic importance and are not harvested commercially. The technology to access deep parts of the ocean floor for large scale collection or any potential commercial use is still not developed. The same limitations restrict the better understanding of the deep sea area.

2.8 Unexploded Ordinance

All three countries have significant World War II histories. Although the risk is considered low, due diligence and careful consideration will be needed during near-shore stages of cable deployment to ensure that the presence of unexploded WW II ammunition, that may be present buried in the substrate for both Kosrae, Kiribati and Nauru if present is removed.

A detailed assessment of the cable alignment will need to be undertaken during the survey assessment to ensure unexploded munitions are located and removed before the cable is deployed.

3. Open Ocean Resources

3.1 Introduction

The marine environments associated with the deep waters surround the islands of KKN and the associated marine flora and fauna are poorly understood, especially the benthic systems. Information relating to movements of a number of highly migratory commercially targeted finfish species (e.g., tuna) is available at a large spatial scale however data on movement of large iconic fauna groups such as the cetaceans (e.g. whales, dolphins) is limited.

3.2 Cetaceans

The EEZ of FSM has resident and transient or migratory populations of cetaceans (whales and dolphins). There has been no dedicated scientific survey undertaken to study to identify establish marine mammal diversity within FSM waters resulting in a paucity of information[17].

There are a total 9 confirmed species each for the FSM and Kiribati EEZs, and 4 from Nauru, the limited records attributed to its relatively small EEZ (see Table 1). There are an additional unconfirmed cetaceans species for FSM (3 species), Kiribati (8 species) and Nauru (2 species).

Of the cetacean species records for the three countries, blue whale *Balaenoptera musculus* is considered Endangered (i.e., likely to become extinct) and sperm whale *Physeter macrocephalus* is considered Vulnerable (i.e., is likely to become endangered unless the circumstances threatening its survival and reproduction improve) based on the IUCN Red List (version 3.1).

For the remaining cetaceans, they are either of 'least concern' or there insufficient information to make scientific assessments on status.

3.3 Marine Turtles

A number of key points can be made regarding the distribution of sea turtles in the three countries of interest:

- The green turtle *Chelonia mydas* and hawksbill turtle *Eretmochelys imbricate* are regularly observed in Kosrae[18]. These species are the most commonly observed in the wider FSM waters, with the olive ridley turtle *Lepidochelys olivacea* and the leatherback turtle *Dermochelys coriacea* being less common[19].
- Five species of turtles in Kiribati including the green turtle, hawksbill, loggerhead *Caretta carretta* and olive ridley and, rarely, the leatherback turtle. Turtle nesting occurs on a number of islands, including some uninhabited islets in North Tarawa[20]. Turtle nesting occurs year round with two seasonal peaks: April – May and October – February. There are no known nesting sites in South Tarawa.

[17] Miller, C., 2009. Current State of knowledge of Cetacean Threat, Diversity and Habitats in the Pacific Islands region, 2009 Revision. WDCS International. 77p
[18] US Army Engineers 1989. Kosrae Coastal Resource Inventory. Prepared by US Army Engineers, Honolulu.
[19] Edwards, A., 2002. Marine biodiversity of the FSM.
[20] Preston, G. 2008. Kiribati Ministry of Fisheries and Marine Resources Development: Institutional strengthening scoping study report. Working Paper 3. Coastal fisheries development and management. Attachment 3 to report of mission statement to AusAID. Gillett, Preston and Associates, Noumea, New Caledonia.
Anon. 1980. Notes on marine turtles of the Republic of Kiribati. Working Paper No. 7. Joint SPC–NMFS workshop on marine turtles in the tropical islands, Noumea, New Caledonia, 11–14 December 1979. South Pacific Commission, Noumea, New Caledonia. 16p.

- There are no well-documented specimen records of turtles on Nauru[21]. Several reports that mention turtles in passing lack substantive detail, but some refer to at least two species, the green turtle and the hawksbill turtle. Anecdotal evidence suggests that both the hawksbill and green turtles … are occasionally present … [and that] some beaches were reportedly once nesting areas although this is no longer the case[22].

An assessment of the conservation status of these species based on the IUCN Red List (version 3.1) indicates:

- Hawksbill turtle is Critically Endangered (i.e., facing a very high risk of extinction).
- Green turtle is considered Endangered; and,
- Olive ridley, leatherback and loggerhead turtles are considered Vulnerable.

[21]Buden, D. W., 2008. The reptiles of Nauru. Pacific Science 62, 4:499–507.
[22]Thaman, R. R., and D. C. Hassall. 1998. Republic of Nauru: National environmental management strategy and national envi ronmental action plan. South Pacific Regional Environment Program (SPREP), Apia, Samoa.

Table 1: Cetacean Species likely passing through the FSM waters[17].

Species	Common Name	Status			IUCN Category
		FSM	Kiribati	Nauru	
Balaenoptera musculus	Blue whale	-	U	-	En
Physeter macrocephalus	Sperm whale	C2	C1	C2	Vu
Lagenodlphis hosei	Fraser's dolphin	C1	C1	C2	Lc
Steno bredanensis	Rough-toothed dolphin	-	C2	-	Lc
Hyperoodon planifrons	Southern bottlenose whale	-	C2	-	Lc
Tursiops sp	Bottlenose dolphin	C2	C1	-	Lc
Ziphius cavirostris	Cuviers beaked whale	U	U	U	Lc
Stenella attenuate	Pantropical spotted dolphin	U	C2	-	Lc
Peponcephala electra	Melon-headed whale	C1	U	C2	Dd
Stenella coeruleoalba	Striped dolphin	C1	U	-	Dd
Stenella longirostris	Spinner dolphin	C1	C1	-	Dd
Globicephala electra	Short-finned pilot whale	C1	C2	-	Dd
Mesoplodon gingkodens	Gingko-toothed beaked	C1	U	-	Dd
Orcinus orca	Orca	U	C2	U	Dd
Balaenoptera edeni	Bryde's-like whale	C1	-	C2	Dd
Eubalaena australis	Southern right whale	-	U	-	Dd
Mesoplodon densirostris	Blainville's beaked whale	-	U	-	Dd
Pseudorca crassidens	False killer whale	-	U	-	Dd

Notes: C = confirmed. U = Unconfirmed. 1 refers to a relatively recent field (or specimen record) confirmation of the given species within the EEZ of a nation. 2 refers to a potential Class 1 record that is either dated, or may be marginally outside of a given EEZ. En = Endangered. Vu = Vulnerable. Lc = of least concern. Dd = Data deficient.

4. Nearshore Coastal Marine Resources

4.1 Background

4.1.1 Kosrae

Kosrae is surrounded by a broad shallow carbonate platform much of which is covered by freshwater swamps, mangrove forest and low coral land and beach strand. The carbonate platform is of recent reef origin and extends between 1 – 5 km out from the islands volcanic shoreline boundary. Three lagoons or embayments bisect the reef platform, the largest of which is Lelu Harbour off the east coast. The floor of the harbour is deep, mostly in excess of 20-30m and is blanketed by fine silts and muds.

Mangrove Forests

Mangroves are a significant coastal habitat and play an important role in coastal biological diversity, erosion control and are a natural barrier of protection for the islands such as Kosrae[23]. They also play an important role in trapping sediment moderating the effects of excessive storm runoff on the surrounding reef system.

Mangrove and lowland swamp forest occupy relatively large areas between the basaltic uplands and seaward strand areas of Kosrae. There is 1,562 ha of mangrove forest in Kosrae which represents 14% of the total land area[24].

The Mangrove forest is most extensive along the south and north west coasts, while lowland swamp forest occurs mainly along the southeast coast. Much of the forest occurs behind a protective coastal strand which, in the absence of a barrier reef, is essential for their protection from wave action.

The swamp forests have been modified in some areas over time by development for agroforestry, cutting of timber and clearance for house construction.

Seagrass & Algae

Sea grass beds extend over large areas of fringing reef flats primarily along the north and west coasts. Like mangroves, seagrass acts as a trap for terrigenous sediments and provide important habitat for a range of invertebrate and fish species. Four species have been observed; *Cymodea rotundata*, *Enhalus acoroides*, *Thalassia hamprichii* and *Holdule uninervis*.

Algae of the genera *Caulerpa*, *Padina* and *Halimeda* are generally common on areas of sand veneered reef pavement not subject to heavy scouring action. These (and other less conspicuous) algae occur within seagrass beds and are fairly common, but irregularly distributed, on patch reefs. The patch and margins and slopes of fringing reefs are typically dominated by live corals, but these areas also support locally abundant coralline algae and patches of *Halimeda* sp. Dense brown algae of the genera *Sargassum* and *Turbinaria* can also be present. The shallower margins of the fringing reef typically have patches of sand producing green algae *Halimeda*.

Reef Systems

The inner reef systems which extend beyond the mangrove fringe and terrigenous sediments are dominated by calcareous sand and rubble deposits which support seagrass beds. The middle to seaward portion is frequently covered by coral rubble, shingle tracts etc. On windward reefs (north and east facing), the outer edge of the reef platform is covered by a

[23] Falanruw, M. 2001. Terrestrial Biodiversity of the FSM. FSM Government publication, 35pp.

solid reef pavement which gives wat to gradually sloping spur-and-groove formation in the surf zone where robust corals and coralline algae are abundant. Steep reef slopes and terraces with very luxuriant coral growth and diversity extend beyond the spur and groove formation. On leeward facing reefs this formation is less developed or absent altogether, and a coral-rich reef slope descends abruptly beyond the outer edge of the reef flat.

Soft Bottom Benthic Communities

Rudimentary embayments bisect the reef platform at several places including Lelu Harbour which measures 3km long by 2 km wide. The floor is in excess of 20-30m deep and covered in fine muds and silts. These softer sediments are likely to be dominated by a range of infaunal and epifaunal invertebrates.

The deeper reef slopes of the Harbour are dominated by talus slopes of coral rubble with live coral more conspicuous on the steep mid-level and upper portions of the walls.

Threatened & Protected Species

Several species of giant clams may be threatened throughout the FSM due to the high levels of exploitation. One species, *Tridacna gigas* has been extirpated in the FSM. Fossils of *T. gigas* are now seen in piles of dredged spoil but the animal is no longer seen alive on the reefs; efforts to reseed the reefs with these animals are ongoing. Other species, such as the *Hypoppus hypoppus* are also being depleted and like the *T. gigas*, they are being cultured to be used for restocking on the reef flats.

As described in Section 3.3, the green turtle *Chelonia mydas* and the hawksbill turtle *Eretmochelys imbricata*, are threatened and critically endangered respectively. However, these species are known to be harvested throughout the Federated States of Micronesia.

Conservation Areas /Marine Management Areas

Kosrae has two existing and 6 proposed Conservation Areas (see Figure 3). A number of these have marine-based components as part of their areas.

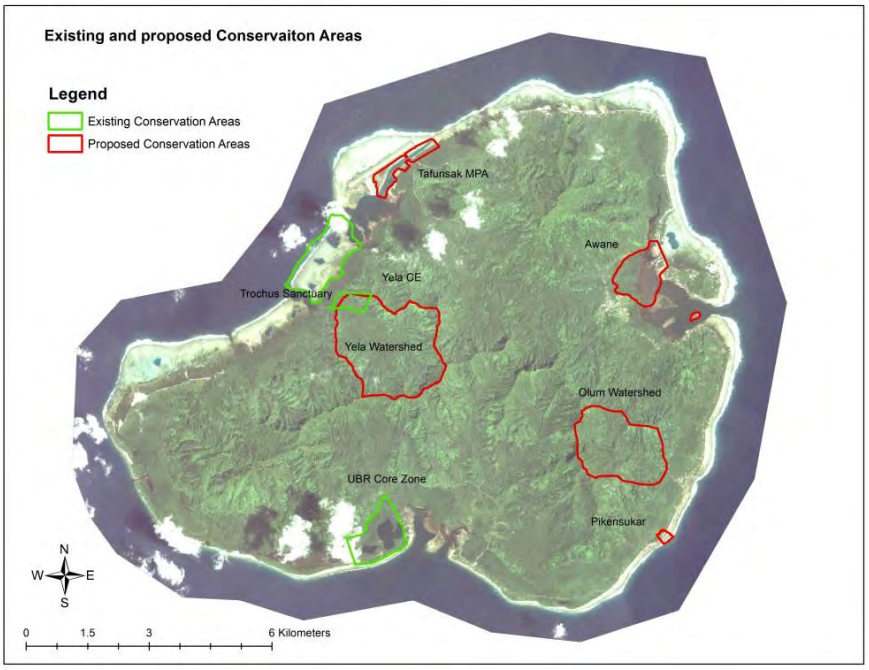


Figure 3: Existing and proposed conservation areas

[24] Cole, T. G., Ewel, K. C., and Devoe, N. N. 1999. Structure of mangroves trees and forests of Micronesia. Forest Ecology and Management 117: 95-109.

4.1.2 Kiribati

Mangrove ecosystems have special ecological significance. On Tarawa, mangroves occur on reef mud flats at the lagoon margins at certain areas, and provide a coastal protection function as well as an important habitat for marine organisms. Mangroves have been subject to depletion, but mangrove forest areas are being rehabilitated by the government under the World Bank funded Kiribati Adaptation Project Phase II (KAP II).

Sea grass beds, which provide an important habitat for shellfish and other organisms, occur extensively within the lagoon particularly toward the southeast. Recent measurements suggest that seagrass beds are expanding[25].

Kiribati has a number of conservation areas, the closest of which is located in North Tarawa, and covers the islets, lagoons, and reefs of North Tarawa Atoll.

In South Tarawa one proposed MPA for a site located to the east of Nanikai which would extend into both the lagoon and open coastal reef area on both sides of the atoll. Discussions with the local community are still ongoing about the establishment of the MPA and there are no boundaries yet put in place.

4.1.3 Nauru

Coral Reef & Fisheries

The coral reef surrounding Nauru is the key marine habitat type present. The hermatypic zone of the reef slope descends to between 15 m and 30 m, beyond which there is a transition zone with coral outcrops that descends to about 60 m. Overall, coral diversity is considered to be impoverished. The dominant coral species covering around 80% of growth belong to the genera Pocillopora, Monitipora and Acropora.

High coral cover, good coral health, good coralline algae cover, and low macroalgal cover all support the view that the reefs are healthy[27]. The low diversity is due to the small size of the island and relatively large distance to areas of high diversity and is not considered to be a sign of an unhealthy reef.

The most fished species are pelagic fishes including tunas (*Katsuwonus pelamis* & *Thunnus albacares*) and rainbow runners (*Elagatis bipinnulata*). These species are abundant all year round accounting for 80% of landed catches. They are caught by trolling and through mid-water hand-lining often associated with fish aggregation devices (FADs) or in the open sea.

Endemic, Rare or Endangered species

The small size of the coastal area means that resources are susceptible to over-exploitation, especially intertidal benthic organisms such as turban shells and octopi, which are easily gleaned at low tide. Anecdotal information suggests that certain reef fish species are becoming scarce[26]. Furthermore, the average size of fish caught is decreasing. Finfish species are becoming rare include mullets (Mugilidae), Topsail Drummer (*Kyphosus cinerascens*), Coral Cod (*Cephalopholis miniata*) and the Humpheaded Maori Wrasse (*Cheilinus undulatus*). Spiny lobster (Palinuridae) is rare, while giant clams (Tridacnidae) are most probably extirpated from Nauru. There are no known verified endemic species from Nauru.

[25] Paulay, G 2000. Benthic Ecology and Biota of Tarawa Atoll Lagoon: Influence of Equatorial Upwelling, Circulation, and Human Harvest. Atoll Rersearch Bulletin No. 487. National History Museum, Smithsonian Institution, Washington.

[26] Johannes, B. *et al.* 2000. Coral reefs of the pacific: status and monitoring, resources and management. Conference paper. Conference: International Coral Reef Initiative Pacific Islands Regional Symposium on Coral Reefs in the Pacific, At Noumea, New Caledonioa, Volume: Report of the UCRI Pacific Islands Regional Symposium.

Four coral species may be locally Critically Endangered, another seven may be locally Endangered, and all others are locally Vulnerable.

One coral species present is listed by the IUCN Red List as endangered (*Pocillopora fungiformis*), and three species (*Montipora caliculata*, *Heliopora coerulea* & *Pavona venosa*) are considered vulnerable[27].

Conservation Areas /Marine Management Areas

In Nauru, a total of eight conservation areas have been proposed[26]. The key proposed marine management areas are shown in Figure 4 and are as follows:

- Anibare Bay (PMMA1).
- Meneng Reef & Ocean Front (PMMA2).
- Ijuw & Anabar Reef Flats & Ocean Front (PMMA3).

None of these areas are located in close proximity to the proposed BMH sites.

Figure 4: Proposed conservation areas in Nauru

4.2 Site Specific Investigations

4.2.1 Introduction

This section of the report describes the methodology and results of the assessment of nearshore coastal marine habitat and fauna (fish, benthic communities, etc.) adjacent to key potential BMH and cable alignments immediately offshore. Site visits were conducted on 21 October 2016 (Kosrae), 28 October 2016 (Kiribati) and 1 November 2016 (Nauru). The potential cable alignments are presented in Appendix A and site details in Appendix B.

4.2.2 Kosrae

A total of seven potential BMH sites were investigated around the island of Kosrae as shown in Figure 5 and described below.

Figure 5: Approximate locations of potential BMH and CLS sites in Kosrae

Northern Part of the Island

- BMH1 - Kosrae Airport at Okat;
- BMH2 – the Phoenix Hotel site; and
- BMH3 – the 'bench' site.

The marine ecological habitat directly adjacent to the potential Kosrae Airport site (BMH1) consists of a coastal seawall protecting the edge of the runway across the upper intertidal and a short section of intertidal reef flats (approximately 100 m); and sub-tidally, the reef slope and muddy sands of the deeper sea floor located considerable distances offshore. Both the Phoenix Hotel site (BMH2) and the 'bench' site (BMH3) have short sandy beaches located towards the upper intertidal zone and relatively long stretches of intertidal reef flats (approximately 230 m & 170 m respectively). There is evidence of ongoing coastal erosion activity at the 'bench' site (BMH3) while the Phoenix Hotel site (BMH2) appears to be aggrading.

Eastern Part of the Island

- BMH4 – The Yacht Club in Lelu Harbour
- BMH5 – Tofol
- BMH6 – Sanskrit Elementary School

These sites are located around the relatively deep water of Lelu harbour which anecdotal evidence suggests extends to 80 feet in the central channel. The BMH4 & 5 sites located on

the northern side of Lelu harbour at the operational wharf at Lelu and the southern side at Sanskrit Elementary School respectively have no intertidal areas and are situated directly adjacent to areas of deeper water. The BMH5 site, located close to Tofol the likely CLS site, has an area of mangroves across the intertidal which would likely require partial removal for cable installation.

Southern Part of the Island

- BMH7 – The 7 Day store in Melem.
- BMH8 – Otwe Harbour.

Like the Lelu Harbour sites, BMH7 & 8 sites have no intertidal habitat located directly adjacent although there is subtidal reek present. The BMH7 site has deep water in close proximity and the BMH8 site is located adjacent to the channel that accesses this working fishing harbour.

4.2.3 Kiribati

A total of four potential BMH sites were investigated around in south Tarawa, Kiribati, as shown in Figure 6 and described as follows:

- BMH1 - Kiribati Airport.
- BMH2 – King George V High School.
- BMH3 – adjacent to Nanikai Village at the eastern end of the causeway adjacent to the Public Broadcasting Radio tower.
- BMH4 – at the eastern end of Bairiki Village at the western end of the causeway.

BMH sites in Betio were not considered due to potential issues arising as a result of unexploded ordinance and discovery of war dead during cable installation. In addition, the lagoon side of south Tarawa was also not considered due to its shallow nature.

The marine ecological habitat directly adjacent to all BMH sites consists primarily of intertidal reef flats (approximately 275 m (BMH1), 150 m (BMH2), 460 m (BMH3) and 500 m (BMH4)); and sub-tidally, the reef slope and muddy sands of the deeper sea floor located considerable distances offshore. The upper intertidal at BMH2 and BMH4 sites consists of a sandy beach (with potential erosion issues) and the BMH1 and BMH3 sites have coastal seawall protection adjacent to the end of the runway and Public Broadcasting Radio tower support.

Figure 6: Approximate locations of potential BMH and CLS sites in Kiribati

4.2.4 Nauru

Two potential BMH sites were investigated around Nauru as shown in Figure 7 and described as follows:

- BMH1 – Government Buildings
- BMH2 – Gabab Boat Ramp

The marine ecological habitat directly adjacent to BMH1 consists primarily of intertidal reef flats (approximately 130 m); and sub-tidally, the reef slope and muddy sands of the deeper sea floor. The BMH2 site lies adjacent to the Gabab boat ramp and channel which extends through the intertidal reef (approximately 100 m); and consists primarily of a sandy channel.

4.3 Intertidal communities

4.3.1 Introduction

This section presents the results of the qualitative assessment of the benthic communities present on the intertidal reef flats adjacent to BMH sites. The intertidal zone extends from the upper intertidal to the top of the subtidal zones.

Figure 7: Approximate locations of proposed BMH and CLS sites in Nauru

4.3.2 Kosrae

The benthic substrate along Intertidal Transects 1, 2 & 3 is characterised by the following:

- Upper intertidal - coarse sands (beach) and coral rubble (IT2 & IT3 only)
- Mid intertidal reef flats littered with coral rubble and pools containing: occasional *Halimeda* sp. (a green algal turf) and *Padina* sp. typical of nutrient enriched environments, and sea cucumber (*Holothuria* sp.), and occasional starfish sponge and coral species.
- Lower intertidal reef flats containing larger coral boulder material, a range of brown and green seaweed species, occasional coral and invertebrate species.

Figures 8-10 present images of the potential transect alignments and typical communities present. Figure 11 presents images of the habitat adjacent to the potential BMH 4 – 8. These sites typically sit adjacent to areas of deeper water and have no intertidal areas.

Figure 8: Typical habitat along IT1 alignment including the rock wall in upper intertidal beach and reef flat (top), sea cucumber (left), *Halimeda* sp. (middle) and small corals (right).

Figure 9: Typical habitat along IT2 alignment including upper intertidal beach and reef flat in the upper intertidal (top), *Halimeda* sp. (left), *Padina* sp. (middle) and seagrass (right).

Figure 10: Typical habitat along IT2 alignment including upper intertidal beach and reef flat in the upper intertidal (top), coral rubble (left), *Padina* sp./sea cucumber (middle) and seagrass (right).

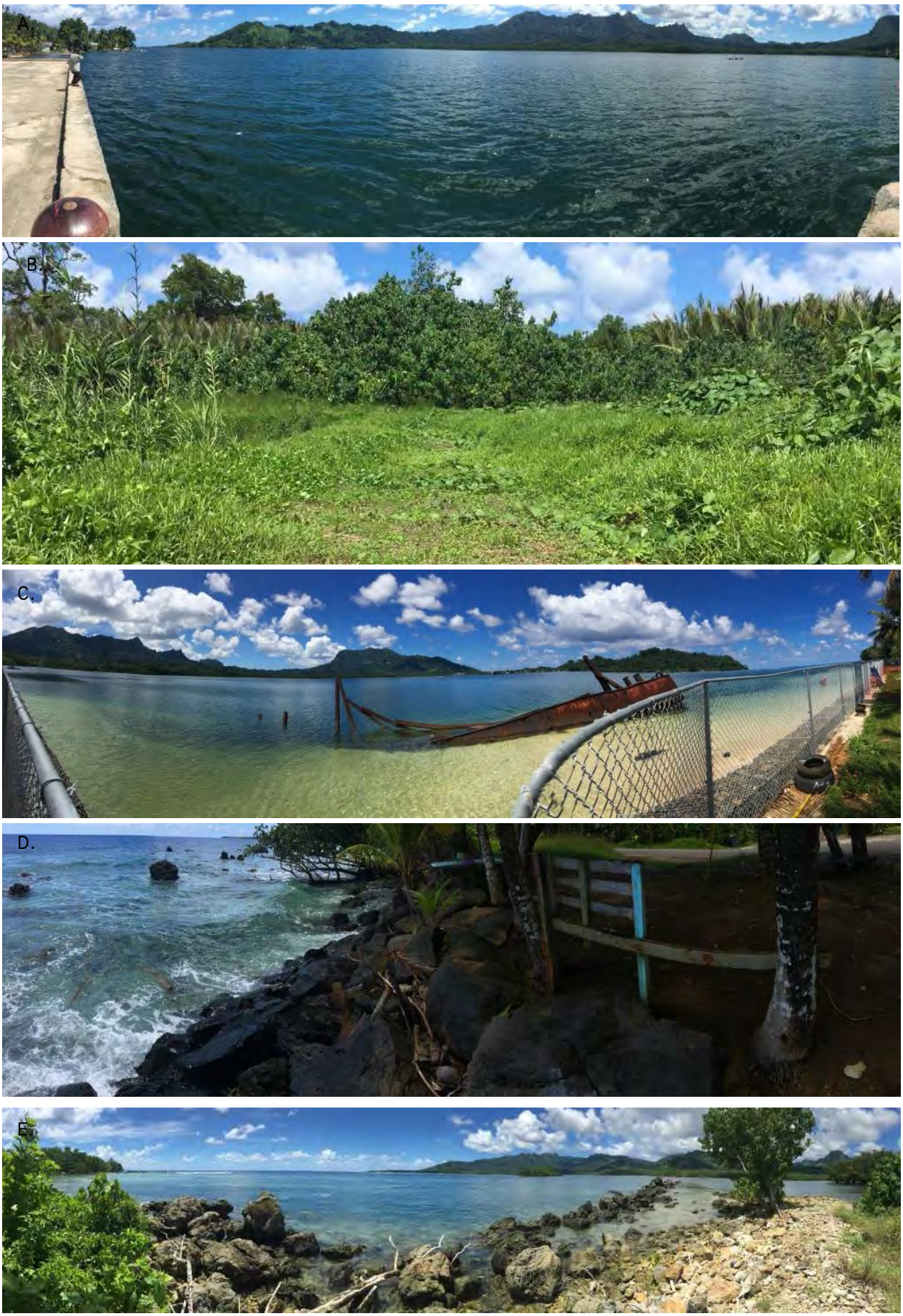


Figure 11: Typical habitat adjacent to potential BMH4 (A), BMH4 5 (B), BMH4 6 (C), BMH4 7 (D) & BMH4 8 (E).

4.3.3 Kiribati

The benthic substrate along Intertidal Transects 1, 2 3 & 4 is characterised by the following:

- Upper intertidal - coarse sands (beach) or rock platforms (e.g., IT1).
- Mid intertidal back reef flats with large pools containing brown and green algae, *Padina* sp, abundant brittle seastar (*Ophiomastix* sp.), and occasional sea cucumber (*Holothuria* sp.).
- Slightly raised lower intertidal reef flats which typically contain a more diverse range of algal and invertebrate species.

Figures 12–15 present images of the potential transect alignments and typical communities present.

Figure 12: Typical habitat along IT1 alignment including upper intertidal hard rock & beach and reef flat (top & middle), green algae (left), *Padina* sp., brown algae & brittle seastar (middle & right).

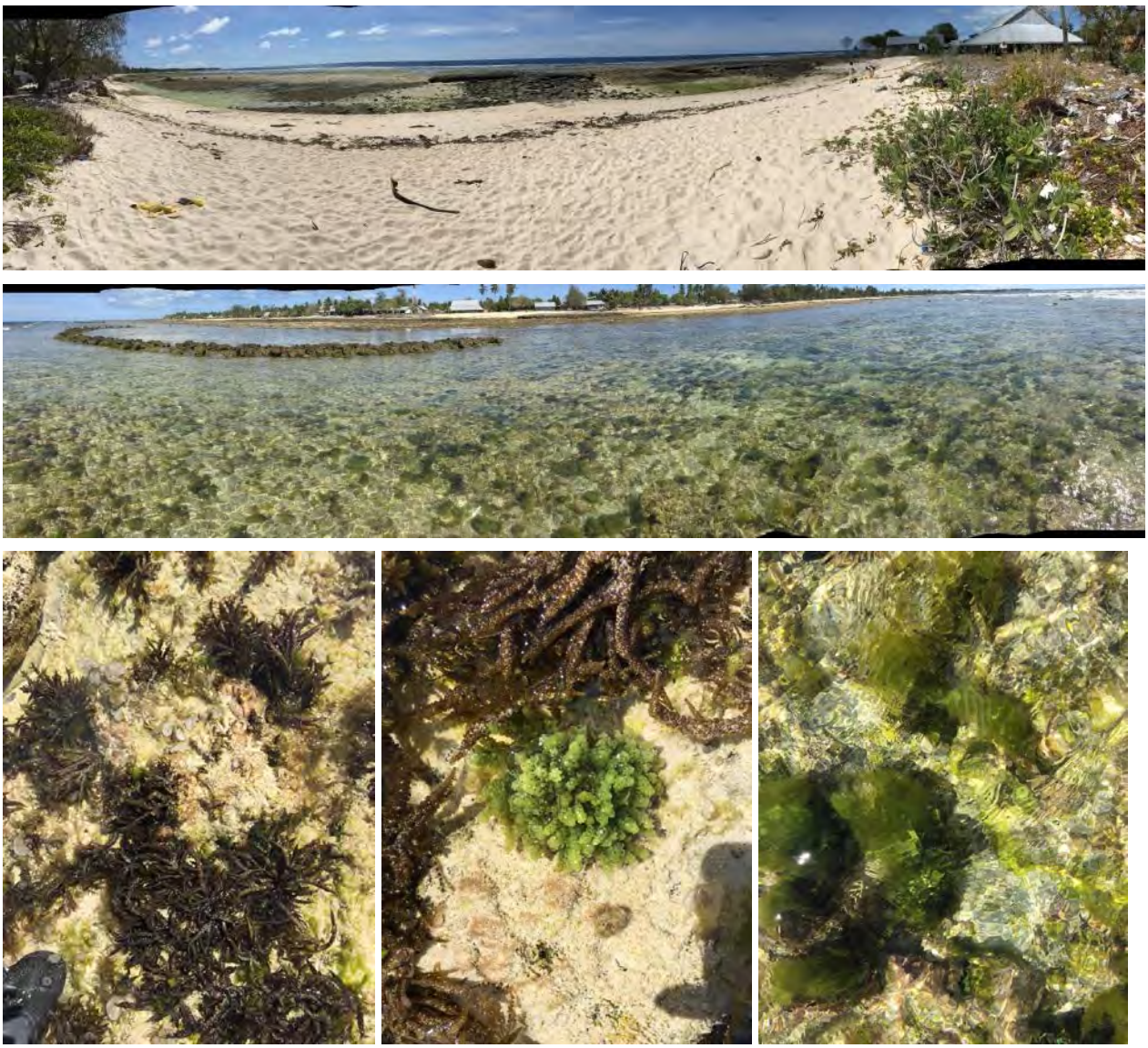


Figure 13: Typical habitat along IT2 alignment including upper intertidal beach and reef flat (top & middle), brown algae & *Padina* sp. (left), sea grapes (middle) and green filamentous algae (right).

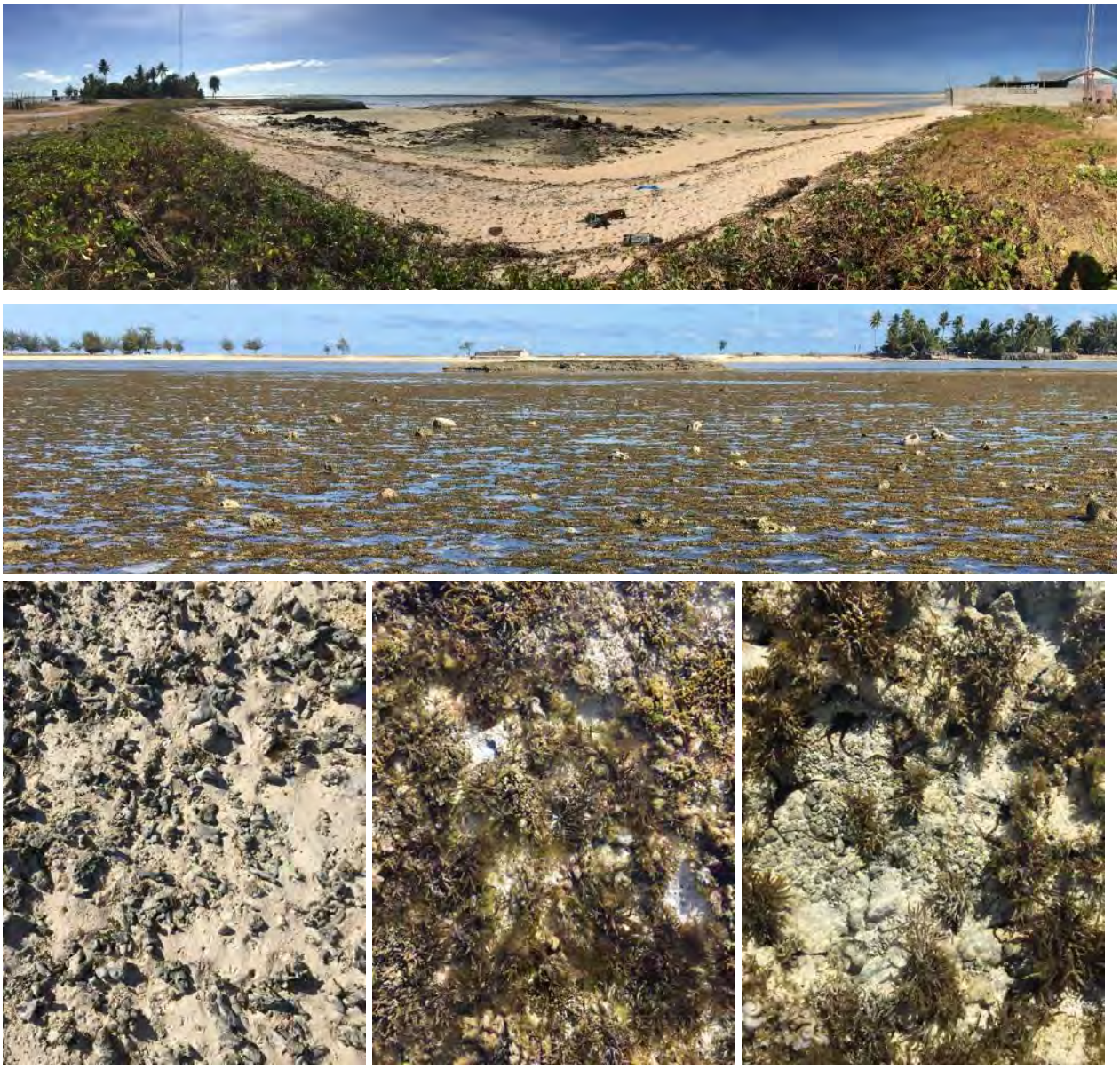


Figure 14: Typical habitat along IT3 alignment including upper intertidal beach and reef flat (top & middle), sand & coral rubble (left), brown algae (left) & brittle seastar (right).

Figure 15: Typical habitat along IT4 alignment including upper intertidal hard rock & beach and reef flat (top & middle), sands (left), brown algae & brittle seastar (left) and seagrapes(right).

4.3.4 Nauru

The benthic substrate along Intertidal Transects 1 (see Figure 16) is characterised by the following:

- Upper intertidal - coarse sands of the beach.
- Mid intertidal back reef flats with large pools containing green turfing algal and occasional coral species, sea cucumber (*Holothuria* sp.), black sea urchin (*Diadema* sp) and several species of coral.
- Lower intertidal reef flats which a greater diversity of coral, sponge and invertebrate species including occasional Crown of Thorns starfish (*Acanthaster planci*).

Intertidal Transects 2, adjacent to Gabab Channel is largely devoid of life consisting primarily of a rock platform with abundant sea cucumbers (Figure 17). The channel itself consists primarily of sands to the edge of the fringing reef then a deeper reef platform.

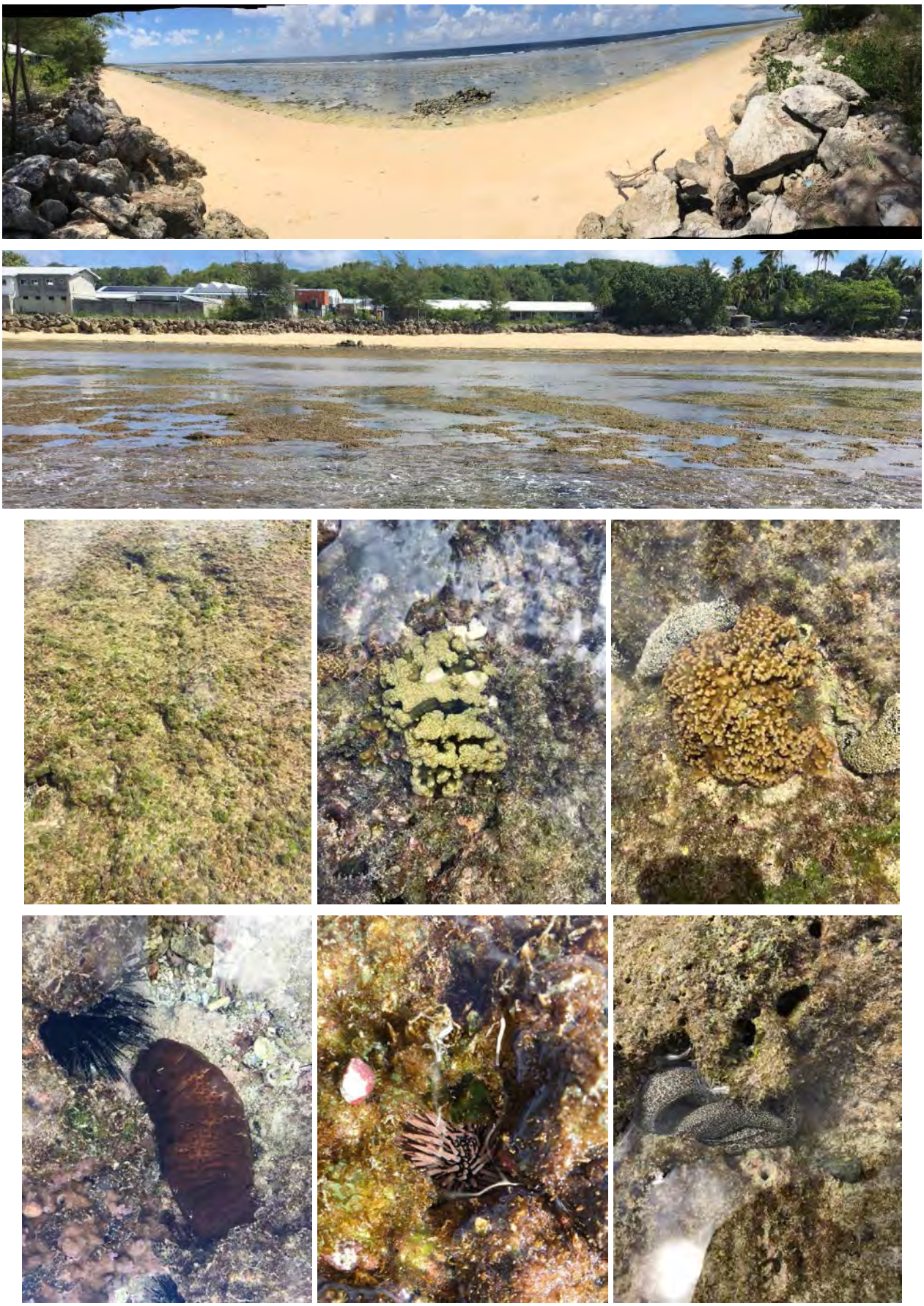


Figure 16: Habitat along IT1 including upper intertidal beach and reef flat (top & middle top), turfing algae of the mid intertidal (left), and coral species of the lower intertidal (middle & right), and typical invertebrate species including urchin & sea cucumber (left), crown of thorns star fish (middle), and eel (left).

Figure 17: Typical habitat along IT2 alignment including upper intertidal beach reef flat and channel (top), sands of channel (left), hard reef platform (middle) and sea cucumbers (right).

4.4 Subtidal communities

4.4.1 Overview

Living benthic communities identified, which extend below the lower intertidal into the subtidal zone, consist of the following:

- Coral communities located at the edge of the reef flats on the reef slopes.
- The macrofauna associated with the sediments in deeper waters beyond the reef slope.

The raw data from the benthic surveys is presented in Appendix C.

4.4.2 Kosrae

The benthic cover at the seaward edge of the reef flats on the reef slope adjacent to all sites is dominated by live coral (41.2%) and abiotic elements (i.e., sand/rock (35.9%)) (see Figure 18). Algae & dead coral have similar (11.9 & 11.0%) benthic cover proportions. Figure 20 presents examples of typical subtidal reef encountered.

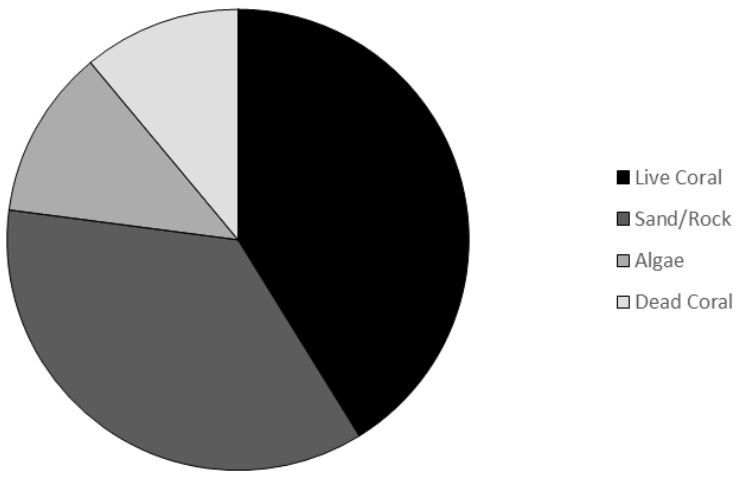


Figure 18: Summary of key benthic types for all subtidal transects

The coral community (see Figure 19) is dominated by Acropora (69.7%) primarily branching (28.4%) and digitate (21.9%) forms. Foliose coral species are also prevalent (21.3%). Branching and mushroom coral types are present in the lowest proportion (1.3 & 0.6% respectively).

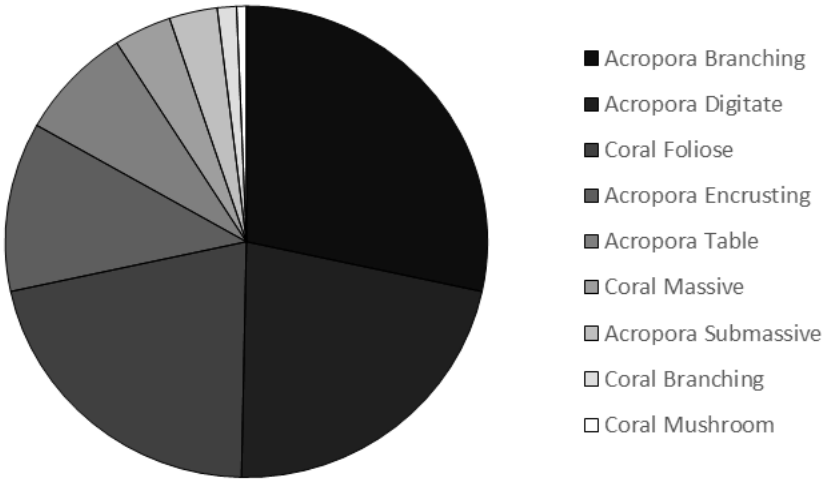


Figure 19: Summary of key coral types for all subtidal transects

Figure 20: Typical reef habitat present at ST1 (top), ST2 (top middle), ST3 (bottom middle) and ST4 (bottom) locations.

Overall, a number of key points can be made regarding the individual transect data (see Figure 21) as follows:

- Live coral is the most dominant benthic type at STI adjacent to the Airport (67%) with abiotic elements being most dominant in ST3 (59%) and ST4 (73%).
- Algae (primarily *Halimeda* sp.) is most prevalent at ST2 (51%) at Waok Reef in Lelu Harbour and dead coral was found primarily along this transect (20%), and the transect ST2 located at the entrance to the Harbour.

Of the corals present, branching acropora are the most dominant across all sites, ranging from 16 - 50% (at ST1 and ST4 respectively) (see Figure 22). The next most dominant coral cover, foliose coral, ranges from 15 - 35% (ST1/ST4 and ST3 respectively). Massive corals are found primarily on ST2 (55%) and digitate acropora on ST1 (49%).

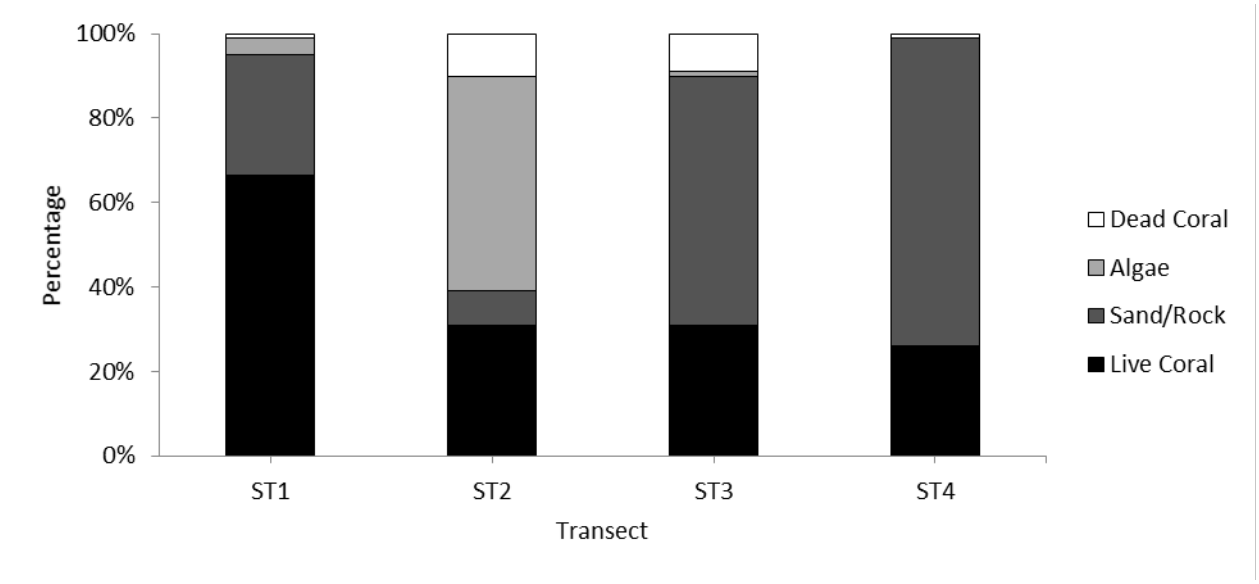


Figure 21: Benthic cover type present on subtidal transects

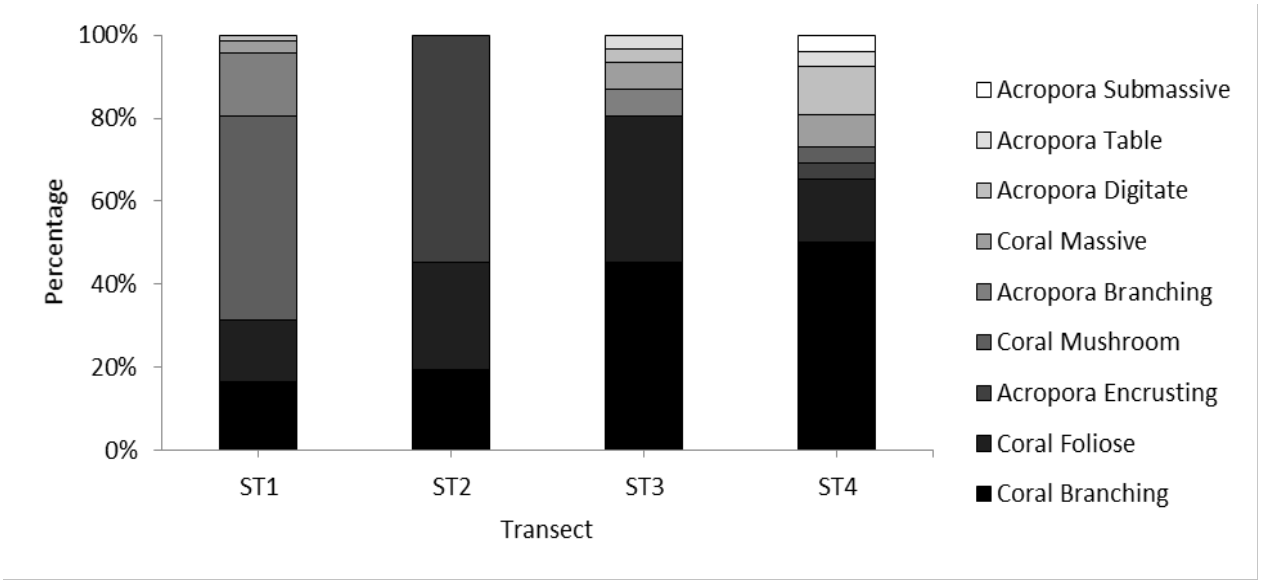


Figure 22: Coral type present on subtidal transects

Small numbers of benthic invertebrates were observed with key species consisting of crustaceans such as crabs, sea cucumber and starfish.

