Initial Environmental Examination

Project No.: 55009-001
Status: Draft
July 2021

Federated States of Micronesia: Preparing the Sustainable Road Infrastructure Investment Project

[Pilot Subproject]

CURRENCY EQUIVALENTS

FSM uses the United States dollar (US$) as at June 2021

AU$1.00	=	US$0.77
US$1.00	=	AU$1.29

ABBREVIATIONS

ADB	–	Asian Development Bank
ABS	–	Areas of Biological Significance
AP	–	Affected Person
CEMP	–	Construction Environmental Management Plan
CSS	–	Country Safeguard System
DoFA	–	Department of Finance and Administration
DTC&I	–	Department of Transportation, Communications, and Infrastructure
EA	–	Executing Agency
EAS	–	Environmental Assessment Statement
EEZ	–	Exclusive Economic Zone
EMP	–	Environmental Management Plan
EPA	–	Environmental Protection Authority
ESS	–	Environmental Safeguard Specialist
ESHG	–	Environment, Health and Safety Guidelines (of World Bank Group)
FSM	–	Federated States of Micronesia
FSMEPA	–	Federated States of Micronesia Environmental Protection Act (2014)
GDP	–	Gross Domestic Product
GIS	–	Geographic Information Systems
GRM	–	Grievance Redress Mechanism
HPO	–	Heritage Protection Office
HSP	–	Health and Safety Plan
IA	–	Implementing Agency
IEE	–	Initial Environmental Examination
IUCN	–	International Union for Conservation of Nature
NBSAP	–	National Biodiversity Strategy and Action Plan
NES	–	National Environmental Service
PMU	–	Program Management Unit
PSC	–	Project Steering Committee
PRF	–	Project Readiness Financing
SIDS	–	Small Island Development States
SPS	–	ADB Safeguard Policy Statement 2009
TOR	–	Terms of Reference
VA	–	Vulnerability Assessment
WB	–	World Bank
WHO	–	World Health Organization

NOTES

(i) The fiscal year (FY) of the Government of the Federated States of Micronesia and its agencies ends on 30 September. “FY” before a calendar year denotes the year in which the fiscal year ends, e.g., FY2019 ended on 30 September 2019.

(ii) In this report, "$" refers to United States dollars.

TABLE OF CONTENTS

EXECUTIVE SUMMARY

1. **The project**. The proposed project readiness financing (PRF) will prepare the FSM Sustainable Road Infrastructure Investment Project (ensuing project) and facilitate a transition to smooth project implementation. In this context the PRF will finance a consulting firm to pilot test the project approach (pilot subproject) and based on these findings, prepare an investment project suitable for Asian Development Bank's (ADB) financing, which is programmed in 2023. This IEE's scope is limited to the proposed pilot project and has been prepared to provide an account of the baseline environmental and social conditions and to describe and evaluate likely impacts caused by the proposed pilot road section improvements and identify measures to avoid and/or mitigate the same.

2. The PRF will thus prepare the ensuing investment project by: (i) piloting the identified road section on the advanced construction technology leading to subsequent selection of candidate subprojects for the ensuing project(s); (ii) undertaking feasibility studies and due diligence on institutional, financial, procurement, and safeguards aspects of the selected subprojects; (iii) preparing detailed engineering designs and procurement of contracts for the ensuing project, including preparation of bid documents and procurement management support; and (iv) initial capacity building to support the ensuing project's start-up activities. The PRF aligns with the ADB's Strategy 2030 operational priorities to: (i) address remaining poverty and reducing inequalities (OP1); (ii) tackle climate change, building climate and disaster resilience, and enhance environmental sustainability (OP3); (iii) make cities more liveable (OP4); and (iv) strengthen governance and institutional capacity (OP6).

3. **Institutional arrangements.** The FSM Department of Finance and Administration (DoFA) will be the executing agency and the FSM Department of Department of Transportation, Communications, and Infrastructure (DTC&I) will be the implementing agency through its Program Management Unit (PMU). The Pohnpei Environmental Protection Authority (EPA) is responsible for implementing the country safeguard system (CSS). The DTC&I PMU will be supported by the PRF consultant which will include environmental specialist(s).

4. **Legal and Policy Framework.** This IEE was conducted in accordance with ADB's Safeguard Policy Statement 2009 (SPS), and the requirements of FSM's CSS which entail the FSM *Environment Protection Act (2014)*; the FSM *EPA Environmental Impact Assessment Regulations (1989)* and given the pilot project location in Pohnpei State; Pohnpei's *Environmental Protection Act (1992).* The latter establishes a procedure under the administration of Pohnpei's EPA for preparation of an environmental assessment statement (EAS) prior to any action that may significantly affect the quality of the environment.

5. **Screening and categorization**. The pilot subproject has been screened based on the existing conditions and proposed scope of works and are categorized as B for environment, given it will have site-specific, largely temporary, and intermittent impacts during construction and most impacts can be avoided or reduced through mitigation measures. The appropriate level of assessment for a category B project is an initial environmental examination (IEE). The IEE complies with requirements of the country safeguards system for environment and ADB's Safeguard Policy Statement 2009 (SPS).

6. **Anticipated Impacts**. The potential environmental impacts arising from the design, construction, and operation of the pilot project will be relatively minor and localized. The existing road has been in existence for some time and most of the impacts within the identified section will occur during the construction stage and provided that the mitigation measures set out in the environmental management plan (EMP) are implemented properly, will create few if any residual impacts. The proposed road upgrading does not directly impact any terrestrial conservation and/or protected areas. No sites of cultural, customary or heritage significance are also identified along

the pilot road section. There are no impacts on critical or natural habitats. Potential social impacts are likely to be minor provided the DTC&I PMU and contractors follow standard health and safety practices and coordinate closely with adjacent communities, residences/business, and schools who themselves support the project, and the DTC&I ensures the EMP is implemented by the contractor. This will include development of a COVID 19 emergency response plan and worker code of conduct which will be appended to the worker's contract.