4.4.3 Kiribati

The benthic cover at the seaward edge of the reef flats on the reef slope adjacent to all sites is dominated by algae (63.0%) which primarily consist of fine algal material on rock pavement (see Figure 23). Live coral is the next most dominant cover with 21.3%. Figure 24 presents examples of typical subtidal reef encountered.

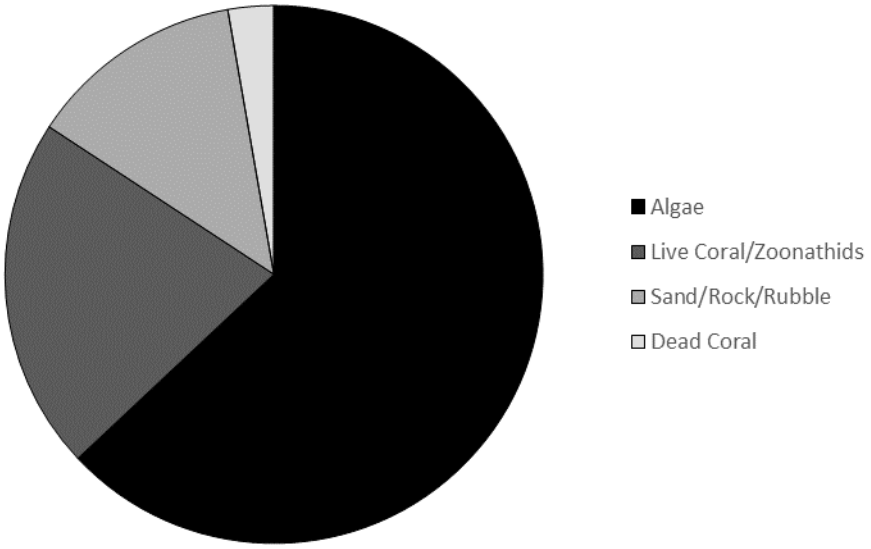


Figure 23: Summary of key benthic types for all subtidal transects

The coral community (see Figure 25) is dominated by submassive coral species (78.2%).

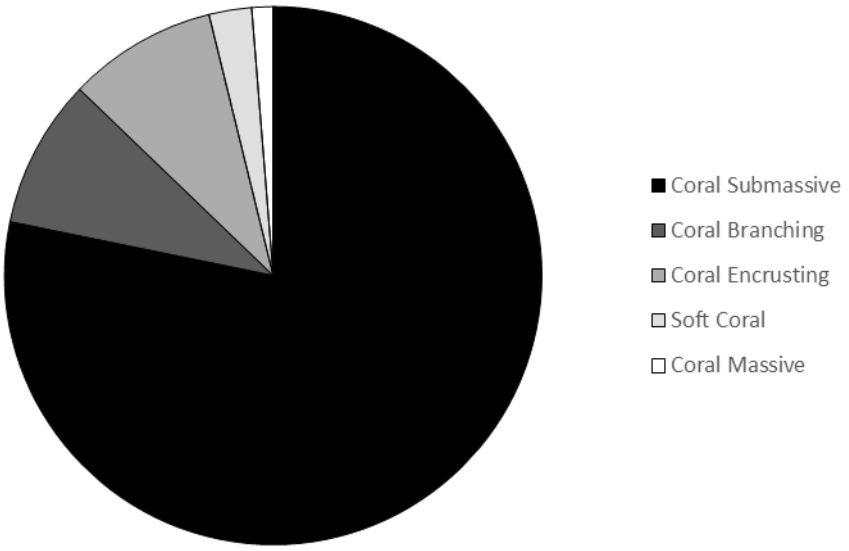


Figure 25: Summary of key coral types for all subtidal transects

Overall, a number of key points can be made regarding the individual transect data (see Figure 26) as follows:

- Algae (primarily fine algal material on rock pavement) is the most dominant benthic type across all sites ranging from 46% (ST1) to 72% (ST2 & ST4).
- Live coral is the next most dominant benthic cover ranging from 12% (ST2) to 34% (ST1).

Figure 24: Typical reef habitat present at ST1 (top) & ST2 (bottom) locations.

Of the corals present, submassive corals are the most dominant across all sites, ranging from 58 - 100% (at ST1 and ST4 respectively) (see Figure 27). A small proportion of soft coral (6.5%) was found at ST1.

Small numbers of benthic invertebrates were observed with key species consisting of crustaceans such as gastropod molluscs, crabs, sea cucumber (*Holothuroidea* sp) and brittle star (*Ophiuroidea* sp.).

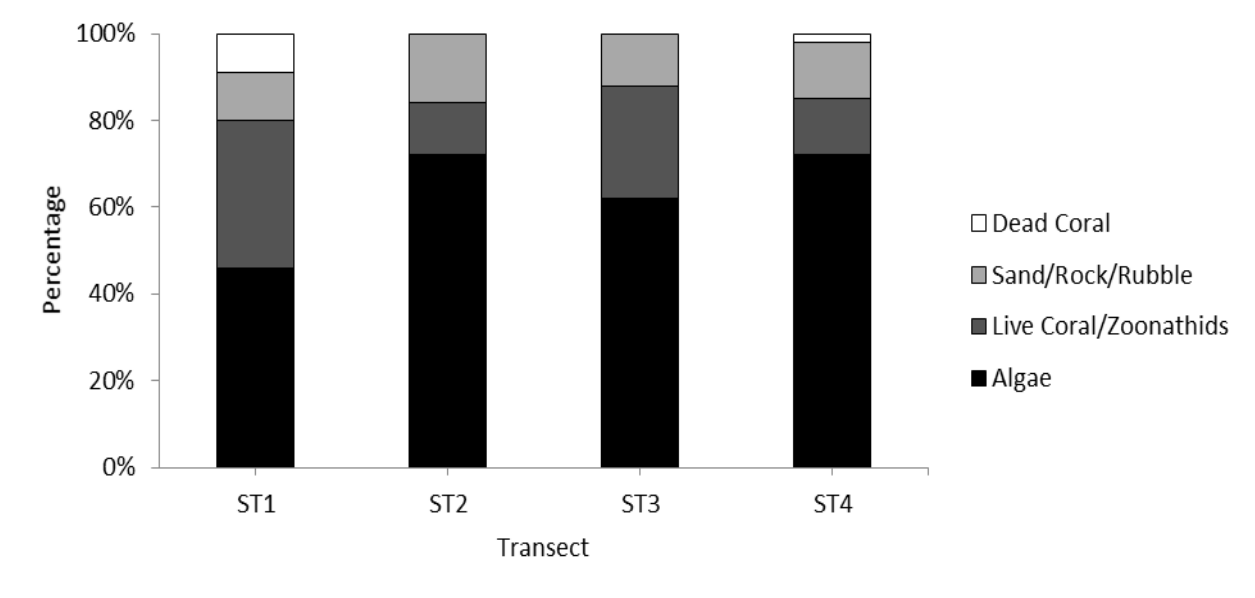


Figure 26: Benthic cover type present on subtidal transects

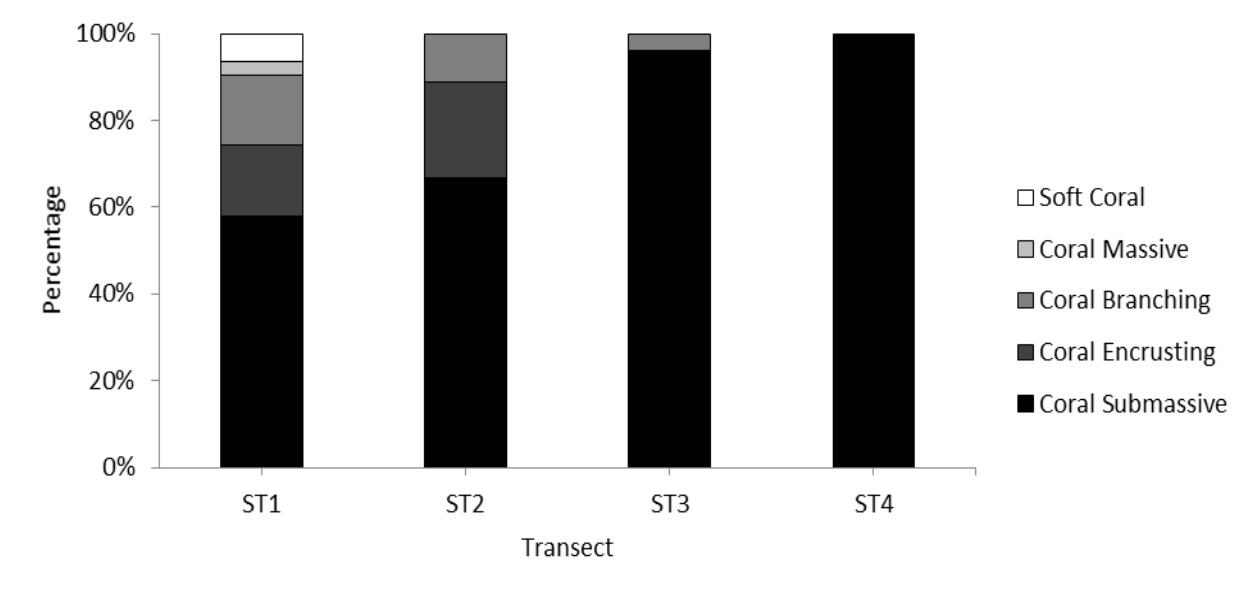


Figure 27: Coral type present on subtidal transects

4.4.4 Nauru

Data to describe the subtidal ecological resources present adjacent to the potential BMH locations has been sourced from the rapid biodiversity assessment (BioRap) undertaken by SPREP in 2013[27]. Figure 27 presents the marine survey site locations. Sites 3 and 2 are located the closest to the proposed BMH1 and BMH2 locations respectively. A number of key points can be made:

- The reefs surrounding Nauru are considered to have a low diversity of hard corals, with a mean of 17.2 species per dive site and a total of 51 species of hard corals at 20 sites.
- Totals of 16 and 11 coral species (see Table 2) are present at Sites 2 & 3 (closest to BMH 2 & 1 respectively) which is at the lower end of the total numbers of coral species observed at other sites which ranged from 8 to 27.

[27]SPREP 2013. Rapid biodiversity assessment of Republic of Nauru.

- Hard coral is the dominant cover at shallow depths (<11m) at Sites 2 & 3 with 54.4 ± 17% and 80.6 ± 1.9% respectively (Table 3). This is at the upper end of the range of hard coral cover observed at other sites which ranges from 16.9% ± 2.8% to 91.2% ± 3.1% ((Sites 20 – 15 respectively). In deeper water (>12m), the dominant cover at Site 3 is also hard coral (76.2%) but at Site 3 hard coral is low (18.7 ± 8.6%) and cover is dominated by calcareous algae (33.1 ± 7.6%). The dominant macroalgae observed at Site 3 only (7.5 & 5.0 ± 1.8% for deep and shallow areas respectively) was *Halimeda* sp. No sponges, soft coral, dead coral, bare substrate and sediment (mud or silt) was recorded at any sites although sponges and soft coral were observed outside of transects.
- The majority of sites (except one) are heavily dominated by a single species, *Porites rus*. No species are considered abundant at Sites 2 & 3, with only *Pocilliopora eydouxi* and *Heliopora coerulea* common (see Figure 27).
- Calculated Coral Replenishment Index[28] (used to determine an ability of an area of reef to re-establish following a major disturbance based on diversity abundance and cover) and Coral Rarity Index (used to evaluate reef sites for conservation) indicates Sites 2 & 3 are in at the lower end of the list of potential priority sites.
- *Pocillopora fungiformis*, listed as "Endangered" by the IUCN (International Union for Conservation of Nature) Red List, and as one of the top 50 "EDGE" (Evolutionarily Distinct & Globally Endangered) coral species in the world, is present at several sites (excluding Sites 2 & 3). *Montipora caliculata*, listed as "vulnerable" by the IUCN Red list and proposed for "Threatened" status under the U.S. Endangered Species Act is present at a single site (but not at Sites 2 & 3). Species listed as "vulnerable" by IUCN include *Heliopora coerulea* (blue coral), which is present at all sites, and *Pavona venosa*, is present at two sites (but not at Sites 2 & 3) (see Figures 29 & 30).
- Overall, high coral cover, good coral health, good coralline algae cover, and low macroalgal cover all support the view that the reefs are healthy. The low diversity is considered to be due to the small size of the island and relatively large distance to areas of high diversity, not a sign of an unhealthy reef.

Figure 28: BioRap survey locations.

[28]DeVantier, L.M., De'ath, G., Done, T.J. and Turak, E. 1998. Ecological assessment of a complex natural ecosystem: a case study from the Great Barrier Reef. Ecol. Appl. 8: 480-496.

Figure 29: ***Porites rus, Pocillopora eydouxi & Heliopora coerulea***

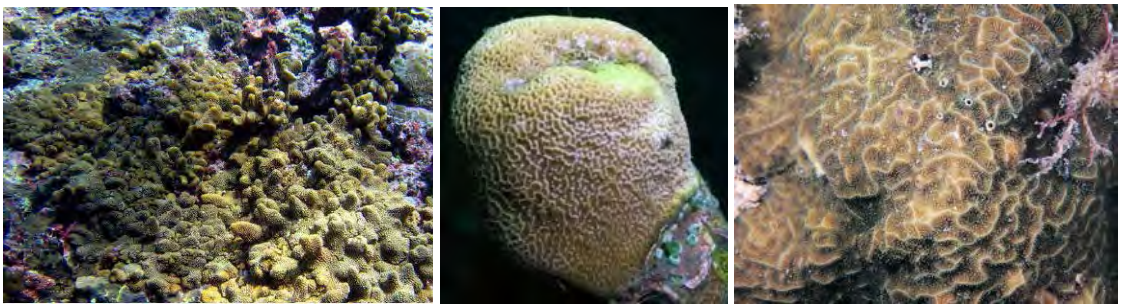


Figure 30: ***Pocillopora fungiformis, Montipora caliculata & Pavona venosa***

Table 2: Coral species at Nauru BioRap sites in close proximity to potential BMH locations

Family	Genus / Species	Location	
		3 (BMH1)	2 (BMH2)
Acroporidae	*Montipora grisea*	U	U
Agariciidae	*Pavona chriquensis*	-	R
	Pavona duerdeni	R	R
	Pavona gigantea	-	U
	Pavona varians	-	R
	Leptoseris mycetoseroides	R	
Faviidae	*Leptastrea transversa*		R
Fungiidae	*Fungia concina*	R	
	Halomitra pileus		R
Octocorallia	*Heliopora coerulea*	C	C
Pocilliopora	*Pocilliopora eydouxi*	C	C
	Pocilliopora meandrina	-	U
	Pocilliopora verrucosa	R	R
Poritidae	*Porites lutea / evermanni*	U	R
	Porites massive	U	U
	Porites monticulosa		R
	Porites rus	D	D
Stylasteridae	*Distichopora violacea*	U	C
	Count	**11**	**16**

Notes: Relative abundance codes – R = Rare, U = Uncommon, C = Common, A = Abundant & D = Dominant.

Table 3: Mean percentage cover at BioRap sites in close proximity to potential BMH locations

Site	Depth (# of transects)	HC	CCA	MA	TA	Cyano	Sand	RB
2 (BMH2)	Deep (4)	18.7 ± 8.6	33.1 ± 7.6	0	15.6 ± 1.6	0.6 ± 0.6	13.7 ± 3.9	18.1 ± 2.4
	Shallow (4)	54.4 ± 17	16.9 ± 7.4	0	7.5 ± 4.4	0.6 ± 0.6	10.6 ± 6.5	10 ± 4.2
3 (BMH1)	Deep (2)	76.2	11.2	7.5	1.2	0	0	3.7 ± 3.7
	Shallow (4)	80.6 ± 1.9	8.0 ± 0.6	5.0 ± 1.8	2.5 ± 1.8	0	1.8 ± 1.2	1.9 ± 1.2

Notes: shallow <11m, deep 12m plus, Hard coral (HC), Macroalgae (MA), Turf algae (TA) Calcareous algae (CCA), cyanobacteria (Cyano), Rubble (RB)

4.5 Fish

4.5.1 Kosrae

The results of the current survey of fish present on the reef edge at Kosrae sites are shown in Appendix D Table D1. The key points to note are as follows:

- A total of 28 species are present across the four transects. The convict surgeonfish (*Acanthurus triostegus*) and the thumbprint emperor (*Letherinus harak*) was observed on the most transects (three).
- The most abundant species (11-100 individuals) across all transects are the convict surgeonfish and greensnout parrotfish (*Scarus spinus*). No species are present in abundances greater than 100.
- A large number of species (22 of the 28 species or 79%) were observed on a single occasion with several species only as a single individual such as *Epinephalus tauvina* and *Rhinecanthus aculeatus*.
- A total of 14 fish families are present with the most common being surgeonfish or tang, parrotfish and goatfish which comprise 58.3% of the total fish species (see Figure 31). Fish species in groups of 2-10 (Category 2) are the most prevalent across all transects comprising 56.4% (Figure 32).
- ST1 (adjacent to proposed BMH1) had the lowest number of fish species (7) compared with ST4 (adjacent to proposed BMH7) which had the highest number of species (12) (Figure 33).

4.5.2 Kiribati

The results of the current survey of fish present on the reef edge at Kosrae sites are shown in Appendix D Table D2. The key points to note are as follows:

- A total of 36 species are present across five transects. The convict surgeonfish (*Acanthurus triostegus*) and the thumbprint emperor (*Letherinus harak*) was observed on the most transects (three).
- The most abundant species (11-100 individuals) across all transects are the convict surgeonfish and greensnout parrotfish (*Scarus spinus*). No species are present in abundances greater than 100.

- A large number of species (22 of the 28 species or 79%) were observed on a single occasion with several species only as a single individual such as the *Epinephalus tauvina* and *Rhinecanthus aculeatus*.
- A total of 14 fish families are present with the most common being surgeonfish or tang, parrotfish and goatfish which comprise 58.3% of the total fish species (see Figure 34). Fish species in groups of 2-10 (Category 2) are the most prevalent across all transects comprising 56.4% (Figure 35).
- ST1 (adjacent to proposed BMH1) had the lowest number of fish species (7) compared with ST4 (adjacent to proposed BMH7) which had the highest number of species (12) (Figure 36).

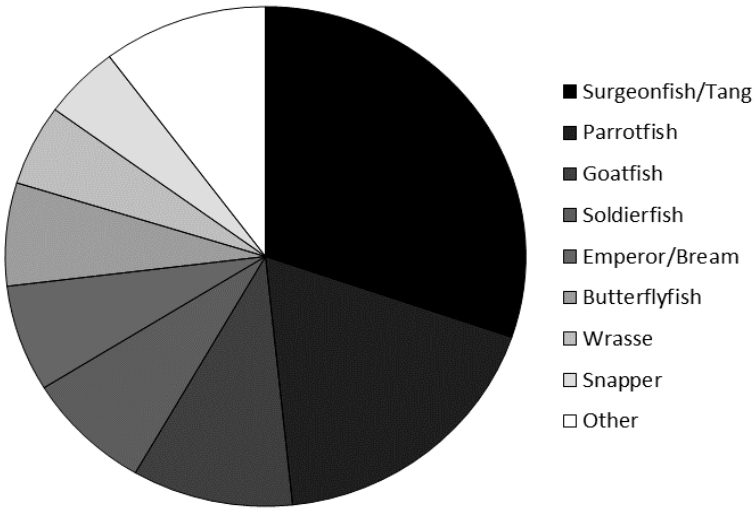


Figure 31: Proportion of key fish families observed at all transects in the current survey.

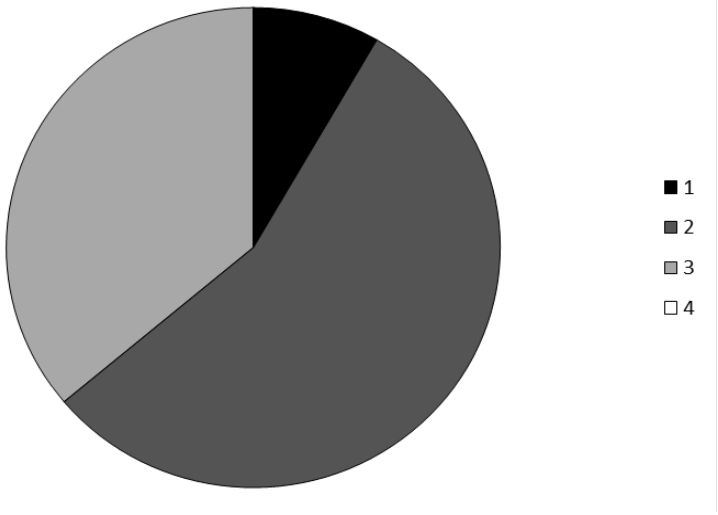


Figure 32: Total number of fish species based on abundance categories (i.e., 1 = single (one individual), 2 = few (2 - 10), 3 = many (11- 100), 4 = abundant (more than 100)) in the current survey for all transects.

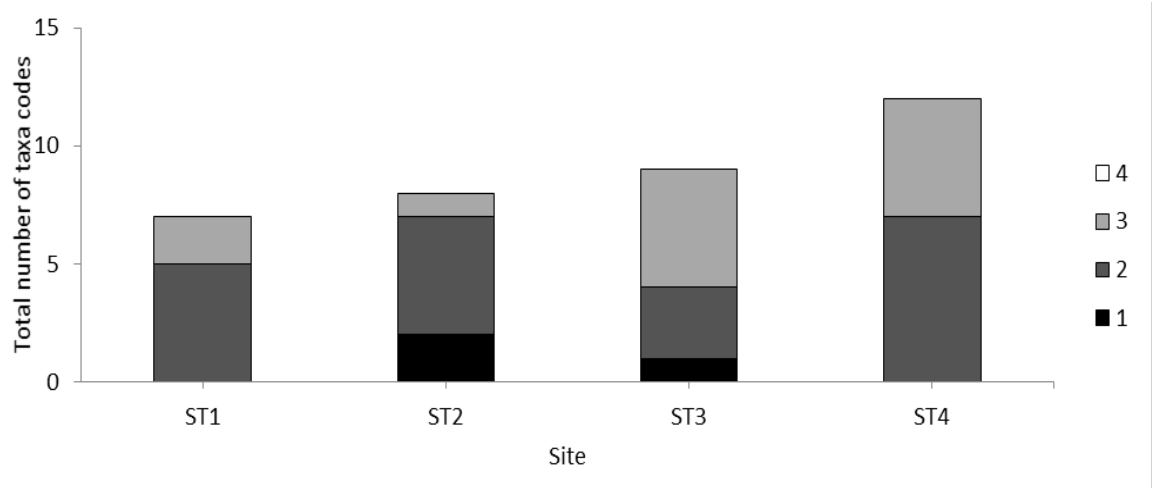


Figure 33: Total number of fish species observed and number of fish species based on abundance categories (see Figure 12 for key).

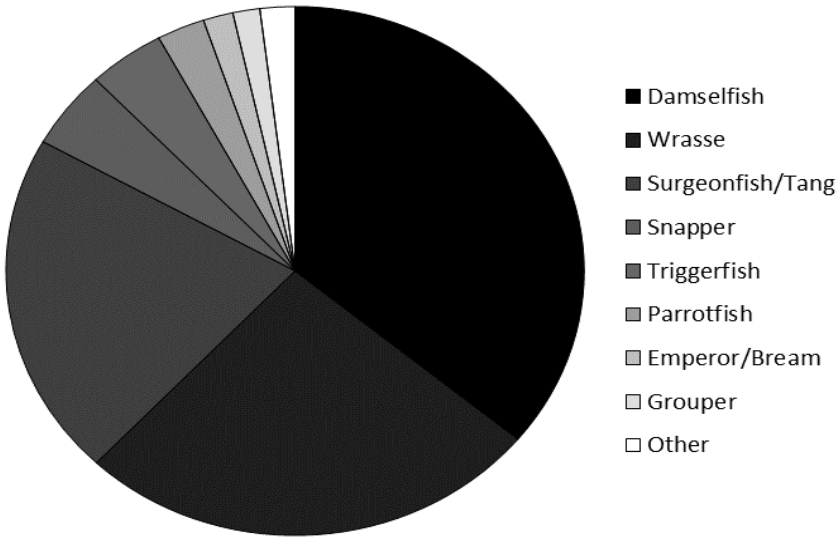


Figure 34: Proportion of key fish families observed at all transects in the current survey.

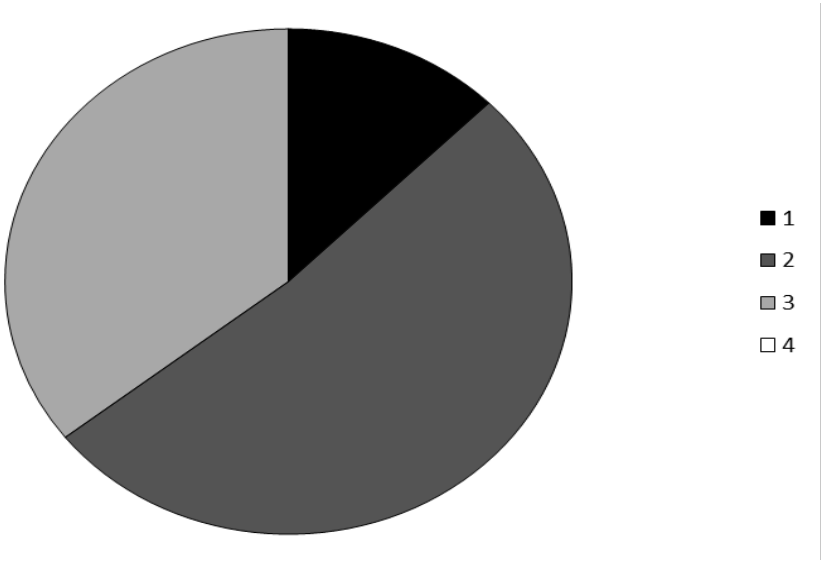


Figure 35: Total number of fish species based on abundance categories (i.e., 1 = single (one individual), 2 = few (2 - 10), 3 = many (11- 100), 4 = abundant (more than 100)) in the current survey for all transects.

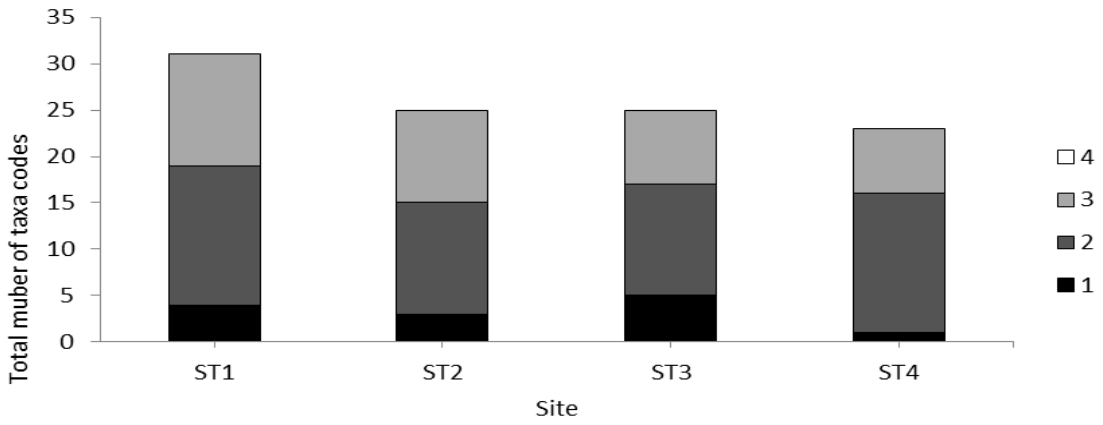


Figure 36: Total number of fish species observed and number of fish species based on abundance categories (see Figure 12 for key).

4.5.3 Nauru

A number of key points can be made regarding the results of the 2013 BioRap fish survey[27] (see Section 4.5.4 for detail) as follows:

- Nauru is considered to have a relatively depauperate reef fish fauna, consisting of at least 407 species of which 231 (or 56%) were observed during the present study. Totals of 52 and 54 fish species are present at Sites 2 & 3 respectively (closest to BMH 2 & 1) compared with the total numbers of species observed at all other sites (ranging from 35 to 88) and is below the average of 74 fish per site.
- Mean fish density is low at 0.6 & 0.3 fish /m^2 at Sites 2 & 3 respectively compared with the range of 0.3 to 1.5 at all other sites and a total mean density of 0.76 fish/m^2.
- The reef fish fauna is dominated by Labridae (34 species), Pomacentridae (30 species), Acanthuridae (21 spp), Chaetodontidae (21 spp), Balistidae (12 species), Serranidae (11 spp) and Scaridae (10 spp).
- Mobile invertebrate feeders are the most common functional group found within the reef fish fauna (23.8%), while planktivorous fishes (19.2%), fishes that had a diet comprised of both invertebrates and fishes (12.8%) and piscivores (10.3%) were also relatively diverse.
- Although the abundance of the reef fish fauna within Nauruan reefs is relatively high there were signs of overfishing including a lack of large sized fishes (i.e. large Groupers and Snappers).
- The lack of early life stages for the majority of reef fishes suggests that the reefs may be distinctly isolated from source habitats (therefore only receiving sporadic new reef fish larvae) which substantially diminish the resilience of the reef fish faunal community to any disturbance events that reduce biodiversity.

5. Terrestrial Resources

5.1 Flora

Kosrae

The vegetation of Kosrae[29] is dominated by the following (see Table 3):

- Cloud forest which is considered unique given the number of endemic species present.
- Native upland forest characterised by *Campnosperma* species.
- Palm trees, a component of forests which occur in dense stands especially in areas where the primary forest has been disturbed.
- Freshwater marsh and riverine systems, filled with grasses, sedges and herbs growing in standing water most of the year and generally located in areas slightly above sea level and are often just inland of mangroves.
- Swamp forests occur where soils are inundated with fresh or slightly saline water. They are most commonly found just inland of mangroves, above tidal influence but lower in elevation than the surrounding terrain.
- Mangrove forests which are considered to be the most distinctive forest type.

There are over 322 plant species in Kosrae of which 250 species are native, many of which are endemic to one or more islands in the FSM.

Table 3: Types of plant communities in Kosrae

Community Type	Area (ha)
Mangrove Forest	1,562
Swamp Forest	345
Upland Forest	5,090
Agroforest *	2,538
Secondary vegetation	1,272
Other non-forest	263
Total Area	**11,186**

Notes: * includes coconut plantations.

Kiribati

In South Tarawa, present day vegetation cover is heavily influenced by human habitation and is dominated by coconut palm (*Cocos nucifera*), flame tree (*Delonixregia* sp), breadfruit (*Artocarpus altilis*) and papaya (*Carica papaya*).

Nauru

The vegetation on Nauru can be described based on vegetation type divided between primary vegetation (coastal strand, mangroves or coastal marshes, inland forest and limestone escarpment vegetation) and secondary vegetation (coconut palm plantations, gardens, ruderal vegetation and disclimax vegetation)[26].

The flora of Nauru to comprise about 56 native species and 125 naturalized species. The native species are all indigenous, with none of them endemic. Many of the native species are extirpated or on the verge of extirpation from the island.

[29] Falanruw, 2001. Terrestrial biodiversity of the Federated States of Micronesia. FSM National Biodiversity Strategy and Action Pland Project. February 2002.

5.2 Fauna

Kosrae

Historically, birds were hunted and habitat destroyed, resulting in extinctions on some of the FSM islands. The Kosrae rail and Kosrae Mountain Starling are now extinct. In 1990, Kosrae had 42 species of bird comprised of: native land & wetland residents (10), resident and non-resident seabirds (5 & 9), shorebirds, migrants & vagrants (16) and introduced species (2).

FSM has 27 species of lizards and one terrestrial snake, and a number of sea snakes. Mammals include one endemic fruit bat and a number of invasive rodent species (mostly mice and rats).

Kiribati

Kiribati has a few land mammals, none being indigenous or endemic. They include the Polynesian rat (*Rattus exulans*), dogs and pigs. A total of 75 bird species have been recorded in Kiribati, with only the Line Islands Reeds Warbler (*Acrocephalus aequinoctialis*) being endemic to Kiritimati.

Nauru

A total of 34 species of birds have been recorded previously on Nauru. Six of these are rare vagrants; three other species have been introduced to the island. Eighteen of the 25 indigenous species are non-breeding visitors and are mainly migrating seabirds and shorebirds. The seven confirmed resident breeding bird species include only two land birds, the Micronesian pigeon (*Ducula oceanica*) and the endemic Nauru reed warbler (*Acrocephalus rehsei*). The reed warbler is the only endemic and is currently listed as vulnerable by the IUCN red data list.

5.3 Site – Specific Descriptions

Kosrae

Vegetation of any significance at the key sites: BMH 1, 6 and 7 and the CLS at Tofol is very limited (see Figure 37). However, much of the road corridor, containing existing telecom infrastructure, leading from these BMH sites to Tofol is covered with vegetation which will be required to be cleared but this is generally limited to introduced species of limited conservation significance.

Kiribati

There is no vegetation at the BMH1-4 and the potential CLS site at Betio. In addition, there is no vegetation along road corridor containing existing ducting from these BMH sites to Betio.

Nauru

There is no vegetation at the beach BMH 1 and 2, and the potential CLS at Yaren.

Figure 37: BMH 1 (left), BMH 6 (middle) BMH7 (right) and typical vegetation along the roadside corridor (bottom).

6. Socio-Economic Environment

6.1 Demographics

Kosrae

The FSM population of about 102,843 people is disproportionately spread across its four states. Almost half live in Chuk; about one-third live in Pohnpei; about 11% in Yap; and Kosrae is the least populated of the states with about 6%.

In 2010 the population of Kosrae was 6,616 - 3,352 men and 3,264 women. The population consists almost entirely of Micronesians; there are a few Americans, Polynesians, and Asians, and expatriates. There are about 1,143 households with an average household size of 5.7 people.

The population of Kosrae grew from 3,266 (1973) to 6,616 (2010). However, between 2000-2010 the annual growth rate was -1.50%. Emigration to other states and especially overseas is the primary reason for this trend. If this trend continues, Kosrae's population will be about 5,611 in a couple of decades (assuming a moderate decline in fertility, moderate increase in life expectancy, and net migration continues to be negative).

Kiribati

The native people of Kiribati are called I-Kiribati, and are ethnically Micronesians. The language is an Oceanic language known as Gilbertese. English is an official language, but this is often the case outside of Tarawa.

South Tarawa is a stretch of islets connected by causeways commencing on Betio to Buota. This strip of lands is where the capital and centre of both commercial and government administration of the Republic of Kiribati is located. The islets are less than 3m above sea level, and only 450m average width. The main settlements are Betio, Bairiki, and Bikenibeu. Betio village is where the main port is located, and the airport is located near Bonriki village. Bikenibeu holds the higher education institutions, and the main religious centres are located at Teaorareke, Antebuka, and Eita villages.

The South Tarawa population was 56,388 people living in 7,877 households according to the 2015 Census (Figure 38). The population of South Tarawa grew by almost 20,000 people between 2000 and 2015. The national growth rate is 2.2%.

The rapidly growing population of 56,388 people is spread over a land area of 15.76 km^2; a population density of 3,578 people per km^2. This represents an increase in density from 3,184 people per km^2 back in 2010. In general, South Tarawa, particularly Betio, is overcrowded. Coupled with natural growth, internal migration to South Tarawa from other parts of Kiribati is occurring. This is due to better opportunities for education, health and employment.

The growing population and high population density of South Tarawa is exacerbating the issues of waste disposal, sanitation, and environmental pollution. The internal migration towards the hub of central government and the central business district will continue naturally for those who seek a better life for themselves and their family. This is not an uncommon phenomenon for small island states across the Pacific.

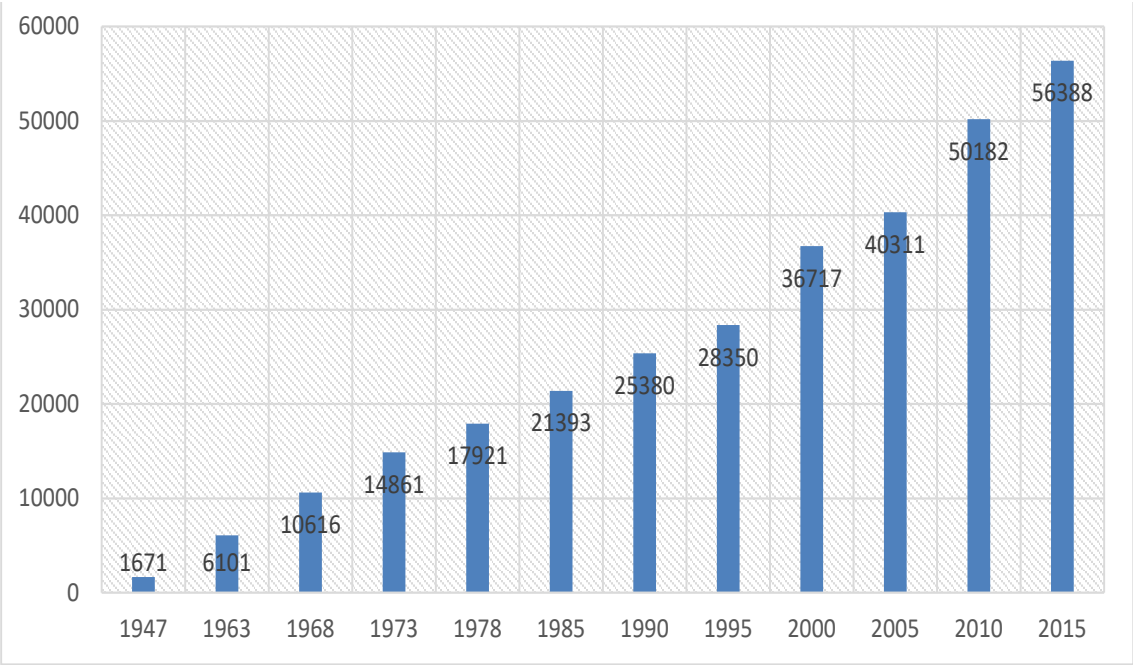


Figure38: South Tarawa population 1947 – 2015.

Nauru

Like other Pacific island nations, pre-phosphate era Nauruans lived a lifestyle that was well suited to the island environment. However, European contact changed that lifestyle; the monetisation of the island economy with a coconut monoculture, later the impacts of war, and the degradation from the phosphate mining period. Consequently, Nauruans faced challenges to their socio-economic wellbeing and a serious physical environmental breakdown[30].

In 2011 the population of Nauru was 10,084 (5,105 males and 4,979 females) (http://nauru.prism.spc.int/) with an average annual growth rate of 1.8. Between 2010-2015 the average Nauru fertility rate was 2.9. The adolescent birth rate in 2011 was 105.5, which is relatively high. The age dependency ratio is 66, reflecting a young population. The life expectancies for Nauruan males and females are 57.5 and 63.2 years respectively. The primary factor for this is the lifestyle diseases resulting in poor health.

Literacy levels for both genders are high with just under 92% of all Nauruan older than 15 years old getting a secondary education. Net enrolment in primary school is 88.1.

6.2 The Economy

Kosrae

FSM cash economy primarily depends on the flow of funds from the United States of America. FSM has been receiving approximately $130 million a year from the United States in Compact of Free Association funds and supplementary grants. About 60% of this supports the Government's administrative costs with the rest infrastructure projects and economic development. Consequently, the public sector drives the cash economy and supports the service oriented private sector.

Kosrae's economy still depends on financial support from the United States, provided by the Compact Agreement with FSM. Consequentially, public sector dominates the economy; the primary employer is the State through its ten departments. Public sector expenditure in 1994

[30] Viviani, N. 1970. Nauru: Phosphate and Political Progress. Australian National University Press, p173

was USD$12.5 million, or 81% of the total state budget. The estimated wage level in 1993 for the private sector was USD$2,736 compared to USD$ 6150 in the public sector.

Kosrae's GDP in 2015 was estimated at USD$14.6 million (or USD$1,963 per person). Major economic sectors in the State of Kosrae are marine resources, tourism, agriculture and small scale businesses. The combined output from these sectors contributed an estimated USD$1.6 million, or 10% of the state product. The State Government owns and operates all infrastructure facilities, health facilities, and most education services, small enterprises, and an extensive commercial activity in the fishery.

The private sector provides employment through retail outlets, restaurants, resorts, farming and some service businesses. The employee earnings per institution in 2015 was US$1.822 million for the private sector and US$17.051 million from the State Government.

The subsistence economy is based on small-scale horticulture and fishing. These two activities are not mutually exclusive as most farmers are also fishermen. Some have livestock for food production. This traditional subsistence economy is still vital for the Kosraeans. Remittances from family overseas also supplement the household income especially those with subsistence production and or no employment.

The Kosraean State Government continues to seek and promote foreign investments to improve the States trade balance and dependency on foreign funding. In fact, the Kosrae State 2014-2023 Strategic Development Plan adopted a sector approach with a goal "To achieve economic advancement and budgetary self-reliance."

Kiribati

The economic growth in Kiribati is expected to be moderate to 1.8% in 2016, and 1.5% in 2017[31]. The GDP per capita in 2014 was $1,838 which is one of the lowest in the Pacific countries.

South Tarawa, as the center for commercial and government activities, is central for the economic welfare of Kiribati. Major projects namely the Kiribati Road Rehabilitation Project, Kiribati Aviation Investment Project, and South Tarawa Sanitation Improvement Sector Project - all have positive impact on the GDP and economy of South Tarawa.

Nauru

The growth in the Nauruan economy for the 2015/16 financial year is expected to be 2.5%. In 2011 the Gross Domestic product (GPD) was US$72 million with a GDP per capita of US$6,954 and GDP growth for 2010-2011 was 14%. The GDP for the main sectors of the economy in 2009 includes 33% Industry (mining), 6.1 % for Agriculture and 60.8% for services with combined exports earning in 2012 $55.7 million and imports of $29 million.

6.3 Poverty & Gender

6.3.1 Poverty

In the FSM, a 2005 survey[32] identified that approximately 22.4% of households or 29.9% of the population are living below the minimum cost of living or the Basic Needs Poverty Line (BNPL). Compared to a similar analysis done in 1998, the proportion of households falling below the BNPL has increased, suggesting a slight worsening of overall poverty in the FSM.

[31] www.adb.org/countries/kiribati/economy

[32] SPC 2005. FSM Household Income and Expenditure Survey. FSM Division of Statistics - Office of Statistics, Budget and Economic Management, Overseas Development Assistance and Compact Management.

In Kiribati, a 2014 survey[33] found that 22% of IKiribati people were living in basic needs poverty. Kiribati is ranked a lowly 121 out of 187 on the Human Development Index.

In Nauru, a 2008 survey[34] estimated that 25.1% of households will have cash shortages to meet their basic needs whilst 16.0% of these households are struggling to meet the cost of food in order to maintain the standard calorie intake.

Poverty does not mean hunger or destitution in the traditional sense, but rather the struggle to meet daily or weekly expenses, especially those requiring cash payments.

In the Pacific, people express their condition as 'being in hardship' rather than in poverty. Causes identified for their hardship include: low income; limited access to basic social services such as sanitation facilities; and limited access to opportunities for gainful income.

6.3.2 Vulnerable Population

The poor households in the FSM are those headed by persons of low educational attainment, with no wage or salary from the private and public sectors. Poverty has a gender bias. While female-headed households constituted 20% of the household population in FSM, they constituted 39% of the total number of households in the lower three expenditure deciles. Poor households as those who are: unemployed and landless; uneducated youth who did not finish school; teenage couples with children; women (widows and single mothers) and men (widowers and elderly); people who owned nothing and were without education or skills; and large families and families without support from their extended families[35].

In South Tarawa, Kiribati, a typical household in South Tarawa will: be larger than a typical household on the outer islands (seven people as compared to five); have one to two members earning a salary (71% of household income coming from wages) but in the context of a general shortage of job opportunities, especially for youth; receive more remittances from seafaring than those on outer islands; supplement this with activities like fishing (26% of household income); more likely to have health issues from poor water, sanitation and overcrowding; and have limited access to land.

In Nauru, a significant proportion of the population is accounted in the lower expenditure deciles (about 40%) which implies that a significant proportion of the population is poor and the expenditure per capita is very small. 73 % of households are headed by men compared to 27 % by women indicating that the traditional concept of "men as the primary bread winner and women devoted for caring of the family and home" is still common. The proportion of poor male headed households was 41% of total households while the proportion of poor female headed households was 16% of total households. The poor maleheaded households were on average 10% below the Basic Need Poverty Line whilst the poverty gap for the poor female-headed households were far less with an average of 5% below the Basic Needs Poverty Line

[33]DFAT 2014. Kiribatu program poverty assessment. Department of Foreign Affairs and Trade. March 2014.

[34]Detenamo, R. 2008. Poverty incidence in Nauru. An assessment of poverty. Statistical Training Institute (STI). Republic of Korea

[35]ADB 2004. Priorities of the people. Hardship in the FSM. September 2004.

6.3.3 Gender

Health

In the FSM, maternal deaths are declining but are widely under-reported, and skilled birth attendants are in short supply in both states[36]. Authorities recognize maternal mortality is a problem in FSM. There is low contraceptive use because of poor service delivery due to geography, lack of supplies and cultural/religious beliefs against contraception. There is a relatively high fertility rate for women over 35 years. Teen birth rates are down. Data on antenatal care are poor, but it is widely recognized as a major challenge. Professional advice on family planning is also weak. Better, cheaper and more reliable telecommunication services should significantly help improve these conditions.

Fertility in Kiribati peaked around 1968 when the total fertility rate reached 7.4 and is now approximately 3.8. The contraceptive prevalence rate is one of the lowest in the Pacific at 18% for currently married women using modern methods and is even lower than some countries that have higher levels of fertility. The unmet need for family planning was 28%, suggesting that there is considerable scope for better quality family planning and reproductive health services. Teenage pregnancy is high (10% of women ages 15–19 years reported they were pregnant or already had a child at the time of the 2009 survey). Annual maternal deaths are low.

In Nauru, the 2011 fertility rate was 3.70. The contraceptive prevalence rate in 2007 was 23% for females aged 15-49 years using modern methods. The unmet need for family planning was 24% in 2007. Nauru's teenage pregnancy rate was 93 per thousand women in the period 1997-2002, and in 2002 almost one in every six girls aged 15-19 had already born a child. Although most couples marry when they discover that the girl is pregnant, the high rate of teenage pregnancy is a concern, since most of these pregnancies are unintentional and burden young people with the responsibilities of parenthood before they have themselves become adults. In the period 2007-11 Nauru had a reported maternal mortality ratio of 300 deaths per 100,000 live births.

Education

In the FSM the 2013 study[9] concluded that gender parity in education this had been achieved at all levels. However, there is the issue of low economic participation of women. Better access to education does not translated into increased participation by women in the formal sector. This is likely due to deeply entrenched beliefs in the traditional role of women, where their role is at home. Also, the lack of job opportunities forces women to turning to subsistence lifestyles.

In Kiribati, gender parity in education has been achieved with more girls attending high school. In terms of employment, the gender gap is narrowest in government employment (53% male, 47% female) whereas in the private sector it is 60% male, 40% female).

The 2011 Census in Nauru indicated that there are insignificant differences between male and female enrolment rates for students aged 5-12. From the age of 13, school enrolment rates for females were noticeably higher than males.

[36]UN 2013. Millennium Development Goals Report.

6.4 Employment

Kosrae

Kosrae's labour force (4,202 people) has a 53.3% participation rate; and an unemployment rate of 23%. Almost two thirds of the employed people work for the State agencies and services (see Figure 39) with 465 people employed in the private sector. A large number of people working in the private sector are employed in the wholesale/retail, construction, and transport, storage, and communication (see Figure 40).