7. The findings of the IEE suggests that improvements to the pilot road section will provide improved public services and safety to all road users, including pedestrians, in the project area of influence. Overall, few of the impacts are irreversible. Potential impacts can be managed and reduced to acceptable levels through the implementation of the measures identified in the EMP, which will be developed into a detailed site-specific construction EMP (CEMP) reflecting the approach and timing of the works and activities (including site-specific plans as identified) proposed by the contractors, and effective monitoring of the same, by the PRF consultant, who will support the DTC&I PMU.

8. **Environmental Management Plan.** An EMP has been prepared to identify, avoid, minimize, and mitigate likely impacts caused by the upgrade improvements for the pilot subproject. Potential impacts can be managed and reduced to acceptable levels through the implementation of the measures identified in the EMP. The IEE and EMP will be updated as the pilot road section design is further defined. Environmental mitigation measures will be incorporated into the design and the IEE and EMP will be included in technical specifications and bidding. The contractor shall prepare a construction EMP (CEMP) that will be reviewed and approved by the IA. The IEE and EMP and required environmental impact assessment checklist will form the EAS to obtain a development review permit from the Pohnpei EPA. The PRF consultant will also include environmental specialists to work with the resident engineer to review and approve the CEMP and to monitor the contractor's implementation of the approved CEMP.

9. **Contractors Environmental Obligations.** Based on the Project's EMP, contractors will be required to prepare their construction EMP (CEMP) to ensure appropriate environmental management during the construction period. In responding to the Project's EMP, the CEMP is to be site and activity specific reflecting the contractor's construction methodology and approach and include all sub-plans (health and safety plan, traffic management plan, erosion and sediment control plan, waste management plan, hazardous substances management plan, and COVID 19 emergency response plan) as required.

10. **Monitoring and reporting.** When construction commences, inspections and audits will be undertaken to ensure measures set out in the EMP and CEMP are effective in mitigating impacts and protecting the environment (based on benchmarked conditions recorded prior to works commencing for parameters identified in the EMP) and that overall, the contractor is working in compliance with the approved CEMP. Monitoring will provide information to determine whether critical factors are within acceptable environmental levels or being exceeded. It also helps to determine whether mitigation measures are effective or should be modified or improved to address the observed and measured change in impacts. Inspections and regular monitoring will be reported.

11. Reporting will include contractor's monthly reports to the DTC&I PMU, quarterly progress reports (including summary of contractor's reports and safeguards matters) prepared by the DTC&I PMU and PRF consultants for submission to the executing agency and ADB, and semi-annual safeguards monitoring reports prepared by the DTC&I PMU and submitted to the executing agency and ADB. ADB will disclose the monitoring reports.

12. **Consultation, participation, and disclosure**. Consultations and meetings were conducted by DTC&I for communities and stakeholders for the pilot subproject in early 2021. A record of consultations is presented in Annex 1. A Communication strategy and consultation and

participation plan will be prepared by the PRF consultants to guide consultations and information disclosure for the ensuing project during the design and implementation stages. For the pilot road section, the civil works contractor will ensure that the public is notified of works and traffic control measures at least two weeks in advance.

9. **Grievance redress mechanism**. A grievance redress mechanism (GRM) has been established for the pilot subproject. The GRM will be implemented through all stages of the pilot including design, construction, and operation. The community will be informed of the GRM through the consultation programme and by prominent display of the GRM process at the subproject site and in the DTC&I office prior to the commencement of onsite works. There will be full and free access to the designated grievance focal point. This GRM will be reviewed and updated by the PRF consultants for the ensuing project based on acceptable methods of conflict resolution in the FSM.

13. **Conclusion**. This IEE has identified potential environmental impacts associated with the pilot subproject as far as is practicable. Measures required to avoid, minimize, or mitigate impacts have been summarised in the EMP which, together with this IEE, will be updated as the pilot subproject is further defined during the feasibility assessment. Provided the mitigation measures outlined in this IEE and EMP are appropriately implemented, the pilot subproject is not expected to have any widespread, irreversible, significant, or long-term environmental impacts.

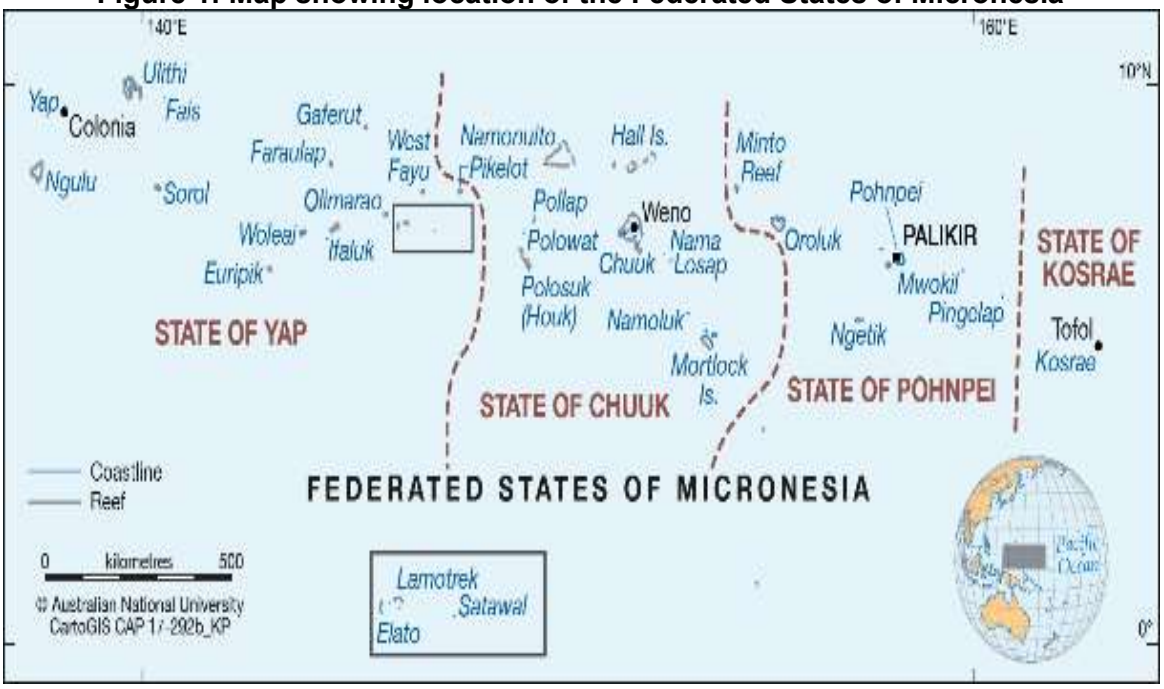
1. INTRODUCTION

A. Project Background

14. **Location.** The Federated States of Micronesia (FSM) is in the north western Pacific and is approximately 2700 km from east to west (**Error! Reference source not found.**). It includes 607 islands, 74 of which are inhabited, which are scattered over an area of 2.6 million square kilometres located between Palau and the Philippines in the west, and the Marshall Islands to the east. It is comprised of four states: Yap, Chuuk, Pohnpei and Kosrae with each state having a main island where most of the population is based. Each State is also diverse in terms of language, culture, environmental and land tenure laws.