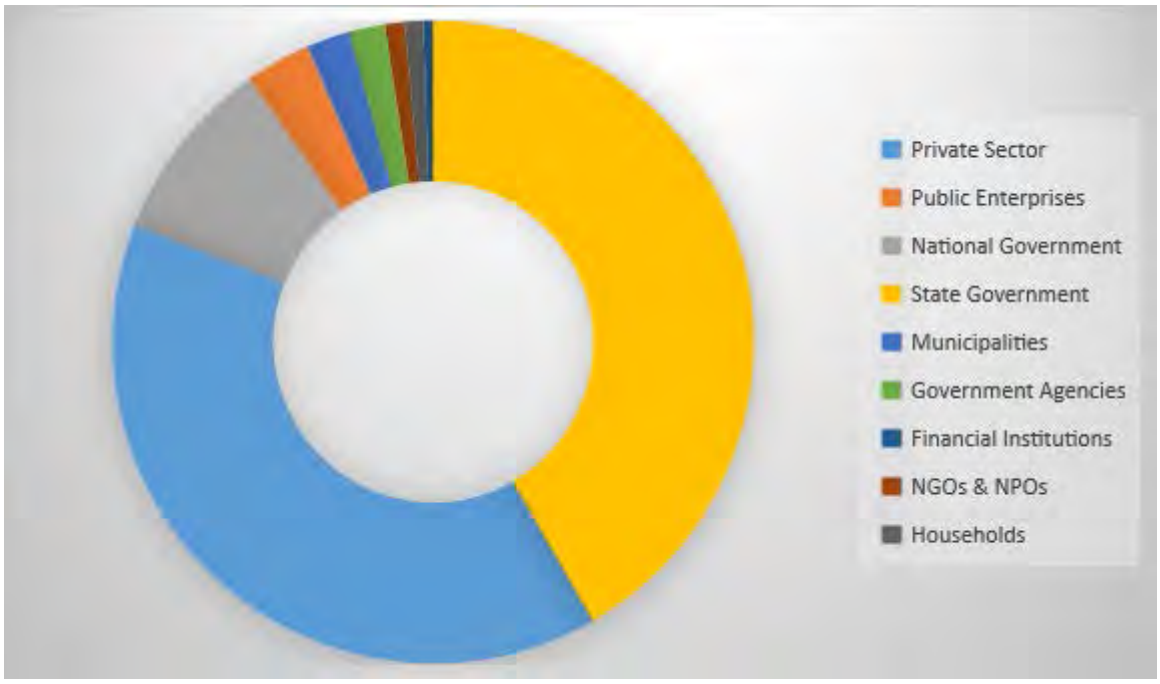


Figure 39: Public Sector Employment

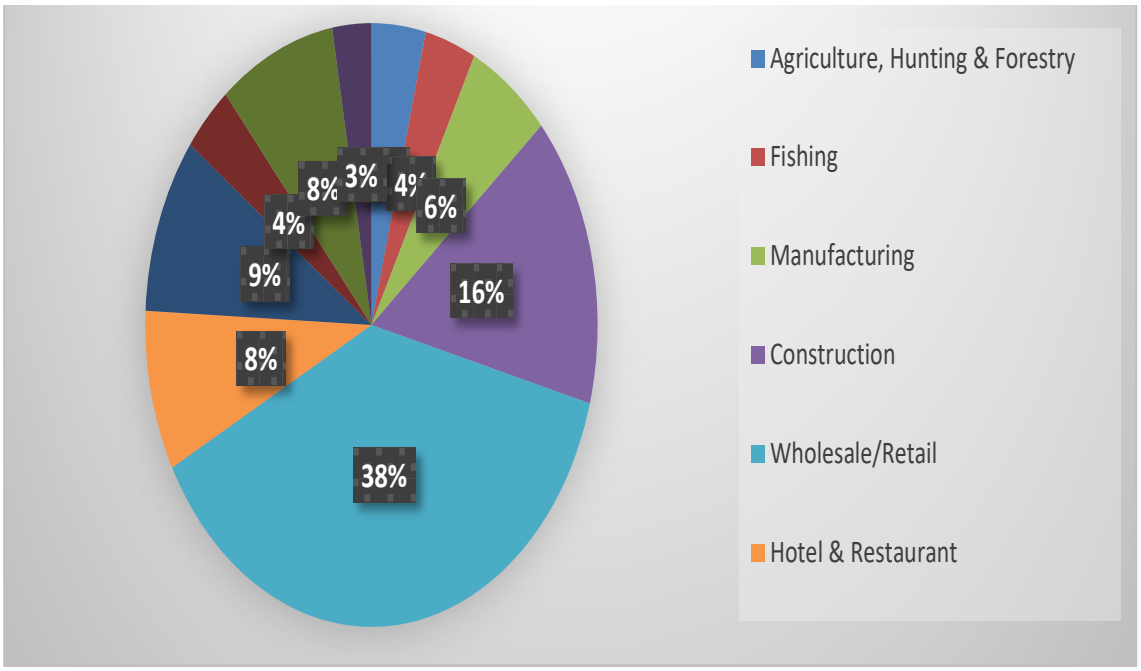


Figure 40: Private Sector Employment by Industry (2015)

Kiribati

The Government, at both regional and national levels, has endeavoured to stimulate economic growth and employment opportunities in the cash economy. The labour force was estimated

at 38,078 people over the age of 15. Unemployment in South Tarawa is about 60% with almost half of the unemployed population actively looking for work.

The benefits of economic investments have begun to show in terms of jobs and cash income, such as the Kiribati Fish Limited. However, any growth in employment is still outstripped by population growth, particularly in South Tarawa. The ratio is about 1:4, for every job there are four potential workers (school leavers, drop outs, returning scholars) per year.

Nauru

During the crisis period in 2011 Nauru had a relatively high unemployment (21% and 26% for males and females respectively) and growing economic inactivity. However, the continuing growth of the working age population, coupled with low emigration, maintains pressure to generate employment[37]. The fact that only 25 people identified themselves as employers reflects the limited development in the private sector.

The most recent statistics estimate 23% of the adult population is unemployed. This issue is more apparent with the 15-19 years old (70% unemployed), and the 20-24 years old (36% unemployed). Unlike most Pacific Island countries, Nauru almost receives no remittances reflecting low emigration rates.

6.5 Fisheries

6.5.1 Commercial Fisheries - Deep Sea Oceanic within EEZ

Kosrae

The EEZ waters of the FSM support a commercial purse seine and long line fishery that have both local and foreign ownership and operational involvement principally that have targeted species of tuna for many years. The commercial fishing fleet operates between State waters and outer boundary of the nation's EEZ. The local long line fleet is restricted in the distances it can travel (license requirements and market longevity of the fish), however will fish throughout the nation's EEZ, whilst the international pursine fishing fleet moves through international boundaries to access fish.

The commercially important and targeted tuna species are highly migratory and information of their precise location and or movements at any one time is difficult. However computer modelling based on past catch records and environmental parameters can provide reasonable information and accuracy of spatial and temporal locations of fish location.

There are no anticipated impacts on these fisheries arising from the deployment and operation of the telecommunication cable; however notification to all vessels in the area of the cable vessel and its path is required to avoid any issues.

Kiribati

The locally-based tuna fishery within Kiribati's EEZ in 2004–2008 produced annual average catches of almost 12,000 tonnes per year worth > USD 21 million. Kiribati also licenses foreign fleets to fish in its EEZ. The average total annual catch of foreign purse-seine fleets exceeded 180,000 tonnes between 1999 and 2008, valued at USD153 million per year

Nauru

Nauru has only a very small local fishery for tuna within its EEZ. In 2004–2008 average catches were 1.2 tonnes per year, worth USD4,500. In contrast, foreign fleets licensed to fish in

[37] ILO, 2014:9

Nauru's EEZ made average annual catches of 63,000 tonnes between 1999 and 2008, worth USD 52 million.

6.5.2 Inshore Commercial & Artisanal Fisheries

Kosrae

There are no large-scale inshore commercial fishing operations in Kosrae. Small scale commercial game fishing charters catering for tourists is allowed. Much of the local small-scale fishers capture fish principally for household consumption and secondarily as an additional income stream.

Kiribati

The coastal fisheries of Kiribati are made up of four components: demersal fish (bottom-dwelling fish associated with coral reef, mangrove and seagrass habitats), nearshore pelagic fish (including tuna, rainbow runner, wahoo and mahi-mahi), invertebrates targeted for export, and invertebrates gleaned from intertidal and subtidal areas.

The total annual catch was estimated to be 20,700 tonnes in 2007, worth >USD 47 million. The commercial catch was 7,000 tonnes. Demersal fish are estimated to make up >70% of the total catch.

Nauru

The coastal fisheries of Nauru are made up mainly of three categories: demersal fish (bottom-dwelling fish associated with coral reef habitats), nearshore pelagic fish (including tuna, rainbow runner, wahoo and mahi-mahi), and invertebrates gleaned from intertidal and subtidal areas. The total annual catch was estimated to be 650 tonnes in 2007, worth > USD 1.5 million. The commercial catch was 200 tonnes. Demersal and nearshore pelagic fish are estimated to make equally important contributions to total catch.

6.5.3 Fish Attraction Devices

Fish Aggregation Devices (FADs) are utilised to support the local fishing fleet. FADs act as artificial reefs providing shelter for smaller organisms, which in turn provide food for large organism higher up in the food chain, attracting small finfish that are targeted by large pelagic fish. Thus congregating pelagic fish around the FADs potentially increase catch rates and decrease fishing effort and expenses for local fishers. The main methods deployed around FADs are trolling, drop-stoning, and hook and line in shallow near shore FADs throughout the waters.

Kosrae

There are three FADs located off the southern and western coasts in Kosrae (see Figure 43).

South Tarawa (Kiribati)

Both near shore and offshore (deep sea) FADs are utilised to support the local fishermen (see Figure 41). There are currently 5 operational FADs, one of which is of particular relevance to the current project being located just south of Nanikai (see Table 4).

Table 4: Details of South Tarawa FADs

Date	Type	Location	GPS Co-ordinates
August 2011	Offshore/Sub-surface	West of Temakin 5 km	01°20.668'N 172°53.196'E
2013 SPC	Near shore/Sub-surface	West of Betio 1	01°23.959'N 172°54.061'E
2013 SPC	Near shore/Sub-surface	West of Betio 2	01°22.760'N

			172°53.849'E
2013 SPC	Near shore/Sub-surface	Betio Cemetery	01°20.656'N 172°55.131'E
2013 SPC	Near shore/Sub-surface	South of Nanikai	01°19.604'N 173°00.352'E
2013 SPC	Near shore/Sub-surface	South of Nei Kaue	01°19.604'N 173°07.607'E

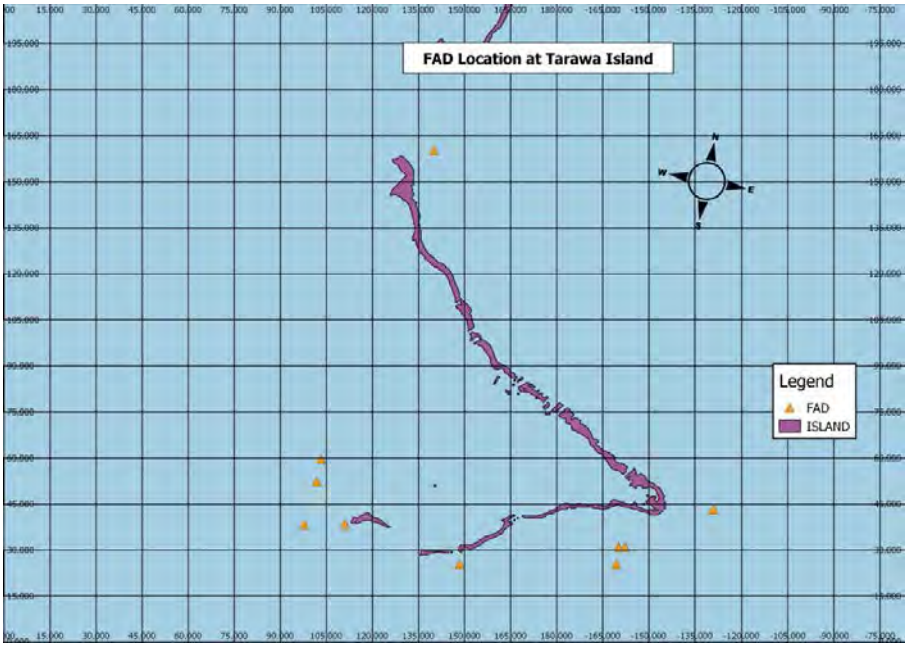


Figure 41: Locations of FADs in close proximity to South Tarawa

Nauru

During the 1990s, the Nauru Fisheries Department (which became the NFMRA in 1997) commenced a FAD programme to assist local fishermen. Deep-water FADs were deployed at a distance of 1.5 to 3.5 km off the reef in depths of 1,500 to 2,600 m. These FADs were mainly to aggregate the passing schools of skipjack tuna and yellowfin tuna so that local Nauruan fishermen using outboard-powered skiffs could troll at these locations, reducing fuel costs and increasing the chance of fishing success.

Three FADs were deployed off Nauru in early 2005 to further assist local fishermen as the economy of Nauru continued to decline. However, increased fuel costs and a shortage of fuel have greatly limited the ability of Nauruans to fully utilise these FADs, adding to the increasing shortage of fish for local consumption.

6.5.4 Dive Industry

In 1997 a series of mooring buoys were installed around the Kosrae coast in anticipation of increased diving and fishing pressure on the surrounding reefs (see Figure 43). These sites are used by local dive operators as part of a small dive tourism industry, with a subset used for regular monitoring of the health of coral reef by Kosrae Island Resource Management Authority (KIRMA).

The key sites located in close proximity to the potential cable alignments are as follows:

- Buoy 49 - the Phoenix Hotel site (BMH 2);
- Buoy 51 - the 'bench' site (BMH3).
- Buoys 1, 2 & 3 – Lelu Harbour and entrance (BMH4, 5 & 6).

- Buoys 15 & 16 – 7 day store (BMH 7).
- Buoys 17 & 18 – Utwe Harbour entrance (BMH 8).

The site at Buoy 15 is of particular interest as there are large coral heads (estimated to be more than 2,000 years old) and a diverse variety of marine life (including eagle rays, schools of huge parrot fish, schools of up to 3 dozen small reef sharks, barracuda, razorfish and squid).

No similar system is place to assist the dive industry on Nauru, although a dive log site (http://www.diveboard.com/explore/spots/nauru) has recorded dives for Gabab Channel (noting how dangerous the site is) and sites located just 300m to the north west (offshore from the Government buildings) and 500m south east of the proposed BMH1.

There are no specific sites of dive interest in Kiribati.

6.6 Sites of Archaeological & Historical Value

In Nauru & Kiribati there were no known sites of archaeological or historical value identified within the PIA. In Kosrae, there are however several historic sites identified in Lelu Harbour (see Figure 42). In any event, a chance finds procedure (CFP) is included in the ESMP.

Figure 42: Locations of wrecks in Lelu Harbour

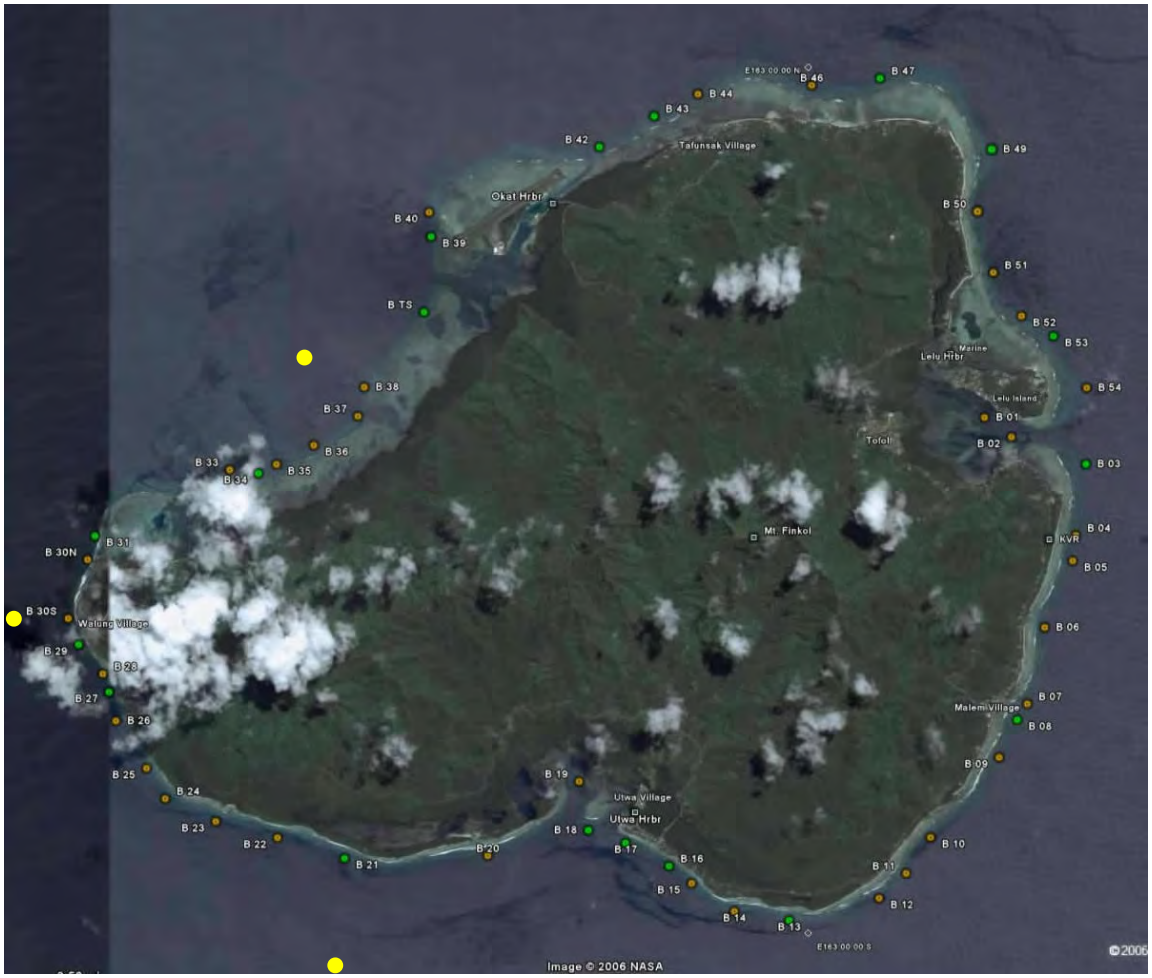


Figure 43: Locations of moorings in Kosrae locating key dive sites and FADs (large yellow dots)

6.7 Land Use

Maps showing landownership arrangements adjacent to proposed BMH sites are provided in the Land Due Diligence Report (Appendix 3 of the ESIA Report). The key points to note are as follows:

Kosrae

- BMH1 is located on the reclamation that forms Kosrae International Airport which is State owned land. Locating the BMH outside the Airport operational area would likely not require permission from the U.S. Federal Aviation Authority.
- BMH6 is located on State land at the Elementary School.
- BMH7 is Private Land.

Kiribati

- BMH1 is located on Government leased land, just outside the Airport security fence, and an unused area. Accessing the existing road easement is also possible.
- BMH2 is located well within the Government leased land area. It is a vacant spot with easy access to the road easement. The adjacent schools will be temporarily impacted during the construction phase.
- BMH3 is located on a BPA sublease from Government, which is on Nanikai. There is a radio aerial on the site, but there is no plan to displace such structure to make way for

the fibre optic submarine cable landing. No tree vegetation on site except for some grass cover. Residential buildings are well away from this site.

- BMH 4 is located on the causeway reclaimed land area at east Bairiki. It does not encroach on the existing subleases or government lease.

Nauru

- BMH1 is located is on government lease land, and is secure in the sense it is located down a drive away from the main road, and is easily accessible. The
- BMH2 is located is on government lease land, and is possibly less secure as it is located on open land but commonly deemed as a public area.

Appendices

Appendix A BMH Sites & Transect Locations

Figure A1: Potential submarine and terrestrial cable alignments for BMH1 (white dashed lines) and intertidal (IT) and subtidal (ST) transects (black dot & dashed line) in Kosrae.

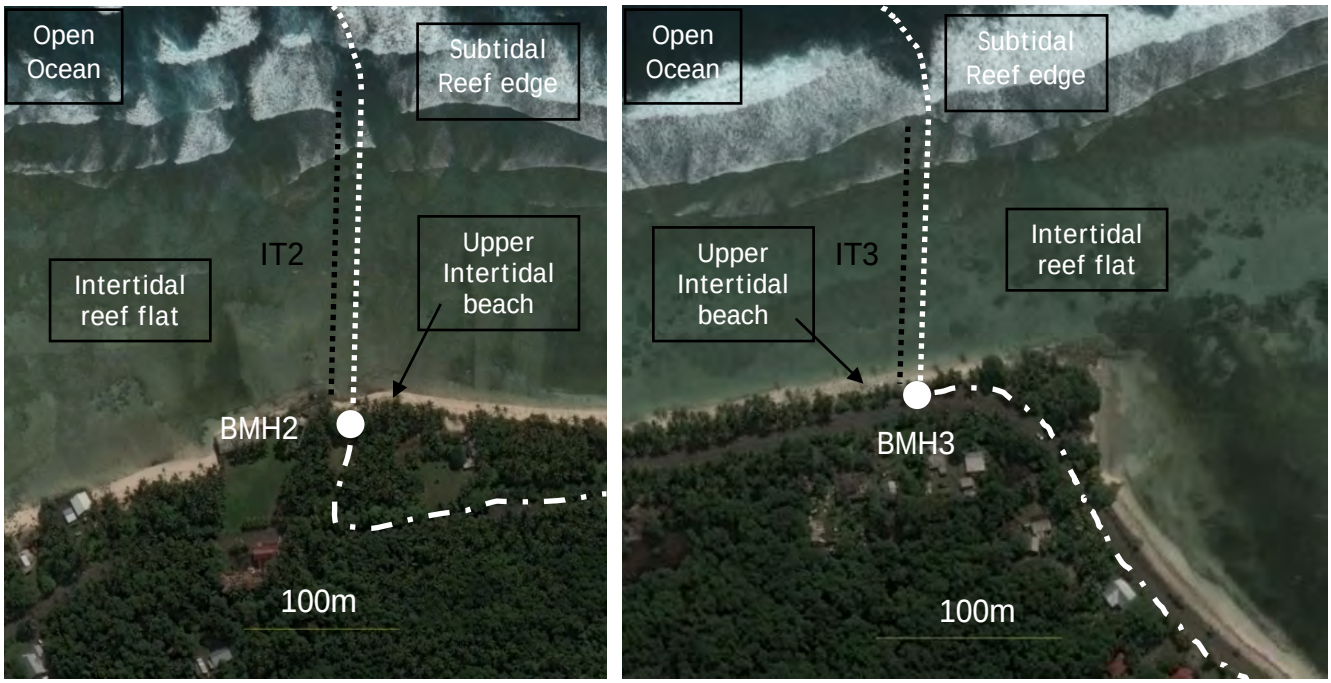


Figure A2: Potential submarine and terrestrial cable alignments for BMH1 (white dashed lines) and intertidal (IT) and subtidal (ST) transects (black dot & dashed line) in Kosrae.

Figure A3: Potential submarine and terrestrial cable alignments for BMH4, 5 & 6 (white dashed lines) and subtidal (ST) transects (black dot) in Kosrae.

Figure A4: Potential submarine and terrestrial cable alignments for BMH7 & 8 (white dashed lines) and subtidal (ST) transect (black dot) in Kosrae.

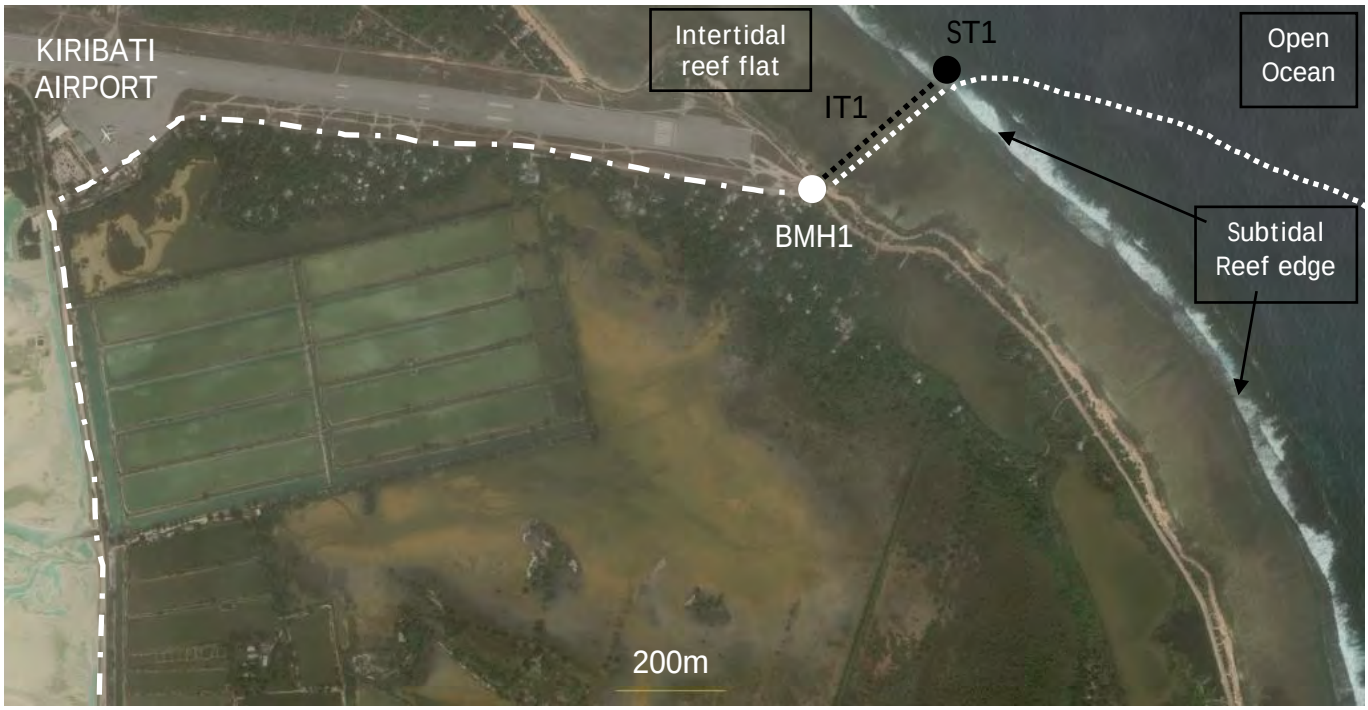


Figure A5: Potential submarine and terrestrial cable alignments for BMH1 (white dashed lines) and subtidal (ST) and intertidal (IT) transects (black dot & dashed line) in Kiribati.

Figure A6: Potential submarine and terrestrial cable alignments for BMH2 (white dashed lines) and subtidal (ST) transect (black dot & dashed line) in Kiribati.

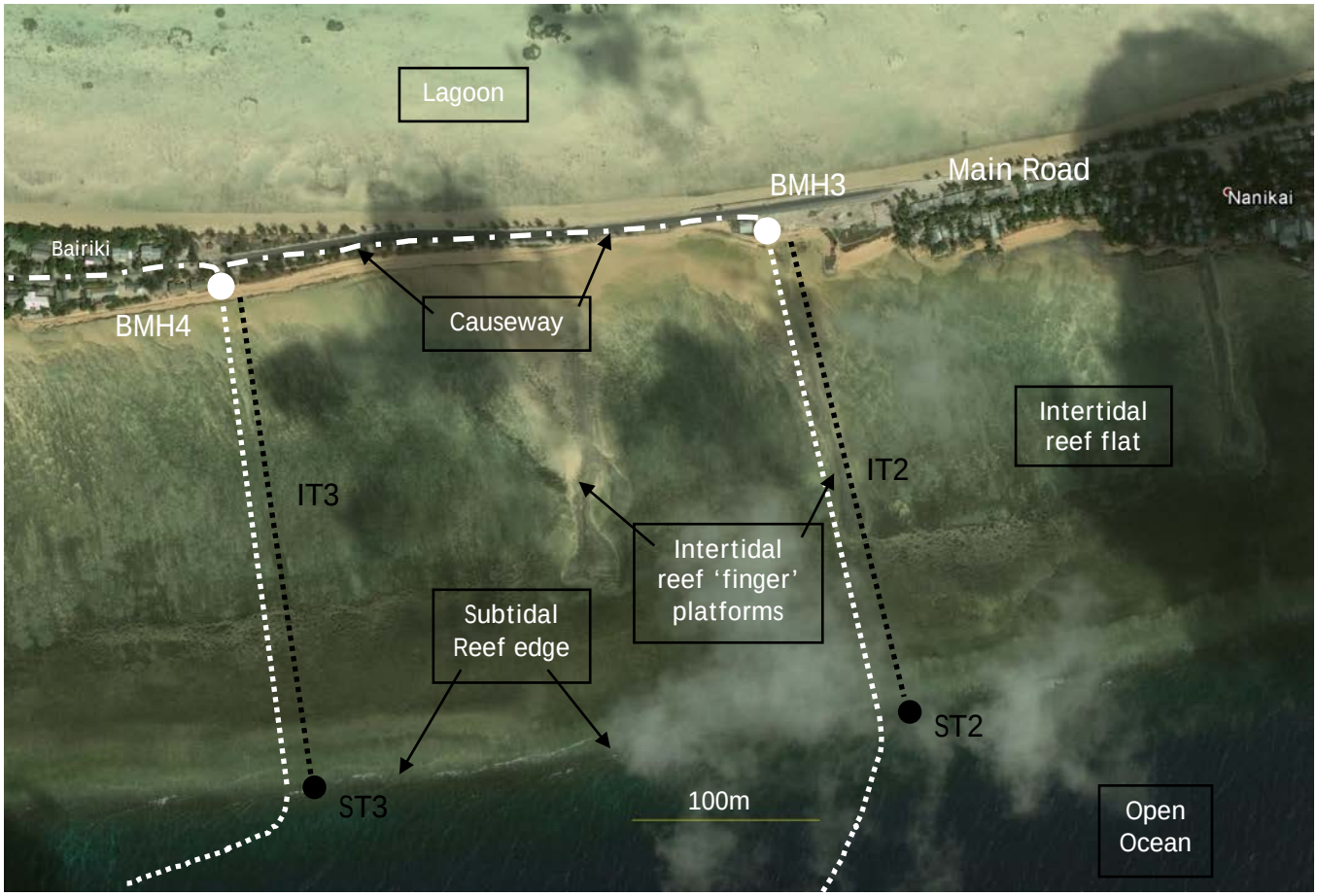


Figure A7: Potential submarine and terrestrial cable alignments for BMH3 & 4 (white dashed lines) and subtidal (ST) transect (black dot & dashed line) in Kiribati.

Appendix B Sampling Sites

Table B1: Summary of field work data for sampling sites used to describe habitat and undertake fish counts

Transect	GPS	Notes
Kosrae		
ST1	N5°21'50.0" E162°57'53.9''	Reef edge, along potential BMH1 cable alignment
ST2	N5°19'26.4" E163°01'42.4''	Waok Patch Reef, adjacent to potential cable alignment to BMH6
ST3	N5°19'25.7" E163°01'58.4''	Reef edge, adjacent to potential cable alignment to BMH4, 5 & 6
ST4	N5°15'51.3" E162°58'59.6''	Reef edge, along potential BMH7 cable alignment
IT1	N5°21'45.3" E162°57'53.8'' (start) – N5°21'48.2" E162°57'54.2'' (finish)	Intertidal reef flats inshore from ST1 along potential BMH1 cable alignment
IT2	N5°21'50.0" E162°57'53.9'' (start) – N5°21'50.0" E162°57'53.9'' (finish)	Intertidal reef flats along potential BMH2 cable alignment
IT3	N5°21'50.0" E162°57'53.9'' (start) – N5°21'50.0" E162°57'53.9'' (finish)	Intertidal reef flats along potential BMH3 cable alignment
Kiribati		
ST1	N1°22'53.8" E173°09'34.3''	Reef edge, along potential BMH1 cable alignment
ST2	N1°22'41.5" E173°07'12.9'	Reef edge, along potential BMH1 cable alignment
ST3	N1°19'29.1" E172°59'39.4'	Reef edge, along potential BMH1 cable alignment
ST4	N1°19'26.2" E172°59'16.1'	Reef edge, along potential BMH1 cable alignment
IT1	N1°22'47.6" E173°09'27.4'' (start) – N1°22'52.7" E173°09'34.4'' (finish)	Intertidal reef flats inshore from ST1 potential BMH1 cable alignment
IT2	N1°21'47.9" E173°07'10.9'' (start) – N1°22'42.9" E173°07'12.6'' (finish)	Intertidal reef flats inshore from ST2 potential BMH2 cable alignment
IT3	N1°19'46.5" E172°59'35.8'' (start) – N1°19'31.5" E172°59'39.4' (finish)	Intertidal reef flats inshore from ST3 potential BMH3 cable alignment
IT4	N1°19'44.3" E172°59'16.2'' (start) – N1°19'27.9" E172°59'16.2' (finish)	Intertidal reef flats inshore from ST4 potential BMH4 cable alignment
Nauru		
IT1	S0°32'53.8" E166°55'02.1'' (start) – S0°32'57.5" E166°54'58.9'' (finish)	Intertidal reef flats inshore from ST3 along possible cable alignment to BMH1
IT4	S0°32'26.3" E166°54'40.5'' (start) – S0°32'27.4" E166°54'37.7'' (finish)	Intertidal sand flats along possible cable alignment to BMH2

Notes: WQ – Water quality. ST – Subtidal. IT – Intertidal. GPS co-ordinates for ST are inshore point of transect.

Appendix C Marine Benthic Data

Table C1: PIT data for Kosrae

	1	2	3	4
0.5	ACB	CF	ACB	RC
1	ACB	HA	ACB	RC
1.5	CA	CF	CF	ACB
2	RC	HA	CF	RC
2.5	RC	HA	RC	SD
3	ACD	HA	RC	RC
3.5	ACD	HA	ACT	RC
4	ACD	HA	RC	SD
4.5	ACD	HA	CF	SD
5	ACD	HA	ACB	SD
5.5	ACD	HA	RC	SD
6	ACD	HA	SD	SD
6.5	ACT	HA	RC	RC
7	ACT	HA	ACS	CMR
7.5	CF	HA	CF	RC
8	RC	DA	ACB	ACE
8.5	RC	DA	CF	RC
9	RC	DA	ACB	DA
9.5	RC	DA	RC	RC
10	ACT	DA	HA	RC
10.5	ACT	DA	CF	RC
11	ACD	DA	CF	RC
11.5	ACD	DA	ACT	RC
12	CF	DA	RC	RC
12.5	CF	DA	RC	RC
13	RC	ACE	ACB	RC
13.5	RC	ACE	CM	RC
14	RC	ACE	RC	RC
14.5	RC	ACE	ACB	RC
15	RC	ACE	RC	RC
15.5	ACB	ACE	ACB	RC
16	RC	ACE	RC	RC
16.5	RC	ACE	CF	RC
17	ACD	ACE	DA	RC
17.5	CF	ACE	DA	RC
18	CF	ACE	CB	RC
18.5	RC	ACE	RC	CB
19	ACD	ACE	RC	RC
19.5	ACD	ACE	RC	RC
20	ACD	ACE	RC	RC
20.5	ACD	ACE	DA	RC
21	ACD	ACE	RC	RC
21.5	ACD	HA	RC	RC
22	RC	HA	RC	RC
22.5	RC	HA	DA	RC
23	ACT	HA	ACB	RC
23.5	ACT	HA	RC	ACS
24	ACD	HA	RC	ACS
24.5	CF	RC	RC	ACS
25	CF	HA	RC	RC
25.5	RC	HA	RC	RC
26	RC	HA	RC	ACD
26.5	ACT	HA	RC	ACB
27	ACT	HA	RC	ACB
27.5	ACB	HA	CF	RC
28	SD	HA	CF	CF
28.5	ACD	HA	ACB	RC

29	ACD	HA	RC	CF
29.5	ACD	HA	RC	CF
30	ACD	ACB	CF	CF
30.5	CF	HA	RC	RC
31	ACD	HA	RC	RC
31.5	ACD	HA	RC	RC
32	ACB	HA	RC	RC
32.5	RC	HA	RC	ACB
33	ACD	RC	RC	CM
33.5	ACD	HA	RC	CM
34	ACD	HA	RC	ACB
34.5	RC	HA	RC	ACB
35	RC	RC	CM	ACB
35.5	SD	RC	RC	RC
36	CA	ACB	RC	RC
36.5	CA	HA	RC	RC
37	RC	HA	RC	ACB
37.5	CA	HA	RC	ACB
38	RC	CF	ACB	RC
38.5	CF	HA	ACB	RC
39	ACD	HA	RC	RC
39.5	ACD	HA	RC	RC
40	CM	RC	RC	RC
40.5	CM	RC	RC	SD
41	ACB	RC	RC	SD
41.5	RC	HA	RC	ACB
42	ACS	ACB	DA	ACB
42.5	ACB	CF	DA	ACB
43	ACB	CF	DA	ACB
43.5	ACB	CF	RC	SD
44	ACB	ACB	RC	SD
44.5	ACD	ACB	RC	SD
45	CF	RC	RC	SD
45.5	ACB	CF	ACB	SD
46	ACD	CF	RC	SD
46.5	ACT	ACB	ACB	SD
47	ACT	HA	RC	RC
47.5	RC	HA	RC	RC
48	RC	HA	RC	SD
48.5	RC	HA	DA	SD
49	ACD	HA	DA	RC
49.5	ACD	HA	RC	RC
50	ACD	HA	RC	RC

Table C2: PIT data for Kiribati

	1	**2**	**3**	**4**
0.5	CS	RC	MA	RC
1	DC	RB	MA	RC
1.5	CB	RB	RCA	CS
2	RB	RB	RB	AA
2.5	DC	RC	RCA	RCA
3	RCA	CA	CS	RCA
3.5	RC	CB	CS	CS
4	RC	CS	RCA	CS
4.5	DA	RB	RCA	RCA
5	DA	RB	RCA	CA
5.5	DA	RB	MC	DC
6	DC	RCA	RCA	RCA
6.5	SD	RCA	RCA	RCA
7	RB	RCA	RCA	CS
7.5	HA	RCA	CS	RCA

8	DC	RCA	RCA	RCA
8.5	RB	RCA	RCA	RCA
9	CB	RC	RCA	MA
9.5	RCA	CA	RCA	CS
10	RCA	RCA	RCA	RCA
10.5	DC	RB	CA	RCA
11	SD	RCA	MC	RCA
11.5	CE	RCA	RCA	RCA
12	SD	RCA	MC	RCA
12.5	ZO	ZO	MC	RCA
13	RCA	RCA	MC	RCA
13.5	SD	CE	CA	MA
14	DC	RB	ZO	RCA
14.5	RB	RB	CS	RCA
15	RCA	RCA	RCA	RCA
15.5	DC	RCA	RCA	CS
16	RCA	RCA	RCA	RCA
16.5	RCA	RCA	RCA	MA
17	RCA	RCA	RCA	CS
17.5	ZO	RCA	RCA	CS
18	RCA	RCA	RCA	CS
18.5	RCA	CS	RCA	CS
19	RCA	RCA	RCA	CS
19.5	RC	RCA	CS	RCA
20	ZO	RCA	CS	RCA
20.5	RCA	RCA	RCA	RB
21	CA	RCA	RCA	RCA
21.5	CS	RCA	RCA	RCA
22	DC	RCA	RCA	RCA
22.5	RCA	RCA	MC	DC
23	CM	RCA	CS	RCA
23.5	CE	RCA	RCA	RCA
24	CS	CS	RCA	RCA
24.5	RCA	RCA	MC	RCA
25	CS	CS	RCA	RCA
25.5	CB	RCA	CB	MA
26	CS	RCA	CS	SD
26.5	CB	RCA	RC	CS
27	RCA	RCA	RCA	RB
27.5	CE	RCA	CS	RCA
28	RCA	MA	CS	RCA
28.5	RCA	RCA	CS	RCA
29	CS	RCA	CS	CS
29.5	RCA	RB	RCA	RCA
30	RCA	RCA	CS	CA
30.5	RCA	RCA	CS	RCA
31	CS	RCA	CS	AA
31.5	RCA	RCA	CS	RCA
32	CS	CS	CS	RB
32.5	CS	RCA	CS	RCA
33	RCA	RCA	CS	RB
33.5	DC	RCA	CA	AA
34	CE	RCA	CS	RB
34.5	CS	RCA	RCA	RCA
35	RCA	RCA	MA	RCA
35.5	CS	RCA	RCA	RCA
36	CS	RCA	RCA	RB
36.5	CA	RCA	RCA	RCA
37	RCA	RCA	RB	MA
37.5	RCA	RCA	CS	SD
38	CS	RCA	CS	MA
38.5	CE	RCA	MC	RCA

39	CS	RCA	CS	RCA
39.5	RCA	RCA	RCA	SD
40	SC	RCA	RCA	RB
40.5	RCA	ZO	MC	RCA
41	CS	RCA	MC	RCA
41.5	RCA	RCA	RCA	MA
42	RCA	RCA	RCA	RCA
42.5	RCA	CS	RCA	RCA
43	CS	RCA	CS	RCA
43.5	CS	RCA	RB	AA
44	RCA	RCA	RCA	RCA
44.5	SC	RCA	SD	RCA
45	RCA	RCA	SD	RCA
45.5	RCA	CE	MC	RCA
46	RCA	RCA	RB	AA
46.5	RCA	ZO	RB	RCA
47	CB	MA	SD	RCA
47.5	CS	RCA	SD	RCA
48	RCA	RCA	SD	SD
48.5	RCA	RCA	SD	RCA
49	RCA	RB	RCA	RCA
49.5	RCA	RB	RCA	RCA
50	RCA	RB	MA	RCA

Appendix D Fish Data

Table D1: Fish species identified in the current survey along transects in Kosrae

Family	Scientific name	Common Name	Transect			
			T1	T2	T3	T4
Acanthuridae	*Acanthurus blotchii*	Ringtail surgeonfish	3			
	Acanthurus guttatus	Whitespotted surgeonfish			3	
	Acanthurus triostegus	Convict surgeonfish	2	2	3	
	Naso lituratus	Orangespine unicornfish				2
Mulidae	*Mulloidichthys flavolineatus*	Yellowstripe goatfish	2			2
	Mulloidichthys mimicus	Mimic goatfish			3	
	Parupeneus indicus	Indian goatfish		3		
Balistidae	*Rhinecanthus aculeatus*	White-banded triggerfish			1	
Chaetodontidae	*Chaetodon auriga*	Threadfin butterflyfish				3
	Chaetodon melannotus	Blackback butterflyfish			2	
	Heniochus acuminatus	Pennant coralfish		2		
Holocentridae	*Myripristis adusta*	Shadowfin soldierfish			2	
	Myripristis berndti	Blotcheye soldierfish	2			
	Myripristis kuntee	Shoulderbar soldierfish				3
Kyphosidae	*Kyphosus vaigiensis*	Brassy chub				3
Labridae	*Epinephalus merra*	Honeycomb grouper				2
	Epinephalus tauvina	Greasy grouper		1		
	Halichoeres nigrescens	Bubblefin wrasse		2		
	Halichoeres podostigma	Axil spot wrasse	3			
Lethrinidae	*Lethrinus harak*	Thumbprint emperor		1	2	3
	Scolopsis lineatus	Striped monocle bream		2		
Lutjanidae	*Lutjanus fulvus*	Blacktail snapper			3	2
Monacanthidae	*Amanses scopas*	Broom filefish				2

Table D1: Fish species identified in the current survey along transects in Kosrae (cont.)

Family	Scientific name	Common Name	Transect			
			T1	T2	T3	T4
Pomacentridae	*Chromis albomaculata*	White-spotted chromis				2
Scaridae	*Hipposcarus harid*	Candelamoa parrotfish		2	3	
	Scarus spinus	Greensnout parrotfish	2			3
Serranidae	*Epinephelus merra*	Honeycomb grouper	2			
Siganidae	*Siganus argenteus*	Streamlined spinefoot				2

Notes: Numbers of fish are presented as one of four abundance codes: 1 - Single (one individual). 2 - Few (2 – 10), 3 – Many (11- 100), 4 – Abundant (more than 100).

Table D2: Fish species identified in the current survey along transects in Kiribati

Family	Scientific name	Common Name			Transect		TOTAL
			T1	T2	T3	T4	
Acanthuridae	*Acanthurus lineatus*	Lined surgeonfish	3	3	3	3	
	Acanthurus nigricans	Whitecheek surgeonfish		1	2		
	Acanthurus grammoptilus	Finelined surgeonfish	3		3		
	Ctenochaetus striatus	Striated surgeonfish	3	2	3		
	Naso lituratus	Orangespine unicornfish	3	2		2	
	Naso unicornis	Bluespine unicornfish	1				
Balistidae	*Balistapus undulatus*	Orange-lined triggerfish	3	1	2		
	Melicthys niger	Black triggerfish	2	2		2	
	Odonus niger	Red-toothed triggerfish	2				
	Pseudobalistes flavimarginatus	Yellow-margin triggerfish	3				
	Rhinecanthus aculeatus	White-banded triggerfish		2	1		
Cirrhitidae	*Paracirrhites arcatus*	Arc-eye hawkfish			1	2	
	Paracirrhites forsteri	Blackside Hawkfish		2			
Chaetodontidae	*Chaetodon bennetti*	Bluelashed butterflyfish			1		
	Chaetodon ornatissimus	Ornate butterflyfish			2		
	Chaetodon vagabundus	Vagabond butterflyfish	2				
	Chelinus undulatus	Humphead wrasse		2			
	Forcipiger longirostris	Longnose butterflyfish			1		
Holocentridae	*Cetoscarus ocellatus*	Spotted parrotfish	1				
	Chlorurus sordidus	Daisy parrotfish	3		2		
	Scarus tricolor	Tricolor parrotfish		1			
Labridae	*Anampses melanurus*	White-spotted wrasse	2				
	Bodianus mesothorax	Splitlevel Hogfish	2				

Table D2: Fish species identified in the current survey along transects in Kiribati (cont.)

Family	Scientific name	Common Name			Transect		TOTAL
			T1	T2	T3	T4	
Labridae	*Chelinus trilobatus*	Tripletail wrasse				2	
	Epinephalus merra	Honeycomb grouper				2	
	Gomphosus varius	Bird wrasse	2	2	2	2	
	Halichoeres hortulanus	Checkerboard wrasse	2	3	3	2	
	Halichoeres melanurus	Tail-spot wrasse				1	
	Labroides dimidiatus	Bluestreak cleaner wrasse		3	2		
	Labroides rubrolabiatus	Redlip cleaner wrasse		2	2		
	Pseudocheilinus tetrataenia	Four-lined wrasse	1				
	Thalassoma amblycephalum	Bluntheaded wrasse	3	3	3	3	
	Thalassoma purpureum	Surge wrasse		2	2		
Lethrinidae	*Gnathodentex aureolineatus*	Striped large-eye bream				3	
	Lethrinus harak	Thumbprint emperor	2		1		
	Lethrinus olivaceus	Long face emperor	1				
Lutjanidae	*Lutjanus bohar*	Two-spot red snapper	3				
	Lutjanus fulvus	Blacktail snapper				2	
	Lutjanus gibbus	Humpback red snapper	3			2	
	Lutjanus monostigma	One spot snapper	2				
	Lutjanus semicinctus	Black-banded snapper	2				
	Macolor niger	Black and white snapper	2				
Pomacentridae	*Abudefduf septemfasciatus*	Banded sergeant		3		3	
	Chromis margaritifer	Bicolor chromis	3	3	3	3	
	Chromis ternatensis	Ternate chromis				3	
	Chromis xanthura	Paletail chromis		3		2	

Table D2: Fish species identified in the current survey along transects in Kiribati (cont.)

Family	Scientific name	Common Name			Transect		TOTAL
			T1	T2	T3	T4	
Pomacentridae	*Plectroglyphidodon dickii*	Blackbar devil	2	3	2		
	Plectroglyphidodon lacrymatus	Whitespotted devil		3		3	
	Pomacentrus coelestis	Neon damselfish			3		
	Stegastes nigricans	Dusky farmerfish	3	3	3	2	
Pomacanthidae	*Centropyge flavissima*	Lemonpeel angelfish		2			
Serranidae	*Cephalopholis argus*	Peacock hind	2	2	2	2	
	Cephalopholis urodeta	Darkfin hind	2	2	2		
Sparidae	*Monotaxis grandoculis*	Humpnose big-eye bream	2			2	
	Ptereleotris evides	Blackfin dartfish				2	
Zanclidae	*Zanclus cornutus*	Moorish Idol			2	2	

Notes: Numbers of fish are presented as one of four abundance codes: 1 - Single (one individual). 2 - Few (2 – 10), 3 – Many (11- 100), 4 – Abundant (more than 100).

Appendix 2 Land Due Diligence Report

KOSRAE-KIRIBATI-NAURU CONNECTION TO HANTRU-1 CABLE PROJECT

LAND DUE DILIGENCE REPORT

part fulfilment of the

ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT

S. Nailasikau Halatuituia
SOCIAL SPECIALIST CONSULTANT

DUE DILIGENCE REPORT PN INVOLUNTARY RESETTLEMENT

KOSRAE STATE (FSM), TARAWA (KIRIBATI), NAURU Connection to HANTRU-1 Cable

14 November 2016

I. INRODUCTION

This due diligence report (DDR) on involuntary resettlement describes:

- A brief background of the Project;
- Component activities;
- Current land ownership status or use;
- Identification of land requirements for sub-project components and potential issues; and
- Conclusive remarks.

II. BRIEF PROJECT BACKGROUND

The World Bank (WB) approved in 2014 the Palau – FSM Connectivity Project (P130592) aimed to reduce the cost and increase the availability of Internet Communication Technology (ICT) services needed to support social and economic development within the respective recipient countries.

The WB is to finance Federated States of Micronesia (FSM) Government's participation on a regional cable to link Kiribati, Nauru and Kosrae State (FSM) to the existing Hannon-Armstrong (HANTRU)-1 cable. HANTRU-1 is already connected Pohnpei (FSM) to Guam. In a joint undertaking, the WB and Asian Development Bank (ADB) are to finance the Kiribati and Nauru Government participation respectively.

The proposed Kosrae-Kiribati-Nauru cable is approximately 2,100km in length, with landing sites on each country yet to be identified.

III. COMPONENT ACTIVTIES

The development process is summarised as follows:

- Cable route concept design and feasibility
- Country and development partner safeguards instruments prepared based on concept and initial feasibility
- Engagement of a cable contractor, who will then undertake:
  - Detailed marine survey
  - Final design (in agreement with the implementing agency and other stakeholders)
  - Country and development partner safeguards instruments updated based on detailed information from above and identified information gaps filled
  - Order the manufacture of the cable and equipment
  - Sub-marine cable laying using a dedicated vessel
- Construction of terrestrial infrastructure
- Connection of the cable to the island telecommunications network

IV. LAND STATUS and RQUIREMENT FOR PROJECT COMPONENTS AND POTENTIAL ISSUES

Land being a traditional source of food, social and political relationships, and identity have made land an integral to the people of Kosrae, Kiribati and Nauru. In effect, access and use of land are closely tied to the respective communities and countries. In difference to many western societies, land has a much broader meaning to the indigenous people of these countries, more than just value as an economic commodity. For the purpose of this project, acknowledging the customary land tenure is paramount. That will assist the project to access and use land areas as required, but also minimise potential risks of any land dispute. Ultimately, assisting the final decision for project site selection on these three countries.

A. KOSRAE STATE, FSM

1) The Land and Tenure

Kosrae has an estimated land area of 42.3 square miles (109.6km^2). It has a fringing reef that provides for three sheltered lagoon areas on three sides on the east, the north, and the west. The lagoons occupy about 4,114 acres (16.6km^2). The most prominent part of the island is its interior uplands, which is two-thirds of the landmass covered with tropical forest. In effect, this area is not inhospitable to both agriculture and settlement. However, the municipal settlement areas in Kosrae spread around the coastal plain. The four municipalities and respective land areas are as follow: Tafunsak (10,597A or 42.9km^2), Lelu (5,357A or 21.67km^2), Malem (4,179.5A or 16.9km^2), and Utwa (7,507.6A or 30.4km^2). In general, only 20% of the total land area is flat and can be utilised namely; settlements (300A or 1.2km^2), agro-forestry (4,100A or 16.6km^2), and natural vegetation (1,100A or 4.5km^2).

The State Government control 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; and the foreshore areas. Kosraeans can own land but not outsiders (foreigners and non-Kosraean). The land is owned "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 customary family land is held in common, then a Tenancy in Common title is issued.

Accessing land through usufruct or access rights (customary practice) were 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 the settlement areas, are done through leasing agreements. The leasing title is the only method for foreigners, or outsiders can own land use rights, but for a defined period.

As a protectorate measure, foreign ownership of land is through leasing titles only. Leasing land is permissible, but the lease terms are controlled exclusively by the state government. Kosrae laws allow for a 55-year lease renewable for an additional 55 years. Although this provides a secure access and uses for the lease period, issues such as land ownership disputes, lack of certainty, poor surveying capabilities, the absence of records, customary usage often hinder foreign investment. As in other Pacific island tenure systems, restrictions on land sales or access by citizens, in this case from other states, land transactions are often made under the customary practice. Thus makes the accurate pricing of land difficult to ascertain. Lack of evidential records of these practices is a challenge. Furthermore, there is no system for land title insurance in Kosrae, similar to the other three States.

The Kosrae Constitution is the primary rule of law in the State of Kosrae. In the preamble, it declares Kosraeans are one, as people, in their language, in their traditions, and in their family and communal life. Similarly, the Constitution contains a number of explicit environmental statements. The Preamble expresses the bounty and beauty of Kosrae. It goes on to pledge to preserve those natural riches. Thus the basis for environmental protection and conservation, both human and physical, has been laid.

Article XI Land and Environment governs the land and environment of Kosrae. The Kosrae State Code Title 11 Land and Environment set out the requirements regarding the acquisition and use of land.

The Governor can transfer title transfer or interest on public land on behalf of the State of the Government; only with the Legislature's resolution. However, he has authority to designate suitable areas of the public land for homesteading to an eligible person.

In managing land and land use, the Code provided for a land use planning, surveying practice, homesteading and establishing the Land Court. The latter 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) The Legal Framework

There is a significant number of legal provisions available within the existing legislations to apply to managing and conserving the environment of Kosrae. The following table contains what deemed to be relevant for this project.

NATIONAL LEGAL FRAMEWORK	
FSM Constitution	The supreme law and it establishes the national, state, and municipal governance.
Federated States of Micronesia 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 Regulations 1988	Earthmoving activities permits are issued by the Secretary of 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.
STATE LEGISLATION	
Constitution of the State of Kosrae	Primary rule of law in the State of Kosrae
Kosrae State Code, Title 17, Chapter 4	Establishes the Kosrae EPA
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	Unauthorised 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

The Development Review Commission (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.

Most of the land in Kosrae is privately owned. However, of the State can acquire an interest in private land for public purpose without consent of the landowners. Further, payment of fair compensation and showing that the lands and the interest are 'highly suited' to the intended use.

The Constitution and the Article XI Land and Environment provide for fair compensation should there be a need for land acquisition for the purpose of resettlement. Further, the process must be done in good faith and made reasonable effort to avoid substantial hardship to the interested parties[1].

3) Land: Station, Sites and easements

a) Landing Station:

The landing station preferred is to be located within the State Government Administration Building. The alternative is the FSM Telecommunication building at Tofol. These properties front the main road that in Kosrae that links the settlements and the proposed sites as well. Easement permits provided are enclosed for ease of reference.

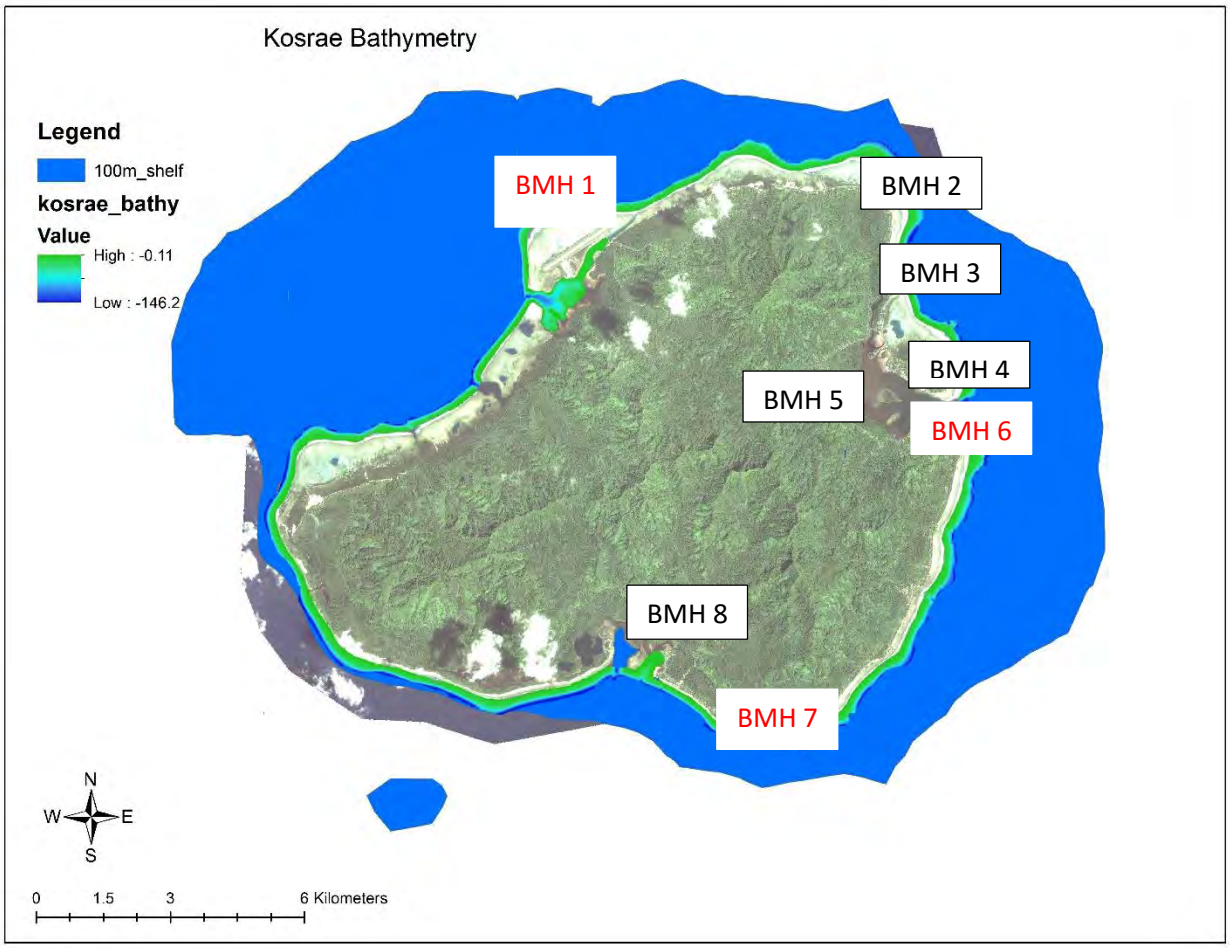
b) The Proposed Beach Manhole (BMH) Sites

A Beach Manhole (BMH) landing facility which will likely comprise a small concrete manhole approximately 2m x 2m x 2m. The beach manhole sites were identified with input from the national government ministries. Given consideration to both potential environmental and social impacts of the project, three sites are recommended. Noting that the preference will be for a site on Government owned or leased land area. Further, locating the site on privately owned land will involve lengthy land negations and compensation, especially if there is a need for resettlement. It is noted that the supplier/contractor will finalise the landing site from their perspective and expertise on ocean cable laying.

A number of sites were identified namely; Kosrae Airport at Okat (BMH1); Phoenix Hotel site (BMH2); the 'bench' site (BMH3); the Yacht Club in Lelu Harbour (BMH4); Tofol (BMH5); Sansrik Elementary School

[1] Palik vs Kosrae, 5 FSM Intrm. 147. 152-154 (Kos. C. Ct. Tr. 1991.

(BMH6); The 7 Day store in Malem (BMH7); and Otwe Harbour (BMH8). However, only three sites (BH1, BMH 6, and BMH 7) are proposed based on the land tenure (ownership), physical characteristics (accessibility; exposure to both marine environment and terrestrial environment).



All three sites have open access to the marine area. For BMH 1 (Tafunsak) and BMH 7 (Malem), the fibre cable will pass straight onto the beach, across the intertidal reef flat. However, for BMH 6 Lelu, it will pass through the harbour entrance (shipping lane) and southward to the site (school).

The three BMH sites are as follow; BMH 1 Tafunsak, government owned; BMH 6 Lelu is Government leased land; and BMH 7 Malem, is a privately owned land.

BMH 1: Kosrae International Airport

This site is on the airport reclaimed land, but outside the existing security fenced runway area. It is an advantage that the reclaimed land is Government owned, and used by Kosrae Ports Authority (KPA). KPA has an existing plan to extend the runway in the near future. However, the Airport management is willing to work with State Government to accommodate the cable landing site. It is about 14km from the proposed cable landing station site in the State Government administrative centre.

BMH 6: 056K01-06, Sansrik Elementary School, Tofol

This site on a school ground adjacent Lelu Harbour. It is a Government leasehold area, and 3km from the landing station at the Government department. Land access will be an internal matter for the State Government's TCI and Education to finalise, but there is no foreseeable issues. The school site is about 3km from the State Government administrative centre.

BMH 7: Augustus Tara (Inpuspusa) - 034M03 & 04

This is on private land at Malem. During site visit consultations the landowner agreed in principle for his land to be considered. There are potential issues with this location. Land negotiations may take some time and create project delays. Secondly, there are evidence that this is a relatively high energy beach for example, rocky beach and steep seawall. This site is about 14km from the State Government administrative centre.

c) Protected Areas:

Kosrae has a number of protected areas and diving areas, none of these occur near or where the project construction sites are being proposed.

d) Terrestrial ecosystems:

Site 1 Tafunsak, as no tree vegetation, except for some grass cover. This is reclaimed area with elevation for protection of the airport runway.

Site 2 Lelu, has no tree vegetation, except for some grass cover. A seawall had been built for the protection of the school grounds.

Site 3 Malem, has a few trees and may require tree removal.

e) Socio-economic environment:

All three sites have no crops or subsistence farming at all. On the sea side, the common practice of reef fishing will only be affected temporarily (construction phase). There will be no harvesting of organisms in any aspects of this project. Generally, there could be short-term socio-economic impact during construction, but during operation there will be social and economic benefits from the access to improved internet services.

f) Historical and Anthropological environment:

The history of Kosrae meant that there are historical and anthropological sites on land and in the sea. Fortunately, the sites selected will not encroach on any of these important sites.

g) Right of Way (ROW)

The project will utilise the existing government right of way to bring the fibre cable to the landing station. This is an existing easement that provides for the roads and State Government utility needs. This area is 30 feet to each side of the road centre line. This area currently has both electric and telephone copper lines, in addition to the transport carriage way.

h) Public Consultation Feedback:

The dialogues during the stakeholder meetings and public consultation were very encouraging and positive. Primarily, people just needed to know about the nature and timeframe for this project. In fact, their existing issues with ICT prompted a lot of people to demand quicker implementation of this project. The aspiration to provide better internet and communication services at an affordable rate was high.

Government and non-government organisations will offer more products and better services. Particularly the private businesses and the financial institutions (banks). In addition, better communication will be welcomed by Kosraeans in Kosrae and overseas.

The potential issues raised were around the land access and ownership. However, these were countered with the option of locating the landing site on Government land, as proposed. Further, the existing utility corridor (telephone and electricity lines) will be used for the fibre cable networking on land. The purpose provision in the Government easement leasehold can accommodate for the fibre cable also. The 60 feet wide easement is clearly marked. However, there were issues with some people potentially claiming land on the seaward side. In reality, their land had been eroded, and these claims are on the existing Government easement areas. Again, the cable will be safer to be laid between the electric posts and the carriage-way, on the land side of the road easement. Thus avoiding unnecessary delays from unmindful claims.

Using and accessing the inter-tidal area for fishing was briefly discussed, but it was ascertained that the impact will be limited to the construction phase. However, care should be taken around the marine cable area.

The issues with usage, specifically accessing inappropriate information by children, was rightfully raised by the women. This is a risk management issue that the women also accepted. Admittedly, they will need assistance and information on how to manage their home internet.

i) Summation:

Given due consideration to the above mentioned factors, particularly land ownership, the order of preference would be BMH 6 (Sansrik Elementary School Lease, *056K01-06 Tofol,* Lelu Harbour), and BMH 1 (International Airport Site, Tafunsak). The distance between the two sites and the land station (Government Administration hub) and associated costs, elevates BMH 6 as the desired option. Granting access and usage of these leaseholds for the beach manhole, and also terrestrial cabling along the easements will be the State Government prerogative. Consultation with the land owner of beach manhole BMH 7 indicates that private land may also be an option, where a suitable easement or lease can be voluntarily negotiated. Therefore, because of the options available for the land based infrastructure, involuntary resettlement and land acquisition can be avoided.

B. TARAWA (KIRIBATI)

1) Land Tenure

The Kiribati land tenure system is encapsulated in six legislations namely, Native Land Ordinance 1956, Gilbert and Phoenix Islands Lands Code, Landowners Taxation Ordinance, Neglected Lands Ordinance, Non-Native Land (Restriction on Alienation) Ordinance 1974, and Native Land (Amendment No.2) Ordinance.

It is vital to note that almost all land in Kiribati belongs to the I-Kiribati, except for the Phoenix and Line Islands, small portions of reclaimed land owned by the Government, and lands belonging to the Catholic and Protestant churches. Further, the I-Kiribati land rights and interests are inherited and can also be gifted (Gilbert and Phoenix Islands Lands Code 1956). Also, for any environmental management and resource conservation effort requires the cooperation of the landowners.

Land ownership is fundamental to the I-Kiribati socio-cultural way of life. Land is owned by families, whom the head has the right to distribute land to its members. In effect, land is a source of power and prestige among local people. Land is still central to communities' socio-political environment, particularly among the older generation.

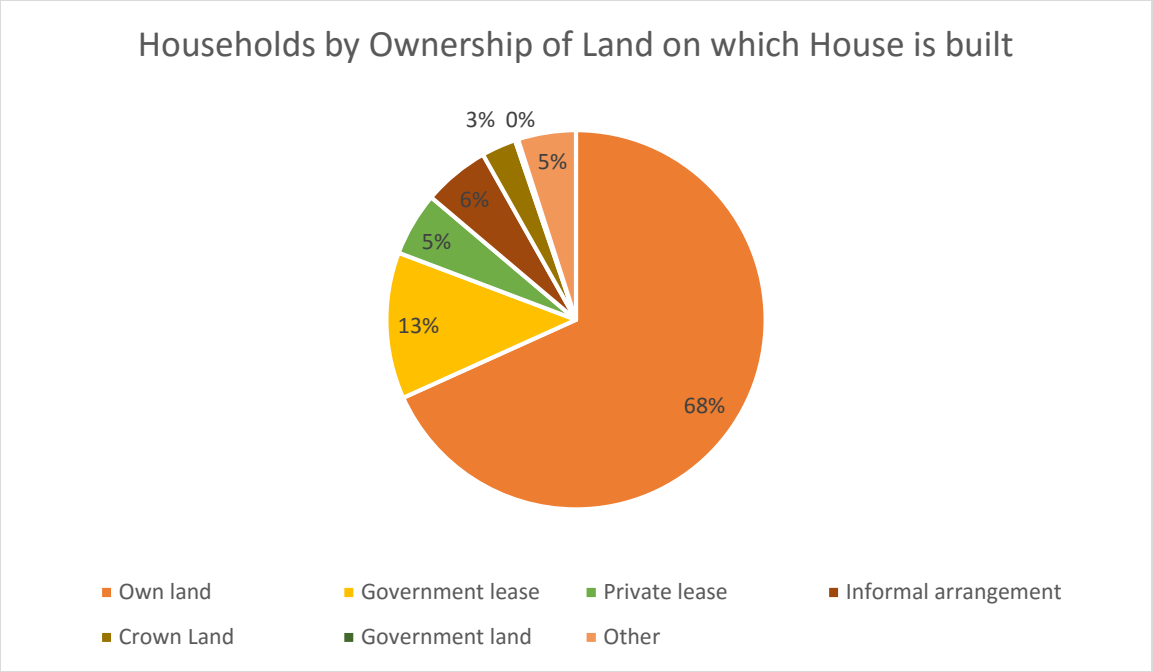
The government only owns land in Kiritimati. Anyway, family members have equal rights to family lands, to use (build) and access (collect produce). Traditionally, land ownership infers ownership of groundwater, provides fishing rights, harvesting rights, and a social security.

A large area of various family lands are being leased by government, businesses, non-government organisations, and churches. In addition, there is still a substantial areas of South Tarawa occupied by internal migrant settlers from other parts of Kiribati.

The government owns some land, namely state land. This is confined to Temwaiku Bight, which is a 200ha reclaimed land. It also leases lands in Betio, Bairiki and Bikenibeu from private landowners.

The Kiribati land tenure upholds the rights of landowners, as stipulated in the Native Land Act; landowners 'controls the use of his property.' Accordingly, the Land Planning Act provides for land use planning in the 'public interest.' It is significant to note that even on Government leaseholds on South Tarawa, the landowner retains the right to veto over applications for sublease on his land. The landowner can either consent or refuse to sign on the planning application form.

Due to the depleted land supply and the tenure situation, a large segment of the urban population either construct their houses illegally or to enter into an agreement (formal or informal) with the land owners to occupy the land. In Betio, Bairiki, and Bikenibeu, some homes and squatter settlements are found amongst shops and offices.



About two third of the 5,584 households in South Tarawa live on land that is owned by their families. One in ten households live on land that is neither owned or leased. These households are built on informal or other arrangements with the landowners. This type of arrangements have no legal or contract basis. However, many land disputes are due to poor informal agreements.

Increasing population within a finite land area like South Tarawa meant that the built areas have encroached on the already vulnerable farming land. Consequently, natural crops such as coconut trees, pandanus, breadfruit, bwabwau (taro), and natural vegetation are fast declining. Most people do not live off their land. Hence rice has become the staple food.

2) The Legal Framework

There is a significant number of legal provisions available within the existing legislations to apply to managing land and conserving the environment of Kiribati. The following table contains what deemed to be relevant for this project.

The Constitution, the Native Land Ordinances 1977, and the State Acquisition of Lands Ordinance 1979, provided for some compensation arrangements in case of involuntary resettlement. This is only applied if those who are resettled have not breached any law. The large number of people who occupy land without proper arrangement, and informal arrangement are not covered. However, the Amendments in 2000 strengthened lands and survey work by defining subdivision. Thus allowing landowners to subdivide a plot of land but subject to the Court's satisfaction. In essence, this aligns the subdivision law with the land sale or lease or sublease provisions.

State acquisition of land(s) is provided for by the State Acquisition of Lands Act 1986. The Republic has the power to acquire land for public purposes by purchasing the freehold or obtaining a lease. Further, the Republic has the power of compelling the surrender of a lease or sublease. However, fair consideration or compensation will have to be paid.

The Republic of Kiribati Constitution	All natural resources of Kiribati vests in the people and Government of Kiribati. In implementing the Constitution, the customs and traditions will be upheld.
Native Land Ordinance 1956	Native lands cannot be alienated to non-native person. Title to native land registered by the Native Lands Commission.
Neglected Land Ordinance 1959	Provides for the purchase of lands that, in the opinion of the Minister responsible, are neglected.
Land Planning Ordinance 1973	Provides for control of land use and development only in areas designated under the Ordinance.
Environment Act 1999	Provides for and establish integrated systems for development control, environmental impact assessment and pollution control. Reduce risks to human health and prevent the degradation of the environment. Protect and conserve natural resources threatened by human activities.
Local Government Act 1984	Provides for building control and town and village planning is the function of Local Council.
Plants Ordinance 1976	Provides for the protection of plants in Kiribati and also for control of plant importation.
Maritime Zones (Demarcation) Act 1983	Establishes Kiribati jurisdiction over an exclusive economic zone. Also, defines international and archipelagic waters and territorial sea.
Foreshore and Land Reclamation Ordinance 1969	Proclaims State ownership over the foreshore and seabed, subject to public rights and navigation.
Laws of Kiribati 1989	Acknowledges customary law that it may be applied to ownership in, over, or in connection with any sea or lagoon area, inland waters or foreshore or reef, or in or on the seabed, including rights of navigation and fishing.
Fisheries Ordinance 1977	Provides for Minister's role in developing the fisheries resources for the full benefit of Kiribati.
Public Utilities Ordinance 1977	Grants exclusive rights over the provision of water in any declared water supply area.
Wildlife Ordinance 1975	This provides for the establishment of wildlife sanctuaries in Kiribati.
Protected Area Ordinance 1957	Provides for the Minister responsible, on the advice of Cabinet, to declare all of any island a prohibited area wherein entry is forbidden without permission.
Closed District Act 1990	Provides for the President, acting on Cabinet advice, to declare closed districts over parts of islands.
Mineral Development Licensing Ordinance 1978	Provides for reporting by prospectors. There is no current legislation to protect national heritage.

3) Land: Station, Sites, and easements

a) The Landing Station (CLS)

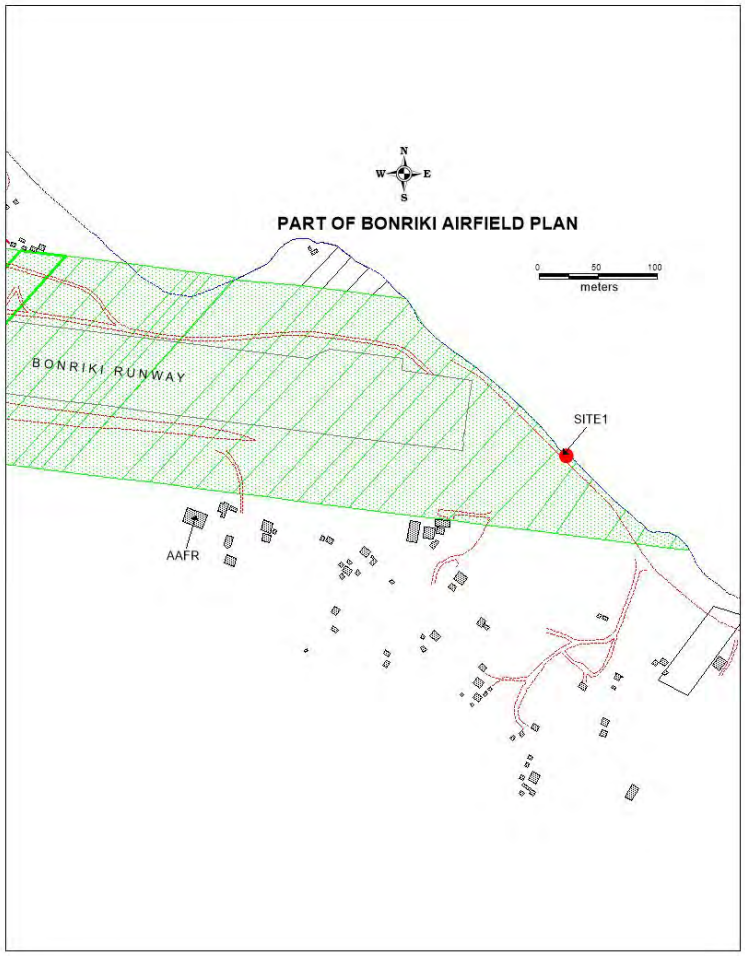
The landing station preferred is located at the ICT Department, Ministry of Communication, Transport, and Tourism Development (MCTTD), Bonriki. The alternatives are the Government facility or the ATH Kiribati facility at Bairiki.

South Tarawa has a unique physical layout, as the islets are interconnected by causeways. This allows one main road easement to traverse through the spine of the islets, from Bonriki to Betio. The Project Manager and the cable supplier will have the final decision on the location of the cable landing station. Essentially, regardless of the CLS location, the terrestrial cabling will be laid in an existing conduit in this easement to connect the beach manhole to the landing station.

b) The Proposed Beach Manhole (BMH) Sites

The Beach Manhole (BMH) landing facility which will likely comprise a small concrete manhole approximately 2m x 2m x 2m. The 4 sites were identified with input from the national government ministries. Given consideration to both potential environmental and social impacts of the project, four sites are recommended, described hereafter. It is noted that the supplier/contractor will finalise the landing site from their perspective and expertise on ocean cable laying.

BMH 1: Bonriki (Airport)



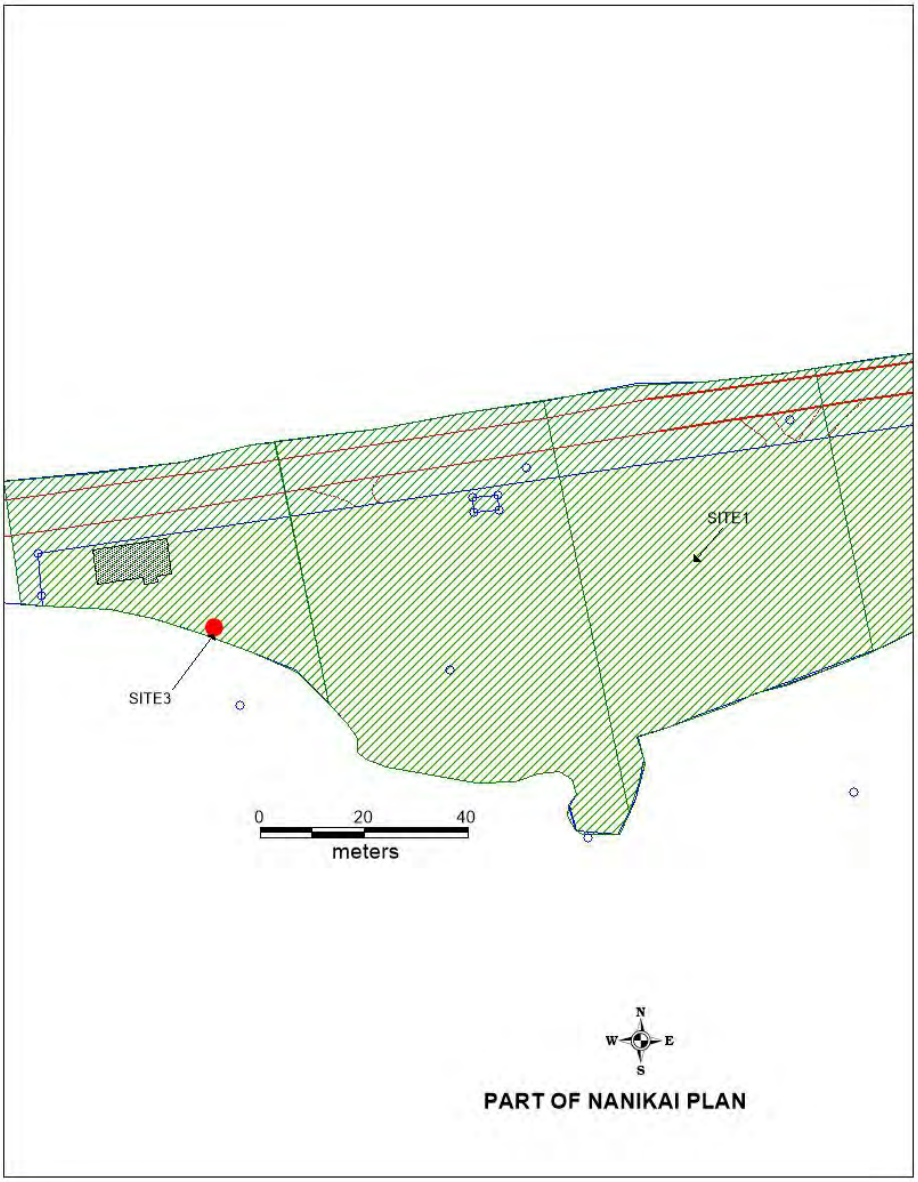
The Green area is the existing Government leased land, within which SITE 1 is located. This is just outside the Airport security fence, and it is a vacant area. Further, connecting to the existing road easement is also accessible without land acquisition. BMH 1 is approximately 27.5 km to the MCTTD at Betio.

BMH 2: King George V (KGV) School

BMH 2 is well within the Government leased land area. It is a vacant spot with easy access to the road easement. There will be no displacement or involuntary land acquisition necessary. The surrounding school activities will only be temporarily impacted upon during the construction phase. BMH 2 is approximately 21km to the MCTTD.

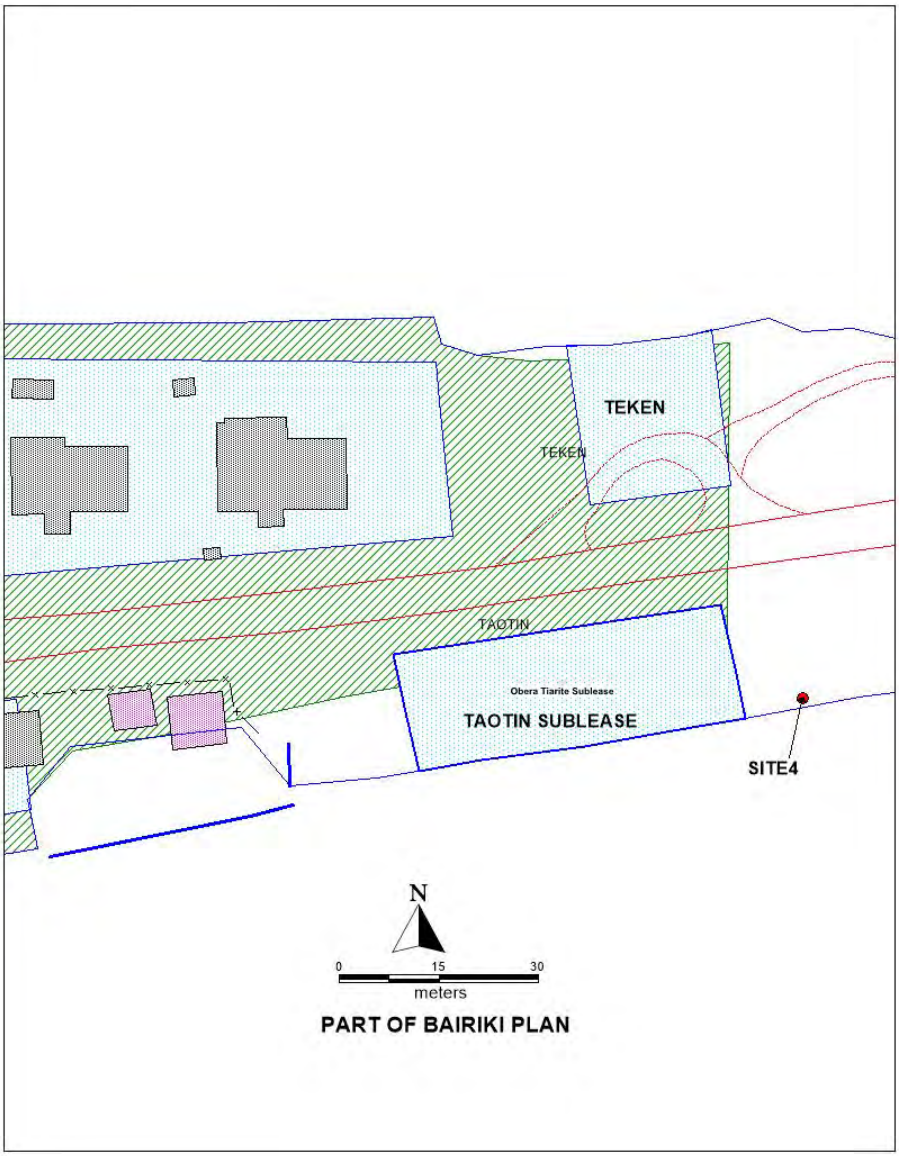
BMH 3: Nanekai (Broadcasting and Publication Aerial)

BMH 3 is on a Broadcasting and Publication Authority (BPA) sublease from Government, which is on Nanekai. There is a radio aerial on the site, but there is no plan to displace such structure to make way for the fiber optic submarine cable landing. No tree vegetation on site except for some grass cover. Residential buildings are well away from this site. This site is approximately 6.5 km from the MCTTD.



BMH 4: Bairiki (Causeway side)

BMH 4 is on the causeway reclaimed land area at east Bairiki. An accretion area is government owned. It does not encroach on the existing subleases or government lease. It is about 5.9 km from the MCTTD.



c) Land ownership:

Government owned land is preferable so that there are no delays to land access agreements. The three sites on Bonriki, KGV, and Bairiki are located on Government leased land areas. The Nanekai site is on a BPA sublease from Government. However, BPA is a government entity that manages and operates Kiribati Radio. There were no issues expressed during consultations if this sublease will be utilised as a landing site.

BMH	Location	Government Ownership
1	End of Airport Runway	*Government still pay the lease. No proper lease agreement.
2	Near King George V and old EBS Library	404/53
3	Eastern side of Nanikai	445/54
4	End of Bairiki towards Nanikai	Accretion land/Government Land

*Note that BMH 1 has a unique arrangement, as confirmed by the Lands Department, Government is leasing the land and pays rent, but there is no lease agreement.

Given the Government ownership of the potential sites, any displacement of people or land acquisition is not necessary. However, Site 1 has disadvantaged based on the absent of a proper lease agreement. Thus leaving Sites 2, 3 and 4, as the preferred site for the beach manhole. In effect, the selected site will be subleased to MCTTD to allow access and ownership of the site.

d) Right of Way:

The existing road easement and road network upgrade almost completed, with an inbuilt conduit readily available, is a major advantage for this project. There are no land access issues foreseen.

e) Protected Areas:

Kiribati has a number of protected areas, none of these occur near or where the project construction is planned.

f) Terrestrial ecosystems:

Site 1 Bonriki and Site 3 Nanekai, have no vegetation, except for some grass cover.

Site 2 KGV and Site 4 Bairiki, have a few trees within the vicinity, but no vegetation removal required.

g) Socio-economic environment:

All four sites have no crops or are not suitable for subsistence farming at all. On the sea side, the common practice of reef fishing will only be affected temporarily (construction phase). There will be no harvesting of organisms in any aspects of this project.

h) **Historical and Anthropological environment:**

During World War II, Betio was a fortified islet and the battlefield for the 1943 Battle of Tarawa. Over seven decades later, there are still unexploded ordinances spread across the islet coastal areas. This is one of the reasons that Betio islet was not considered for this project. Further, fallen soldiers missing in action are believed to be either buried or located around the islet. In similar fade, Butaritari islet also experienced the violence of WWII. This was not the case with regards to the islets of Bairiki, Nenkai and Bonriki, where the proposed landing sites are located. Further, the proposed sites do not encroach or part of any known historical or anthropological sites.

i) Public Consultation Feedback:

Due to the current land tenure, and WWII history, the proposed sites were generally accepted as potential location for the landing site.

The public needs for the project, as potential improvement of the existing internet and communication services, was overwhelming. Strong support from both the Government and Non-government entities were evident.

Kiribati has a large contingent of its population overseas, and communication is an important part of their daily lives. Therefore, the perception of an accessible and affordable service, such as the fibre cable, is accepted with minimal resistance.

The concerns were generally around the impact on the fisheries, potential costs, and social impacts. The importance of fishing to the people of Tarawa was evident, as some raised concerns of potential impacts of the fibre cable on fish. However, explanations and evidences quickly dowsed down these concerns.

Using and accessing the inter-tidal area for fishing was briefly discussed, but it was ascertained that the impact will be limited to the construction phase. However, care should be taken around the marine cable area.

The potential costs to the people of this fibre cable service was justly raised as a concern. However, people accepted the fact that it will depend on the Kiribati Government and the selected operator for the cable. This was beyond the scope of the team anyways.

The concerns with respect to the social impact of this project were a subject matter of discussions. The disproportionate in terms of knowledge and information between different age groups, and also gender, was highlighted. Women and children, were seen as the most vulnerable people to the negative impact of the fast internet. Overall, the need for a public awareness and information assistance, from government for example, was apparent.

Government, with regards to ICT capacity and infrastructure development, has to progress well ahead of the landing date.

j) Summation:

Given due consideration to the above mentioned factors, particularly land ownership, the order of preference would be BMH 4 (Accretion Area, Government owned), and BMH 3 (Nanikai), BMH 2 (near King George V), and BMH 1 (end if runway, Airport). Given that the road, and associated easement, traverse the whole atoll (Bonriki to Betio), there is ample areas for connecting the beach manhole and the landing station. Granting access and usage of these leaseholds for the beach manhole, and also terrestrial cabling along the easements will be the State Government prerogative. The limited area for developing a landing station at Betio may promote Bairiki as the landing station location. In this case, BMH 4 and BMH 3 may be the better option. It is noted that the cable supplier may have the final input in finalising the BMH. Overall, involuntary resettlement and land acquisition will not be necessary.

C. NAURU

1) The Nauru Land Tenure

Nauru is surrounded by a fringing coral reef ranging from 120m to 300m wide, which drops away sharply on the seaward edge to a depth of approximately 4,000m. The raised central plateau (Topside) generally lies between 20-45 meters above sea level with occasional elevations of up to 50-70m. The central plateau is approximately 1600 ha (over 70% of the island). This area has been extensively mined and now inhabitable.

In 2011 the population of Nauru was 10,084 (5,105 males and 4,979 females) (Bureau of Statistics, 2013), with an average annual growth rate of 1.8. It is however noted in the census summary, that the current population growth rate is higher than reflected as the Nauru fertility rate is increasing and should therefore result in the nation's growth rate of around 2.8 percent a year. Life expectancies is rather inferior compared to New Zealand. The Nauruan males and females are 57.5 and 63.2 years respectively. Similar to neighbouring Pacific islands, life style diseases is the main reason (Bureau of Statistics, 2013).

The long history of phosphate mining the "Top side" of the island, at least 70 percent of the island is deemed uninhabitable and unsuitable for any kind of livelihood. Consequently, majority of Nauru's population is concentrated along the coast with many settlements along the coastline resulting in a population density of over 1,500 persons per km^2 (Nauru Bureau of Statistics, 2013). This has considerable implications and consequences for sustainable land and water management, in terms of the availability and suitability of land and water for future settlement.

Nauru has an estimated land area of 21 km^2. The land is customary land, and is owned by Nauruan individuals and/or families and subsequently can be leased but not sold to non-Nauruan's.

> "(2) Any person who transfers … the freehold of any land in Nauru to any person other than a Nauruan person shall be guilty of an offense; (3) Any person who, without the consent in writing of the President, transfers, sells or leases, or grants any estate or interest in any land in Nauruans…is guilty of an offense" s3 Lands Act 1976.

The government has acquired small parcels of land for its own but in general all government infrastructures are located on leased land. Unfortunately, agricultural plays a minor role in both subsistence and cash economy, and people rely on imported goods.

Majority of land believed to be held by individuals as un-severed separate shares of portions of land held originally by families or individuals. Collective ownership of customary land means that both male and female. Nauru is one of the countries that has homogeneity custom of indigenous people. Unlike other countries, Nauru has customary land but not customary chiefs. Instead, there is a Land Committee is appointed by Cabinet. Part of this Committee's purpose is to apply the principle of "just terms" as provided by the law on land acquisition for public purpose. The Land Committee is the adjudicating authority on land ownership and disputes in Nauru.

2) The legal framework

Nauru's phosphate mining history has left 70% of the island inhabitable. This is primarily in the interior of the island, commonly known as the "Top Side." Consequently, the population is concentrated along the coastline areas, with a population density of 1,500/km^2 (Nauru Bureau of Statistics, 2013). The pressure on both land and water resource management not only for today but for the future is increasingly critical.

The long-term management of the islands remaining terrestrial resources is paramount for Nauru's future. The need to rehabilitate the degraded interior land and sustainable use of its coastal resources are critical for sustaining and improving Nauruan's quality of life.

There is a significant number of legal provisions available within the existing legislations to apply to managing and conserving the environment of Nauru. The following table contains what deemed to be relevant for this project.

Constitution of Nauru 1968	Provides the basis for Nauru's government and legal authority.
Lands Act 1968	This act ensures proper leasing arrangements and specifically requires rehabilitation of extracted or mined areas.
Lands Act 1976	Repealed Lands Ordinance (1921-1968), and made provision for the leasing of land for the purpose of phosphate industry. For other public purposes, removal of trees, crops, soil, and sand, and payment of compensation respectively.
Land (Declaration of Ownership) Ordinance 1962	Provision for compensation to Nauruans landowners who were not compensated for phosphate mined from the German Wireless Station land area.
Land Committee Act 1956	Established the Nauru Land Committee to determine questions on ownership and rights in respect of land where issues involve Nauruans and Pacific Islanders.
Customs and Adopted Laws Act 1971	Provisions relating to the institutions, customs, and usages of Nauruans, and adopted laws.
Sea Boundaries Act 1997	This demarcates Nauru's sea boundaries and maritime zones and declares the rights of the Republic of Nauru in these zones.
Wild Bird Protection Act 1937	Prohibition on taking of magpies, snipe, quail, Nauru canneries, and noddies.

Agricultural Quarantine Act 1999	Provides for the protection of plants, animals and public health. Also the protection, development, and utilization of the natural resources and the environment by preventing introduction and spread of diseases and pests.
Fisheries Act 1997	Established the Nauru Fisheries and Marine Resources Authority to manage, develop, conserve and protect the fisheries and marine resources of Nauru.
Nauru Antiquities Ordinance 1935	Provides for the protection of the Nauru antiquities, relics, curios and article of ethnological and anthropological interest and scientific value.
Telecommunication Act 2002	Provides for establishment, maintenance, operation and retaliation of telecommunication services in, to and from Nauru.
Public Health Ordinance 1925-1967 Health (Eatinghouse) Regulations 1974	Provisions for safety of the public health of Nauru.
Criminal Procedure Act 1972	This is relevant to any criminal prosecutions which may be undertaken in relation to offenses against any environment law.
Criminal Justice Act 1999	Provisions for appropriate penalties to be applied for persons committing littering and other offenses which affect the environment.
Nauru Rehabilitation Corporation Act 1997	This affords specific provisions for the rehabilitation works in Nauru.
Port Authority Act 2006	Establishes the Port Authority with vested powers that covers the marine environments.
Litter Prohibition Act 1983	Provides for abatement of litter.
Animals Regulation 2000	Extends the provisions of the Animal Act to include most other animals.

In Nauru, where most of the land is customary, Government can only lease lands. Noting that Nauru is the only Pacific country that has no legislation that allows Government to force a landowner, including customary owners, to transfer ownership to the government. Landowners consent is paramount and Government has to prove 'just terms'. Negotiating new leases by Government for public purposes can be lengthy and tedious. Leasing customary land by Government requires government management efficiency

and prompt rental payments. Further, all land transfers, sales or leases, or grants any estate or interests in, any land in Nauru must consented to by the President. The Constitution (s26) and the Lands Act 1976 provides for Nauruans rights to land. The Lands Act provides for compensation in case of involuntary resettlement, as a result of successful negotiations acquiring land through leasehold. Also, the fees for compensation are prescribed under the schedules of the Act.

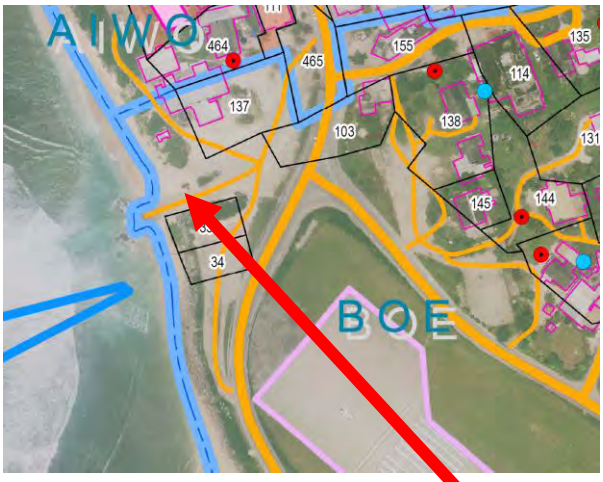
3) Land: Station, Beach Manhole Sites and Easements

a) The Landing Station

The Cable Landing Station will be at the ICT Building at Yarren, which is on the Government compound, under an existing Government lease.

b) The Proposed Beach Manhole Sites:

There were two sites identified with the assistance and input from the relevant ministries, led by the ICT Department. A Beach Manhole (BMH) landing facility which will likely comprise a small concrete manhole approximately 2m x 2m x 2m.