15. Pohnpei where the pilot subproject is located is a high volcanic island with a mountainous interior, approximately 21km in diameter and 112 km in circumference. Including lagoon islands, the total land area of Pohnpei is about 340km^2.

Figure 1: Map showing location of the Federated States of Micronesia



16. **Transport challenges.** FSM's population is served by 200 kilometers of sealed and some 15 kilometers of unsealed primary roads over a combined land area of 700 square kilometers dispersed across the four semi-autonomous states. Recognizing that domestic transport connectivity is critical to social and economic development, the Asian Development Bank (ADB) is assisting the FSM to improve road transport to provide access to essential services, improve trade and tourism, and facilitate access to domestic and international markets. It is noted in this context that there is only one primary circumferential route on the main island in each of the four FSM states. These are two-lane roads with 5.5-meter to 7.3-meter-wide carriageways. The road conditions are mostly good to fair, with some sections in poor and very poor condition. Since the road network is essentially non-existent due to limited redundancy or connectivity, all-weather access is severely affected by intense climate in undulating terrain and general lack of adequate drainage and routine maintenance practices. Even a few poor or very poor sections or crossings can severely disrupt the flow of people, goods, and the services.

17. There are also several other common obstacles to the effective maintenance and resilience of transport assets including (i) insufficient capacity of the institutions responsible for infrastructure delivery to implement sustainable routine and periodic maintenance programs; (ii) inadequate fiscal budgets to allocate required financial resources for recurrent maintenance and rehabilitation; (iii) vulnerability to natural disasters and anticipated climate change; and (iv) limited transport sector policy and legislation.

18. The institutional make-up of FSM is thus relatively challenging with the national government taking the responsibility for policy, planning, and funding, whereas the four semi-autonomous states are responsible for execution, and operation and maintenance of infrastructure assets. In transport, the DTC&I at the national level implements the FSM Infrastructure Development Plan, 2016–2025.[1] It then provides technical assistance to the state governments for project management, resource mobilization, and institutional strengthening. DTC&I coordinates the planning and delivery of major infrastructure projects and programs through the program management unit (PMU) staffed with professional engineers and support staff.

19. The road network in each of the four states however is owned and managed by the state governments through the respective departments responsible for infrastructure. Each state also has an infrastructure planning and implementation committee which is responsible for the review, approval, and monitoring of infrastructure projects. Compact-funded infrastructure projects are managed by state-level project management offices. The absence of effective institutional arrangements and lack of adequate funding over the past 20 years have resulted in a progressively deteriorating state of the roads and lack of adequate network coverage to integrate all communities into the main economic activities and provide access to social services.

20. **The project**. To help address these constraints the Government of FSM and ADB have prioritized support to the transport sector for the first time in ADB's country operations business plan for 11 small Pacific island countries for 2021–2023.[2] ADB is well positioned to add value in strengthening the transport sector in FSM by leveraging its unique experience and knowledge of the Pacific region's infrastructure constraints and opportunities. ADB's flexible financial instruments, such as this PRF, will also ensure that project delivery approach is pilot tested, and that the ensuing project is implementation-ready prior to commitment of scarce public resources.

21. In summary, the PRF is intended to test the project approach and prepare an investment project suitable for Asian Development Bank's (ADB) financing programmed in 2023. It will comprise the following four outputs:

Output 1: Scope of sector policies, strategies, and investments identified.

Output 2: Detailed engineering designs and bidding documents prepared; implementation contracts procured.

Output 3: Innovative tools for road rehabilitation works in the FSM piloted.

Output 4: Capacity of executing and implementing agencies, and implementation arrangements tested.

22. **Pilot subproject.** A pilot road section of approximately 3.5kms has been identified on Pohnpei (Figure 2). This section will be subject to further design and feasibility by the PRF consultants to designate only 1km of this road section for piloting the innovative construction methods: which includes (i) full-depth reclamation to recycle pavement materials to combat

[1] Government of the Federated States of Micronesia Department of Transportation, Communications, and Infrastructure. 2015. Federated States of Micronesia Infrastructure Development Plan FY2016–2025. Palikir.
[2] ADB. 2020. Country Operations Business Plan: Eleven Small Pacific Island Countries, 2021–2023. Manila.

construction waste and reduce carbon emission during construction, and (ii) intelligent compaction for better coverage and quality of road compaction operations. The PRF will procure equipment and materials for the pilot subproject, which will be implemented on the selected 1km segment. The pilot study will be witnessed by representatives of the FSM states, and a report will be provided on the potential for upscaling the pilot study to all states under the ensuing project.

Figure 2: Location of pilot road section between Pakir and Kolonia township

23. **Institutional arrangements.** The FSM Department of Finance and Administration (DoFA) will be the executing agency and the FSM Department of Department of Transportation, Communications, and Infrastructure (DTC&I) will be the implementing agency through its Program Management Unit (PMU). The Pohnpei Environmental Protection Authority (EPA) is responsible for implementing the country safeguard system (CSS). The DTC&I PMU will be supported by the PRF consultant which will include environmental specialist(s).

B. Scope of environment assessment

24. **Screening and categorization.** The pilot subproject has been screened based on the site conditions and proposed scope of works and has been determined as category B for environment given, it will have site-specific, largely temporary, and intermittent impacts during construction and most impacts can be avoided or reduced through mitigation measures. The appropriate level of assessment for a category B project is an initial environmental examination (IEE). The IEE complies with requirements of the country safeguards system (CSS) and ADB's Safeguard Policy Statement 2009 (SPS).

25. **Scope and coverage.** This IEE has been prepared in accordance with the FSM *Environment Protection Act (2014)*; the FSM *EPA Environmental Impact Assessment Regulations (1989)* and given the pilot project location in Pohnpei State; Pohnpei's *Environmental Protection Act (1992).* The assessment also complies with the requirements for category B projects in

accordance with ADB's Safeguard Policy Statement 2009 (SPS)[3]. The scope of the IEE includes the footprint of the pilot subproject as well as the area of influence of the subproject area to ensure that secondary or indirect impacts can be identified and managed. It is based on a limited field study, consultations, and site visit, and relied on secondary sources of information available in relevant reports and databases. Based on the current information available, the pilot subproject area is considered as potential Critical Habitat based on ADB's SPS definition. Additional on the ground assessment and survey however will be carried out in early implementation as a validation exercise to update the IEE and to confirm the presence of critical habitat or not. The findings will inform the EMP update and if necessary, a Biodiversity and Invasive Species Action Plan will be prepared to confirm compliance with the ADB SPS and ensure no net loss of biodiversity.

26. The IEE will then be reformatted, as required, and submitted as an Environmental Assessment Statement (EAS) as part of the development permit application to the Pohnpei EPA. The overall objective of the assessment process is to identify impacts and measures to avoid, minimise/mitigate or compensate for them. In summary, the objectives of the IEE are to:

(i) Identify and describe the existing environmental conditions—physical, biological and socio-economic—in the pilot subproject areas including the identification of Critical Habitat (as defined in ADB Safeguard Policy Statement 2009 (SPS)) potentially impacted by the project;
(ii) Assess the proposed location, design, construction, and operation activities to identify and evaluate their potential impacts (positive and negative), and determine their significance;
(iii) Propose appropriate mitigation and monitoring measures that are incorporated into an environmental management plan (EMP) that will avoid or minimise adverse impacts so that residual impacts are reduced to acceptable levels;
(iv) Consult with stakeholders on the potential impacts and understand the issues and concerns about the impacts and how they might be affected; and
(v) Ensure that all statutory requirements for the project such as applicable legislation and regulations, permits required (if any) and policies have been considered.

[3] ADB. 2009, Safeguard Policy Statement, Manila Philippines

2. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

A. Country Safeguards System

27. The FSM is made up of four semi-autonomous States, each with their own established legislative system, various supporting legislation and procedures governing management and protection of the environment, with an overarching national government retaining responsibility for negotiating and entering into multilateral environmental agreements. The States take the lead role in ensuring that development is avoided in vulnerable areas and ensuring that critical natural systems are protected. Each State has thus made efforts to control development and manage natural resources through the creation of state specific land use plans, coastal zone plans, legislation, and regulations. The National Government provides guidance and technical assistance to the States when needed and requested on matters related to planning, economic development, natural resources, fisheries, and the environment.

28. Activities undertaken by the national government, or its agencies, are assessed under the National Act (FSM Environment Protection Act,2014; FSM EPA Environmental Impact Assessment Regulations,1989). Activities are also particularly assessed under the state-level Acts and regulations. In this context the pilot road section subproject will be particularly subject to assessment under Pohnpei's Environmental Protection Act (1992). Each State has an Environmental Protection Authority (EPA) which has autonomous responsibility for State Environmental Impact Assessment (EIA) Regulations and other environment-related legislation. They stipulate the type of activities for which development consent, must be sought and which proposed developments require environmental assessment.

29. For the pilot subproject, the Pohnpei EPA will manage the environmental compliance process and initially requires an environmental assessment to be completed before implementation can begin. This initial assessment of potential impacts and mitigation is required under Pohnpei state law to identify potential environmental risks. If no potential risks are raised in the initial assessment, then the project can proceed. If the initial assessment identifies potential issues, then a full assessment is required.

30. **FSM Environment Protection Act (2014).** The Environment Protection Act (revised Code 2014) provides for the protection of the environment, culture, historic and natural aspects of Micronesian heritage. The Act is a national government declaration of on-going commitment in cooperation with State and municipal governments and other concerned public and private organizations. The Act declares to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare to create and maintain conditions under which the people of FSM and nature can exist in productive harmony and fulfill the social, economic, and other requirements of present and future generations of FSM. To this end, the Act consistent with other considerations of national policy, coordinates governmental plans, functions, programs, and resources to the end that the inhabitants of the FSM may:

(i) fulfil the responsibilities for each generation as trustee of the environment for succeeding generations;
(ii) enjoy safe, healthful, productive, and aesthetical and culturally pleasing surroundings;
(iii) attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable or unintended consequences;
(iv) preserve important historic, cultural, and natural aspects of our Micronesian heritage, and maintain, wherever possible, an environment which supports diversity and variety of individual choice; and

(v) remain responsible members of the global community by complying with the international legal obligations accepted by the Federated States of Micronesia upon ratifying or acceding to international environment agreements.

31. **FSM EPA Environmental Impact Assessment Regulations (1989).** The purpose of the EIA Regulations is to implement Section 13 of the FSM Environmental Protection Act by establishing standard procedures for preparation of an environmental impact assessment statement prior to taking or funding any major action that may significantly affect the quality of the human environment. These Regulations require the National Government and its agencies to submit an Environmental Impact Statement (EIS) to the Secretary of Human Resources prior to taking any "major"3 action significantly effecting the quality of the human environment. "Effect" is defined to include indirect, direct, and cumulative effects in areas such as land use, population density, air, water, and natural systems including ecosystems. "Effects" may be ecological, aesthetic, cultural, historical, economic, social or health related. "Significant Impacts", determined as a result of a preliminary assessment, require a Comprehensive EIA. Draft EIA statements are to be made available for public comment and review, including provision for a public hearing.

32. The EIA process is intended to help the public and government officials make decisions with the understanding of the environmental consequences of their decisions, and take actions consistent with the goal of protecting, restoring, and enhancing the environment. These regulations provide the directions to achieve this purpose. In addition, these regulations are designed to (i) integrate the EIA process into early planning of projects to ensure timely consideration of environmental factors and to avoid delays; and (ii) identify at an early stage the significant environmental issues requiring further study thereby defining the scope of the EIA.