BMH 2: Boat Ramp, Gabab

BMH 1: Government Compound.

The two sites were put forward primarily for the land status; perceived as government leased or owned. Thus avoiding the lengthy process of accessing and securing rights for the Government to use privately or family owned land.

The coastal location is also a major factor, as both sites are near the coastline. Nauru has advantage because the island has deep sea near shore. The fact that both sites are vacant, as there are no building structure or crops or vegetation that needed removal.

c) Land ownership:

In light of the fact that Government has existing leaseholds for its administrative sites and buildings. The preferred sites (BMH 1 and BMH 2) are detailed below.

BMH 1: Government compound, LOT 58, Yarren

This is an existing Government leased area, and currently occupied by Government, and commonly known as the Government compound.

Accessibility and security are deemed vital, as this is a national asset. BMH 1, present the better option, as it is on government lease, secured, and easily accessible.

BMH 2: Public Boat Ramp, Gabab

This site has a boat ramp with an open parking area. This is a vacant area between land allotment 33 and land allotment 137, according to the map provided. There is a risk of the site being claimed either by an individual or family under the customary provision. Further, locals vouched that it is not uncommon occurrence for unpredictable high wave to cause damages during heavy weather.

Any impact on the local fishing and boating activities will be limited to the implementation phase where there will be restrictions around the cable.

d) Right of Way:

The project will definitely use existing government right of way to land and bring the fiber optic cable to the landing station.

There is an existing fibre optic cable that connects the Government administrative offices on Yarren. These cables are partly secured to the electric posts, and partly buried, along the road easements. There is already a plan to extend this cabling to cover the whole island. In effect, the existing road easements can be utilised for terrestrial cabling purposes.

Given the fact that the Landing Station will be at the ICT Building, which is on the Government compound, it is sensible for the beach manhole to be located on BMH 2.

e) Protected Areas:

Nauru has a number of protected areas, none of these occur near or where the project construction is planned.

f) Terrestrial ecosystems:

BMH 1 Yarren, is a built Government compound, and has no vegetation except for some grass cover.

BMH 2 Gabab, has no grass cover, except for a few young ironwood trees (secondary coastal vegetation).

g) Socio-economic environment:

The two sites have no crops or are not suitable for subsistence farming at all. On the sea side, the common practice of reef fishing will only be affected temporarily (construction phase).

h) **Historical and Anthropological environment:**

Given the history of Nauru, there are historical WWII around the island. However, the proposed project sites, BMH 1 Yarren and BMH 2 Gabab, do not encroach or impact upon any historical sites.

i) Public Consultation Feedback:

Stakeholder meetings and public consultation was held during the field trip to Nauru (30th October – 2nd November 2016). Stakeholders include both government and non-government, and covers environment, conservation, legal, gender, youth, women, and NGOs. The views and perceptions reflected the multi-facet of this project within the Nauruan society.

The technological gap between the young generations and their parents were evident. Rightfully asserted, public awareness and education were raised as a natural prerequisite to the implementation phase. This will be a necessary component of managing the risk of opening Nauru to the global network.

The proposed project has great potential for Nauru. However, the legal framework and local infrastructure must be developed leading up to the fiber optic submarine cable landing date. Thus allowing the people and government of Nauru to fully utilised the cable. Freedom of speech is embedded in the Constitution. However, internet freedom is still an area that requires further development. In fact, that Cyber Crime Act passed in May 2016, which certainly will help monitoring and managing the internet.

The potential negative impact both on the environment and the people's lives were perceived to be nil. On the other hand, the positive impacts were overwhelmingly expressed. Either way, these views are considered vital component of this assessment. Evidently, the perceived positive impact far outweighed any negative impact.

j) Summation:

Given due consideration to the above mentioned factors, particularly land ownership, the order of preference would be BMH 1 (Government Leasehold, Yarren) over BMH 2 (Boat Ramp, Boe). Given that the road, and associated easement, is currently being utilised for terrestrial cabling, there is no limitation on siting the beach manhole as suppose to the location of the landing station. Granting access and usage of BMH 1 will be the Government's prerogative. Overall, involuntary resettlement and land acquisition will not be necessary for BMH 1 (Yarren).

There are no IR impacts identified on all three countries, the BMH sites have been identified on land either owned or leased by the respective governments, or on private land where voluntary land access may be possible. The landing locations are flexible and therefore compulsory acquisition of beach manhole sites

can be avoided. The right of ways for all terrestrial cables are within existing government right of ways. Cable Landing Stations are all located within government buildings.

Government land is prioritised because the access arrangements are more simply to arrange as supposed to private or customary land.

V. NEXT STEP

The disproportion of understanding and skills with regard to the internet technology was apparent in all three recipient countries. This is noticeable between the young and older generations, and gender.

Unlike the developed countries, Pacific people often identify and perceive life through a collective perspective, and not necessarily as an individual. Hence, the connectivity between individuals, families, and communities through this new platform (internet) is appropriate. It is when this new platform of interconnectedness challenges the cultural and traditional values, and religious principles, that issues are experienced and difficult questions had to be answered.

Each of the government ICT departments should consider ushering in the cable technology with more methodical public awareness and gender sensitive information programs. Each countries respective societies should be better prepared and better grasp this technological advance. Within the unit of society (household), parents should have the understanding and ability to manage home internet usage. Appropriate usage for the purpose of betterment of education, economy and health, will lead to extensive socio-economic benefits.

In parallel, similar awareness and information program tailored for the government institutions, and the private sector, is also necessary. Private and small businesses should better equipped and realign their business plans accordingly.

Furthermore, respective governments have to be better prepared (legal framework, policies, internal operations, infrastructure) in order to fully realised the benefit of the fibre optic technology. This project provides the platform for providing an integrated public service, especially integrating policies and social services.

The cable supplier will have the concluding input into the final selection of BMH on each country. However, the recommended sites for due consideration are as follow:

Kosrae (FSM)

Kosrae (FSM) are BMH 1 (Airport, Tafunsak) and BMH 6 (Sansrik Elementary School, Tofol). These sites are existing Government leaseholds and infrastructure can be laid without disturbing current land uses, thus involuntary resettlement and land acquisition are not necessary. Terrestrial cabling from the beach manhole from either site to the landing station can be installed along the existing road easement.

The State of Kosrae can acquire land for public purpose without consent of the interested party, but compensate the landowners the fair amount. Further, any transfer of lease or sublease or any part thereof, needs the prior consent of the lessor. This is not necessary in light of the recommended sites. However, the lease agreement on BMH 2 will require review, as the lease purpose will include

communication as supposed to education. This may require the landowner's consent. In light of this, BMH 1 (Airport, Tafunsak) may be the best option.

Kiribati

Kiribati (South Tarawa) are BMH 1 (Airport, Bonriki), BMH 2 (King George V School, Bukenibeu), BMH 3 (Nanikai), BMH 4 (Bairiki). All sites are government leaseholds, thus resettlement and land acquisition are not necessary. All sites can be connected to the landing station, either Betio or Bairiki, via the existing duct along the road easements.

The Lessee (Government) or Sub-Lessee (state owned enterprise) can either transfer the lease or sub-lease, or sub-lease the lease, with the approval of the Minister. Further, the Minister's power can be delegated to the Chief Lands Officer, when the land allotment is under 10 acres. In the case of native leases, it shall be approved by the Land Court. Any of such lease transfer or sublease must be registered in the Leases Register or Sub-Leases Register respectively.

Nauru

Nauru is BMH 1 (Government compound), which is a government leased area. There is no need for resettlement and land acquisition. Existing road easement can be used for terrestrial cabling.

The leasing of land for public purposes is under the authority of the Minister. Since this is an existing Government leasehold, it is advisable to inform the Minister in writing seeking Cabinet approval. The Lessee (Government) can consent to implement the project (beach manhole and landing station) on its property.

Appendix 1: KOSRAE CONSULTATIONS

SOCIAL SAFEGUARD CONSULTATION. October 18, 2016		
Bank of Guam	Gwendolyn E Nicolas Assistant Vice President Branch Manager	• Bank operation hindered by limited and slow internet • At times staff had to stay on until late at night, in order to complete transactions & transmitting to Main Branch (Guam) • Services available are also limited due to slow internet • Products offered can be expand and delivered with a better internet • We are happy to express our support for this project
FSM Bank	Lynn Langu Assistant Branch Manager	• Had to work long hours some days to complete work needed because of the slow internet • Relaying information to and from Pohnpei can be frustrating • Mobile banking is a real possibility, if the fibre optic cable provides us with fast internet • There is real need for this project in Kosrae
FSM ACE	Smith Sigrah Kosrae Manager	• Businesses like ours do need this for our website and dealing with customers • Doing business on the internet can be slow and impacts on our business operation. • It can be difficult to relay finance information with our head branch in Pohnpei • We need a better and faster internet • It is necessary to invite you to address the Commerce Board this Thursday
Lelu Municipal Government	Ben Jesse Mayor	• Appreciate this, for including our office in your consultation. • To me, our work in this municipality will definitely benefit from this project. • We need to inform and raise public awareness in a timely manner. This is difficult with the existing internet. • May be a chance for our people to do courses online in Hawaii or the States. • We support whatever happens. If this cable lands on our municipality, that is great. If not, we still support it.
19 October, 2016		
Utwe Resident	Simon Lak Former Mayor	• This is a good chance for our people • Contacting our family members overseas is important for us
Utwe Resident	Aluk Levi Former Mayor	• We need better internet to contact our family members overseas • About time to see this new technology implemented in Kosrae • No issues with landing the cable here

Utwe Municipal Government	Truman Waguk Mayor	• Hoping that the cable lands here in Utwe • We need better communication/internet for our local people • Support this and will talk to local people about this new project • Utwe seemed to be always the last to get these type of developments. Anyway, it is good because we get the best projects result, because we get it with lesson learned from other municipalities, like the water system. • See no real issue with our local fishing activities • The sooner the better
Malem Resident	Malon Talley Church Pastor & Youth Leader	• Built a Gym for the youth; to give them something to occupy their time with, otherwise they will drift into drinking etc. The local school is also using this gym as well. • We have a vision and program that includes a Youth Centre, as an extension of our gym. This requires a better internet; kids can do research or distant learning. • This project is what we need. • Also need better communication with our families overseas; this is important to us locals.
Ahmadiyya Muslims Community	Imam E.M. Kauser Religious Minister	• It is now difficult to communicate with our head quarter in London. • Sometimes we need to pay our orders from ACE but cannot, as such service (eftpos) is not available. We had to carry large cash to do that, and that is not advisable for anyone to carry large cash around. • Predecessor used to go to either Treelodge or Nautilus and stay there the practically the whole day, so he can access the internet. • We cannot access the Muslim television now, but that is a important part of our operation. • We pay the maximum package, but the access we received is not consistent. • We note the negative impacts of such internet capability but these are insignificant comparing to the benefits we will have. • We support this project; and we will arrange for the Kiribati counterpart to meet you.
Kosraean Women Association	Salorne Mast (President) Masy Livae Merbina Nena Brnisda Nakumura Jenny Seymour Hetty J Palik Tamoe E Ylaguk Priscilla Labonete Rose K Sigrah	• President welcomes the opportunity to be involved and to hear about the project. • Concerns with the exposure of youths to the negative impact of the internet. • Some mothers/women are rather better prepared than most to receive this new technology and exposure. In fact, most do not fully comprehend this exposure, and kids are better versed with the internet. So hard for mothers to monitor kids' activities over the internet, especially with the kind of exposure this technology will bring.

		• As mothers, this will be another role for us, making sure that the new internet is used properly. However, support will be needed to inform/educate or prepare us for this technology. • Interests raised about who will be managing or in charge of this cable. • We can see the capacity and speed of this technology, but there is a need to guarantee that the rates will be affordable.
20 October 2016		
Community Consultation	Senators Members of public Business	• Need to know who fund this project • Concerns with maintenance of this cable ('Warranty') • Impact on fish and sea creatures • Telecom need to negotiate their role with regards to this cable • Highlight the role of Municipal stakeholders
Chamber of Commerce	Business owners	• Keen to see this project completed • Liberalisation of communication is welcomed • Noted that the road at Utwe will move inland due to continuous erosion of the existing road • Keen to see more than one operator (competition) • Expected the rates to be much cheaper

Appendix 2: KIRIBATI CONSULTATIONS

Tarawa Consultations		
25 October 2016		
Amalgamated Telecommunication Holding Kiribati	Kamleshwar Sharma CEO	• ATH supports the concept • ATH wants to contribute to the process • Happy to provide any technical information, but need a written request
	Arobati Teamako A/Manager Earth Station	• This is a new technology to us
Ocean Link		• Difficult to access and compete with ATHK • Need to have the cable accessible to private operators • Difficulty in interconnection between two operators • Keen to see who is going to manage the cable • Operator of the cable must be independent of the current operators (fair competition)
Women Development	Bairee. Beniamina. Officer in Charge	• Communication is vital for women; especially with families within Tarawa, and with those overseas. • Issue now is the "bad image" being downloaded and shared by kids. • Children's' time being spent on phones, laptops, tablets is an issue with their school work. Imagine if the fibre cable will allow faster internet. • We are aware that teachers have found pornographic materials in student's phones.

		• Some students pretend to do school work but they spend school time on their phones or internet. • Better communication will allow us to share information with communities, especially community development information. • We need to manage this new technology through some kind of program for the public.
NGOs	Uriam. Robati. Senior NGO Officer	• We have almost 300 NGOs registered with us; and there is more being set up and seeking help on how to incorporate their NGO. • Main concern is that we need more public information on this type of new technology. • Our people should be aware and have some understanding. • There have been some issues with the current project being implemented by McDowell: some people vandalise it because there were no consultation, awareness, and information for the local people (community). • Appreciate that you start by informing us. I hope that the public awareness and information will continue on so that local people, especially those who are less fortunate, to know and understand this new project.
Social Welfare	Tabotabo.Auatabu. Principal Social Welfare Officer	• We are aware that internet has some negative influence on people. • The most vulnerable in this type of development is our children. They access to a fast technology, with little guidance. Be mindful, that some parents have less knowledge of this internet technology. That make it difficult for them and the kids. • There is a need for more consultation, so that people are fully aware of this new technology. They will need help to manage the risks that this will bring to their homes. We will liaise with the Ministry of Communication on this important issue. • There is a need to have some kind of protection for our kids. Either, educating the parents or have some program, like parent lock, so that parents can manage the internet usage in their homes. • Adults, also need some protection with this new internet technology.
26 October 2016		
MOEL	Uataake Terite Technical Office Barnabas Iotiabata IT Technician	• Internet only service • Concerns with cable management and operator (independent) • Good timing for us to review our satellite contract • Will build in the cable into our next business plan • We would like to be involved in the planning with Government
28 October 2016		
EcoCare		TO ADD

Environment and Conservation Division		TO ADD
KANGO	Tereeao Teingiia President	
29 October 2016		
Ahmadiyya Muslim Community Tarawa	Imam Khawaja Fahad Ahmad	• Long overdue for Kiribati to have a reliable internet • Current internet is expensive • Communicating with our headquarter is vital • We provide basic education service for local people, and we need good internet • Better internet will allow us to expand our community education service

Appendix 3: NAURU CONSULTATIONS

Nauru Consultations		
31st October – 2nd November 2016		
Lands & Survey	Penisasi Nakautoga	• Land survey has been done for most claims • Support by providing the necessary information
Youth Affairs	Lavinia Akken	• Youth are very well familiar with the internet • Youth are fast learner in using the internet • Issues with accessing and distributing inappropriate images • Work hindered by unreliable internet service
Culture Affairs	Riverina Scotty	• We feel like we are isolated • Need to expose our cultural products to a wider market • We need more visitors and tourists
Child Protection	Krystelle McKenzie	• Children are vulnerable especially with this coming technology (exposure)
Justice & Border Control	Filipo Masaurua Stella Dubriya Daron Adeang	• Rights: Peoples rights to have equal access to this service at an affordable cost • The project should be gender sensitive, especially the women and children (rights and protection) • Issues as of date will worsen of there are no appropriate measures to protect and manage the potential risks of this technology
Department of Commerce, Industry, and Environment		• Presentation and Briefing on the project • Potential location discussed with no issues raised
Eco Nauru	Tyronne Deiye	• Established but currently applying for funds, such as the GEF Small Grant • Our team is well equipped (experience and knowledge) to do conservation and environmental work
Public Meeting		• Interests on the cable project was evident • Keen to access a more reliable and affordable internet service • Open and fair competition will benefit people

		• Government need to alert land owners of their utilising the leasehold for the cable. There should be not issue, a matter of courtesy. • Interested to know who funds the project. Glad to know it is not paid by the Government.

GOVERNMENT ACCESS USE RIGHT
PRIMARY ROAD EASEMENT/STATEMENT OF INTENT (SI)

(OKAT TO YEMAK SECTION, TAFUNSAK MUNICIPALITY)

Document No.	Parcel No.	Section Name	Type of Use Right	Date of Use Right	Width Use Right	Original Landowner	Person Signed Use Right	Expiration Date
LM-TPRE-72-0001		Okat Road	Easement	5/30/1972	60'	Tulensru Seymour	Tulensru Seymour	Indefinite
LM-TPRE-72-0002		Okat Road	Easement	5/30/1972	60'	Tulensru Tolenoa	Tulensru Tolenoa	Indefinite
LM-TPRE-72-0003		Okat Road	Easement	5/30/1972	60'	Teroa Tolenoa	Teroa Tolenoa	Indefinite
LM-TPRE-72-0004		Okat Road	Easement	5/30/1972	60'	Stephin Kinere	Stephin Kinere	Indefinite
LM-TPRE-72-0005		Okat Road	Easement	5/30/1972	60'	Singeo Nena	Singeo Nena	Indefinite
LM-TPRE-72-0006		Okat Road	Easement	5/30/1972	60'	Seymour Celab	Seymour Celab	Indefinite
LM-TPRE-72-0007		Okat Road	Easement	5/30/1972	60'	Samson Johnithan	Samson Johnithan	Indefinite
LM-TPRE-72-0008		Okat Road	Easement	5/30/1972	60'	Palokoa Joe	Palokoa Joe	Indefinite
LM-TPRE-72-0009		Okat Road	Easement	5/30/1972	60'	Paliksru Peter	Paliksru Peter	Indefinite
LM-TPRE-72-0010		Okat Road	Easement	5/30/1972	60'	Notwe Peter	Notwe Peter	Indefinite
LM-TPRE-72-0011		Okat Road	Easement	5/30/1972	60'	Nena Tolenoa	Nena Tolenoa	Indefinite
LM-TPRE-72-0012		Okat Road	Easement	5/30/1972	60'	Moses Widmer	Moses Widmer	Indefinite
LM-TPRE-72-0013		Okat Road	Easement	5/30/1972	60'	Mark Jim	Mark Jim	Indefinite
LM-TPRE-72-0014		Okat Road	Easement	5/30/1972	60'	Lupalik Palsis	Lupalik Palsis	Indefinite
LM-TPRE-72-0015		Okat Road	Easement	5/30/1972	60'	Lonno P. Joe	Lonno P. Joe	Indefinite
LM-TPRE-72-0016		Okat Road	Easement	5/30/1972	60'	Likiaksru P. Joe	Likiaksru P. Joe	Indefinite
LM-TPRE-72-0017		Okat Road	Easement	5/30/1972	60'	Kun Arriola	Kun Arriola	Indefinite
LM-TPRE-72-0018		Okat Road	Easement	5/30/1972	60'	Jack K. Jack	Jack K. Jack	Indefinite
LM-TPRE-72-0019		Okat Road	Easement	5/30/1972	60'	Alokoa Palokoa	Alokoa Palokoa	Indefinite
LM-TPRE-72-0020		Okat Road	Easement	5/30/1972	60'	Kun Palokoa	Kun Palokoa	Indefinite
LM-TPRE-72-0021		Okat Road	Easement	5/30/1972	60'	Inus Albert	Inus Albert	Indefinite
LM-TPRE-72-0022		Okat Road	Easement	5/30/1972	60'	Hosea Saimon	Hosea Saimon	Indefinite
LM-TPRE-72-0023		Okat Road	Easement	5/30/1972	60'	Celab Jackson	Celab Jackson	Indefinite
LM-TPRE-72-0024		Okat Road	Easement	5/30/1972	60'	Allen Mackwelung	Allen Mackwelung	Indefinite
LM-TPRE-72-0025		Okat Road	Easement	5/30/1972	60'	Alik Palsis	Alik Palsis	Indefinite
LM-TPRE-72-0026		Okat Road	Easement	5/30/1972	60'	Augustin Luke	Augustin Luke	Indefinite
LM-TPRE-72-0027		Okat Road	Easement	5/30/1972	60'	Daniel Seymour	Daniel Seymour	Indefinite
LM-TPRE-72-0028		Okat Road	Easement	5/30/1972	60'	Fanry Albert	Fanry Albert	Indefinite
LM-TPRE-72-0029		Okat Road	Easement	5/30/1972	60'	Alokoa Seymour	Alokoa Seymour	Indefinite
LM-TPRE-72-0030		Okat Road	Easement	5/30/1972	60'	Likiaksru Lazeres	Likiaksru Lazeres	Indefinite
LM-TPRE-72-0031		Okat Road	Easement	5/30/1972	60'	Heinrich Iriarte	Gray Tolenoa	Indefinite

(YEKASUK TO INKOEYA SECTION IN TAFUNSAK MUNICPALITY)

Document No.	Parcel No.	Section Name	Type of Use Right	Date of Use Right	Width of Use Right	Original Landowner	Person Signed Easement	Expiration Date
LM-TPRS-77-0048		Yekasuk, Taf	SI	1/28/1977	60'	Kufus Alik	Kufus Alik	Indefinite
LM-TPRS-77-0049		Yemak, Taf	SI	2/14/1977	60'	Rosa K. Albert	Rosa K. Albert	Indefinite
LM-TPRS-77-0050		Yemak, Taf	SI	1/28/1977	60'	Samson Janathan	Samson Janathan	Indefinite
LM-TPRS-77-0051		Yeitua, Taf	SI	1/28/1977	60'	Lupalik Nithan	Hamilton Jackson	Indefinite
LM-TPRS-77-0052		Yeitua, Taf	SI	2/4/1977	60'	Teroa Tolenoa	Teroa Tolenoa	Indefinite
LM-TPRS-77-0053		Yeitua, Taf	SI	1/28/1977	60'	Nena Tolenoa	Nena Tolenoa	Indefinite
LM-TPRS-77-0054		Yeitua, Taf	SI	2/4/1977	60'	Tulensru Tolenoa	Tulensru Tolenoa/Risin	Indefinite
LM-TPRS-77-0055		Yeitua, Taf	SI	1/28/1977	60'	Lupalik Palsis	Lupalik Palsis	Indefinite
LM-TPRS-77-0056		Yeitua, Taf	SI	2/9/1977	60'	Kilafwasru Tulensru	Espil Tulensru	Indefinite
LM-TPRS-77-0057		Yeitua, Taf	SI	1/28/1977	60'	Kilafwa N. Jackson	Kilafwa N. Jackson	Indefinite
LM-TPRS-77-0058		Kalo, Taf	SI	1/28/1977	60'	Paliksru Peter	Paliksru Peter	Indefinite
LM-TPRS-77-0059		Kiokat, Taf	SI	1/28/1977	60'	Russel Ned	Russel Ned	Indefinite
LM-TPRS-77-0060		Kiokat, Taf	SI	2/4/1977	60'	Nena Sigrah	Nena Sigrah	Indefinite
LM-TPRS-77-0061		Kiokat, Taf	SI	2/14/1977	60'	Kiyus Jackson	Kiyus Jackson	Indefinite
LM-TPRS-77-0062		Kiokat, Taf	SI	1/28/1977	60'	Kun Jackson	Kun Jackson	Indefinite
LM-TPRS-77-0063		Puluntaol, Taf	SI	1/28/1977	60'	Nemaiya Tulensru	Nemaiya Tulensru	Indefinite
LM-TPRS-77-0064		Finsnilang, Taf	SI	2/4/1977	60'	Palik Asher	Palik Asher	Indefinite
LM-TPRS-77-0065		Finfoko, Taf	SI	1/28/1977	60'	Aliksru Tolenoa	Aliksru Tolenoa	Indefinite
LM-TPRS-77-0066		Finfoko, Taf	SI	2/9/1977	60'	Joseph Skilling	Joseph Skilling	Indefinite
LM-TPRS-77-0067		Finfoko, Taf	SI	8/8/1977	60'	Alik F. Skilling	Alik F. Skilling	Indefinite
LM-TPRS-77-0068		Finfoko, Taf	SI	2/11/1977	60'	Semeon Skilling	Semeon Skilling	Indefinite
LM-TPRS-77-0069		Finfoko, Taf	SI	1/28/1977	60'	Eklun Ned	Eklun Ned	Indefinite
LM-TPRS-77-0070		Sronsrono, Taf	SI	2/16/1977	60'	Oran George	Oran George	Indefinite
LM-TPRS-77-0071		Malsu, Taf	SI	1/28/1977	60'	Russel Ned	Russel Ned	Indefinite
LM-TPRS-77-0072		Malsu, Taf	SI	1/28/1977	60'	Moses Asher	Moses Asher	Indefinite
LM-TPRS-77-0073		Malsu, Taf	SI	1/28/1977	60'	Zakias George	Zakias George	Indefinite
LM-TPRS-77-0074		Malsu, Taf	SI	2/1/1977	60'	Timothy George	Timothy George	Indefinite
LM-TPRS-77-0075		Wia, Taf	SI	01 28 1977	60'	Sam Albert	Sam Albert	Indefinite
LM-TPRS-77-0076		Wia, Taf	SI	2/14/1977	60'	Alik Jonathan	Alik Jonathan	Indefinite
LM-TPRS-77-0077		Wia, Taf	SI	1/28/1977	60'	Lupalik Palsis	Lupalik Palsis	Indefinite
LM-TPRS-77-0078		Wia, Taf	SI	1/28/1977	60'	Alokoa Palsis	Alokoa Palsis	Indefinite
LM-TPRS-77-0079		Wia, Taf	SI	2/4/1977	60'	Tulen Palsis	Alex Palsis	Indefinite
LM-TPRS-77-0080		Wia, Taf	SI	1/28/1977	60'	Kilafwa Palsis	Kilafwa Palsis	Indefinite
LM-TPRS-77-0081		Wia, Taf	SI	1/28/1977	60'	Kioken Daniel	Kioken Daniel	Indefinite
LM-TPRS-77-0082		Wia, Taf	SI	2/22/1977	60'	Kun Welly	Kun Welly	Indefinite
LM-TPRS-77-0083		Yekula, Taf	SI	2/11/1977	60'	Tukaia Ittu	Tukaia Ittu	Indefinite
LM-TPRS-77-0084		Yekula, Taf	SI	2/11/1977	60'	Frank Lonno	Frank Lonno	Indefinite
LM-TPRS-77-0085		Yekula, Taf	SI	1/28/1977	60'	Allen Mackwelung	John Allen	Indefinite
LM-TPRE-89-0086		Finfukul, Taf	Easement	5/25/1989	60'	Sitsiro Mongkeya	Sitsiro Mongkeya	Indefinite
LM-TPRS-77-0087		Finfukul, Taf	SI	1/28/1977	60'	Kun Mongkeya	Kun Mongkeya	Indefinite
LM-TPRE-89-0088		Finfukul, Taf	Easement	7/10/1989	60'	Bermin Weilbacher	Bermin Weilbacher	Indefinite

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LM-TPRS-77-0089	Sialat, Taf	SI	1/28/1977	60'	Natchuo Mongkeya	Natchuo Mongkeya	Indefinite
LM-TPRS-77-0090	Sialat, Taf	SI	1/28/1977	60'	Alokoa Mongkeya	Alokoa Mongkeya	Indefinite
LM-TPRS-77-0091	Sialat, Taf	SI	2/14/1977	60'	Joseph A. Mongkeya	Joseph A. Mongkeya	Indefinite
LM-TPRS-77-0092	Sialat, Taf	SI	2/14/1977	60'	Aliksa Mongkeya	Aliksa Mongkeya	Indefinite
LM-TPRS-77-0093	Sialat, Taf	SI	2/14/1977	60'	Recca Mongkeya	Recca Mongkeya	Indefinite
LM-TPRS-77-0094	Sialat, Taf	SI	2/4/1977	60'	Miles Tolenoa	Miles Tolenoa	Indefinite
LM-TPRS-77-0095	Kisas, Taf	SI	10/18/1977	60'	Moses Palsisa	Moses Palsisa	Indefinite
LM-TPRS-77-0096	Kisas, Taf	SI	9/16/1977	60'	Nimoy Johnny	Nimoy Johnny	Indefinite
LM-TPRE-89-0097	Kisas, Taf	Easement	5/24/1989	60'	Marcus Nedlic	Marcus Nedlic	Indefinite
LM-TPRS-77-0098	Kisas, Taf	SI	9/15/1977	60'	Conrad Johnny	Otmer Johnny	Indefinite
LM-TPRS-77-0099	Inkoeya, Taf	SI	2/11/1977	60'	Alik William	Stanley William	Indefinite
LM-TPRS-77-0100	Inkoeya, Taf	SI	1/28/1977	60'	Lelean John	Lelean John	Indefinite
LM-TPRS-77-0101	Inkoeya, Taf	SI	1/28/1977	60'	Nena William	Nena William/Katchuo	Indefinite
LM-TPRS-77-0102	Inkoeya, Taf	SI	2/14/1977	60'	Shra N. Paulin	Shra N. Paulin	Indefinite
LM-TPRS-77-0103	Inkoeya, Taf	SI	1/28/1977	60'	Donald Jonah	Donald Jonah	Indefinite

INKOEYA TO TEYA SECTION IN LELU MUNICIPALITY

Document No.	Parcel No.	Section Name	Type of Use Right	Date of Use Right	Width of Use Right	Original Landowner	Person Signed Use Right	Expiration
LM-LPRS-77-0221		Inkoeya, Lelu	SI	2/17/1977	60'	Teiye Sigrah	Teiye Sigrahy	Indefinite
LM-LPRS-77-0222		Finaunpes, Lelu	SI	2/10/1977	60'	Theodore Sigrah	Theodore Sigrah	Indefinite
LM-LPRS-77-0223		Finaunpes, Lelu	SI	2/15/1977	60'	Paul Sigrah	Paul Sigrah	Indefinite
LM-LPRS-77-0224		Finaunpes, Lelu	SI	11/14/1977	60'	Widmer Sigrah	Widmer Sigrah	Indefinite
LM-LPRS-77-0225		Finaunpes, Lelu	SI	2/15/1977	60'	Herbert Sigrah	Herbert Sigrah	Indefinite
LM-LPRS-77-0226		Finfoko, Lelu	SI	2/11/1977	60'	Spencer Asher	Spencer Asher	Indefinite
LM-LPRS-77-0227		Finfoko, Lelu	SI	2/17/1977	60'	Alik John	Alik John	Indefinite
LM-LPRS-77-0228		Finfoko, Lelu	SI	2/22/1977	60'	Justin Alokoa	Justin Alokoa	Indefinite
LM-LPRS-77-0229		Finfoko, Lelu	SI	2/17/1977	60'	Hirom Palikkun	Hirom Palikkun	Indefinite
LM-LPRS-77-0230		Finfoko, Lelu	SI	2/28/1977	60'	Austin Albert	Austin Albert	Indefinite
LM-LPRS-77-0231		Finfoko, Lelu	SI	2/10/1977	60'	Isao Sigrah	Isao Sigrah	Indefinite
LM-LPRS-77-0232		Finfoko, Lelu	SI	2/11/1977	60'	Judah Sigrah	Judah Sigrah	Indefinite
LM-LPRS-77-0233		Finfoko, Lelu	SI	10/18/1977	60'	Frealing Sigrah	David Abraham	Indefinite
LM-LPRE-94-0234		Finfoko, Lelu	Easement	11/7/1994	60'	Palikkun N. Sigrah	Palikkun N. Sigrah	Indefinite
LM-LPRS-77-0235		Finfoko, Lelu	SI	2/15/1977	60'	Freddy Likiaksa	Freddy Likiaksa	Indefinite
LM-LPRS-77-0236		Pukusrik, Lelu	SI	11/16/1977	60'	Tinteru Sam	Tinteru Sam	Indefinite
LM-LPRS-77-0237		Pukusrik, Lelu	SI	2/14/1977	60'	Alida Kun	Alikda Kun	Indefinite
LM-LPRS-77-0238		Pukusrik, Lelu	SI	11/16/1977	60'	Sepe Noah	Sepe Noah	Indefinite
LM-LPRE-93-0239		Pukusrik, Lelu	Easement	9/27/1993	60'	H.O. Musrasrik	Winton Palik	Indefinite
LM-LPRS-77-0240		Pukusrik, Lelu	SI	12/1/1977	60'	Nowel Lowary	Nowel Lowary	Indefinite
LM-LPRS-77-0241		Pukusrik, Lelu	SI	2/24/1977	60'	Alokoa Lowary	Alokoa Lowary	Indefinite
LM-LPRS-77-0242		Pukusrik, Lelu	SI	3/3/1977	60'	Saelus Lowary	Saelus Lowary	Indefinite
LM-LPRS-77-0243		Pukusrik, Lelu	SI	2/14/1977	60'	Piola Alokoa	Piola Alokoa	Indefinite
LM-LPRS-77-0244		Marlan, Lelu	SI	2/10/1977	60'	Florian Nena	Florian Nena	Indefinite
LM-LPRS-77-0245		Sroanef, Lelu	SI	2/17/1977	60'	Serah Brence	Serah Brence	Indefinite
LM-LPRS-77-0246		Sroanef, Lelu	SI	2/15/1977	60'	Herbert Sigrah	Herbert Sigrah	Indefinite
LM-LPRS-77-0247		Putukte, Lelu	SI	2/15/1977	60'	Taetus Mike	Taetus Mike	Indefinite
LM-LPRS-77-0248		Putukte, Lelu	SI	2/17/1977	60'	Likiak Mike	Likiak Mike	Indefinite
LM-LPRS-77-0249		Putukte, Lelu	SI	2/10/1977	60'	Robar Mike	Robar Mike	Indefinite
LM-LPRS-77-0250		Finpukal, Lelu	SI	2/10/1977	60'	Sapino Sigrah	Sapino Sigrah	Indefinite
LM-LPRS-77-0251		Finpukal, Lelu	SI	4/18/1977	60'	Marcus Nedlic	Marcus Nedlic	Indefinite
LM-LPRS-77-0252		Mutunnenea, Lelu	SI	9/15/1977	60'	Mitchio Noda	Mitchio Noda	Indefinite
LM-LPRS-77-0253		Mutunnenea, Lelu	SI	2/10/1977	60'	Sapino Sigrah	Sapino Sigrah	Indefinite
LM-LPRS-77-0254		Mutunnenea, Lelu	SI	2/11/1977	60'	Yamado Noda	Yamado Noda	Indefinite
LM-LPRS-77-0255		Mutunnenea, Lelu	SI	2/17/1977	60'	Likiak Mike	Likiak Mike	Indefinite
LM-LPRS-77-0256		Mutunnenea, Lelu	SI	2/11/1977	60'	Paliksru Mike	Paliksru Mike	Indefinite
LM-LPRS-77-0257		Lukaf, Lelu	SI	2/11/1977	60'	Judah Sigrah	Judah Sigrah	Indefinite
LM-LPRS-77-0258		Lukaf, Lelu	SI	2/17/1977	60'	Alik John	Alik John	Indefinite
LM-LPRS-77-0259		Lukaf, Lelu	SI	9/15/1977	60'	Calvin Likiak	Calvin Likiak	Indefinite
LM-LPRS-77-0260		Lukaf, Lelu	SI	2/10/1977	60'	Irving Mackwelung	Irving Mackwelung	Indefinite
LM-LPRS-77-0261		Lukaf, Lelu	SI	1/28/1977	60'	Joince Nena	Joince Nena	Indefinite
LM-LPRS-77-0262		Lukaf, Lelu	SI	10/17/1977	60'	Elley Seku	Elley Seku	Indefinite
LM-LPRS-77-0263		Lukaf, Lelu	SI	10/17/1977	60'	Ekinaetes Elley	Ekinaetes Elley	Indefinite
LM-LPRS-77-0264		Fomseng, Lelu	SI	10/18/1977	60'	Kilafwakun George	Kilafwakun George	Indefinite
LM-LPRS-77-0265		Fomseng, Lelu	SI	11/7/1977	60'	Alokoa George	Alokoa George	Indefinite
LM-LPRS-77-0266		Fomseng, Lelu	SI	10/17/1977	60'	Paliksru George	Paliksru George	Indefinite
LM-LPRS-77-0267		Fomseng, Lelu	SI	2/10/1977	60'	Idosi Jesse	Idosi Jesse	Indefinite
LM-LPRS-77-0268		Fomseng, Lelu	SI	2/28/1977	60'	Austin Albert	Austin Albert	Indefinite
LM-LPRS-77-0269		Fomseng, Lelu	SI	1/28/1977	60'	Abner Tilfas	Abner Tilfas	Indefinite
LM-LPRS-77-0270		Innem, Lelu	SI	1/28/1977	60'	Jacob Nena	Jacob Nena	Indefinite
LM-LPRS-77-0271		Innem, Lelu	SI	2/10/1977	60'	Aliksa P. Sigrah	Aliksa P. Sigrah	Indefinite
LM-LPRS-77-0272		Innem, Lelu	SI	2/22/1977	60'	Justin Alokoa	Justin Alokoa	Indefinite
LM-LPRS-77-0273		Innem, Lelu	SI	2/15/1977	60'	Freddy Likiaksa	Freddy Likiaksa	Indefinite
LM-LPRS-77-0274		Innem, Lelu	SI	2/14/1977	60'	Tulenkun Alokoa	Tulenkun Alokoa	Indefinite
LM-LPRS-77-0275		Innem, Lelu	SI	2/15/1977	60'	Shrew Likiaksa	Clanry Likiaksa	Indefinite
LM-LPRS-77-0276		Innem, Lelu	SI	10/28/1977	60'	Joshua Alokoa	Joshua Alokoa	Indefinite
LM-LPRS-77-0277		Innem, Lelu	SI	2/10/1977	60'	Hudson Edwin	Hudson Edwin	Indefinite
LM-LPRS-77-0278		Innem, Lelu	SI	1/28/1977	60'	Bingham Palik	Bingham Palik	Indefinite
LM-LPRS-77-0279		Innem, Lelu	SI	10/18/1977	60'	Soarku Seku	Soarku Seku	Indefinite
LM-LPRS-77-0280		Sungansralu, Lelu	SI	2/10/1977	60'	Norman Skilling	Norman Skilling	Indefinite
LM-LPRS-77-0281		Tofol, Lelu	SI	1/28/1977	60'	Joab P. Sigrah	Joab P. Sigrah	Indefinite
LM-LPRE-93-0282	057K07&08	Sre, Lelu	Easement	1/18/1993	60'	Diovil Sigrah	Diovil Sigrah	1/17/2092
LM-LPRS-77-0283		Sre, Lelu	SI	2/14/1977	60'	Shiro Sigrah	Fred Sigrah	Indefinite
LM-LPRS-77-0284		Sre, Lelu	SI	1/28/1977	60'	Sru Jerry	Sru Jerry	Indefinite
LM-LPRE-92-0285	060K02	Sruusr, Lelu	Easement	11/17/1992	60'	Theodore Sigrah	Theodore Sigrah	Indefinite
LM-LPRE-91-0286	057K01	Sruusr, Lelu	Easement	12/12/1991	60'	Ramsey Sigrah	Ramsey Sigrah	Indefinite
LM-LPRS-77-0287		Sruusr, Lelu	SI	1/28/1977	60'	Aaron Sigrah	Tadasy Sigrah	Indefinite

LM-LPRS-77-0288		Sruusr, Lelu	SI	4/21/1977	60'	Arthur Sigrah	Arthur Sigrah	Indefinite
LM-LPRS-77-0289		Sruusr, Lelu	SI	2/10/1977	60'	Richard Sigrah	Richard Sigrah	Indefinite
LM-LPRS-77-0290		Sruusr, Lelu	SI	2/25/1977	60'	Joseph Skilling	Joseph Skilling	Indefinite
LM-LPRS-77-0291		Malusr, Lelu	SI	1/28/1977	60'	Killion Abraham	Killion Abraham	Indefinite
LM-LPRS-77-0292		Ka, Lelu	SI	2/10/1977	60'	Martin Jesse	Martin Jesse	Indefinite
LM-LPRS-77-0293		Ka, Lelu	SI	1/28/1977	60'	Franklin James	Franklin James	Indefinite
LM-LPRS-77-0294		Ka, Lelu	SI	2/10/1977	60'	Kontae Peter	Kontae Peter	Indefinite
LM-LPRS-77-0295		Tafeyat, Lelu	SI	2/10/1977	60'	Mitcher Skilling	Mitcher Skilling	Indefinite
LM-LPRS-77-0296		Tafeyat, Lelu	SI	2/10/1977	60'	Sapino Sigrah	Sapino Sigrah	Indefinite
LM-LPRS-77-0297		Tafeyat, Lelu	SI	2/10/1977	60'	Tulen Semuta	Tulen Semuta	Indefinite
LM-LPRS-78-0298		Otrang, Lelu	SI	2/21/1978	60'	Paliksru George	Paliksru George	Indefinite
LM-LPRS-78-0299		Otrang, Lelu	SI	1/21/1978	60'	Kenye Aliksa	Kenye Aliksa	Indefinite
LM-LPRS-77-0300		Otrang, Lelu	SI	1/28/1977	60'	Jacob Sikain	Wilfred Palik	Indefinite
LM-LPRS-77-0301		Otrang, Lelu	SI	1/20/1978	60'	Jacob Aliklof	Jacob Aliklof	Indefinite
LM-LPRS-78-0302		Fwol, Lelu	SI	1/21/1978	60'	Alfred Kun	Minoru Tulensa	Indefinite
LM-LPRS-77-0303		Fwol, Lelu	SI	1/28/1977	60'	Kilafwa Lonno	Kilafwa Lonno	Indefinite
LM-LPRS-77-0304		Sansrik, Lelu	SI	11/29/1977	60'	Hirosi Ismael	Hirosi Ismael	Indefinite
LM-LPRS-77-0305		Sansrik, Lelu	SI	8/8/1977	60'	Alik F. Skilling	Alik F. Skilling	Indefinite
LM-LPRS-77-0306		Sansrik, Lelu	SI	1/28/1977	60'	Harry Skilling	Harry Skilling	Indefinite
LM-LPRS-77-0307		Sansrik, Lelu	SI	2/10/1977	60'	Norman Skilling	Norman Skilling	Indefinite
LM-LPRS-78-0308		Sansrik, Lelu	SI	1/21/1978	60'	James Ernest	Theodore Sigrah	Indefinite
LM-LPRS-77-0309		Fenef, Lelu	SI	10/18/1977	60'	David Abraham	David Abraham	Indefinite
LM-LPRE-91-0310		Inlas, Lelu	Easement	12/17/1991	60'	Merlinda 'Timothy	Merlinda Timothy	12/16/2090
LM-LPRS-78-0311		Inlas, Lelu	SI	1/30/1978	60'	Ueta Palik	Ueta Palik	Indefinite
LM-LPRS-77-0312		Inlas, Lelu	SI	3/10/1977	60'	Sapuro Freddy	Sapuro Freddy	Indefinite
LM-LPRE-91-0313	069K01&02	Mutunlik, Lelu	Easement	12/17/1991	60'	Alik F. Skilling	Alik F. Skilling	12/16/2090
LM-LPRE-77-0314		Mutunlik, Lelu	Easement	2/14/1977	60'	Likiaksru Lazeres	Likiaksru Lazeres	Indefinite
LM-LPRS-77-0315		Mutunlik, Lelu	SI	1/20/1978	60'	Palikkun Andrew	Palikkun Andrew	Indefinite
LM-LPRS-77-0316		Mutunlik, Lelu	SI	1/28/1977	60'	Gedion Salik	Gedion Salik	Indefinite
LM-LPRS-77-0317		Mutunlik, Lelu	SI	2/16/1977	60'	Benton Nena	Benton Nena	Indefinite
LM-LPRS-77-0318		Mutunlik, Lelu	SI	1/28/1977	60'	Abner Tilfas	Abner Tilfas	Indefinite
LM-LPRS-77-0319		Leyot, Lelu	SI	2/1/1977	60'	Kiyus Jackson	Kiyus Jackson	Indefinite
LM-LPRS-77-0320		Leyot, Lelu	SI	2/28/1977	60'	Kasper Tilfas	Kasper Tilfas	Indefinite
LM-LPRS-77-0321		Leyot, Lelu	SI	1/22/1978	60'	Ludwig Tilfas	Ludwig Tilfas	Indefinite
LM-LPRS-77-0322		Leyot, Lelu	SI	3/9/1977	60'	Shrue F. Weilbacher	Shrue F. Weilbacher	Indefinite
LM-LPRS-77-0323		Leyot, Lelu	SI	1/20/1978	60'	Windolin Tilfas	Windolin Tilfas	Indefinite
LM-LPRS-77-0324		Puk, Lelu	SI	2/25/1977	60'	Joseph Skilling	Joseph Skilling	Indefinite
LM-LPRS-77-0325		Puk, Lelu	SI	2/11/1977	60'	Semeon Skilling	Semeon Skilling	Indefinite
LM-LPRE-92-0326		Puk, Lelu	Easement	11/24/1992	60'	Sydney Skilling	Sydney Skilling	11/23/2091
LM-LPRS-77-0327		Puk, Lelu	SI	2/25/1977	60'	Aaron Sigrah	Aaron Sigrah	Indefinite
LM-LPRS-77-0328		Puk, Lelu	SI	2/11/1977	60'	Palikkun Sigrah	Palikkun Sigrah	Indefinite
LM-LPRS-77-0329		Puk, Lelu	SI	1/28/1977	60'	Simon Killin	Simon Killin	Indefinite
LM-LPRS-77-0330		Puk, Lelu	SI	11/21/1991	60'	Sapino Sigrah & Richard	Sapino & Richard Sig.	Indefinite
LM-LPRS-77-0331		Tenwak, Lelu	SI	2/17/1977	60'	Thurston Siba	Thurston Siba	Indefinite
LM-LPRS-77-0332		Tenwak, Lelu	SI	1/28/1977	60'	Elaijah Tosie	Elaijah Tosie	Indefinite
LM-LPRS-77-0333		Tenwak, Lelu	SI	1/20/1977	60'	Alokoa Noa	Joshua Alokoa	Indefinite
LM-LPRS-77-0334		Tenwak, Lelu	SI	1/20/1978	60'	Clement Alokoa	Clement Alokoa	Indefinite
LM-LPRS-77-0335		Tenwak, Lelu	SI	8/1/1977	60'	Rev. Alik Isaac	Rev. Alik Isaac	Indefinite
LM-LPRS-77-0336		Tenwak, Lelu	SI	1/28/1977	60'	Sam Isaac	Sam Isaac	Indefinite
LM-LPRS-77-0337		Tenwak, Lelu	SI	1/28/1977	60'	Masaki Thomson	Masaki Thomson	Indefinite
LM-LPRE-91-0338	076K03&06	Tenwak, Lelu	Easement	12/17/1991	60'	Truman Welley	Truman Welley	12/16/1990

KOAROM TO INPSUSPUSA SECTION (MALEM MUNICIPALITY)