33. **State legislation, regulation, and policy.** It is noted that the four states each have their respective state level regulations and legal frameworks. For the purposes of this pilot subproject, these are the most important as the works will be assessed and monitored at a state level. As such the following laws and policies in Pohnpei exist for managing and conserving the environment and apply to the PRF pilot subproject:

- Constitution of the State of Pohnpei (1984) (Primary rule of law in the State of Pohnpei).
- Public Trust Lands Distribution Act (1980).
- Public Lands Act (1987).
- Deed of Trust Act (1987).
- Trust Territory Environmental Protection Act, preserved from the Trust Territory environmental law. The Act and subordinate regulations relate to:
  - Air pollution;
  - Pesticides;
  - Public water supply systems;
  - Marine and freshwater quality;
  - Solid waste;
  - Toilet facilities and sewerage disposal; and
  - Earthmoving.
- Transportation Zone Act (1987).
- Conservation and Resource Enforcement Act (1982).
- Forest Management Act (1979).
- Pohnpei Watershed Forest Reserve and Mangrove Protection Act (1987).
- Designation of State Bird Act.
- Marine Resources Conservation Act (1981).
- Pohnpei Environmental Protection Act (1992).
- Pohnpei Cultural Preservation Act.
- Trust Territory Environmental Quality Protection Act.

34. **Pohnpei Constitution (1984).** Under the Pohnpei Constitution, the State Governor must establish and administer "*comprehensive plans for the conservation of natural resources and the protection of the environment*". Article 12 states that only Ponapean citizens, who are also pwilidak of Pohnpei, may acquire a permanent interest in real property. The Constitution also prohibits leases of more than 25 years and indefinite land-use agreements. The Government of Pohnpei may acquire land for public purposes following consultation with local government, owners, and an offer for payment of a purchase price or compensation. Article 13 of the Pohnpei Constitution prohibits the introduction, storage, use, test, and disposal of nuclear, chemical, gas and biological weapons, nuclear power plants and related waste materials from Pohnpei. Article 5 of the Pohnpei Constitution states "[*t]his Constitution upholds, respects, and protects the customs and traditions of the traditional kingdoms of Pohnpei*" and that the Pohnpei Government shall respect and protect customs and traditions.

35. **Pohnpei Environment Protection Act (1992).** Pohnpei's *Environmental Protection Act (1992)* S.L. No. 3L-26-92 establishes a procedure for preparation of an environmental assessment statement (EAS) prior to any action that may significantly affect the quality of the human environment. The degree of environmental assessment detail for a project depends upon the significance of its potential environmental impacts. Significance of the action is determined by the EPA on consideration of an Initial Assessment (with a prescribed checklist) submitted by the proponent.

36. The EPA receives the environmental assessment document and reviews it for compliance with the Act and the regulations in terms of format, adequacy of information and objectivity. The EPA authorizes commencement of a project, through a permitting process, only if it determines that the assessment is sufficient. Once the completed assessment is presented to the EPA Board of Directors and upon the final deliberations of the EPA Board, a permit will be given to the project proponent with conditions for compliance of the project proponent as required by EPA regulations.

37. There is a range of potentially required permits and licenses for a major development in Pohnpei and these comprise:

(i) EPA Earthmoving Permit;
(ii) Land Ownership Documentation;
(iii) Forestry Clearance;
(iv) Marine Resources Assessment Report;
(v) Municipal Government Clearance (planning approval);
(vi) Department of Lands Approval; and
(vii) Historic Preservation Clearance.

38. The Act requires the active assistance of all government authorities to achieve its goals. The result, in practice, is that only the EPA Earthmoving Permit is required. This applies to projects with significant amounts of earthworks. Its focus is the management of soil and water conservation.

39. The Pohnpei EPA will require an initial assessment document which will determine whether an EAS is required depending on the nature and scale of impacts. The EAS would be reviewed by the EPA Board of Directors and a permit provided with conditions for compliance with EPA regulations.

40. **International agreements and convention.** FSM is noted to have the following ratified environmental related international and regional agreements (Table 1).

Table 1: International Conventions and Treaties

Year	Convention or Treaty
1951	International Plant Protection Convention

1972	World heritage Convention
1982	United Nations Convention on the Law of the Sea
1984	Agreement relating to the Conduct of a Joint Program of Marine Geoscientific Research and Mineral Resource Studies of the South Pacific Region
1985	Vienna Convention for the Protection of the Ozone Layer
1986	Convention for the Protection of the Natural Resources of the South Pacific Region and companion protocols
1988	Convention for the Protection of Natural Resources and Environment of the South Pacific Region (the Noumea Convention)
1990	Convention for the prohibition of fishing with long driftnets in the South Pacific
1993	United Nations Framework Convention on Climate Change
1994	Convention on Biological Diversity
1995	Montreal Protocol on Substances that Deplete the Ozone Layer
1995	Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal
1996	Convention to ban the importation into Forum island countries of hazardous and radioactive wastes and to control the transboundary movement and management of hazardous wastes within the South Pacific Region (Waigani Convention)
1996	United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification
1997	Agreement Implementing Provisions of December 10, 1982 on Straddling Fish Stocks and Highly Migratory Fish Stocks
1999	Kyoto Protocol to the United Nations Framework Convention on Climate Change
2001	Stockholm Convention on Persistent Organic Pollutants
2012	Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization (ABS) to the Convention on Biological Diversity
2014	Doha Amendment to the Kyoto Protocol to the United Nations Framework Convention on Climate Change
2016	Paris Agreement to the UNFCCC
2017	Kigali Amendment to the Montreal Protocol

B. ADB Safeguard Policy Statement

41. The goal of the ADB's SPS is to promote the sustainability of project outcomes by protecting the environment and people from any potential adverse impacts of the project.

42. The SPS has the objectives to (i) avoid adverse impacts of projects on the environment and affected people; (ii) where possible; minimize, mitigate, and/or compensate for adverse project impacts on the environment and affected people when avoidance is not possible; and (iii) help borrowers/clients to strengthen their safeguard systems and develop the capacity to manage environmental and social risks. To help achieve the desired outcomes, ADB adopts eleven policy principles for guiding the assessment of projects that trigger environmental risks and impacts.