Document No.	Parcel No.	Section Name	Type of Use Right	Date of Use Right	Width of Use Right	Original Landowners	Person Signed Easement/SI	Expiration Date
LM-MPRE-94-0462		Koarom, Malem	Easement	5/12/1994	60'	Tilda Thomas	Tilda Thomas	5/11/2093
LM-MPRS-77-0463		Koarom, Malem	SI	1/28/1977	60'	Emos Elesha	Emos Elesha	Indefinite
LM-MPRS-77-0464		Koarom, Malem	SI	2/16/1977	60'	Anton Nedlic	Anton Nedlic	Indefinite
LM-MPRE-01-0465		Koarom, Malem	Easement	8/28/2001	60'	H.O. Palikkun George	Roleigh George	8/27/2100
LM-MPRS-77-0466		Finfoko, Malem	SI	1/28/1977	60'	Kilafwa Charley	Kilafwa Charley	Indefinite
LM-MPRS-77-0467		Finfoko, Malem	SI	1/28/1977	60'	Nena Charley	Nena Charley	Indefinite
LM-MPRS-77-0468		Fintakol, Malem	SI	1/29/1977	60'	Godfrey Talley	Godfrey Talley	Indefinite
LM-MPRE-01-0469		Fintakol, Malem	Easement	5/8/2001	60'	H.O. Notwe Saelus	Anguri Jacob	5/7/2100
LM-MPRS-77-0470		Songtou, Malem	SI	1/28/1977	60'	Kun Aaron	Kun Aaron	Indefinite
LM-MPRS-77-0471		Songtou, Malem	SI	1/28/1977	60'	Lupe Ittu	Lupe Ittu	Indefinite
LM-MPRS-77-0472		Songtou, Malem	SI	1/1/1977	60'	Lucius Charley	Lucius Charley	Indefinite
LM-MPRS-77-0473		Infalok, Malem	SI	1/28/1977	60'	Maeta Kilafwasru	Nena Kilafwasru	Indefinite
LM-MPRS-77-0474		Infalok, Malem	SI	3/2/1977	60'	Saelus Lowary	Saelus Lowary	Indefinite
LM-MPRS-77-0475		Infalok, Malem	SI	1/28/1977	60'	Likiaklik Kilafwaru	Likiaklik Kilafwasru	Indefinite
LM-MPRS-77-0476		Pilyuul, Malem	SI	1/28/1977	60'	Albert Talley	Albert Talley	Indefinite
LM-MPRS-77-0477		Pilyuul, Malem	SI	2/11/1977	60'	Frank Lonno	Frank Lonno	Indefinite
LM-MPRE-93-0478	004M04&06	Inkoeya, Malem	Easement	1/25/1993	60'	Edina Manasa	Edina Manasa	1/24/2092
LM-MPRE-93-0479	004M04	Inpukpuk, Malem	Easement	1/25/1993	60'	Edina Manasa	Edina Manasa	1/24/2092
LM-MPRS-77-0480		Insaru, Malem	SI	3/10/1977	60'	Palikkun Charley	Palikkun Charley	Indefinite
LM-MPRS-77-0481		Insaru, Malem	SI	1/25/1977	60'	Minoru Charley	Minoru Charley	Indefinite
LM-MPRS-77-0482		Insaru, Malem	SI	3/10/1977	60'	Gustin Charley	Gustin Charley	Indefinite
LM-MPRE-93-0483		Finpukpasr, Mal	Easement	1/25/1993	60'	Kingston Phillip	Kingston Phillip	1/24/2092
LM-MPRE-93-0484	005M05	Pilyuul, Malem	Easement	9/25/1993	60'	Lipan Kephas	Lipan Kephas	9/24/2092
LM-MPRS-77-0485		Sronsak, Malem	SI	2/10/1977	60'	Charley Charley	Charley Charley	Indefinite
LM-MPRS-77-0486		Fufsan, Malem	SI	1/28/1977	60'	Ittu Kilafwasru	Ittu Kilafwasru	Indefinite
LM-MPRS-77-0487		Fufsan, Malem	SI	1/28/1977	60'	Boyd Aaron	Boyd Aaron	Indefinite
LM-MPRS-77-0488		Pekula, Malem	SI	1/28/1977	60'	Norman George	Norman George	Indefinite
LM-MPRE-93-0489	005M15	Pekula, Malem	Easement	1/21/1993	60'	Anako Salik	Anako Salik	1/20/2092
LM-MPRE-93-0490	005M14	Pekula, Malem	Easement	1/25/1993	60'	Neila James	Neila James	1/24/2092
LM-MPRS-77-0491		Pekula, Malem	SI	3/2/1977	60'	Moody Shrew	Moody Shrew	Indefinite

LM-MPRS-77-0492		Pekula, Malem	SI	2/14/1977	60'	Thurston Siba	Thurston Siba	Indefinite
LM-MPRS-77-0493		Foko, Malem	SI	3/2/1977	60'	Takasy Shrew	Takasy Shrew	Indefinite
LM-MPRE-01-0494		Foko, Malem	Easement	5/8/2001	60'	Kiatoa Ittu	Kiatoa Ittu	5/7/2100
LM-MPRS-77-0495		Foko, Malem	SI	2/14/1977	60'	Stephinson Ittu	Stephinson Ittu	Indefinite
LM-MPRE-93-0496	006M23&18	Inwot, Malem	Easement	1/25/1993	60'	Soloman R. Talley	Soloman R. Talley	1/24/2092
LM-MPRE-93-0497	006M19&22	Inwot, Malem	Easement	2/23/1993	60'	Ruben Talley	Ruben Talley	2/22/2092
LM-MPRS-77-0498		Kutafeut, Malem	SI	3/2/1977	60'	Sephin Shrew	Sephin Shrew	Indefinite
LM-MPRE-93-0499	00704&03	Kutafeut, Malem	Easement	1/25/1993	60'	Kun Luey	Kun Luey	1/24/2092
LM-MPRS-77-0500		Yewak, Malem	SI	11/1/1977	60'	Lucius Charley	Lucius Charley	Indefinite
LM-MPRS-77-0501		Yewak, Malem	SI	1/28/1977	60'	Kilafwa Charley	Kilafwa Charley	Indefinite
LM-MPRS-77-0502		Yewak, Malem	SI	3/2/1977	60'	Bercil Charley	Bercil Charley	Indefinite
LM-MPRS-77-0503		Masis, Malem	SI	3/9/1977	60'	Shrew Tolennoa	Shrew Tolennoa	Indefinite
LM-MPRE-95-0504		Masis, Malem	Easement	3/21/1995	60'	Malem Baptist Church	Rev. Luther Cornelius	3/20/2094
LM-MPRS-77-0505		Masis, Malem	SI	2/5/1977	60'	Luther Cornelius	Luther Cornelius	Indefinite
LM-MPRS-77-0506		Masis, Malem	SI	1/28/1977	60'	Kun Tolennoa	Kun Tolennoa	Indefinite
LM-MPRE-01-0507		Masis, Malem	Easement	5/8/2001	60'	Likiak Langu	Likiak Langu	5/7/2100
LM-MPRS-77-0508		Masis, Malem	SI	3/3/1977	60'	Tolennoa Langu	Tolennoa Langu	Indefinite
LM-MPRE-93-0509	009M06&07	Kesron, Malem	Easement	1/25/1993	60'	Stephin Easu	Stephin Easu	1/24/2092
LM-MPRE-01-0510		Kesron, Malem	Easement	8/28/2001	60'	Abraham Anton	Abraham Anton	8/27/2100
LM-MPRE-93-0511	008M20&21	Inkewosr, Malem	Easement	1/25/1993	60'	Stephin Easu	Stephin Easu	1/24/2092
LM-MPRE-01-0512		Inkewosr, Malem	Easement	8/28/2001	60'	Anguri Jacob	Anguri Jacob	8/27/2100
LM-MPRE-93-0513	009M10&15	Inaloka, Malem	Easement	5/13/1993	60'	Norman George	Norman George	5/12/2092
LM-MPRE-01-0514		Inaloka, Malem	Easement	5/8/2001	60'	Takasy Shrew	Takasy Shrew	Indefinite
LM-MPRS-77-0515		Inaloka, Malem	SI	1/28/1977	60'	Takumi George	Takumi George	Indefinite
LM-MPRS-77-0516		Inpea, Malem	SI	3/4/1977	60'	Roldon Phillip	Roldon Phillip	Indefinite
LM-MPRS-77-0517		Inpea, Malem	SI	3/3/1977	60'	Palikkun Phillip	Palikkun Phillip	Indefinite
LM-MPRS-77-0518		Inpea, Malem	SI	1/20/1977	60'	Elesha Phillip	Elesha Phillip	Indefinite
LM-MPRE-01-0519		Inpea, Malem	Easement	5/8/2001	30'	Oscar Phillip	Oscar Phillip	5/7/2100
LM-MPRS-77-0520		Inpea, Malem	SI	1/20/1977	60'	Luther Timothy	Luther Timothy	Indefinite
LM-MPRS-77-0521		Inpea, Malem	SI	2/5/1977	60'	Palokoa Timothy	Palokoa Timothy	Indefinite
LM-MPRS-77-0522		Sanwo, Malem	SI	1/28/1977	60'	Moses Lonno	Moses Lonno	Indefinite
LM-MPRS-77-0523		Sanwo, Malem	SI	1/28/1977	60'	Kun Lonno	Kun Lonno	Indefinite
LM-MPRS-77-0524		Sanwo, Malem	SI	1/28/1977	60'	Theodore Lonno	Theodore Lonno	Indefinite
LM-MPRE-93-0525	009M32	Pipi, Malem	Easement	1/25/1993	60'	Kun Luey	Kun Luey	1/24/2092
LM-MPRE-01-0526		Pipi, Malem	Easement	5/8/2001	60'	Likiak Langu	Likiak Langu	5/7/2100
LM-MPRE-01-0527		Pipi, Malem	Easement	5/8/2001	30'	Hirosi Ismael	Hirosi Ismael	5/7/2100
LM-MPRS-77-0528		Funenea, Malem	SI	1/28/1977	60'	Cline George	Cline George	Indefinite
LM-MPRS-77-0529		Funenea, Malem	SI	1/20/1977	60'	Salik Cornelius	Salik Cornelius	Indefinite
LM-MPRS-00-0530		Funenea, Malem	SI		60'	Roleigh George	Roleigh George	Indefinite
LM-MPRE-93-0531		Mutenpal, Malem	Easement	1/25/1993	30'	Kun Aaron	Kun Aaron	1/24/2092
LM-MPRS-77-0532		Mutenpal, Malem	SI	1/28/1977	60'	Shiro Timothy	Shiro Timothy	Indefinite
LM-MPRE-01-0533		Mutenpal, Malem	Easement	5/8/2001	30'	Noah G. Talley	Noah G. Talley	5/7/2100
LM-MPRS-77-0534		Mutenpal, Malem	SI	1/28/1977	60'	Lambert Talley	Lambert Talley	Indefinite
LM-MPRE-93-0535		Mutenpal, Malem	Easement	2/12/1993	60'	Kilafwasru Kilafwasru	Kilafwasru Kilafwasru	2/11/2092
LM-MPRS-77-0536		Mutenpal, Malem	SI	3/3/1977	60'	Nena Livaie	Nena Livaie	Indefinite
LM-MPRS-77-0537		Sungankuta, Mal	SI	10/18/1977	60'	Moses Palsisa	Moses Palsisa	Indefinite
LM-MPRS-77-0538		Sungankuta, Mal	SI	1/20/1977	60'	Austin Jonas	Austin Jonas	Indefinite
LM-MPRE-01-0539		Sungankuta, Mal	Easement	5/8/2001	30'	Grant Jonas	Grant Jonas	5/7/2100
LM-MPRS-77-0540		Inmeng, Malem	SI	1/20/1977	60'	Samuel Musrasrik	Samuel Musrasrik	Indefinite
LM-MPRS-77-0541		Inmeng, Malem	SI	1/28/1977	60'	Swinton Jack	Swinton Jack	Indefinite
LM-MPRS-77-0542		Inmeng, Malem	SI	1/28/1977	60'	Joseph Olter	Joseph Olter	Indefinite
LM-MPRS-77-0543		Meoa, Malem	SI	3/2/1977	60'	Tolennoa Kilafwasru	Tolennoa Kilafwasru	Indefinite
LM-MPRS-77-0544		Meoa, Malem	SI	1/28/1977	60'	Tulen Kilafwasru	Tulen Kilafwasru	Indefinite
LM-MPRS-77-0545		Fukrin, Malem	SI	3/4/1977	60'	Richard Palik	Richard Palik	Indefinite
LM-MPRE-93-0546	011M37	Fukrin, Malem	Easement	1/18/1993	60'	Likiak Talley	Likiak Talley	1/17/2092
LM-MPRS-77-0547		Fukrin, Malem	SI	3/2/1977	60'	Palsisa Soloman	Palsisa Soloman	Indefinite
LM-MPRS-77-0548		Fukrin, Malem	SI	1/28/1977	60'	Ruben Soloman	Ruben Soloman	Indefinite
LM-MPRS-77-0549		Fukrin, Malem	SI	3/2/1977	60'	Burtin Soloman	Burtin Soloman	Indefinite
LM-MPRS-77-0550		Safono, Malem	SI	1/28/1977	60'	Gedion Palokoa	Gedion Palokoa	Indefinite
LM-MPRE-01-0551		Safono, Malem	Easement	5/8/2001	60'	Marumo Lonno	Marumo Lonno	5/7/2100
LM-MPRE-93-0552	018M09&10	Kotfa, Malem	Easement	2/1/1993	60'	Morgan Jonas	Morgan Jonas	1/31/2092
LM-MPRS-77-0553		Kotfa, Malem	SI	3/2/1977	60'	Aaron Phillip	Aaron Phillip	Indefinite
LM-MPRS-77-0554		Kotfa, Malem	SI	3/3/1977	60'	Joshua Phillip	Joshua Phillip	Indefinite
LM-MPRS-77-0555		Pual, Malem	SI	3/1/1977	60'	Lindpergh Talley	Lindpergh Talley	Indefinite
LM-MPRE-93-0556	019M03,05 &019M13	Pual, Malem	Easement	1/21/1993	60'	Salik Cornelius	Salik Cornelius	1/20/2092
LM-MPRE-01-0557		Pual, Malem	Easement	8/28/2001	60'	Weyler Talley	Weyler Talley	8/27/2100
LM-MPRE-01-0558		Pual, Malem	Easement	5/8/2001	60'	Stephine Tilfas	Stephine Tilfas	5/7/2100
LM-MPRS-77-0559		Pual, Malem	SI	9/15/1977	60'	Otmer Musrasrik	Otmer Musrasrik	Indefinite
LM-MPRE-93-0560	020M04&05	Pual, Malem	Easement	2/1/1993	60'	Takumi George	Takumi George	21 31 2092
LM-MPRE-93-0561	020M06&09	Pual, Malem	Easement	2/3/1993	60'	Lyndon Cornelius	Lyndon Cornelius	2/2/2092
LM-MPRE-01-0562		Pual, Malem	Easement	5/8/2001	60'	Glasstine Cornelius	Glasstine Cornelius	5/7/2100
LM-MPRE-93-0563		Pukunsukar	Easement	1/25/1993	60'	Roldon P. Timothy	Roldon P. Timothy	1/24/2092
LM-MPRE-01-0564		Pukunsukar	Easement	5/8/2001	60'	Bardon Musrasrik	Bardon Musrasrik	5/7/2100
LM-MPRE-93-0565	029M10&11	Finfoko, Malem	Easement	2/1/1993	60'	Takumi George	Takumi George	1/31/2093
LM-MPRE-01-0566		Finfoko, Malem	Easement	5/8/2001	60'	Marcel Jonas	Marcel Jonas	5/7/2100
LM-MPRE-01-0567		Mutunsakfar	Easement	5/8/2001	60'	Marumo Lonno	Marumo Lonno	5/7/2100
LM-MPRE-97-0568	023M08	Finfoko, Malem	Easement	4/14/1997	60'	Arthur Jonas	Arthur Jonas	4/13/2096
LM-MPRS-77-0569		Mutunsakfar	SI	3/3/1977	60'	Jack Musrasrik	Jack Musrasrik	Indefinite
LM-MPRE-93-0570	024M08$10	Srenfoul, Malem	Easement	1/20/1993	60'	Merlina Willer	Merlina Willer	1/19/2092
LM-MPRS-77-0571		Yeseng, Malem	SI	3/10/1977	60'	Marres Tosie	Marres Tosie	Indefinite
LM-MPRS-77-0572		Yeseng, Malem	SI	3/2/1977	60'	Tulenkun Alokoa	Tulenkun Alokoa	Indefinite
LM-MPRS-77-0573		Yeseng, Malem	SI	3/2/1977	60'	Sadao Johnnyboy	Sadao Johnnyboy	Indefinite
LM-MPRE-93-0574	028M01&02	Molsron, Malem	Easement	1/19/1993	60'	Joseph Olter	Joseph Olter	1/18/2092
LM-MPRS-77-0575		Mosral, Malem	SI	2/23/1977	60'	Otnael Edmond	Otnael Edmond	Indefinite
LM-MPRE-01-0576		Mosral, Malem	Easement	8/23/2001	30'	Augustus Tara	Augustus Tara	8/22/2100
LM-MPRE-01-0577		Mosral, Malem	Easement	5/8/2001	60'	Lambert & Kenye L.	Lambert & Kenye L.	5/7/2100
LM-MPRS-77-0578		Mosral, Malem	SI	10/18/1977	60'	Moses Palsisa	Moses Palsisa	Indefinite

LM-MPRE-01-0579		Mosral, Malem	Easement	8/28/2001	60'	Abraham Anton	Abraham Anton	8/27/2100
LM-MPRE-01-0580		Pukunkiar, Malem	Easement	5/8/2001	60'	Likiak Langu	Likiak Langu	5/7/2100
LM-MPRS-77-0581		Lela, Malem	SI	2/10/1977	60'	Sukuo Langu	Sukuo Langu	Indefinite
LM-MPRE-01-0582		Lela, Malem	Easement	8/23/2001	30'	Augustus Tara	Augustus Tara	8/22/2100
LM-MPRE-01-0583		Lela, Malem	Easement	5/8/2001	30'	Carston Talley	Carston Talley	5/7/2100
LM-MPRE-01-0584		Lela, Malem	Easement	5/8/2001	60'	Rustom Kilafwasru	Rustom Kilafwasru	5/7/2100
LM-MPRE-93-0585		Lela, Malem	Easement	1/25/1993	60'	Kun Luey	Kun Luey	1/24/2092
LM-MPRE-93-0586		Lela, Malem	Easement	1/21/1993	60'	Salik Cornelius	Salik Cornelius	1/20/2092
LM-MPRE-01-0587		Inpukpuk, Malem	Easement	8/28/2001	60'	H.O. Shrew Jonas	Yasuo Jonas	8/27/2100
LM-MPRE-93-0588		Inpukpuk, Malem	Easement	1/25/1993	60'	Tamiko Tolennoa	Tamiko Tolennoa	1/24/2092
LM-MPRE-93-0589		Inpukpuk, Malem	Easement	1/25/1993	60'	Tolennoa Langu	Tolennoa Langu	1/24/2092
LM-MPRE-93-0590		Inmetak, Malem	Easement	1/20/1993	60'	Salik Cornelius	Salik Cornelius	1/19/2092
LM-MPRE-93-0591		Inmetak, Malem	Easement	2/3/1993	60'	Lyndon Cornelius	Lyndon Cornelius	2/2/2092
LM-MPRS-77-0592		Mutunfunak, Ma	SI	8/20/1977	60'	Kutal Clarence	Kutal Clarence	Indefinite
LM-MPRE-01-0593		Mutunfunak, Ma	Easement	5/8/2001	60'	Dwight S. Musrasrik	Dwight S. Musrasrik	5/7/2100
LM-MPRE-93-0594		Mutunfunak, Ma	Easement	2/1/1993	60'	Soloman Talley	Soloman Talley	1/31/2092
LM-MPRE-93-0595		Sroa, Malem	Easement	2/1/1993	60'	Soloman & Samuel T.	Soloman & Samuel T.	1/31/2092
LM-MPRE-93-0596	031M18	Sroa, Malem	Easement	1/20/1993	60'	Weyler Talley	Weyler Talley	1/19/2092
LM-MPRE-93-0597	032M02	Sroa, Malem	Easement	1/25/1993	60'	Kun Aaron	Kun Aaron	1/24/2092
LM-MPRE-01-0598		Kuplu, Malem	Easement	5/8/2001	30'	Hirosi Ismael	Hirosi Ismael	5/7/2100
LM-MPRS-77-0599		Kuplu, Malem	SI	3/2/1977	60'	Bercil Charley	Bercil Charley	Indefinite
LM-MPRE-01-0600		Kelak, Sroa	Easement	11/26/2001	60'	Linus George	Linus George/Lipar Geo	11/25/2100
LM-MPRE-01-0601		Pipi, Malem	Easement	5/8/2001	30'	Hirosi Ismael	Hirosi Ismael	5/7/2100
LM-MPRE-01-0602		Pinglap/Inpot	Easement	11/26/2001	60'	Linus George	Linus George/Lipar Geo	11/25/2100
LM-MPRE-01-0603		Inpuspusa/Sroa	Easement	11/26/2001	60'	Linus George	Linus George/Lipar Geo	11/25/2100
LM-MPRS-77-0604		Inpuspusa	SI	11/2/1977	60'	Linus George	Linus George/Lipar Geo	Indefinite
LM-MPRE-93-0605	033M12	Mutunsral	Easement	4/28/1993	60'	Madison Nena	Madison Nena	4/27/2092
LM-MPRE-93-0606		Yonsrokom	Easement	8/23/2001	60'	Neila G. Hedmon	Neila G. Hedmon	8/22/2100
LM-MPRE-01-0607		Kalemlem	Easement	5/8/2001	30'	Boyd Aaron	Boyd Aaron	5/7/2100
LM-MPRE-01-0608		Mutunsra	Easement	5/8/2001	30'	Hirosi Ismael	Hirosi Ismael	5/7/2100
LM-MPRE-00-0609		Inpuspusa	Easement		30'	Augustus Tara	William Tara	
LM-MPRE-98-0610	034M05&06 &34M14	Inpuspusa	Easement	11/17/1998	60'	Takeo George	Patrick Olter	11/16/2097
LM-MPRS-77-0611		Inpuspusa	SI	10/21/1977	60'	Arthur George	Arthur George	Indefinite

INPUSPUSA TO FWALWE SECTION IN UTWE MUNICIPALITY

Document No.	Parcel No.	Section	Type of Use Right	Date of Use Right	Width of Use Right	Original Landowner	Person Signed Use Right	Expiration Date
LM-UPRS-77-0611		Inpuspusa, Utwe	SI	3/3/1977	60'	Rison Wakuk	Rison Wakuk	Indefinite
LM-UPRS-77-0612		Inpuspusa, Utwe	SI	2/25/1977	60'	Rental Alik	Rental Alik	Indefinite
LM-UPRS-77-0613		Inpuspusa, Utwe	SI	2/22/1977	60'	Esra Nena	Esra Nena	Indefinite
LM-UPRS-77-0614		Inpuspusa, Utwe	SI	10/29/1977	60'	Tedrick Melander	Tedrick Melander	Indefinite
LM-UPRS-77-0615		Palusrik, Utwe	SI		60'	Alik Nena	Alik Nena	Indefinite
LM-UPRS-77-0616		Palusrik, Utwe	SI		60'	Elsward Livaie	Elsward Livaie	Indefinite
LM-UPRS-77-0617		Mutuntaa, Utwe	SI	10/1/1980	60'	Atino Paul	Atino Paul	Indefinite
LM-UPRS-77-0618		Telik, Utwe	SI		60'	Morres Wakuk	Morres Wakuk	Indefinite
LM-UPRS-77-0619		Wan Taf, Utwe	SI		60'	Palikkun Nena	Kinsiro Nena	Indefinite
LM-UPRS-77-0620		Wan Taf, Utwe	SI		60'	Esra Nena	Esra Nena	Indefinite
LM-UPRS-77-0621		Wan Taf, Utwe	SI		60'	Thomas Nena	Thomas Nena	Indefinite
LM-UPRS-77-0622		Wan Taf, Utwe	SI	9/16/1980	60'	Hadley Alik	Hadley Alik	Indefinite
LM-UPRS-77-0623		Wan Taf, Utwe	SI	9/30/1980	60'	Heirs of Edmond	Otnael Edmond	Indefinite
LM-UPRS-77-0624		Wan Taf, Utwe	SI	9/16/1980	60'	Kun I. Benjamin	Kun I. Benjamin	Indefinite
LM-UPRS-77-0625		Wan Taf, Utwe	SI	9/17/1980	60'	Rental Alik	Rental Alik	Indefinite
LM-UPRS-80-0626		Wan Utwe	SI	9/24/1980	60'	H.O. Isiah Benjamin	Wilmer Benjamin	Indefinite
LM-UPRS-80-0627		Wan Utwe	SI	9/16/1980	60'	H.O. Jacob Killin	Aliksa Killin	Indefinite
LM-UPRS-80-0628		Wan Utwe	SI	9/30/1980	60'	Likiak Benjamin	Likiak Benjamin	Indefinite
LM-UPRS-77-0629		Inkupar, Utwe	SI		60'	Lulu Tulenkun	Lulu Tulenkun	Indefinite
LM-UPRS-77-0630		Inkupar, Utwe	SI		60'	Harold Edmond	Harold Edmond	Indefinite
LM-UPRS-77-0631		Inkupar, Utwe	SI	9/18/1980	60'	Walter Tulenkun	Walter Tulenkun	Indefinite
LM-UPRS-77-0632		Finkol, Utwe	SI	9/23/1980	60'	Kilafwa Tulenkun	Kilafwa Tulenkun	Indefinite
LM-UPRS-77-0633		Finkol, Utwe	SI	9/17/1980	60'	Clarence Tulenkun	Clarence Tulenkun	Indefinite
LM-UPRS-77-0634		Finkol, Utwe	SI	3/5/1984	60'	Floyd Wakuk	Floyd Wakuk	Indefinite
LM-UPRS-77-0635		Finkol, Utwe	SI	9/16/1980	60'	Edward Wakuk	Edward Wakuk	Indefinite
LM-UPRS-77-0636		Finkol, Utwe	SI	3/21/1984	60'	Kun Johnithan	Kun Johnithan	Indefinite
LM-UPRS-77-0637		Finkol, Utwe	SI		60'	Kilafwa Lazeres	Kilafwa Lazeres	Indefinite
LM-UPRS-77-0638		Finkol, Utwe	SI		60'	Tadao Wakuk	Morres Wakuk	Indefinite
LM-UPRS-77-0639		Finkol, Utwe	SI	9/16/1980	60'	Kun Tilfas	Kun Tilfas	Indefinite
LM-UPRS-77-0640		Finkol, Utwe	SI	9/17/1980	60'	Windolin Tilfas	Windolin Tilfas	Indefinite
LM-UPRS-77-0641		Yelum, Utwe	SI		60'	Tedrick Melander	Kenye Tedrick	Indefinite
LM-UPRS-77-0642		Finmena, Utwe	SI	9/17/1980	60'	Nena T. Wakuk	Nena T. Wakuk	Indefinite
LM-UPRS-77-0643		Finmena, Utwe	SI		60'	Tulenkun T. Wakuk	Tulenkun T. Wakuk	Indefinite
LM-UPRS-77-0644		Finmena, Utwe	SI	9/25/1980	60'	Godwin Joel	Godwin Joel	Indefinite
LM-UPRS-77-0645		Inti, Utwe	SI		60'	Anson Nena	Anson Nena	Indefinite
LM-UPRS-77-0646		Inti, Utwe	SI		60'	Aldrate Nena	Aldrate Nena	Indefinite
LM-UPRS-77-0647		Yeni, Utwe	SI	9/25/1980	60'	Vanston Wakuk	Vanston Wakuk	Indefinite
LM-UPRS-77-0648		Yeni, Utwe	SI		60'	Tedrick Melander	Tedrick Melander	Indefinite
LM-UPRS-77-0649		Yeni, Utwe	SI	9/24/1980	60'	Godwin Joel	Godwin Joel	Indefinite
LM-UPRS-77-0650		Yeni, Utwe	SI	3/21/1984	60'	Alokoa P. Joe	Alokoa P. Joe	Indefinite
LM-UPRS-77-0651		Yeni, Utwe	SI	9/17/1980	60'	Nena T. Wakuk	Nena T. Wakuk	Indefinite
LM-UPRS-77-0652		Yeni, Utwe	SI	9/18/1980	60'	Martin Andrew	Martin Andrew	Indefinite
LM-UPRS-77-0653		Yeni, Utwe	SI	9/16/1980	60'	Aliksa Killin	Aliksa Killin	Indefinite
LM-UPRS-77-0654		Yeni, Utwe	SI		60'	Nena Thomas	Nena Thomas	Indefinite
LM-UPRS-77-0655		Yiesron, Utwe	SI	9/18/1980	60'	Aaron Wakuk	Aaron Wakuk	Indefinite
LM-UPRS-77-0656		Yiesron, Utwe	SI	9/16/1980	60'	Kotaro Wakuk	Kotaro Wakuk	Indefinite
LM-UPRS-77-0657		Yiesron, Utwe	SI	9/16/1980	60'	Yuston Wakuk	Yuston Wakuk	Indefinite
LM-UPRS-77-0658		Yiesron, Utwe	SI	9/23/1980	60'	Honosr Wakuk	Honosr Wakuk	Indefinite

Parcel No. 056-K-01

ORIGINAL

Certificate of Title

This Certificate is issued pursuant to 67 TTC Section 117 and an order of the Kosrae State Land Commission of the Federated States of Micronesia, made on the 28th day of June, 19 85, numbered 056-K-01 in the files of said Land Commission. This is to certify that Kosrae State Public Land Authority

now residing in N/A Municipality, Kosrae State, is (are) the owner(s) of an estate in Fee Simple in land situated in Lelu Municipality, Kosrae State, Federated States of Micronesia, known as Parcel Number 056-K-01, and containing an area of 1,141,811 square meters, more or less, as more particularly described on Drawing/Cadastral Plat Number 056-K-00, the original of which was registered with the Office of the Kosrae State Registrar as Document Number 484, on the 6th day of April, 19 84, subject, however, to the estates, liens, charges and encumbrances noted on the reverse hereof. In accordance with 67 TTC Section 119 from the date of this Certificate all transactions involving the land described herein, except any lease or use right for a term not exceeding one (1) year, shall be registered with the Registrar instead of being recorded with the Clerk of Courts.

In witness whereof, we have hereunto set our hands and caused our official seal to be affixed, this 28th day of June, 19 85.

By: Mitchell K. Aaron
Senior Land Commissioner

By: Jun N. [illegible]
Commissioner

By:
Commissioner

Registered this 28th day of June, 19 85, at 9:05 A.M./~~P.M.~~, as Document Number 683, at the Registrar's Office, Kosrae State.

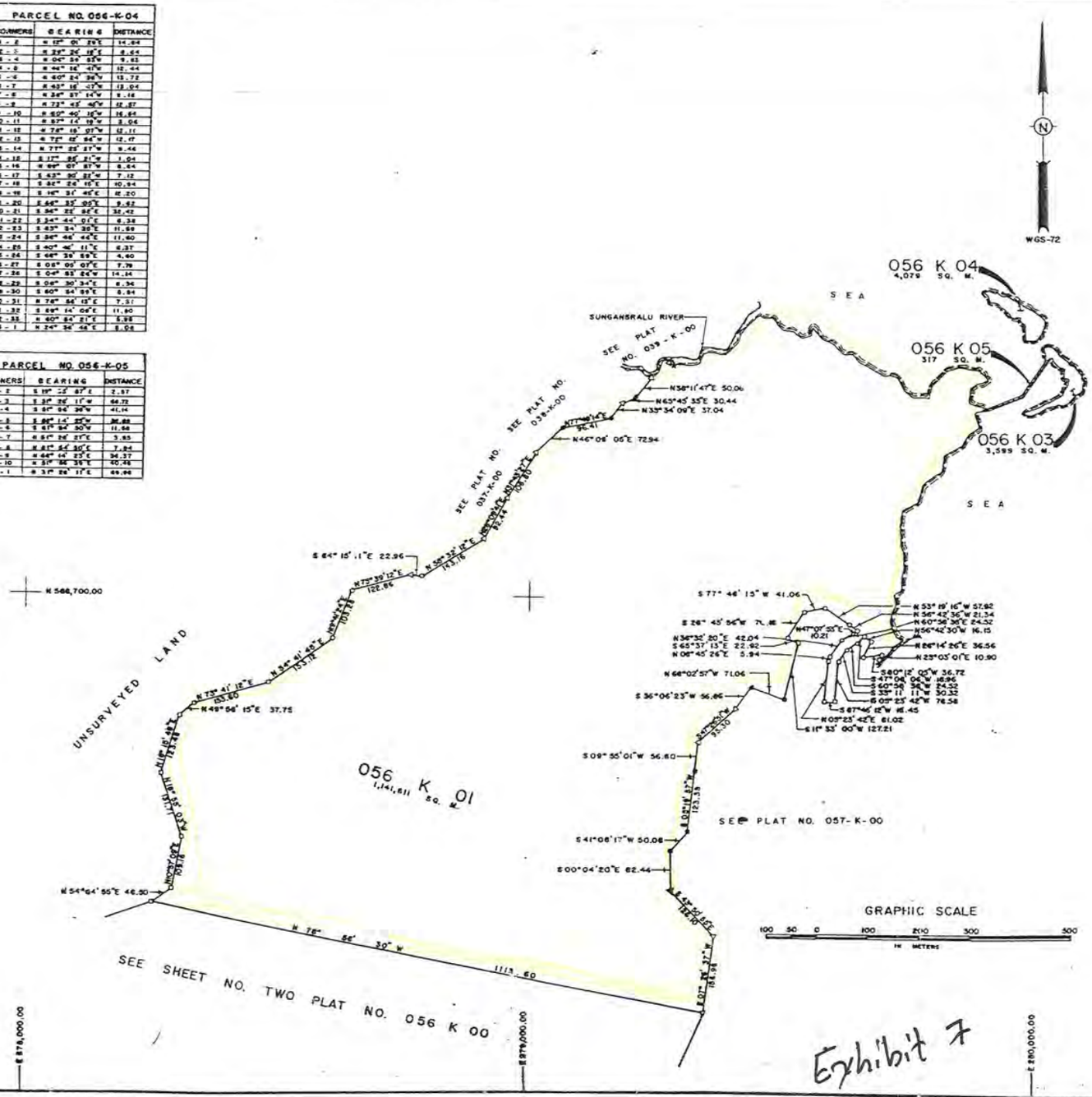
By: Mitchell K. Aaron
Registrar

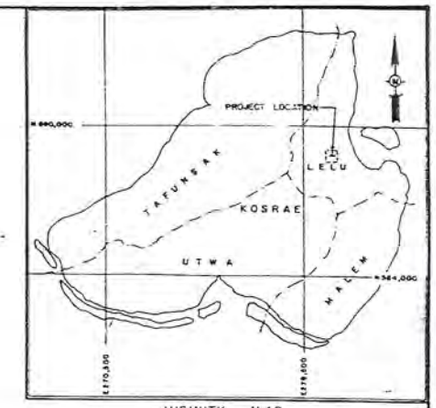
PARCEL NO. 056-K-01		
CORNERS	BEARING	DISTANCE
29 - 30	N 42° 40' 22"E	20.84
30 - 31	N 17° 41' 41"E	12.53
31 - 32	N 67° 27' 05"E	14.60
32 - 33	S 82° 55' 04"E	5.72
33 - 34	S 74° 46' 00"E	21.65
34 - 35	S 61° 37' 44"E	19.01
35 - 36	N 65° 43' 26"E	14.82
36 - 37	N 33° 39' 47"E	23.27
37 - 38	N 7° 00' 23" 30"E	12.46
38 - 39	S 71° 00' 58"E	29.61
39 - 40	N 46° 59' 03"E	26.92
40 - 41	N 19° 32' 12"E	28.26
41 - 42	N 43° 32' 40"E	31.16
42 - 43	N 56° 16' 07"E	17.66
43 - 44	S 65° 16' 26"E	6.70
44 - 45	S 26° 43' 10"E	22.66
45 - 46	S 37° 13' 46 E	29.96
46 - 47	S 60° 54' 35"E	24.87
47 - 48	S 60° 21' 36"E	20.44
48 - 49	N 74° 27' 17"E	17.64
49 - 50	N 18° 45' 24"E	16.33
50 - 51	S 31° 30' 12"E	30.73
51 - 52	S 75° 31' 16"E	22.99
52 - 53	S 49° 04' 21"E	32.16
53 - 54	N 66° 34' 23"E	17.82
54 - 55	S 35° 06' 47"E	17.44
55 - 56	S 40° 14' 19"E	37.77
56 - 57	S 64° 18' 40"E	24.60
57 - 58	S 29° 42' 12"E	32.64
58 - 59	S 33° 31' 32"E	17.96
59 - 60	S 63° 06' 52"E	30.32
60 - 61	N 20° 53' 04"E	30.04
61 - 62	N 46° 44' 32"E	40.88
62 - 63	N 70° 30' 16"E	14.34
63 - 64	S 62° 31' 21"E	47.72
64 - 65	S 20° 36' 44"E	33.74
65 - 66	S 82° 22' 41"W	31.80
66 - 67	S 01° 88' 23"W	29.80
67 - 68	S 64° 57' 53"E	21.03
68 - 69	S 17° 42' 46"E	33.48
69 - 70	S 51° 29' 27"W	12.48
70 - 71	N 74° 22' 12"W	24.48
71 - 72	S 21° 00' 12"E	40.72
72 - 73	S 39° 30' 42"W	27.10
73 - 74	S 22° 13' 36"W	20.94
74 - 75	S 61° 46' 02"W	41.75
75 - 76	S 12° 24' 40"W	34.86
76 - 77	S 55° 10' 22"W	44.00
77 - 78	S 15° 32' 10"W	42.16
78 - 79	S 43° 32' 06"W	30.26
79 - 80	S 05° 56' 44"W	32.33
80 - 81	S 82° 03' 01"E	34.53
81 - 82	S 11° 01' 36"E	28.45
82 - 83	S 00° 53' 06"W	17.09
83 - 84	S 06° 37' 38"W	26.88
84 - 85	S 04° 33' 42"W	24.90
85 - 86	S 59° 05' 56"W	16.32
86 - 87	S 23° 21' 32"E	12.27
87 - 88	S 20° 09' 45"W	21.64
88 - 89	S 07° 39' 58"W	12.72
89 - 90	S 60° 22' 32"E	15.34
90 - 91	S 06° 30' 16"W	10.51
91 - 92	S 46° 53' 22"E	18.64
92 - 93	S 27° 55' 26"W	23.04
93 - 94	S 45° 00' 04"W	19.37
94 - 95	S 3° 22' 47"W	12.22

PARCEL NO. 056-K-03		
CORNERS	BEARING	DISTANCE
1 - 2	N 76° 44' 34"E	14.87
2 - 3	N 69° 28' 20"E	19.16
3 - 4	N 64° 11' 09"E	23.09
4 - 5	N 24° 17' 25"E	21.24
5 - 6	N 47° 05' 25"E	19.78
6 - 7	N 69° 25' 47"E	20.26
7 - 8	N 07° 50' 46"E	23.74
8 - 9	N 22° 46' 04"W	34.42
9 - 10	N 44° 06' 25"W	21.66
10 - 11	N 56° 41' 45"W	26.76
11 - 12	N 44° 27' 56"W	21.34
12 - 13	N 37° 01' 27"W	11.66
13 - 14	S 72° 27' 18"W	18.66
14 - 15	S 18° 38' 06"E	16.37
15 - 16	S 19° 33' 07"E	10.96
16 - 17	N 40° 07' 07"E	11.81
17 - 18	S 25° 39' 22"E	20.16
18 - 19	S 56° 81' 06"E	16.47
19 - 20	S 13° 34' 56"W	16.10
20 - 21	S 81° 01' 36"E	14.96
21 - 22	S 18° 51' 50"W	15.54
22 - 23	S 21° 48' 30"W	23.80
23 - 24	S 66° 33' 00"W	12.40
24 - 25	S 70° 35' 22"W	16.74
25 - 26	S 63° 00' 27"W	33.24
26 - 1	S 48° 27' 16"W	10.84

PARCEL NO. 056-K-04		
CORNERS	BEARING	DISTANCE
1 - 2	N 12° 01' 20"E	14.64
2 - 3	N 39° 24' 15"E	8.64
3 - 4	N 04° 33' 55"W	9.83
4 - 5	N 44° 18' 47"W	12.44
5 - 6	N 60° 24' 36"W	13.72
6 - 7	N 43° 18' 17"W	13.04
7 - 8	N 24° 27' 14"W	8.16
8 - 9	N 73° 43' 40"W	12.27
9 - 10	S 69° 40' 18"W	16.64
10 - 11	N 37° 14' 19"W	8.04
11 - 12	N 78° 19' 27"W	12.11
12 - 13	N 72° 12' 54"W	12.17
13 - 14	N 77° 25' 27"W	9.46
14 - 15	S 17° 35' 21"W	1.04
15 - 16	N 69° 01' 37"W	8.44
16 - 17	S 63° 30' 33"W	7.12
17 - 18	S 24° 26' 15"E	10.94
18 - 19	S 16° 31' 46"E	12.20
19 - 20	S 64° 33' 05"E	9.52
20 - 21	S 54° 22' 24"E	32.42
21 - 22	S 34° 44' 01"E	6.38
22 - 23	S 43° 34' 30"E	11.69
23 - 24	S 36° 46' 44"E	11.60
24 - 25	S 40° 46' 11"E	6.31
25 - 26	S 46° 39' 59"E	4.60
26 - 27	S 05° 05' 07"E	7.79
27 - 28	S 04° 53' 24"W	14.14
28 - 29	S 06° 30' 34"E	6.34
29 - 30	S 60° 54' 59"E	6.84
30 - 31	N 74° 54' 13"E	7.31
31 - 32	S 69° 14' 04"E	11.80
32 - 33	N 40° 54' 21"E	5.98
33 - 1	N 24° 34' 44"E	5.08

PARCEL NO. 056-K-05		
CORNERS	BEARING	DISTANCE
1 - 2	S 19° 12' 87"E	2.87
2 - 3	S 36° 26' 17"W	66.72
3 - 4	S 01° 04' 39"W	41.14
4 - 5	S 86° 14' 22"W	36.86
5 - 6	S 61° 54' 30"W	11.56
6 - 7	N 61° 26' 21"E	3.85
7 - 8	N 81° 54' 30"E	7.84
8 - 9	N 64° 14' 23"E	34.37
9 - 10	N 31° 56' 35"E	10.78
10 - 1	N 37° 26' 17"E	69.96





VICINITY MAP
PROXMATE SCALE 1:100,000

LEGEND:

- Boundary line.
- Railroad (single track).
- Set .102 X .102 Land Management standard conc. markers.
- Set .127 X .127 prewar existing concrete markers. (dep. surveys).
- Triangulation stations.
- Triangular existing concrete markers. (dep. surveys).
- River.
- Meander line along the O.H.W.M. of the river and the sea.

NOTES:

1. SURVEY BASED ON SECONDARY CONTROL STA.(S) WHICH TIED TO 1974 AND ADJUSTMENT BY DMA OF MIRAK AND SECOR TO WORLD GEOTETIC SYSTEM -72 (WGS-72).
2. THIS SHEET ONE(1) OF PLAT NO. 056 K 00 CAATAINS FOUR (4) PARCELS WITH AN AREA OF 1,145,806 SQUARE METERS.
3. PROPERTY CORNERS AND LINES SHOWN HEREON ARE ACCORDING TO THOSE COMPILED BY THE KOSRAE LRT AND PARTIES INVOLVED.
4. FOR BOUNDARY DESCRIPTION OF PARCEL NO. 056-K-03, 056-K-04, 056-K-05, & PART OF PARCEL NO. 056-K-01, REFER TO TABULATION TABLES SHOWN AT LEFT.

Register this 6th day of ___ 19__ at 3:00 o.m. o.m. as Document Number 4-0-0, at Registrar's Office, Kosrae District.

By: [signature]
Registrar, Kosrae

TRUST TERRITORY OF THE PACIFIC ISLANDS
DEPARTMENT OF RESOURCES AND DEVELOPMENT
DIVISION OF LANDS AND SURVEYS

KOSRAE STATE KOSRAE ISLAND
LELU MUNICIPALITY

CADASTRAL PLAT

PORTION OF TOFOL SECTION

I CERTIFY THAT THIS SURVEY WAS PERFORMED BY ME OR UNDER MY SUPERVISION IN ACCORDANCE WITH EXISTING LAWS AND REGULATIONS.

[signature]
REGISTERED SURVEYOR — DATE

SURVEY AUTHORIZED BY: GOVERNOR — DATE
APPROVAL RECOMMENDED BY: CADASTRAL SURVEYOR — DATE
APPROVED: [signature] LAND COMMISSIONER — DATE

SURVEY DATA	DATE	SCALE 1:4,000
FIELD T.H./E.E.	KOSRAE 3/76	056 K 00
FIELD BOOK NO. LR B.E.-15		
COMPUTED BY: R.G./H.A.	3/76 & 3/83	
DRAFTED BY S. WANUK	4/2/84	
CHECKED BY H.A.	4/4/84	

Exhibit 7

Parcel No. 034-M-04

OWNER'S DUPLICATE CERTIFICATE

Certificate of Title

Kosrae Land Court

This Certificate is issued pursuant to S.L. 7-126 Section 11.615.

This is to certify that William A. Tara

now residing in Malem Municipality is/are owner(s) of an estate in Fee Simple in land situated in Malem which is more particularly described as follows:

Parcel No. 034-M-04 locally called Inpuspusa, situated and being located in Malem municipality.

as shown on the Division of Surveying and Mapping Official Cadastral Plat Number 034M00 dated June 12,1995 and containing an area of 1,468 square meters, subject, however, to the estates, liens, charges, conditions and encumbrances noted on the reverse hereof. In accordance with S.L. No. 7-126 Section 11.615 from the date of this Certificate, all transactions involving the land described herein, except any lease or use right for a term not exceeding one (1) year, shall be registered with the State Registrar.

In Witness Whereof, we hereunto set our hands and caused our official seal to be affixed, this 4th day of October, 2016.

By: Robinson H. Timothy

Presiding Justice

Registered this 4th day of October 2016 at 12:42 AM/PM. as Document Number 159066 at the Registrar's Office, Land Court, Kosrae.

Alokoa H. Sigrah

REGISTRAR

Exhibit 6

Parcel No. 034-M-03

OWNER'S DUPLICATE CERTIFICATE

Certificate of Title

Kosrae Land Court

This Certificate is issued pursuant to S.L. 7-126 Section 11.615.

This is to certify that William A. Tara

now residing in Malem Municipality is/are owner(s) of an estate in Fee Simple in land situated in Malem which is more particularly described as follows:

Parcel No. 034-M-03 locally called Inpuspusa, situated and being located in Malem municipality.

as shown on the Division of Surveying and Mapping Official Cadastral Plat Number 034M00 dated June 12,1995 and containing an area of 12,689 square meters, subject, however, to the estates, liens, charges, conditions and encumbrances noted on the reverse hereof. In accordance with S.L. No. 7-126 Section 11.615 from the date of this Certificate, all transactions involving the land described herein, except any lease or use right for a term not exceeding one (1) year, shall be registered with the State Registrar.

In Witness Whereof, we hereunto set our hands and caused our official seal to be affixed, this 4th day of October, 20 16.

KOSRAE LAND COURT 2002 OFFICIAL SEAL

By Robinson H. Timothy

Presiding Justice

Registered this 4th day of October 20 16 at 12:40 AM/PM, as Document Number 159065 at the Registrar's Office, Land Court, Kosrae.

Alokpa E. Sigrah

REGISTRAR

Exhibit 6

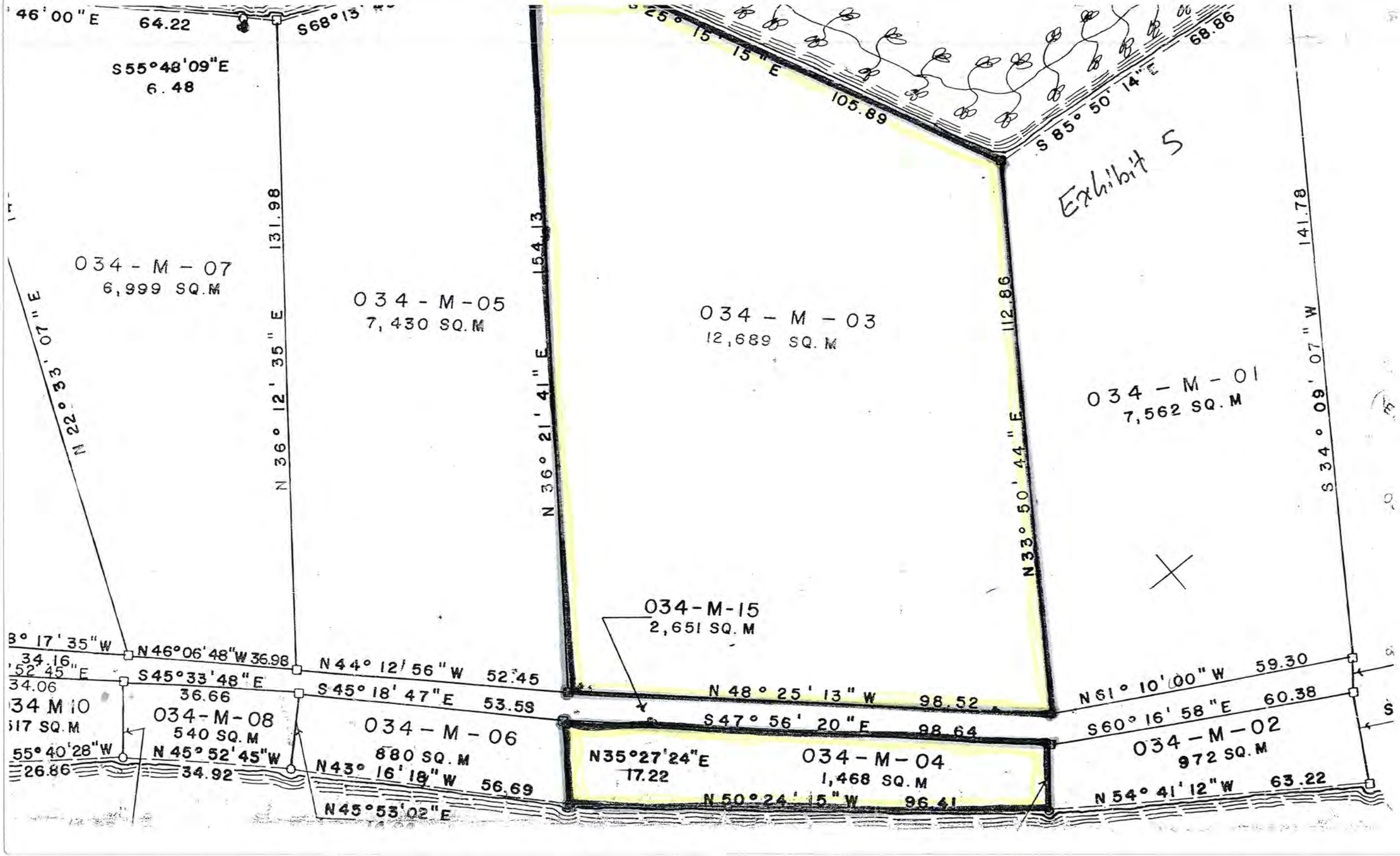


Exhibit 5
46'00"E 64.22
S68°13'
S55°48'09"E
6.48
131.98
N 36° 12' 35" E
N 22° 33' 07" E
034 - M - 07
6,999 SQ.M
034 - M - 05
7,430 SQ.M
154.13
N 36° 21' 41" E
25° 15' 15" E
105.89
S 85° 50' 14" E
68.86
034 - M - 03
12,689 SQ.M
112.86
N 33° 50' 44" E
141.78
S 34° 09' 07" W
034 - M - 01
7,562 SQ.M
034-M-15
2,651 SQ.M
3° 17' 35"W
34.16
52' 45" E
34.06
034 M 10
517 SQ.M
55° 40' 28" W
26.86
N46°06'48"W 36.98
S45°33'48"E
36.66
034-M-08
540 SQ.M
N 45° 52' 45" W
34.92
N 44° 12' 56" W 52.45
S45° 18' 47" E 53.58
034 - M - 06
880 SQ.M
N43° 16' 18" W 56.69
N45°53'02"E
N 48° 25' 13" W 98.52
S47° 56' 20" E 98.64
N35°27'24"E
17.22
034 - M - 04
1,468 SQ.M
N 50° 24' 15" W 96.41
N 61° 10' 00" W 59.30
S60° 16' 58" E 60.38
034 - M - 02
972 SQ.M
N 54° 41' 12" W 63.22

STATEMENT OF INTENT

I, Masaky T., in consideration of similar grants by other property owners hereby grant a sixty (60) foot wide easement and right of way across my real property situated at Tenwak Section, Lelu Municipality, Kosrae District for all public purposes including: the right to grade, level, fill, drain, construct, erect, maintain, operate, inspect, remove, repair, and rebuild the following:

(a) a road or highway of the usual width and character sufficient for all purposes of transportation and travel, together with such bridges, culverts, ramps and cuts as may be necessary; and

(b) underground and above ground pipelines, mains and pumps for the purpose of conveying water and sewage; and

(c) electric transmission, distribution and telephone poles with all necessary wires, cables and fixtures thereon; and

(d) all other facilities that are determined by the Government to be in the public interest.

Said document of Intent shall suffice until such time that a survey can be conducted, to accurately locate and describe said ~~Farm~~ main Road. When this is completed I agree to execute a deed betwen myself and the Trust Territory Government for said sixty (60) foot wide right of way.

AND THE GRANTOR FURTHER GRANTS, without compensation, the right to the Government to clear said right of way and keep it clear of brush, trees and fire hazards, including the right to cut, trim and remove trees and overhanging branches, if any.

IN WITNESS WHEREOF, the parties have subscribed their names below.

GRANTOR

By: Masaki Thomas

Date: 2/10/77

GOVERNMENT OF THE TRUST TERRITORY
OF THE PACIFIC ISLANDS

By: James K. Pualoa
James K. Pualoa
District Administrator, Kosrae District

Date: 2/10/77

I, Norio Skilling, employee under Trust Territory Government hereby certify that the above-written STATEMENT OF INTENT was executed in my presence by the above-named Grantor.

N Skilling
Norio Skilling

Exhibit 9

Exhibit 9

Filed and recorded in Book No. One, Page Sit (6),
at 02:03 A.M./P.M., this 9th day of May, 1991.

Land Commission
State of Kosrae

KOSRAE STATE GOVERNMENT

KOSRAE STATE LAND COMMISSION
P.O. BOX LC
TOFOL, KOSRAE FM #96944

Phone: (691) 3025
Fax: (691) 3162
TELEX: GOV KOSRAE

DATE: April 22, 1993

NOTE:

This subject Land Parcel No. (s) 010-M-06 and N/A

has been issued Certificate of Title

to Mr. Kun Aaron as Fee Simple Estate.

The aforementioned are the informations reflected in our records.

Kulo.

for Clifton Abraham
Land Document Registrar

Grant of Easement

Gov't Contract Form 3
Contract Number _____

GRANT OF EASEMENT

THIS GRANT OF EASEMENT, is made this 13th day of August, 19 92, by and between the Government of the Kosrae State, (hereinafter "Government") and Mr. Kun Aaron of Malem Municipality, Kosrae State, (hereafter "Grantor").

RECITALS

WHEREAS, Grantor represents to the Government that he is the legal owner of, or possesses or represents all interest in, a certain parcel of land located in Malem Municipality, Kosrae State, Federated States of Micronesia;

WHEREAS, the Government desires to enter the land of the Grantor to construct/maintain public road system and all public utilities such as electrical distribution system, water lines, sewer lines and other related public purposes

WHEREAS, the Grantor desires to grant to the Government a sixty (60') foot wide easement to permit the Government to conduct the business set forth above;

WHEREAS, the parties have met, negotiated and agreed to the granting of an easement under the following terms and conditions;

NOW, THEREFORE, in consideration of the mutual promises hereinafter set forth, the parties agree as follows:

ARTICLE 1. GRANT OF EASEMENT

The Grantor hereby grants to the Government of sixty (60') foot wide easement and right of way across the real property (hereinafter "Property") located at Malem Municipality, Mutenpal Section, more particularly described as Parcel No. 010M06, as shown on Kosrae State Plat No. 010M00, a copy which is attached hereto.

ARTICLE 2. TERM

This Grant of Easement shall be effective on the date of this instrument and shall continue in effect for a term of ninety nine (99) years.

ARTICLE 3. CONSIDERATION

In consideration of the Grant of Easement set forth in Article 1 herein, the Government shall pay to the Grantor the sum of zero ($ 0.0) Dollars, payable on the date of this instrument.

ARTICLE 4. PURPOSE

The Government shall utilize the property for the purpose of constructing/ maintaining public road system and all public utilities such as Electrical Distribution system, water lines, sewer lines, and other related purposes.

ARTICLE 5. CONSTRUCTION DAMAGE BY GOVERNMENT AND COMPENSATION

The Grantor agrees that there shall be no compensation for any damage caused to trees and crops on the property by the actions of the Government.

ARTICLE 6. WARRANTY OF OWNERSHIP

The Grantor covenants and warrants that he possesses or represents all interests, proprietary and otherwise, in the premises and the Grantor agrees to indemnify and hold the Government harmless from all suits, claims and demands of ownership made against the Government because of this conveyance and agrees to satisfy fully all other persons having ownership interests in the premises as their interest may appear under Kosraean custom or otherwise, and further Grantor agrees to defend against all suits of ownership that may arise.

ARTICLE 7. GOVERNMENT REPRESENTATIVE

The authorized representative of the Government for the purpose of this Grant of Easement shall be the Governor of Kosrae State.

ARTICLE 8. GRANT OF EASEMENT COMPLETE

It is expressly agreed that this Grant of Easement contains all of the terms, conditions and agreements between the parties relating to the Premises and that no prior or collateral oral or written understanding or agreement pertaining to premises shall be valid or of any force or effect and that terms and conditions of this Grant of Easement cannot be altered, changed or modified except in writing signed by the parties hereto.

ARTICLE 9. GRANT OF EASEMENT BINDING

It is agreed that the stipulations and conditions contained in the Grant of Easement shall be binding upon the heirs, legal representative, successors and assigns of both parties.

ARTICLE 10. TRANSLATION

This instrument shall be translated into Kosraen. In the event of a conflict, the English language version shall govern.

IN WITNESS WHEREOF, the parties have executed this instrument on the date set forth above.

Fund Available Account No. _____

_____ Director of Finance

_____ Date

Numbered and Legal Review completed

_____ Attorney General

4-26-93 Date

GRANTOR

_____ Kun Aaron

1-25-93 Date

GOVERNMENT

_____ Thurston K. Siba
Governor, Kosrae State

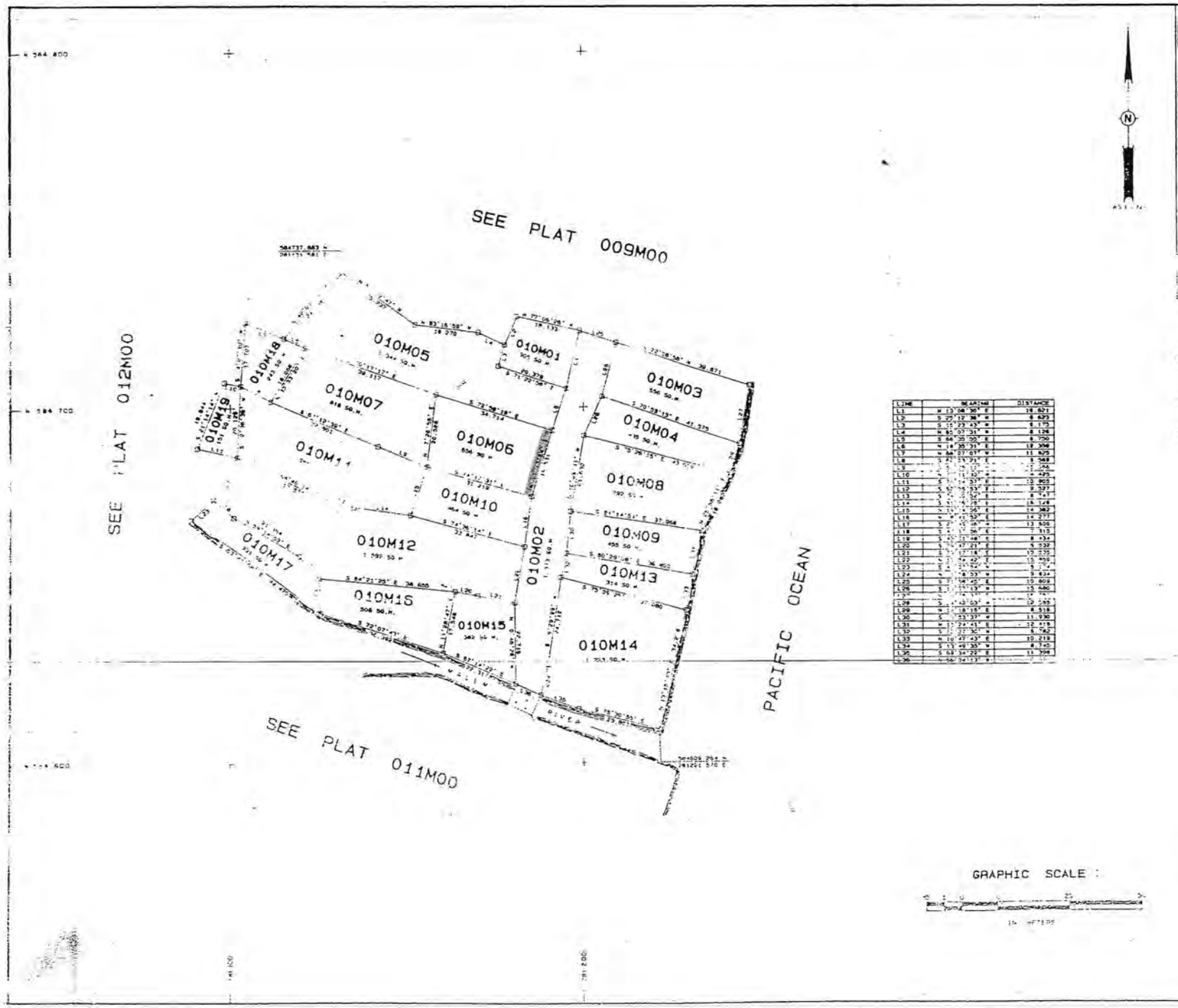
4/28/93 Date

Filed and recorded in Book #1, Page 17, at 11:07 A.M./P.M., this 29th day of April, 19 93.

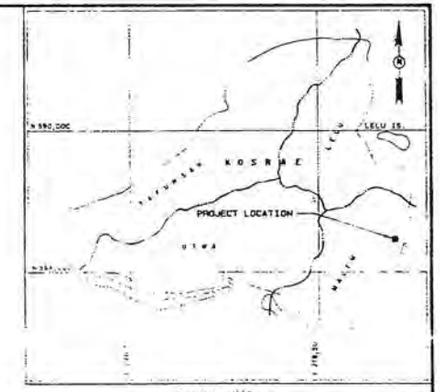
Register this 29th day of April 19 93, at 1:57 A.M./P.M., as Document Number 3345, at Registrar's Office, Kosrae District.

By: _____ Registrar, Kosrae

for Zhinda Kasmo
Registrar
Land Commission, Kosrae



LINE	BEARING	DISTANCE
L1	N 13°08'30" E	18.621
L2	S 25°12'36" E	8.623
L3	S 16°23'43" W	8.175
L4	N 80°07'31" W	8.126
L5	S 64°25'50" E	8.750
L6	N 14°35'31" E	12.308
L7	N 64°27'27" W	11.825
L8	S 27°21'51" W	5.569
L9	[illegible]	[illegible]
L10	[illegible]	[illegible]
L11	S [illegible]°11'37" E	10.800
L12	S 50°16'53" E	9.527
L13	S [illegible]°[illegible]'[illegible] E	8.147
L14	S [illegible]°[illegible]'[illegible] E	16.148
L15	N [illegible]°[illegible]'[illegible] E	14.383
L16	N [illegible]°41'53" E	14.277
L17	S [illegible]°[illegible]'[illegible] W	13.500
L18	S [illegible]°[illegible]'[illegible] E	7.315
L19	S [illegible]°[illegible]'48" E	8.134
L20	S [illegible]°47'21" E	5.320
L21	S [illegible]°47'18" E	10.235
L22	S [illegible]°[illegible]'[illegible] E	13.950
L23	S [illegible]°[illegible]'[illegible] E	[illegible]
L24	S [illegible]°[illegible]'33" E	5.834
L25	S [illegible]°[illegible]'[illegible] E	10.802
L26	S [illegible]°[illegible]'13" E	13.680
L27	[illegible]	[illegible]
L28	S [illegible]°43'53" E	10.245
L29	N [illegible]°18'15" E	8.518
L30	S [illegible]°53'37" E	11.930
L31	N [illegible]°74'41" E	12.473
L32	S [illegible]°[illegible]'50" E	5.742
L33	N 10°47'43" E	10.219
L34	S 53°45'35" E	8.740
L35	S 53°34'22" E	11.394
L36	N 56°34'13" W	[illegible]



VICINITY MAP
APPROX SCALE 1 96,000

LEGEND:

- SET 100 x 100 CONCRETE MONUMENT
- SET 1INCH ROD
- LOT LINE
- SHORE LINE

NOTES:

1. SURVEY BASED ON SECONDARY CONTROL POINT WHICH IS TIED TO 1974 AND ADJUSTMENT BY DNA OF HIRAM AND SECOR SURVEY TO WGS-72.
2. [illegible]
3. ROAD VARIES IN WIDTH.
4. THIS CADASTRAL PLAT CONTAINS AN AREA OF 12,[illegible] SQUARE METERS IN 19 PARCEL
5. THE HIGHEST PARCEL NUMBER ON THIS PLAT IS 010M19.
6. PROPERTY CORNERS AND LINES SHOWN HEREON ARE ACCORDING TO THOSE COMPILED BY THE KOSRAE LRT AND PARTIES INVOLVED.

REGISTERED THIS 19th DAY OF [illegible] 19[illegible] AT 0:[illegible] AM DOCUMENT NO. 1009 AT THE OFFICE OF THE STATE REGISTRAR KOSRAE STATE

REGISTRAR

GRAPHIC SCALE :

10 METERS

KOSRAE STATE LAND COMMISSION
GOVERNMENT OF THE STATE OF KOSRAE
FEDERATED STATES OF MICRONESIA

SECTION (S) OF MUTENPSL
MUNICIPALITY OF MALEM
KOSRAE ISLAND, EASTERN CAROLINE ISLANDS

CADASTRAL PLAT

SURVEYOR — DATE 12-11-86

SURVEY DATA — DATE — SCALE 1 : 50

010M00

Parcel No. 068-K-05

OWNER'S
DUPLICATE
CERTIFICATE

Certificate of Title

This Certificate is issued pursuant to Section KC 11.616 and Section KC 11.617(1) of the Kosrae Code and a determination of the Kosrae State Land Commission of the Federated States of Micronesia, made on the 28th day of June, 19 85, numbered 068K05 in the files of said Land Commission. This is to certify that Kosrae State Public Land Authority

now residing in Lelu Municipality, Kosrae State, is (are) the owner(s) of an estate in Tenancy-in-Common in land situated in Lelu Municipality, Kosrae State, Federated States of Micronesia known as Parcel Number 068-K-05, and containing an area of 3,440 square meters, more or less, as more particularly described on Drawing/Cadastral Plat Number 068-K-00, the original of which was registered with the Office of the Kosrae State Land Commission as Document Number 1002, on the 17th day of December, 19 86, subject, however, to the estates, liens, charges and encumbrances noted on the reverse hereof. In accordance with Section KC 11.617 from the date of this Certificate all transactions involving the land described herein, except any lease or use right for a term not exceeding one (1) year, shall be registered with the Registrar of the Land Commission instead of being recorded with the Clerk of Courts.

In witness whereof, we have hereunto set our hands and caused our official seal to be affixed, this 31st day of March, 19 94.

Exhibit 3

By: Richard Sigrah
Senior Land Commissioner

By: Johnston Jonas
Associate Commissioner

By:
Associate Commissioner

Registered this 1st day of April, 19 94, at 9:44 A.M./P.M., as Document Number 3552, at the Land Commission Registrar's Office, Kosrae State.

By:
Registrar

TAFUNSAK MUNICIPALITY

FINAL PLAT	10,031,444 SQ. M.
PRELIMINARY PLAT	767,541 SQ. M.
UNSURVEYED	58,009 SQ. M.
SURVEYED NOT MAP	N O N E
MANGROVE AREA	5,494,618 SQ. M.

Data as of May 31, 2010

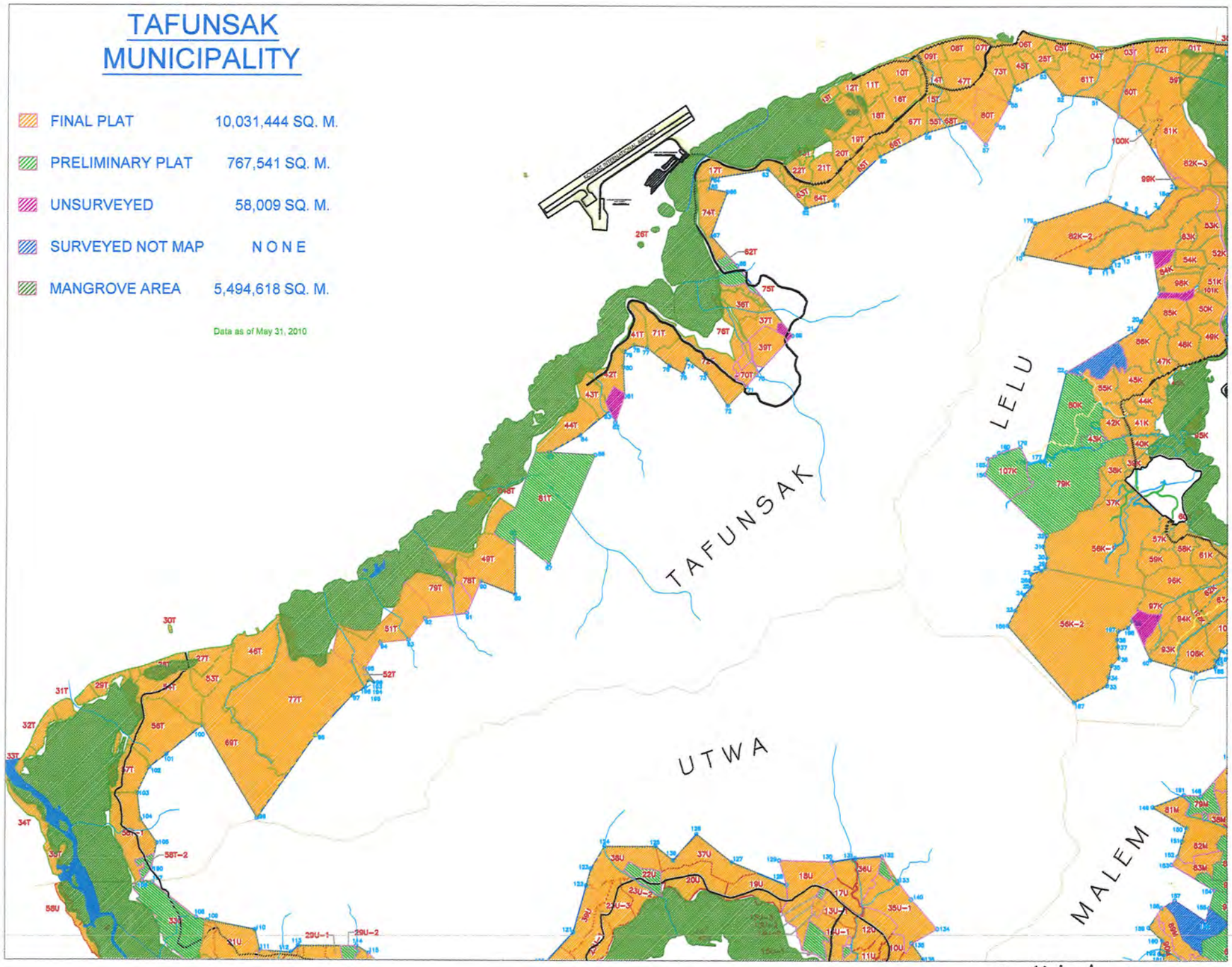


Exhibit 1

SEE PLAT 005U00

004U17

004U22

004U16

004U15

004U18

004U11

004U13

004U14

004U19

004U12

004U10

004U20

004U09

004U07

004U08

004U05

004U06

004U21

PACIFIC OCEAN

004U04

Existing Landfill Area
Utwe Boat Marina

004U02

MANGROVE

004U03

004U01

SEE PLAT 003U00

Exhibit 4

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GRAPHIC SCALE

LEGEND

NOTES

KOSRAE STATE LAND COMMISSION

FEDERATED STATES OF MICRONESIA

CADASTRAL PLAT

004U00

Exhibit 2
068K01
59 sq.m
068K02
1,691 sq.m
068K03
2,990 sq.m
068K04
1,439 sq.m
068K05
3,441 sq.m
068K06
2,657 sq.m
7,448
068K07
2,542 sq.m
8,442
068K08
7,135 sq.m
N 588,300

LM-UPRS-77-0659	Yiesron, Utwe	SI		60'	John Martin	John Martin	Indefinite	
LM-UPRS-77-0660	Yiesron, Utwe	SI	9/22/1980	60'	H.O. Taulung	KunTaulung	Indefinite	
LM-UPRS-77-0661	Yiesron, Utwe	SI		60'	Charley Jim	Charley Jim	Indefinite	
LM-UPRS-77-0662	Maal, Utwe	SI	9/18/1980	60'	Martin Andrew	Martin Andrew	Indefinite	
LM-UPRS-77-0663	Maal, Utwe	SI		60'	Ludwig Lorena	Ludwig Lorena	Indefinite	
LM-UPRS-77-0664	Maal, Utwe	SI	9/18/1980	60'	Kenye Morris	Kenye Morris	Indefinite	
LM-UPRS-77-0665	Maal, Utwe	SI		60'	H.O. Mathew	Benton Nena	Indefinite	
LM-UPRS-77-0666	Maal, Utwe	SI	9/16/1980	60'	Kinere Nena	Kinere Nena	Indefinite	
LM-UPRS-77-0667	Maal, Utwe	SI		60'	Elsward Livaie	Elsward Livaie	Indefinite	
LM-UPRS-77-0668	TafuWan, Utwe	SI		60'	Palikkun Andrew	Palikkun Andrew	Indefinite	
LM-UPRS-77-0669	TafuWan, Utwe	SI	9/18/1980	60'	Martin Andrew	Martin Andrew	Indefinite	
LM-UPRS-77-0670	Parpat, Utwe	SI	9/17/1980	60'	Benjamin Jr.	Benjamin Jr.	Indefinite	
LM-UPRS-80-0671	Tafeyuut, Utwe	SI	9/17/1980	60'	Sloving Tilfas	Sloving Tilfas	Indefinite	
LM-UPRS-80-0672	Tafeyuut, Utwe	SI	9/30/1980	60'	Thurston Siba	Thurston Siba	Indefinite	
LM-UPRS-80-0673	Tafeyuut, Utwe	SI	9/25/1980	60'	H.O. Alik John	Teddy John	Indefinite	
LM-UPRS-80-0674	Tafeyuut, Utwe	SI	9/16/1980	60'	Kun Tilfas	Kun Tilfas	Indefinite	
LM-UPRS-80-0675	Thronul, Utwe	SI		60'	H.O. Alik John	Tosie John	Indefinite	
LM-UPRS-80-0676	Thronul, Utwe	SI	9/17/1980	60'	Kenye Alik	Kenye Alik	Indefinite	
LM-UPRS-80-0677	Thronul, Utwe	SI	9/25/1980	60'	H.O. Alik John	Teddy John	Indefinite	
LM-UPRS-80-0678	Finmusraak, Utwe	SI		60'	Salik Taulung	Salik Taulung	Indefinite	
LM-UPRS-80-0679	Finmusraak, Utwe	SI	9/17/1980	60'	H.O. Iso Tilfas	Paul I. Tilfas	Indefinite	
LM-UPRS-80-0680	Finmusraak, Utwe	SI	9/25/1980	60'	H.O. Iso Tilfas	Killion Abraham	Indefinite	
LM-UPRS-80-0681	Yiewal, Utwe	SI	9/23/1980	60'	Aliksru Edmond	Aliksru Edmond	Indefinite	
LM-UPRS-80-0682	Yiewal, Utwe	SI	9/30/1980	60'	Otnael Edmond	Otnael Edmond	Indefinite	
LM-UPRS-80-0683	Yiewal, Utwe	SI	9/20/1980	60'	Asu Seymour	Alokoa Seymour	Indefinite	
LM-UPRS-80-0684	Inmasrol, Utwe	SI	9/19/1980	60'	James Obet	James Obet	Indefinite	
LM-UPRS-80-0685	Inmasrol, Utwe	SI		60'	Elsward Livaie	Elsward Livaie	Indefinite	
LM-UPRS-80-0686	Utwa,Utwa	SI	9/16/1980	60'	Killin Killin	Killin Killin	Indefinite	
LM-UPRS-80-0687	Utwa,Utwa	SI	9/24/1980	60'	Gordon Benjamin	Gordon Benjamin	Indefinite	
LM-UPRS-80-0688	Utwa,Utwa	SI	9/16/1980	60'	Kun I. Benjamin	Kun I. Benjamin	Indefinite	
LM-UPRS-80-0689	Utwa,Utwa	SI	9/30/1980	60'	Likiak Benjamin	Likiak Benjamin	Indefinite	
LM-UPRS-80-0690	Mota, Utwe	SI	9/20/1980	60'	Rebuck Nena	Rebuck Nena	Indefinite	
LM-UPRS-80-0691	Mota, Utwe	SI		60'	Nena Livaie	Nena Livaie	Indefinite	
LM-UPRS-80-0692	Telik, Utwe	SI	9/18/1980	60'	Morres Wakuk	Morres Wakuk	Indefinite	
LM-UPRS-80-0693	Sipyen, Utwe	SI	9/24?80	60'	Godwin Joel	Godwin Joel	Indefinite	
LM-UPRS-80-0694	Sipyen, Utwe	SI	9/23/1980	60'	Clinton Benjamin	Clinton Benjamin	Indefinite	
LM-UPRS-80-0695	Sipyen, Utwe	SI	9/17/1980	60'	Tolenna Joseph	Tolenna Joseph	Indefinite	
LM-UPRS-80-0696	Sipyen, Utwe	SI	9/24/1980	60'	Wilmer Benjamin	Wilmer Benjamin	Indefinite	
LM-UPRS-80-0697	Sipyen, Utwe	SI	9/18/1980	60'	Martin Andrew	Martin Andrew	Indefinite	
LM-UPRS-80-0698	Sipyen, Utwe	SI	9/18/1980	60'	Joseph Lukan	Joseph Lukan	Indefinite	
LM-UPRS-80-0699	Finatem, Utwe	SI		60'	Kilafwa Lazeres	Kilafwa Lazeres	Indefinite	
LM-UPRS-80-0700	Finatem, Utwe	SI	9/17/1980	60'	Benno Tilfas	Benno Tilfas	Indefinite	
LM-UPRS-80-0701	Finatem, Utwe	SI	10/2/1980	60'	John Martin	John Martin	Indefinite	
LM-UPRS-80-0702	Finatem, Utwe	SI		60'	Detrick Melander	Kenye Detrick	Indefinite	
LM-UPRS-80-0703	Finatem, Utwe	SI	2/8/1989	60'	H.O. Phillip Kur	Palikkun Phillip	Indefinite	
LM-UPRS-80-0704	Finatem, Utwe	SI	9/29/1980	60'	Oscar Phillip	Oscar Phillip	Indefinite	
LM-UPRS-80-0705	Finatem, Utwe	SI	9/30/1980	60'	Likiaksru Laseres	Likiaksru Laseres	Indefinite	
LM-UPRS-80-0706	Finatem, Utwe	SI	10/6/1980	60'	Hansin Laseres	Hansin Laseres	Indefinite	
LM-UPRS-80-0707	Isra, Utwe	SI		60'	Floyd Wakuk	Floyd Wakuk	Indefinite	
LM-UPRS-80-0708	Isra, Utwe	SI		60'	Clanry Tilfas	Clanry Tilfas	Indefinite	
LM-UPRS-80-0709	Isra, Utwe	SI	9/30/1980	60'	Srue Weilbacher	Henrich Weilbacher	Indefinite	
LM-UPRS-80-0710	Isra, Utwe	SI		60'	Benton Nena	Benton Nena	Indefinite	100
LM-UPRS-80-0711	Isra, Utwe	SI		60'	Kilafwa Paulino	Kilafwa Paulino	Indefinite	
LM-UPRS-80-0712	Isra, Utwe	SI	9/17/1980	60'	Damian Tulensa	Damian Tulensa	Indefinite	
LM-UPRS-80-0713	Isra, Utwe	SI	9/17/1980	60'	Benjamin I. Benjamin	Benjamin I. Benjamin	Indefinite	
LM-UPRS-80-0714	Songkosra, Utw	SI	9/30/1980	60'	Likiak Benjamin	Likiak Benjamin	Indefinite	
LM-UPRS-80-0715	Songkosra, Utw	SI	9/17/1980	60'	Rental Alik	Rental Alik	Indefinite	
LM-UPRS-80-0716	Songkosra, Utw	SI	9/16/1980	60'	Shrew Nena	Shrew Nena	Indefinite	
LM-UPRS-80-0717	Songkosra, Utw	SI		60'	John Palsisa	John Palsisa	Indefinite	
LM-UPRS-80-0718	Selmea, Utwe	SI	9/18/1980	60'	Killin Killin	Killin Killin	Indefinite	
LM-UPRS-80-0719	Selmea, Utwe	SI		60'	Winston Killin	Winston Killin	Indefinite	
LM-UPRS-80-0720	Faleng, Utwe	SI	9/25/1980	60'	Yamado Noda	Yamado Noda	Indefinite	
LM-UPRS-80-0721	Faleng, Utwe	SI	9/18/1980	60'	H.O. Lowari	Alokoa Lowari	Indefinite	
LM-UPRS-80-0722	Infwal, Utwe	SI	9/18/1980	60'	Kinshiro Palikkun	Kinshiro Palikkun	Indefinite	
LM-UPRS-80-0723	Finkekea, Utwe	SI	9/23/1980	60'	Makoto Edmond	Makoto Edmond	Indefinite	
LM-UPRS-80-0724	Finkekea, Utwe	SI	9/20/1980	60'	Repuk Nena	Repuk Nena	Indefinite	
LM-UPRS-80-0725	Saolung, Utwe	SI	9/30/1980	60'	Otnael Edmond	Otnael Edmond	Indefinite	
LM-UPRS-80-0726	Fwaa, Utwe	SI		60'	Detrick Melander	Kenye Detrick	Indefinite	
LM-UPRS-80-0727	Fwaa, Utwe	SI	9/17/1980	60'	Hiroshi Ismael	Mitchigo Hiroshi	Indefinite	
LM-UPRS-80-0728	Kusrmwo, Utwe	SI	9/23/1980	60'	Atchiro Melander	Atchiro Melander	Indefinite	
LM-UPRS-80-0729	Fwinlesr, Utwe	SI	9/30/1980	60'	Otnael Edmond	Otnael Edmond	Indefinite	
LM-UPRS-80-0730	Fwinlesr, Utwe	SI	9/17/1980	60'	Joseph Lukan	Joseph Lukan	Indefinite	
LM-UPRS-80-0731	Fwinlesr, Utwe	SI	9/17/1980	60'	Bino Joseph	Bino Joseph	Indefinite	
LM-UPRS-80-0732	Fwinlesr, Utwe	SI	9/30/1980	60'	Otnael Edmond	Otnael Edmond	Indefinite	
LM-UPRS-80-0733	Neywot, Utwe	SI	9/16/1980	60'	Shrew Nena	Shrew Nena	Indefinite	
LM-UPRS-80-0734	Neywot, Utwe	SI	9/16/1980	60'	Kinere Nena	Siosi Kinere	Indefinite	
LM-UPRS-80-0735	Neywot, Utwe	SI		60'	Clanry Tilfas	Clanry Tilfas	Indefinite	
LM-UPRS-80-0736	Neywot, Utwe	SI	9/30/1980	60'	Ned Fredy	Ned Fredy	Indefinite	
LM-UPRS-80-0737	Neywot, Utwe	SI		60'	Kilafwa Paulin	Kilafwa Paulino	Indefinite	
LM-UPRS-80-0738	Fwalwe, Utwe	SI	9/16/1980	60'	Nena S. Nena	Nena S. Nena	Indefinite	
LM-UPRS-80-0739	Fwalwe, Utwe	SI	9/18/1980	60'	Joseph Ittu	Joseph Ittu	Indefinite	
LM-UPRS-80-0740	Fwalwe, Utwe	SI	9/20/1980	60'	Rebuk Nena	Repuk Nena	Indefinite	
LM-UPRS-80-0741	Fwalwe, Utwe	SI		60'	Benton Nena	Benton Nena	Indefinite	

Appendix 3 International Conventions and Treaties

Table 3A. List of relevant conventions and treaties associated with the marine sector of the FSM.

Ratified	Convention and/or Treaty
1991	To ratify the United Nations convention on the Law of the Sea ("UNCLOS").
1993	Kyoto Protocol to the United Nations Framework Convention on Climate Change.
1993	Agreement for the Implementation of the Provisions of the UN Convention on the Law of the Sea of 10 Dec 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks
1994	To ratify the amendments to the Federated States of Micronesia Arrangement for Regional Fisheries Access (The FSM Arrangements).
1994	To accede to the "Convention on Biological Diversity," the objectives of which are to conserve biological diversity, to promote the sustainable use of biological components, and to provide for the fair and equitable sharing of the benefits of genetic resources and technology, including biotechnology.
1995	Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal
1995	Ratifying the convention for the prohibition of fishing with the long driftnets in the South Pacific, otherwise more popularly known as "The Wellington Convention"
Date unknown	To ratify the amendment to the treaty on fisheries between the Governments of certain Pacific Island States and the Government of the United States of America, the Aim of said amendments is to allow U.S. long line vessels access to high seas within the treaty area.
1999	To provide for the acceptance, approval and ratification by the Republic of Palau of UNESCO's Convention for the safeguarding of the Intangible Cultural Heritage.
1999	To ratify the Articles of Agreement establishing the Arrangement for the Management of the Western Pacific Purse Seine Fishery, otherwise known as "The Palau Arrangement".
1992	Ratifying the Niue Treaty on Cooperation in Fisheries Surveillance and Law Enforcement in the South Pacific Region and 2012 amendment.
2002	Convention concerning the Protection of the World Cultural and Natural Heritage
2005	Convention on the Conservation and Management of Highly Migratory Fish

	Stocks in the Western and Central Pacific Ocean
2005	To ratify the accession of the Republic of Palau to the Convention for the Conservation of Migratory Species of Wild Animals.
2009	To ratify the Agreement on Regional Cooperation in Matters Affecting International Commercial Shipping in Micronesia.
2010	To ratify a number of agreed upon amendments to the Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery.
2010	To ratify the Third Arrangement Implementing the Nauru Agreement Setting Forth Additional Terms and Conditions of Access to the Fisheries Zones of the Pacific
2011	International Convention for the Prevention of Marine Pollution from Ships, 1973 (MARPOL) adopted in London on 2 Nov 1973 and its Protocol of 1978, adopted in London on 2 Nov 1973 and its Protocol of 1978, adopted in London on 17 Feb

Table 3B. FSM membership to international and regional organizations associated with the marine sector.

International Organisation Membership
I. United Nations (UN)
A. United Nations Development Program (UNDP)
Secretariat of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)
• Food and Agriculture Organization of the United Nations (FAO)
• International Seabed Authority (ISA)
• International Watershed Project (IWP)
2) International Whaling Commission (IWC)
A. International Tribunal for Law of the Sea (ITLOS)
A. International Maritime Organization
2) Bureau (Secretariat) of the Convention on Wetlands (RAMSAR)
(i) Secretariat of the United Nation Convention to Combat Desertification (UNCCD)
(i) Secretariat of the United Nations Convention on Biological Diversity (UNCBD)
A. United Nations Educational, Scientific and Cultural Organization
1. Secretariat of the United Nations Framework Convention on Climate Change (UNFCCC)
a) Asian Development Bank
A. World Bank Group
Regional Organisations Membership
• Western and Central Pacific Fisheries Commission (WCPFC)
1) Secretariat of the Pacific Community (SPC)
2) Forum Fisheries Agency (FFA)
2) Secretariat of the Pacific Islands Forum (PIF)
• Secretariat of the Pacific Regional Environment Programme (SPREP)
1) Applied Geoscience and Technology Division (SOPAC) of the

Kiribati is party to the following international environment conventions & treaties:

- Convention for the Protection of the Ozone Layer (1985)
- Convention on Climate Change (1992)
- Convention for the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (1972) [London Dumping Convention]
- Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific (1989)
- South Pacific Forum Fisheries Agency Convention (1979)
- International Convention for the Prevention of Pollution from Ships (1973) and its 1978 Protocol
- United Nations Convention on the Law of the Sea (1982) (signed? ratified?)
- South Pacific Nuclear Free Zone Treaty (1985)
- Convention on Biological Diversity
- The Niue Treaty between Tonga and Tuvalu on Co-operation in Fisheries Surveillance and Law Enforcement (1993)
- Convention for the Protection of the Natural Resources and Environment of the South Pacific Region (1986) and related Protocols [SPREP Convention]

Nauru is party to the following international agreements:

- The International Plant Protection Convention (1951)
- Treaty on the Non-Proliferation of Nuclear Weapons (1970)
- Convention on the Prevention of Marine Pollution by the Dumping of Wastes and Other Matter (the London Convention) (1972)
- United Nations Convention to Combat Desertification and Drought (CCDD)
- South Pacific Forum Fisheries Agency Convention (1979)
- United Nations Convention on the Law of the Sea (1982)
- Agreement for the Implementation of the Provisions of the UN Law of the Sea of December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (1997)
- United Nations Educational, Scientific and Cultural Organisation (UNESCO) (1996)
- Convention for the Protection of the Ozone Layer (1985)
- South Pacific Nuclear Free Zone Treaty (1985)
- Convention for the Protection of the Natural Resources and the Environment in the South Pacific Region and Related Protocols, including the Protocol for the Prevention of Pollution of the South Pacific Region by Dumping (Apia Convention) (1986)
- Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific (1989)
- United Nations Framework Convention on Climate Change (1992)
- Multilateral Treaty on Fisheries Between the the Governments of Certain Pacific Island States and the Government of the United States of America (1993)
- Convention on the Conservation of Biological Diversity (1992)
- Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactivve Waters and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region (1995)
- Convention on Hazardous and Toxic Wastes (Waigani Convention) (to yet ratified)
- South Pacific Regional Environment Programme (SPREP Convention) (1994)
- Treaty on Cooperation in Fisheries Surveillance and Law Enforcement in the South Pacific Region (the Niue Treaty) (1992)
- Basic Agreement between Nauru and the World Health Organisation (1995)

Appendix 4 Evaluation of Compliance with WB Safeguard Policies & ADB Safeguard Policy Statement (SPS) Environmental Requirements

Table 4A: Evaluation of ESIA against WB Safeguard Policies that have been triggered for the Kosrae and Kiribati projects

WB Operational Policy	Application to Project	Potential Impacts	Mitigation Measures
OP4.01 Environmental Assessment	This OP is triggered as there will be minor environmental and social impacts to be managed.	As outlined in Section 6.2	Implementation of the ESMP (Section 7)
OP4.04 Natural Habitats	This OP is triggered as there may be some disturbances to marine ecosystems.	A) Cable laying activities in near shore areas could cause damage to live coral resulting in unstable positioning of the cable. B) The laying of the cable in the marine environment will result in the loss of a small area of habitat specifically, seagrasses which provide habitat for juvenile fish species and benthic invertebrates.	A) Use diver and/or marker buoy guided cable placement and post lay surveys to ensure that the cable comes to rest on the sea floor in the wide channels identified through field surveys. B) No mitigation possible, loss of some seagrass areas are likely, however, the cable will either be buried during construction or the cable will bury itself in soft sediments over time. Seagrass
OP 4.11 Physical and Cultural Resources	This OP is triggered as a precaution. There are no known physical or cultural resources within the project impact area but chance find mitigations are recommended.	Disturbance of physical & cultural resources	Any physical or cultural resources, as defined in WB OP4.11 that are discovered by chance during the course of the project development will be covered by the chance find procedures.