43. The SPS contains three safeguard requirements (SR); SR1: environment, SR2: involuntary resettlement and SR3: indigenous peoples. Each of the safeguard requirements comprises an objective, scope and triggers, and a set of policy principles that must be met. Each of the safeguard requirements follows a due diligence process of screening, categorization, scoping, consultation, impact assessment, management, and monitoring and reporting. Documentation of the due diligence is subject to disclosure as per the requirements of the *Access to Information Policy 2018*.

44. The environment safeguard requires due diligence which entails addressing environmental concerns, if any, of a proposed activity. This commences with screening a project to determine its category of impact. ADB categorizes projects into categories A, B, C, and FI according to the significance of likely impacts. As per SR1, the pilot road subproject project has been screened as Category B. Category B projects are assessed to have some adverse impacts, but of lesser degree and/or significance than category A, the impacts are site-specific and can be managed or mitigated to satisfactory levels. Category B projects require an initial environmental examination (IEE), and this exercise concludes that this IEE is regarded as the final environmental assessment report.

45. ADB's SPS applies pollution prevention and control technologies and practices consistent with good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines (EHSG). The EHSG provide the context of international best practice and contribute to establishing targets for environmental performance. Standards incorporated into the EHSG will be used in parallel with local FSM environmental standards (where they exist) throughout this document with the principals of due diligence and a precautionary approach adopted. Application of occupational and community health and safety measures, as laid out in the EHSG is also required under the SPS.

46. ADB will not finance projects that do not comply with the SPS and the host country's social and environmental laws and regulations, including those laws implementing host country obligations under international law. The SPS also contains a prohibited activities list identifying specific activities that ADB will not finance.

3. PROJECT DESCRIPTION

A. Rationale

47. FSM like other Small Island Developing States (SIDS) face significant challenges related to its geographic remoteness and dispersion, environmental fragility, and climate change impacts which pose major challenges for infrastructure delivery, and even threaten the physical viability of some areas of both the main islands and the more remote outer islands. In this context, FSM is vitally dependent on access to a well-functioning and reliable transportation system as typical to many SIDS in the Pacific, primary roads in FSM provide access to public facilities, economic infrastructure, and job opportunities along the coastlines where most of its population reside.

48. It is noted that there is only one primary circumferential route on the main island in each of the four FSM states. These are two-lane roads with 5.5-meter to 7.3-meter-wide carriageways. The road conditions are mostly good to fair, with some sections in poor and very poor condition. Since the road network is essentially non-existent due to limited redundancy or connectivity, all-weather access is severely affected by intense climate in undulating terrain and general lack of adequate drainage and routine maintenance practices. Even a few poor or very poor sections or crossings can severely disrupt the flow of people, goods, and the services. The outlook is not promising with climate projections predict elevations in air temperature, frequency of days of extreme, increased rainfall and rising sea levels. Sea level rise combined with natural year-to-year changes accentuate the impact of storm surges and coastal flooding.

49. In addition, FSM's vehicle fleet grew 30% from 8,500 in 2015 to 11,800 in 2019 just before the onset of the coronavirus disease (COVID-19) pandemic[4]. Main roads carry as little as 400 vehicles per day in the rural areas, to over 8,000 vehicles per day on the heavily trafficked urban roads. The State of Pohnpei is estimated to have over 60% of vehicle fleet and about the same proportion of vehicles are old and mostly private fleet which are costly to operate and maintain emitting higher greenhouse gas emissions, especially on roads which are in poor condition. While the economic activity will remain suppressed in 2021, a return to normalcy is expected to bring more economic activity; and with it, an increase in traffic flows, traffic congestion in urban areas and higher greenhouse gas emissions from the aging vehicle fleet[5].

50. The institutional make-up of FSM is relatively challenging with the national government taking the responsibility for policy, planning, and funding, whereas the four semi-autonomous states are responsible for execution, and operation and maintenance of infrastructure assets. In transport, DTC&I at the national level implements the FSM Infrastructure Development Plan, 2016–2025[6] and provides technical assistance to the state governments for project management, resource mobilization, and institutional strengthening. DTC&I in this context has been tasked to implement the *"Pave the Nation"* Program of the government to address the pressing social and economic infrastructure needs.

51. Each state also has an infrastructure planning and implementation committee which is responsible for the review, approval, and monitoring of infrastructure projects. Compact-funded infrastructure projects are managed by state-level project management offices. In summary, the absence of effective institutional arrangements and lack of adequate funding over the past 20 years have resulted in a progressively deteriorating state of the roads and lack of adequate

[4] FSM Statistics. FSM Statistics Transportation (Registered Vehicle) (accessed 10 April 2021).
[5] A recent assessment carried out by FSM and IMF suggests that the COVID-19 pandemic caused 1.6% decline in gross domestic product in 2020 widening to 3.7% in 2021.
[6] Government of the Federated States of Micronesia Department of Transportation, Communications, and Infrastructure. 2015. Federated States of Micronesia Infrastructure Development Plan FY2016–2025. Palikir.

network coverage to integrate all communities into the main economic activities and provide access to social services.

52. The World Bank's recently approved Prioritized Road Investment and Management Enhancement Project aims to improve FSM's road network through upgrades to primary road sections and water crossings with climate resilience considerations; provide technical assistance to create an enabling environment for asset management systems and provide planning tools for prioritizing road investments[7]. Guided by Strategy 2030, ADB's support through this PRF is essential to bridge the sector funding gap, partner with the World Bank and other financiers to deliver coordinated assistance, and provide knowledge support in institutional, technological, and human resource development. Given FSM is a small island developing state and its classification as a fragile and conflict-affected situation, the project development will take a country-focused approach and seek to use advanced technologies with primary focus on building long-term sustainability from engineering and operational standpoints.

B. PRF outputs and activities

53. The PRF's objective is to test the project approach and prepare an investment project suitable for Asian Development Bank's (ADB) financing programmed in 2023, comprising the following four outputs:

Output 1: Scope of sector policies, strategies, and investments identified. The PRF will undertake upstream project pipeline development and sector studies to identify policies, strategies, and investments under the ensuing project(s). The scope of assessments will include primary, secondary, and urban roads in the four states of the FSM. FSM's road subsector policies, strategies, and investment plans will be critically reviewed to identify opportunities for more efficient sector operation, maintenance, and better funding that aligns with ADB Strategy 2030.