Table 4B: Evaluation of ESIA elements against ADB Safeguard Requirements – Environment (from Appendix 1 of ADB 2009)

ADB SPS Environmental Requirement	Reference to this ESIA
1. Environmental Assessment	
4. …At an early stage of project preparation, the borrower/client will identify potential direct, indirect, cumulative and induced environmental impacts on and risks to physical, biological, socioeconomic, and physical cultural resources and determine their significance and scope, in consultation with stakeholders, including affected people and concerned NGOs. If potentially adverse environmental impacts and risks are identified, the borrower/client will undertake an environmental assessment as early as possible in the project cycle. For projects with potentially significant adverse impacts that are diverse, irreversible, or unprecedented, the borrower/client will examine alternatives to the project's location, design, technology, and components that would avoid, and, if avoidance is not possible, minimize adverse environmental impacts and risks. The rationale for selecting the particular project location, design, technology, and components will be properly documented, including, cost-benefit analysis, taking environmental costs and benefits of the various alternatives considered into account. The "no project" alternative will be also considered.	Addressed throughout this ESIA
5. The assessment process will be based on current information, including an accurate project description, and appropriate environmental and social baseline data; … will consider all potential impacts and risks of the project on physical, biological, socioeconomic (occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media and physical cultural resources in an integrated way. The project's potential environmental impacts and risks will be reviewed against the requirements presented in this document and applicable laws and regulations of the jurisdictions in which the project operates that pertain to environmental matters, including host country obligations under international law.	Addressed throughout this ESIA
6. Impacts and risks will be analyzed in the context of the project's area of influence. This area of influence encompasses (i) the primary project site(s) and related facilities that the borrower/client (including its contractors) develops or controls, such as power transmission corridors, pipelines, canals, tunnels, access roads, borrow pits and disposal areas, and construction camps; (ii) associated facilities that are not funded as part of the project (funding may be provided separately by the borrower/client or by third parties), and whose viability and existence depend exclusively on the project and whose goods or services are essential for successful operation of the project; (iii) areas and communities potentially affected by cumulative impacts from further planned development of the project, other sources of similar impacts in the geographical area, any existing project or condition, and other project-related developments that are realistically defined at the time the assessment is undertaken; and (iv) areas and communities potentially affected by impacts from unplanned but predictable developments caused by the project that may occur later or at a	The Area of Project Influence is described in Section 4. Baseline data

different location. The area of influence does not include potential impacts that might occur without the project or independently of the project. Environmental impacts and risks will also be analyzed for all relevant stages of the project cycle, including preconstruction, construction, operations, decommissioning, and postclosure activities such as rehabilitation or restoration.	
7. The assessment will identify potential transboundary effects, such as air pollution, increased use or contamination of international waterways, as well as global impacts, such as emission of greenhouse gases and impacts on endangered species and habitats.	Refer Section 6.7.3.
8. The environmental assessment will examine whether particular individuals and groups may be differentially or disproportionately affected by the project's potential adverse environmental impacts because of their disadvantaged or vulnerable status, in particular, the poor, women and children, and Indigenous Peoples. Where such individuals or groups are identified, the environmental assessment will recommend targeted and differentiated measures so that adverse environmental impacts do not fall disproportionately on them.	Refer Sections 6.3 and 6.4
9. Depending on the significance of project impacts and risks, the assessment may comprise a full-scale environmental impact assessment (EIA) for category A projects, an initial environmental examination (IEE) or equivalent process for category B projects, or a desk review. An EIA report includes the following major elements: (i) executive summary, (ii) description of the project, (iii) description of the environment (with comprehensive baseline data), (iv) anticipated environmental impacts and mitigation measures, (v) analysis of alternatives, (vi) environmental management plan(s), (vii) consultation and information disclosure, and (viii) conclusion and recommendations. The annex to this appendix provides further details. An IEE, with its narrower scope, may be conducted for projects with limited impacts that are few in number, generally site-specific, largely reversible, and readily addressed through mitigation measures.	This ESIA was addressed as a full-scale ESIA
10. When the project involves existing activities or facilities, relevant external experts will perform environmental audits to determine the existence of any areas where the project may cause or is causing environmental risks or impacts. If the project does not foresee any new major expansion, the audit constitutes the environmental assessment for the project. A typical environmental audit report includes the following major elements: (i) executive summary; (ii) facilities description, including both past and current activities; (iii) summary of national, local, and any other applicable environmental laws, regulations, and standards; (iv) audit and site investigation procedure; (v) findings and areas of concern; and (vi) corrective action plan that provides the appropriate corrective actions for each area of concern, including costs and schedule.	Not relevant
11. When the project involves the development of or changes to policies, plans, or programs that are likely to have significant environmental impacts that are regional or sectoral, strategic environmental assessment will be required. A strategic environmental assessment report will include (i) an analysis of the scenario, (ii) an assessment of long-term and indirect impacts, (iii) a description of the consultation process, and (iv) an explanation of option selection.	Not relevant

2. Environmental Planning and Management	
12. The borrower/client will prepare an environmental management plan (EMP) that addresses the potential impacts and risks identified by the environmental assessment. The EMP will include the proposed mitigation measures, environmental monitoring and reporting requirements, emergency response procedures, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Where impacts and risks cannot be avoided or prevented, mitigation measures and actions will be identified so that the project is designed, constructed, and operated in compliance with applicable laws and regulations and meets the requirements specified in this document. The level of detail and complexity of the environmental planning documents and the priority of the identified measures and actions will be commensurate with the project's impacts and risks. Key considerations include mitigation of potential adverse impacts to the level of "no significant harm to third parties", the polluter pays principle, the precautionary approach, and adaptive management.	Section 8 ESMP
13. If some residual impacts are likely to remain significant after mitigation, the EMP will also include appropriate compensatory measures (offset) that aim to ensure that the project does not cause significant net degradation to the environment. Such measures may relate, for instance, to conservation of habitat and biodiversity, preservation of ambient conditions, and greenhouse gas emissions. Monetary compensation in lieu of offset is acceptable in exceptional circumstances, provided that the compensation is used to provide environmental benefits of the same nature and is commensurate with the project's residual impact.	Not relevant
14. The EMP will define expected outcomes as measurable events to the extent possible and will include performance indicators or targets that can be tracked over defined periods. It will be responsive to changes in project design, such as a major change in project location or route, or in technology, unforeseen events, and monitoring results.	Section 8 ESMP and Appendix 9 Environmental Mitigation (ESMiT) and Monitoring (ESMoT) Tables
15. At times, a third party's involvement will influence implementation of the EMP. A third party may be, inter alia, a government agency, a contractor, or an operator of an associated facility. When the third-party risk is high and the borrower/client has control or influence over the actions and behavior of the third party, the borrower/client will collaborate with the third party to achieve the outcome consistent with the requirements for the borrower/client. Specific actions will be determined on a case-by-case basis.	Not relevant
16. The borrower/client will use qualified and experienced experts to prepare the environmental assessment and the EMP. For highly complex and sensitive projects, independent advisory panels of experts not affiliated with the project will be used during project preparation and implementation.	ESIA meets this criterion.
3. Information Disclosure	

17. The borrower/client will submit to ADB the following documents for disclosure on ADB's website: I. a draft full EIA (including the draft EMP) at least 120 days prior to ADB Board consideration, and/or environmental assessment and review frameworks before project appraisal, where applicable; II. the final EIA/IEE; III. a new or updated EIA/IEE and corrective action plan prepared during project implementation, if any; and IV. the environmental monitoring reports.	Will be complied with. Refer to reporting processes in Section 8.6.
18. The borrower/client will provide relevant environmental information, including information from the documents in para. 17 in a timely manner, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. For illiterate people, other suitable communication methods will be used.	ESIA will be publically disclosed.
4. Consultation and Participation	
19. The borrower/client will carry out meaningful consultation with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation. …Consultation will be carried out in a manner commensurate with the impacts on affected communities. The consultation process and its results are to be documented and reflected in the environmental assessment report.	Section 7 of ESIA
5. Grievance Redress Mechanism	
20. The borrower/client will establish a mechanism to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the project's environmental performance. The grievance mechanism should be scaled to the risks and adverse impacts of the project. It should address affected people's concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and	Section 9 of ESIA
6. Monitoring and Reporting	
21. The borrower/client will monitor and measure the progress of implementation of the EMP. The extent of monitoring activities will be commensurate with the project's risks and impacts. In addition to recording information to track performance, the borrower/client will undertake inspections to verify compliance with the EMP and progress toward the expected outcomes. For projects likely to have significant adverse environmental impacts, the borrower/client will retain qualified and experienced external experts or qualified NGOs to verify its monitoring information. The borrower/client will document monitoring results, identify the necessary corrective actions, and reflect them in a corrective action plan. The borrower/client will implement these corrective actions and follow up on these actions to ensure their effectiveness.	Section 8.5 of ESIA

22. The borrower/client will prepare periodic monitoring reports that describe progress with implementation of the EMP and compliance issues and corrective actions, if any. The borrower/client will submit at least semiannual monitoring reports during construction for projects likely to have significant adverse environmental impacts, and quarterly monitoring reports for highly complex and sensitive projects. For projects likely to have significant adverse environmental impacts during operation, reporting will continue at the minimum on an annual basis. Such periodic reports will be posted in a location accessible to the public. Project budgets will reflect the costs of monitoring and reporting requirements.	Appendix 9 - Environmental Mitigation (ESMiT) and Monitoring (ESMoT) Tables
7. Unanticipated Environmental Impacts	
23. Where unanticipated environmental impacts become apparent during project implementation, the borrower/client will update the environmental assessment and EMP or prepare a new environmental assessment and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.	Section 8 ESMP
8. Biodiversity Conservation and Sustainable Natural Resource Management	
24. The borrower/client will assess the significance of project impacts and risks on biodiversity and natural resources as an integral part of the environmental assessment process specified in paras. 4–10. The assessment will focus on the major threats to biodiversity, which include destruction of habitat and introduction of invasive alien species, and on the use of natural resources in an unsustainable manner. The borrower/client will need to identify measures to avoid, minimize, or mitigate potentially adverse impacts and risks and, as a last resort, propose compensatory measures, such as biodiversity offsets, to achieve no net loss or a net gain of the affected biodiversity.	Section 6.2 General Environment
a. Modified Habitats	
25. In areas of modified habitat, where the natural habitat has apparently been altered, often through the introduction of alien species of plants and animals, such as in agricultural areas, the borrower/client will exercise care to minimize any further conversion or degradation of such habitat, and will, depending on the nature and scale of the project, identify opportunities to enhance habitat and protect and conserve biodiversity as part of project operations.	Not relevant – not modified habitats – impacts are no more than minor.
b. Natural Habitats	
26. Mitigation measures will be designed to achieve at least no net loss of biodiversity. They may include a combination of actions, such as postproject restoration of habitats, offset of losses through the creation or effective conservation of ecologically comparable areas that are managed for biodiversity while respecting the ongoing use of such biodiversity by Indigenous Peoples or traditional communities, and compensation to direct users of biodiversity.	Not considered to apply – impacts are no more than minor.
c. Critical Habitats	

27. No project activity will be implemented in areas of critical habitat unless the following requirements are met …:	Not considered to apply – no critical habitats - impacts are no more than minor.
28. When the project involves activities in a critical habitat, the borrower/client will retain qualified and experienced external experts to assist in conducting the assessment.	Not considered to apply – no critical habitats - impacts are no more than minor
d. Legally Protected Areas	
29. In circumstances where some project activities are located within a legally protected area, in addition to the requirement specified in para. 28, the borrower/client will meet the following requirements …:	Not considered to apply – no relationship with legally protected areas - impacts are no more than minor.
e. Invasive Alien Species	
30. The borrower/client will not intentionally introduce any new alien species …	Section 6.2 General Environment in Section 6 Anticipated Impacts
f. Management and Use of Renewable Natural Resources	
31. Renewable natural resources will be managed in a sustainable manner….	Not relevant – not dealing with renewable natural resources.
9. Pollution Prevention and Abatement	
32. During the design, construction, and operation of the project the borrower/client will apply pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards….	Appendix 9 - Environmental Mitigation (ESMiT) Tables
a. Pollution Prevention, Resource Conservation, and Energy Efficiency	
33. The borrower/client will avoid, or where avoidance is impossible, will minimize or control the intensity or load of pollutant emission and discharge. In addition the borrower/client will examine and incorporate in its operations resource conservation and energy efficiency measures consistent with the principles of cleaner production…	Appendix 9 - Environmental Mitigation (ESMiT) Tables
b. Wastes	
34. The borrower/client will avoid, or where avoidance is not possible, will minimize or control the generation of hazardous and nonhazardous wastes and the release of hazardous materials resulting from project activities. … When waste disposal is conducted by third parties, the borrower/client will use contractors that are reputable and legitimate enterprises licensed by the relevant regulatory agencies.	Section 3.1 Project Components

c. Hazardous Materials	
35. The borrower/client will avoid the manufacture, trade, and use of hazardous substances and materials subject to international bans or phaseouts because of their high toxicity to living organisms, environmental persistence, potential for bioaccumulation, or potential for depletion of the ozone layer and will consider the use of less hazardous substitutes for such chemicals and materials.	Section 3.1 Project Components
d. Pesticide Use and Management	
36. The environmental assessment will ascertain that any pest and/or vector management activities related to the project are based on integrated pest management approaches and aim to reduce reliance on synthetic chemical pesticides in agricultural and public health projects.	Section 6.2 General Environment in Section 6 Anticipated Impacts
37. The borrower/client will not use products that fall in World Health Organization Recommended Classification of Pesticides by Hazard Classes Ia (extremely hazardous) and Ib (highly hazardous) or Class II (moderately hazardous), if the project host country lacks restrictions on distribution and use of these chemicals, or if they are likely to be accessible to personnel without proper training, equipment, and facilities to handle, store, apply and dispose of these products properly. The borrower/client will handle, store, apply and dispose of pesticides in accordance with international good practice such as the Food and Agricultural Organization's International Code of Conduct on the Distribution and Use of Pesticides	
e. Greenhouse Gas Emissions	
38. The borrower/client will promote the reduction of project-related anthropogenic greenhouse gas emissions in a manner appropriate to the nature and scale of project operations and impacts. ….	Section 6.2 General Environment in Section 6 Anticipated Impacts
10. Health and Safety	
a. Occupational Health and Safety	
39. The borrower/client will provide workers with a safe and healthy working environment, taking into account risks inherent to the particular sector and specific classes of hazards in the borrower's/client's work areas, including physical, chemical, biological, and radiological hazards. The borrower/client will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring during the course of work by (i) identifying and minimizing, so far as reasonably practicable, the causes of potential hazards to workers; (ii) providing preventive and protective measures, including modification, substitution, or elimination of hazardous conditions or substances; (iii) providing appropriate equipment to minimize risks and requiring and enforcing its use; (iv) training workers and providing them with appropriate incentives to use and comply with health and safety procedures and protective equipment; (v) documenting and reporting occupational accidents, diseases, and incidents; and (vi) having emergency prevention, preparedness, and response arrangements in place.	Appendix 9 - Environmental Mitigation (ESMiT) Tables

40. The borrower/client will apply preventive and protective measures consistent with international good practice, as reflected in internationally recognized standards such as the World Bank Group's Environment, Health and Safety Guidelines.	
b. Community Health and Safety	
41. The borrower/client will identify and assess the risks to, and potential impacts on, the safety of affected communities during the design, construction, operation, and decommissioning of the project, and will establish preventive measures and plans to address them in a manner commensurate with the identified risks and impacts. These measures will favor the prevention or avoidance of risks and impacts over their minimization and reduction. …	Section 6.3 and 6.4 of ESIA.
42. The borrower/client will inform affected communities of significant potential hazards in a culturally appropriate manner. The borrower/client will be prepared to respond to accidental and emergency situations. This preparation will include response planning document(s) that addresses the training, resources, responsibilities, communications, procedures, and other aspects required to respond effectively to emergencies associated with project hazards. Appropriate information about emergency preparedness and response activities, resources, and responsibilities will be disclosed to affected communities.	Section 7 of this ESIA
43. When structural elements or components, such as dams, tailings dams, or ash ponds, are situated in high-risk locations and their failure or malfunction may threaten the safety of communities, the borrower/client will engage qualified and experienced experts, separate from those responsible for project design and construction, to conduct a review as early as possible in project development and throughout project design, construction, and commissioning.	Not relevant – Project does not involve such elements
11. Physical Cultural Resources [44-48]	Not relevant – Project does not affect PCRs – see Section 6.4 of ESIA

Table 4C: Evaluation of ESIA elements against ADB Safeguard Requirements – Involuntary Resettlement - Appendix 2 of ADB 2009

Safeguard Requirements 2: Involuntary Resettlement	Reference to this ESIA
A. Introduction	
1. …. ADB …seeks to avoid involuntary resettlement wherever possible; minimize involuntary resettlement by exploring project and design alternatives; enhance, or at least restore, the livelihoods of all displaced persons in real terms relative to pre-project levels; and improve the standards of living of the affected poor and other vulnerable groups. Note: In the context of involuntary resettlement, displaced persons are those who are physically displaced (relocation, loss of residential land, or loss of shelter) and/or economically displaced (loss of land, assets, access to assets, income sources, or means of livelihoods) as a result of (i) involuntary acquisition of land, or (ii) involuntary restrictions on land use or on access to legally designated parks and protected areas.	As noted in Section 2.5.3 of this ESIA, all land acquisition associated with the project will be voluntary. The location of the cable can be changed to accommodate voluntary land acquisition. The land due diligence study (see Appendix 2) indicates that there are several suitable Government owned or leased sites available for the location of infrastructure, none of which will cause any involuntary resettlement. If private or custom-owned land is required, this will be acquired voluntarily, using lease or easement arrangements. It therefore appears that this safeguard policy requirement is not triggered. For the avoidance of doubt, each relevant requirement of these involuntary resettlement safeguard requirements is reviewed against the ESIA below.
B. Scope of Application	
3. The requirements apply to all ADB-financed and/or ADB-administered sovereign and non-sovereign projects, and their components regardless of the source of financing, including investment projects funded by a loan; and/or a grant; and/or other means, such as equity and/or guarantees (hereafter broadly referred to as projects). The requirements also cover involuntary resettlement actions conducted by the borrower/client in anticipation of ADB support.	Applies to Nauru elements of Project

Safeguard Requirements 2: Involuntary Resettlement	Reference to this ESIA
4. The involuntary resettlement requirements apply to full or partial, permanent or temporary physical displacement (relocation, loss of residential land, or loss of shelter) and economic displacement (loss of land, assets, access to assets, income sources, or means of livelihoods) resulting from (i) involuntary acquisition of land, or (ii) involuntary restrictions on land use or on access to legally designated parks and protected areas. Resettlement is considered involuntary when displaced individuals or communities do not have the right to refuse land acquisition that results in displacement. This occurs in cases where (i) lands are acquired through expropriation based on eminent domain; and (ii) lands are acquired through negotiated settlements, if expropriation process would have resulted upon the failure of negotiation. Note: In the context of involuntary resettlement, displaced persons are those who are physically displaced (relocation, loss of residential land, or loss of shelter) and/or economically displaced (loss of land, assets, access to assets, income sources, or means of livelihoods) as a result of (i) involuntary acquisition of land, or (ii) involuntary restrictions on land use or on access to legally designated parks and protected areas.	There is no: (i) involuntary acquisition of land, nor are there (ii) involuntary restrictions on land use or on access to legally designated parks and protected areas. Therefore the ADB involuntary resettlement safeguard requirements are not triggered.
5. If potential adverse economic, social, or environmental impacts from project activities other than land acquisition (including involuntary restrictions on land use, or on access to legally designated parks and protected areas) are identified, such as loss of access to assets or resources or restrictions on land use, they will be avoided, or at least minimized, mitigated, or compensated for, through the environmental assessment process. If these impacts are found to be significantly adverse at any stage of the project, the borrower/client will be required to develop and implement a management plan to restore the livelihood of affected persons to at least pre-project level or better.	No significant adverse impacts on land access in areas other than legally designated parks and protected areas are identified. Section 6.2.2 of the ESIA identifies that there will be temporary restrictions on costal use (fishing) during the very brief duration of installation. Otherwise, interference with marine and coastal environmental will be less than minor.
C. Requirements	
2. Compensation, Assistance and Benefits for Displaced Persons	
7. Displaced persons in a project area could be of three types: (i) persons with formal legal rights to land lost in its entirety or in part; (ii) persons who lost the land they occupy in its entirety or in part who have no formal legal rights to such land, but who have claims to such lands that are recognized or recognizable under national laws; and (iii) persons who lost the land they occupy in its entirety or in part who have neither formal legal rights nor recognized or recognizable claims to such land. The involuntary resettlement requirements apply to all three types of displaced persons.	The Project does not involve any displaced persons as defined.
8. The borrower/client will provide adequate and appropriate replacement land and structures or cash compensation for parties described in paras. 7(i) and 7(ii) and 7(iii) ….	Not relevant see 7 above
9. Preference will be given to land-based resettlement strategies for displaced persons whose livelihoods are land-based…	Not relevant see 7 above

Safeguard Requirements 2: Involuntary Resettlement	Reference to this ESIA
10. The rate of compensation for acquired housing, land and other assets will be calculated at full replacement costs….	Not relevant see 7 above
11. In the case of physically displaced persons, the borrower/client will provide (i) relocation assistance, secured tenure to relocation land, better housing at resettlement sites with comparable access to employment and production opportunities, and civic infrastructure and community services as required; (ii) transitional support and development assistance, such as land development, credit facilities, training, or employment opportunities; and (iii) opportunities to derive appropriate development benefits from the project.	No physical displacement – see 7 above
12. In the case of economically displaced persons, regardless of whether or not they are physically displaced, the borrower/client will ……	No economic displacement – see 7 above
13. Involuntary resettlement should be conceived of and executed as part of a development project or program.	Not relevant see 7 above
14. The borrower/client will ensure that no physical displacement or economic displacement will occur until [various specific requirements are met].	Not relevant see 7 above
2. Social Impact Assessment	
15. The borrower/client will conduct socioeconomic survey(s) and a census, with appropriate socioeconomic baseline data to identify all persons who will be displaced by the project and to assess the project's socioeconomic impacts on them. For this purpose, normally a cut-off date will be established by the host government procedures. In the absence of such procedures, the borrower/client will establish a cut-off date for eligibility. Information regarding the cutoff date will be documented and disseminated throughout the project area. The social impact assessment (SIA) report will include (i) identified past, present and future potential social impacts, (ii) an inventory of displaced persons and their assets, (iii) an assessment of their income and livelihoods, and (iv) gender-disaggregated information pertaining to the economic and sociocultural conditions of displaced persons. The project's potential social impacts and risks will be assessed against the requirements presented in this document and applicable laws and regulations of the jurisdictions in which the project operates that pertain to involuntary resettlement matters, including host country obligations under international law.	The procedure adopted in this ESIA is described in Section 7 and Appendix 7 of the ESIA. The chosen methodology was a targeted survey approach involving direct consultation with the limited number of potentially impacted parties, and recognition that impacts would be no more than minor and then only during the short duration of cable installation (see Section 6.2.2 of ESIA). A census was not undertaken as part of this programme because it was recognised very early on that the Project did not involve involuntary displacement as defined in the SPS Requirement.
16. As part of the social impact assessment, the borrower/client will identify individuals and groups who may be differentially or disproportionately affected by the project because of their disadvantaged or vulnerable status. Where such individuals and groups are identified, the borrower/client will propose and implement targeted measures so that adverse impacts do not fall disproportionately on them and they are not disadvantaged in relation to sharing the benefits and opportunities resulting from development.	See consultation records in Appendix 7.
3. Resettlement Planning	

Safeguard Requirements 2: Involuntary Resettlement	Reference to this ESIA
17. The borrower/client will prepare a resettlement plan, if the proposed project will have involuntary resettlement impacts.	No resettlement plan needed – the project does not involve involuntary resettlement impacts.
18. A resettlement plan will be based on the social impact assessment and through meaningful consultation with the affected persons.	Not relevant see 16 above
19. The borrower/client will analyze and summarize national laws and regulations pertaining to land acquisition, compensation payment, and relocation of affected persons in the resettlement plan.	Not relevant – no relocation of affected persons
20. All costs of compensation, relocation, and livelihood rehabilitation will be considered project costs.	Not relevant – no relocation of affected persons or need for livelihood restoration,
21. The borrower/client will include detailed measures for income restoration and livelihood improvement of displaced persons in the resettlement plan.	No resettlement plan needed – the project does not involve involuntary resettlement impacts.
22. The information contained in a resettlement plan may be tentative until a census of affected persons has been completed.	No resettlement plan needed – the project does not involve involuntary resettlement impacts
23. Projects with significant involuntary resettlement impacts will need adequate contingency funds to address involuntary resettlement impacts that are identified during project implementation.	Not relevant – the project does not involve involuntary resettlement impacts.
24. The borrower/client will use qualified and experienced experts to prepare the social impact assessment and the resettlement plan.	ESIA preparation undertaken using independent experienced and qualified experts.
4. Negotiated Land Acquisition	
25. Safeguard Requirements 2 does not apply to negotiated settlements, unless expropriation would result upon the failure of negotiations.	Not relevant – the project does not involve involuntary resettlement impacts.
5. Information Disclosure	

Safeguard Requirements 2: Involuntary Resettlement	Reference to this ESIA
26. The borrower/client will submit the following documents to ADB for disclosure on ADB's website: (i) a draft resettlement plan and/or resettlement framework endorsed by the borrower/client before project appraisal; (ii) the final resettlement plan endorsed by the borrower/client after the census of affected persons has been completed; (iii) a new resettlement plan or an updated resettlement plan, and a corrective action plan prepared during project implementation, if any; and (iv) the resettlement monitoring reports.	No resettlement plan needed – the project does not involve involuntary resettlement impacts. .
27. The borrower/client will provide relevant resettlement information, including information from the documents in para. 26 in a timely manner…...	No resettlement plan needed – the project does not involve involuntary resettlement impacts.
6. Consultation and Participation	
28. The borrower/client will conduct meaningful consultation with affected persons, their host communities, and civil society for every project and subproject identified as having involuntary resettlement impacts…..	Effective and proper consultation was undertaken to provide an appropriate basis for this ESIA.
7. Grievance Redress Mechanism	
29. The borrower/client will establish a mechanism to receive and facilitate the resolution of affected persons' concerns and grievances about physical and economic displacement and other project impacts, paying particular attention to the impacts on vulnerable groups. The grievance redress mechanism should be scaled to the risks and adverse impacts of the project….	See Section 9 of the ESIA
8. Monitoring and Reporting	
30. The borrower/client will monitor and measure the progress of implementation of the resettlement plan. The extent of monitoring activities will be commensurate with the project's risks and impacts….	No resettlement plan needed – the project does not involve involuntary resettlement impacts. Ongoing social impact monitoring is proposed in Appendix 9 Table 9.2 of the ESIA.
31. The borrower/client will prepare semiannual monitoring reports that describe the progress of the implementation of resettlement activities and any compliance issues and corrective actions.	No resettlement plan needed – the project does not involve involuntary resettlement impacts. Ongoing social impact monitoring is proposed in Appendix 9 Table 9.2 of the ESIA.
9. Unanticipated Impacts	
32. If unanticipated involuntary resettlement impacts are found during project implementation, the	See Appendix 9 Table 9.2 of the ESIA.

Safeguard Requirements 2: Involuntary Resettlement	Reference to this ESIA
borrower/client will conduct a social impact assessment and update the resettlement plan or formulate a new resettlement plan covering all applicable requirements specified in this document.	
10. Special Considerations for Indigenous Peoples	
33. The borrower/client will explore to the maximum extent possible alternative project designs to avoid physical relocation of Indigenous Peoples that will result in adverse impacts on their identity, culture, and customary livelihoods…..	There will be no relocation of any parties as a consequence of the Project.

Appendix 5 Chance Find Procedure

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

1. Stop the activities in the area of the chance find;
2. Delineate the discovered site or area (e.g. fencing);
3. 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 Cultural Commission representative or person with delegated authority take over;
4. Prohibit the collection of objective by any person;
5. Notify the local government and Historic Preservation Offices (where available) within 24 hours (and police if it is human remains);
6. Any objects that are found must be handed over to the Historic Preservation Office.
7. Project works can resume only after instruction is provided from the Historic Preservation Office.

Appendix 6 Potential cable alignments & BMH Sites

Figure 6a: Potential submarine and terrestrial cable alignments for BMH1 (white dashed lines) in Kosrae.

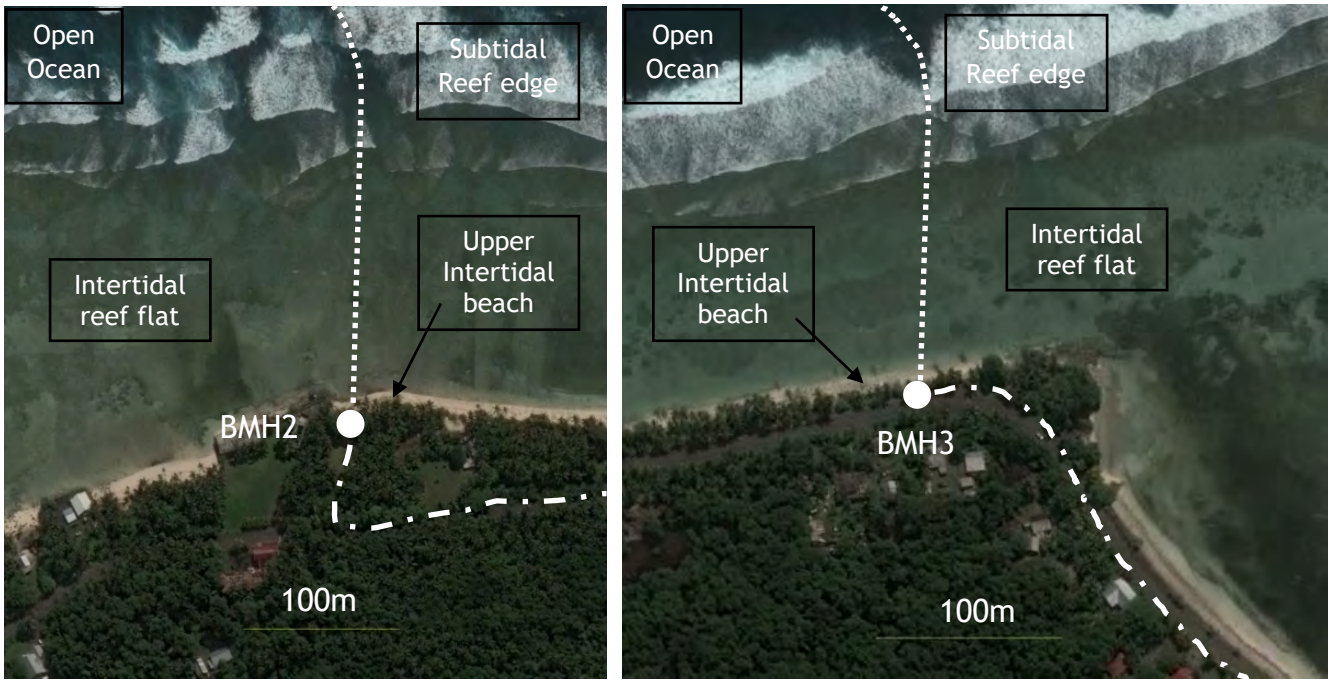

Figure 6b: Potential submarine and terrestrial cable alignments for BMH1 (white dashed lines) in Kosrae.

Figure 6c: Potential submarine and terrestrial cable alignments for BMH4, 5 & 6 (white dashed lines) in Kosrae.

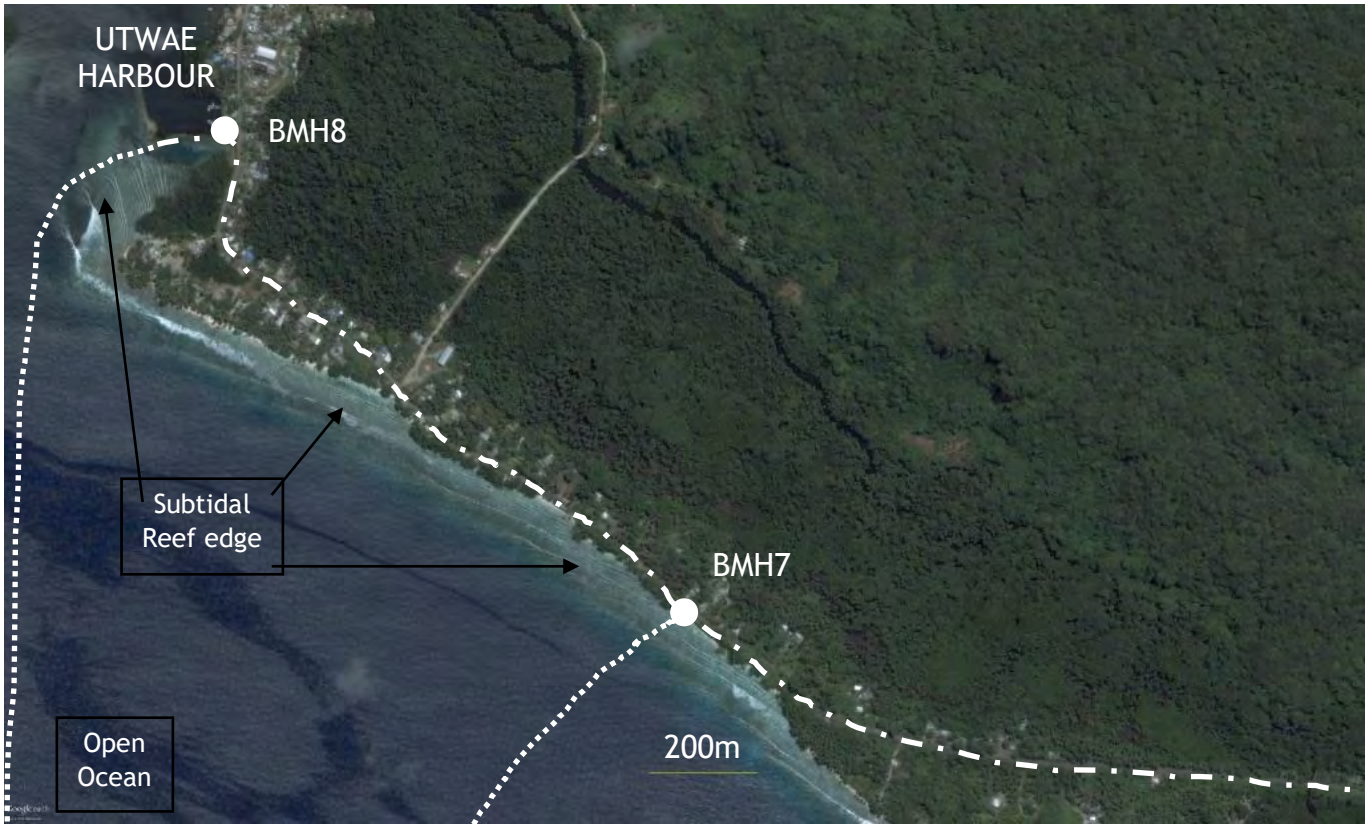

Figure 6e: Potential submarine and terrestrial cable alignments for BMH7 & 8 (white dashed lines) in Kosrae.

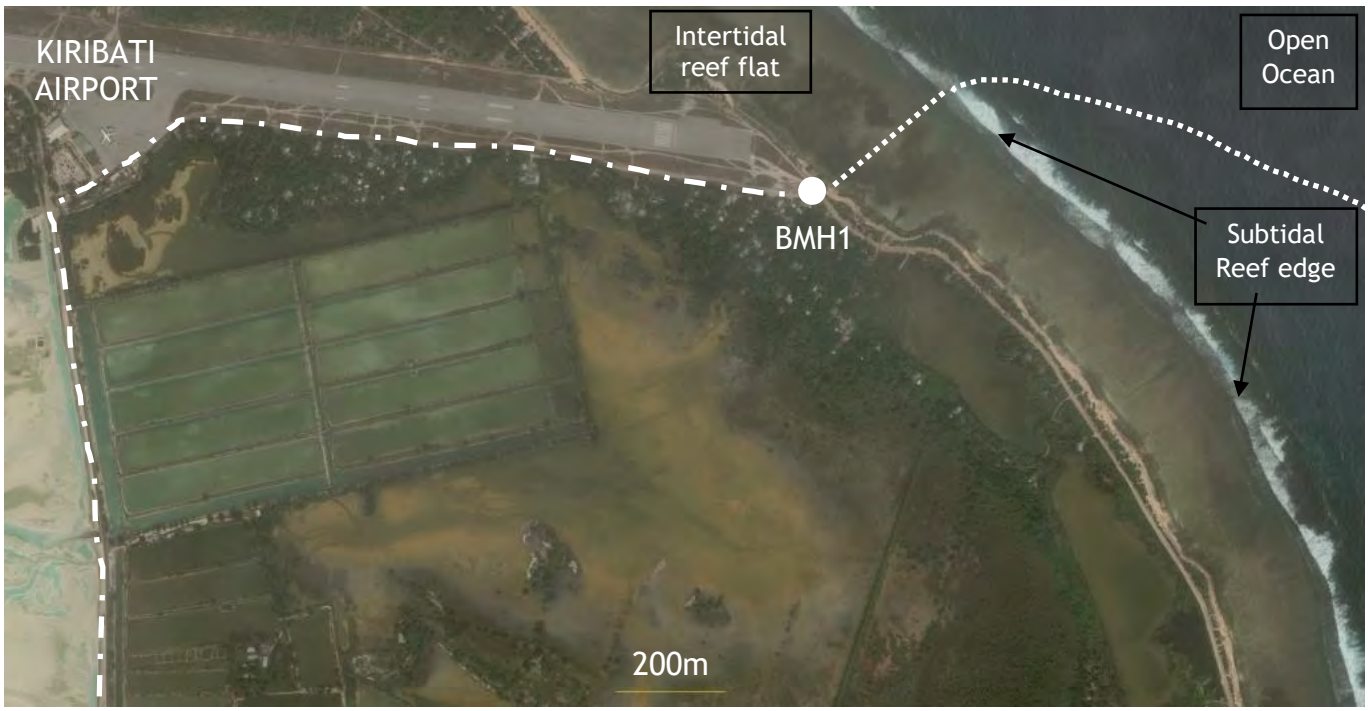

Figure 6f: Potential submarine and terrestrial cable alignments for BMH1 (white dashed lines) in Kiribati.

Figure 6g: Potential submarine and terrestrial cable alignments for BMH2 (white dashed lines) in Kiribati.

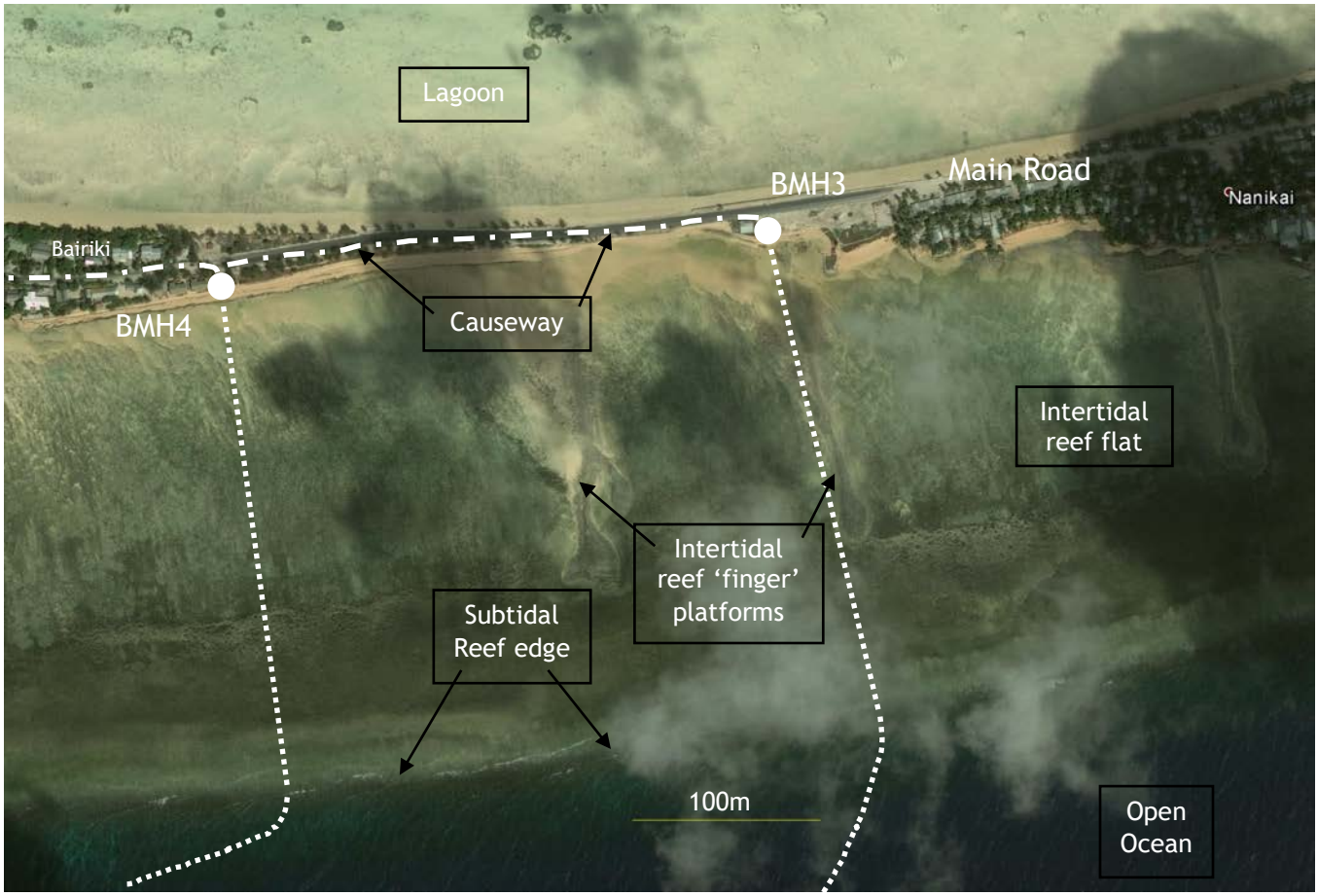

Figure 6h: Potential submarine and terrestrial cable alignments for BMH3 & 4 (white dashed lines) in Kiribati.

Figure 6i: Potential submarine and terrestrial cable alignments for BMH1 & 2 (white dashed lines) in Nauru (Note terrestrial fibre cable is already in place).

Appendix 7 Consultation Summaries

Appendix 7A: Summary of Kosrae Consultation

October 17, 2016		
General Consultation	List of attendees (see Appendix 4)	• Preferred CLS location is Tofol • Can use existing roadside easement • A number of sites used for coastal monitoring • Series of maps available to access (Conservation area, bathymetry, coastal erosion, seawalls) • BMH description provided, issue with private land owners • Issue of eroding private land into road easement. • Discussion re potential BMH sites – Airport site (disputing which department internally has jurisdiction), southern sites (conservation areas nearby) and Lelu Harbour sites (school is State Land). • EIA requirements
October 18, 2016		
Bank of Guam	Gwendolyn E Nicolas Assistant Vice President Branch Manager	• Bank operation hindered by limited and slow Internet • At times staff had to stay on until late at night, in order to complete transactions & transmitting to Main Branch (Guam) • Services available are also limited due to slow Internet • Products offered can be expand and delivered with a better Internet • We are happy to express our support for this project
FSM Bank	Lynn Langu Assistant Branch Manager	• Had to work long hours some days to complete work needed because of the slow Internet • Relaying information to and from Pohnpei can be frustrating • Mobile banking is a real possibility, if the fibre optic cable provides us with fast Internet • There is real need for this project in Kosrae
FSM ACE	Smith Sigrah Kosrae Manager	• Businesses like ours do need this for our website and dealing with customers • Doing business on the Internet can be slow and impacts on our business operation. • It can be difficult to relay finance information with our head branch in Pohnpei • We need a better and faster Internet • It is necessary to invite you to address the Commerce Board this Thursday
Lelu Municipal Government	Ben Jesse Mayor	• Appreciate this, for including our office in your consultation. • To me, our work in this municipality will definitely benefit from this project. • We need to inform and raise public awareness in a timely manner. This is difficult with the existing Internet. • May be a chance for our people to do courses online in Hawaii or the States. • We support whatever happens. If this cable lands on our municipality, that is great. If not, we still support it.
October 19, 2016		
Utwe Resident	Simon Lak Former Mayor	• This is a good chance for our people • Contacting our family members overseas is important for us
Utwe Resident	Aluk Levi Former Mayor	• We need better Internet to contact our family members overseas • About time to see this new technology implemented in Kosrae • No issues with landing the cable here
Utwe Municipal Government	Truman Waguk Mayor	• Hoping that the cable lands here in Utwe • We need better communication/Internet for our local people • Support this and will talk to local people about this new project • Utwe seemed to be always the last to get these types of developments. Anyway, it is good because we get the best projects result, because we get it with lesson learned from other municipalities, like the water system. • See no real issue with our local fishing activities • The sooner the better
Malem Resident	Malon Talley Church Pastor & Youth Leader	• Built a Gym for the youth; to give them something to occupy their time with, otherwise they will drift into drinking etc. The local school is also using this gym as well. • We have a vision and program that includes a Youth Centre, as an extension of our gym. This requires a better Internet; kids can do research or distant learning.

		• This project is what we need. • Also need better communication with our families overseas; this is important to us locals.
Ahmadiyya Muslims Community	Imam E.M. Kauser Religious Minister	• It is now difficult to communicate with our head quarter in London. • Sometimes we need to pay our orders from ACE but cannot, as such service (eftpos) is not available. We had to carry large cash to do that, and that is not advisable for anyone to carry large cash around. • Predecessor used to go to either Treelodge or Nautilus and stay there the practically the whole day, so he can access the Internet. • We cannot access the Muslim television now, but that is an important part of our operation. • We pay the maximum package, but the access we received is not consistent. • We note the negative impacts of such Internet capability but these are insignificant comparing to the benefits we will have. • We support this project; and we will arrange for the Kiribati counterpart to meet you.
Kosraean Women Association	Salorne Mast (President) Masy Livae Merbina Nena Brnisda Nakumura Jenny Seymour Hetty J Palik Tamoe E Ylaguk Priscilla Labonete Rose K Sigrah	• President welcomes the opportunity to be involved and to hear about the project. • Concerns with the exposure of youths to the negative impact of the Internet. • Some mothers/women are rather better prepared than most to receive this new technology and exposure. In fact, most do not fully comprehend this exposure, and kids are better versed with the Internet. So hard for mothers to monitor kids' activities over the Internet, especially with the kind of exposure this technology will bring. • As mothers, this will be another role for us, making sure that the new Internet is used properly. However, support will be needed to inform/educate or prepare us for this technology. • Interests raised about who will be managing or in charge of this cable. • We can see the capacity and speed of this technology, but there is a need to guarantee that the rates will be affordable.
October 20 2016		
Community Consultation	Senators Members of public Business List of Attendees (see Appendix 8)	• Need to know who fund this project • Concerns with maintenance of this cable ('Warranty') • Impact on fish and sea creatures • Telecom need to negotiate their role with regards to this cable • Highlight the role of Municipal stakeholders
Chamber of Commerce	Business owners (see Appendix 8)	• Keen to see this project completed • Liberalisation of communication is welcomed • Noted that the road at Utwe will move inland due to continuous erosion of the existing road • Keen to see more than one operator (competition) • Expected the rates to be much cheaper

Appendix 7B: Summary of Kiribati Consultation

25 October 2016		
Amalgamated Telecommunication Holding Kiribati	Kamleshwar Sharma CEO	• ATH supports the concept • ATH wants to contribute to the process • Happy to provide any technical information, but need a written request
	Arobati Teamako A/Manager Earth Station	• This is a new technology to us
Ocean Link		• Difficult to access and compete with ATHK • Need to have the cable accessible to private operators • Difficulty in interconnection between two operators • Keen to see who is going to manage the cable • Operator of the cable must be independent of the current operators (fair competition)
Women Development	Bairee. Beniamina. Officer in Charge	• Communication is vital for women; especially with families within Tarawa, and with those overseas. • Issue now is the "bad image" being downloaded and shared by kids. • Children's' time being spent on phones, laptops, tablets is an issue with their schoolwork. Imagine if the fibre cable will allow faster Internet.

		• We are aware that teachers have found pornographic materials in student's phones. • Some students pretend to do school work but they spend school time on their phones or Internet. • Better communication will allow us to share information with communities, especially community development information. • We need to manage this new technology through some kind of program for the public.
NGOs	Uriam. Robati. Senior NGO Officer	• We have almost 300 NGOs registered with us; and there is more being set up and seeking help on how to incorporate their NGO. • Main concern is that we need more public information on this type of new technology. • Our people should be aware and have some understanding. • There have been some issues with the current project being implemented by McDowell: some people vandalise it because there were no consultation, awareness, and information for the local people (community). • Appreciate that you start by informing us. I hope that the public awareness and information will continue on so that local people, especially those who are less fortunate, to know and understand this new project.
Social Welfare	Tabotabo.Auatabu. Principal Social Welfare Officer	• We are aware that Internet has some negative influence on people. • The most vulnerable in this type of development is our children. They access to a fast technology, with little guidance. Be mindful, that some parents have less knowledge of this Internet technology. That make it difficult for them and the kids. • There is a need for more consultation, so that people are fully aware of this new technology. They will need help to manage the risks that this will bring to their homes. We will liaise with the Ministry of Communication on this important issue. • There is a need to have some kind of protection for our kids. Either, educating the parents or have some program, like parent lock, so that parents can manage the Internet usage in their homes. • Adults, also need some protection with this new Internet technology.
26 October 2016		
MOEL	Uataake Terite Technical Office Barnabas Iotiabata IT Technician	• Internet only service • Concerns with cable management and operator (independent) • Good timing for us to review our satellite contract • Will build in the cable into our next business plan • We would like to be involved in the planning with Government
27 October 2016		
Public Consultation – Nanikai Community	Attended by approximately 50 people from local community of Nanikai (see Appendix 8)	• Will cable affect fish? • How is cable brought ashore? • Will other islands in Kiribati benefit? • Will cable be visible? • What will the cost of Internet access be? • How will access to offensive websites be managed? • Will local labour used in cable installation Project?
28 October 2016		
EcoCare	Dr Kameri Onorio	• Provided explanation of Project • Several other EIAs have been completed in Kiribati
Environment and Conservation Division	Taoues Reiher (Director) Victoria Hnanguie (Officer)	• Provided explanation of Project • EIA might not be needed which is a requirement for license to install & operate.
KAP (Kiribati Adaptation Programme)	Etrily Menikaoti	• Provided explanation of Project • To provide island profile
KANGO	Tereeao Teingiia (President)	• Provided explanation of Project • KANGO managers all recognized small NGOs in Kiribati
Ministry of Public Works	Meeting with key enginners	• Provided explanation of Project • Programme of seawall works not proactive, its reactive • There is duct in the roadside but they don't know whether the cable could be placed in it.

29 October 2016		
Ahmadiyya Muslim Community Tarawa	Imam Khawaja Fahad Ahmad	• Long overdue for Kiribati to have a reliable Internet • Current Internet is expensive • Communicating with our headquarter is vital • We provide basic education service for local people, and we need good Internet • Better Internet will allow us to expand our community education service

Appendix 7C: Summary Nauru Consultation

31st October		
Department of Commerce, Industry & Environment	List of Attendees (see Appendix 8)	• Provided explanation of Project • Gabab site has strong currents. • To be mindful of public mindset re environmental impacts • Looking at establishing MPAs particularly southern coast, working with local community. • Could existing pipeline be used in intertidal by government buildings?
1st November 2016		
Lands & Survey	Penisasi Nakautoga	• Land survey has been done for most claims • Support by providing the necessary information
Youth Affairs	Lavinia Akken	• Youth are very well familiar with the Internet • Youth are fast learner in using the Internet • Issues with accessing and distributing inappropriate images • Work hindered by unreliable Internet service
Culture Affairs	Riverina Scotty	• We feel like we are isolated • Need to expose our cultural products to a wider market • We need more visitors and tourists
Child Protection	Krystelle McKenzie	• Children are vulnerable especially with this coming technology (exposure)
Justice & Border Control	Filipo Masaurua Stella Dubriya Daron Adeang	• Rights: Peoples rights to have equal access to this service at an affordable cost • The project should be gender sensitive, especially the women and children (rights and protection) • Issues as of date will worsen of there are no appropriate measures to protect and manage the potential risks of this technology
Department of Commerce, Industry, and Environment		• Presentation and Briefing on the project • Potential location discussed with no issues raised
Eco Nauru	Tyronne Deiye	• Established but currently applying for funds, such as the GEF Small Grant • Our team is well equipped (experience and knowledge) to do conservation and environmental work
2nd November 2016		
Public Meeting	List of attendees (see Appendix 8)	• Interests on the cable project was evident • Keen to access a more reliable and affordable Internet service • Open and fair competition will benefit people • Government needs to alert landowners of their utilising the leasehold for the cable. There should be not issue, a matter of courtesy. • Interested to know who funds the project. Glad to know it is not paid by the Government.