Output 2: Detailed engineering designs and bidding documents prepared, implementation contracts procured. Based on the priority investments, the PRF will conduct all necessary engineering surveys and investigations, as well as develop the engineering designs with focus on climate and disaster resilience, inclusive development, road safety, and environmental and social due diligence. A strategic procurement planning and market analysis will be undertaken, and bidding documents prepared for the proposed road works under the ensuing project following ADB's Guidance Note on Procurement.[8]

Output 3: Innovative tools for road rehabilitation works in the FSM piloted (Pilot subproject). Responding to climate resilience and long-term sustainability, the PRF will undertake small-scale pilot testing of innovative construction methods.

Output 4: Capacity of executing and implementing agencies, and implementation arrangements are tested. Based on the Output 1 recommendations, the PRF will test the project delivery approach for most effective organizational and implementation arrangements to ensure that selected projects from all states are planned and implemented in a coordinated and efficient manner. This output will ensure that the ensuing project is adequately resourced, and organizational relationships are structured to effectively manage the project risks.

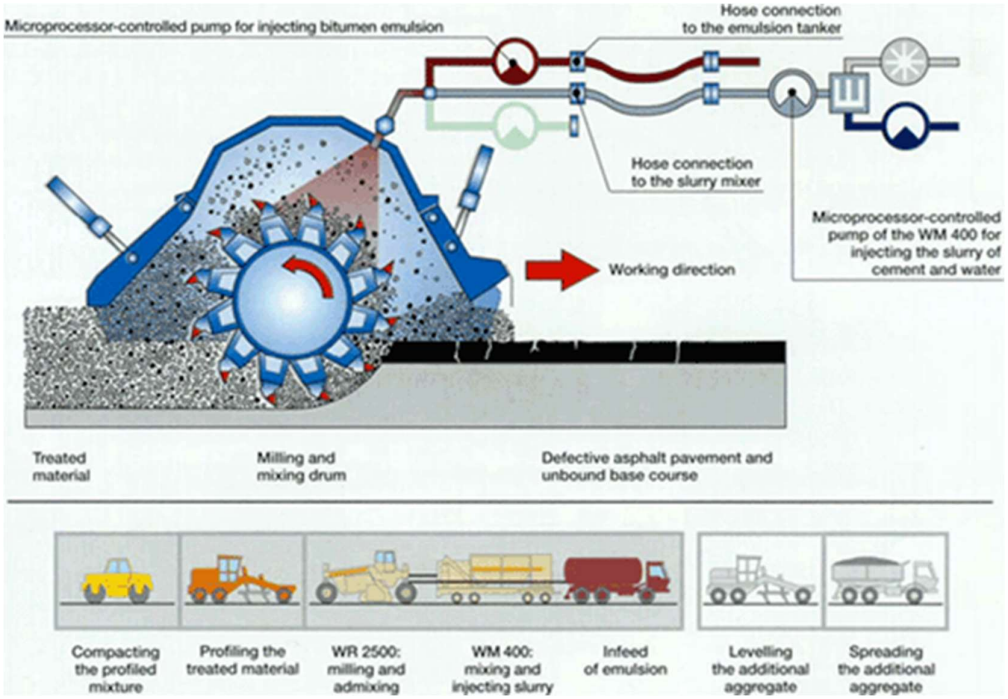
[7] World Bank. Forthcoming. Federated States of Micronesia. Prioritized Road Investment and Management Enhancement Project. Washington DC. (approved 17 May 2021)
[8] ADB. 2018. Strategic Procurement Planning. Guidance Note on Procurement. Manila.

C. Pilot Subproject

54. The PRF calls for the use of cutting-edge technology for road construction. Full-depth reclamation (FDR) and the intelligent compaction methods are among the proposed technologies. These technologies reduce road construction related emissions by in-place recycling of the road pavements thereby reducing the need for sourcing and transporting the raw materials from quarries to the project site. They have been shown to speed up project implementation, improve quality, and reduce traffic disruptions. The pilot testing will include acquisition of these technologies and construction upgrade of about 1 km road section suitable for applying this technology by a qualified domestic contractor. The PRF Consultant will supervise the application of these technologies from technology acquisition to full pilot testing.

55. **Full-depth reclamation.** Full depth reclamation has been defined as a recycling method where all the asphalt pavement section and a predetermined amount of underlying materials are treated to produce a stabilized base course[9]. As illustrated in Figure 3, the five main steps in this process are pulverization, introduction of additive, shaping of the mixed material, compaction, and application of a surface or a wearing course. If the in-place material is not sufficient to provide the desired depth of the treated base, new materials may be imported and included in the processing. This method of recycling is normally performed to a depth of 100 to 300 mm and since this method recycles the materials in situ, there is no need to haul in aggregate or haul out old material for disposal. The vehicle movements are reduced and there is no need for detours since it can be done under traffic, making this process more convenient for residents.

Figure 3: Schematic of FDR



56. The FDR methodology preserves natural resources by using existing materials and conserving virgin aggregates. The road performance is improved through better stabilization,

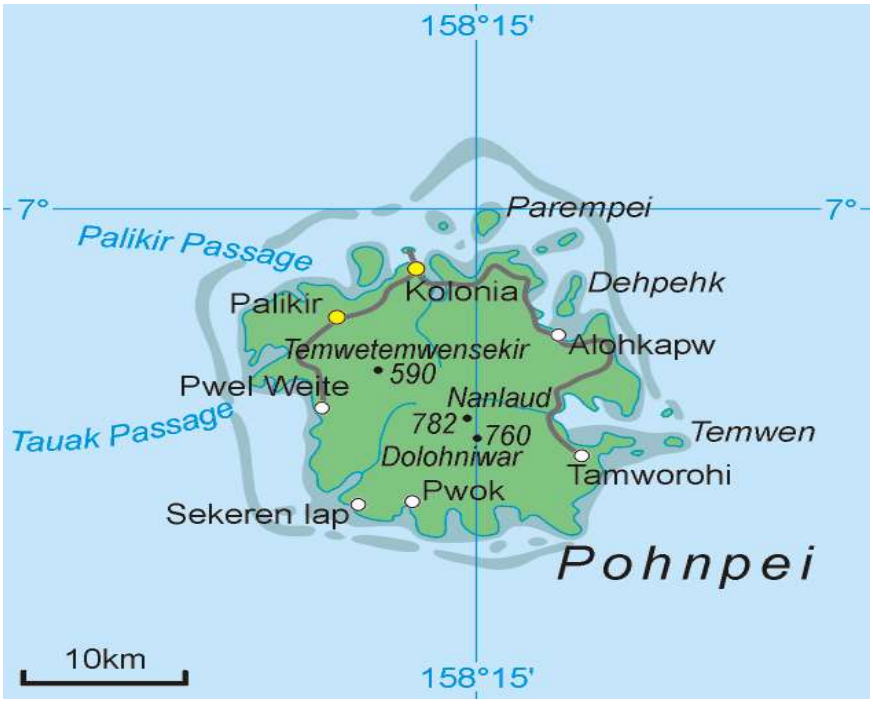
[9] *An Overview of Recycling and Reclamation Methods for Asphalt Pavement Rehabilitation*, Asphalt Recycling and Reclaiming Association, Annapolis, MD, 1992.

building a stronger, low-maintenance road that will last for many years. In summary, the major advantages and benefits of full depth reclamation are as follows:

(i) The structure of the pavement can be improved significantly without changing the geometry of the pavement and shoulder reconstruction.
(ii) It can restore old pavement to the desired profile, eliminate existing wheel ruts, restore crown, and slope, and eliminate potholes, irregularities, and rough areas. Pavement widening operations can also be accommodated in the process. A uniform pavement structure is obtained by this process.
(iii) It can eliminate alligator, transverse, longitudinal, and reflection cracking with ride quality can be improved.
(iv) The production and engineering costs is low, and only a thin overlay or chip seal surfacing is required on most projects.
(v) Materials and energy are conserved, and air quality problems resulting from dust, fumes, and smoke are eliminated. The process is environmentally desirable since disposal problems are avoided.

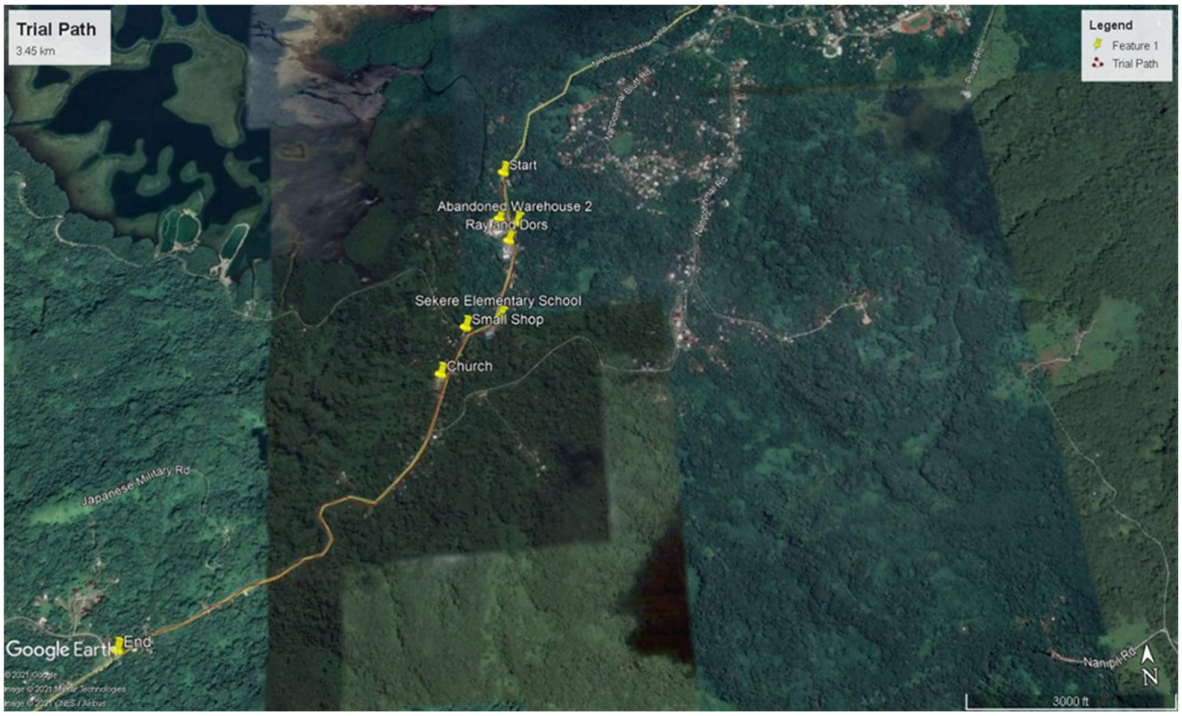
57. **Location.** The pilot road section of approximately 3.5kms has been identified on Pohnpei (Figure 4). This section is part of the main existing arterial road connecting the township of Pakir in the west to the main urban hub of Kolonia.

Figure 4: Location of pilot subproject



58. **Existing conditions.** The pilot subproject area as defined in further detail in Figure 4 illustrates the subproject's area of influence and immediate socio-economic environment. The identified road section will be subject to further design and safeguards due diligence by the PRF consultants to select only 1km along this road section for the pilot subproject.

Figure 5: Pilot subproject's area of influence



59. The current road is sealed and two-way; it provides access from Kolonia to the western villages, heading west to Pakir township, the capital. The identified section traverses from just outside Kolonia on the coast through the outskirts and upper slopes, and provides access for community residences, small business, a church, a school and subsistence and market gardens. The surface condition is variable and in many sections is ridged, failing and potholed (Figure.6) The road is also in a deteriorating condition, with inconsistent maintenance. non-existent line markings to indicate lane edges and centreline, (Figure 7) and inadequate warning and pavement area defined for key intersections (Figure 8). Figure 9 illustrates the school along the roadside as well as the expected daily traffic load.

Figure 6

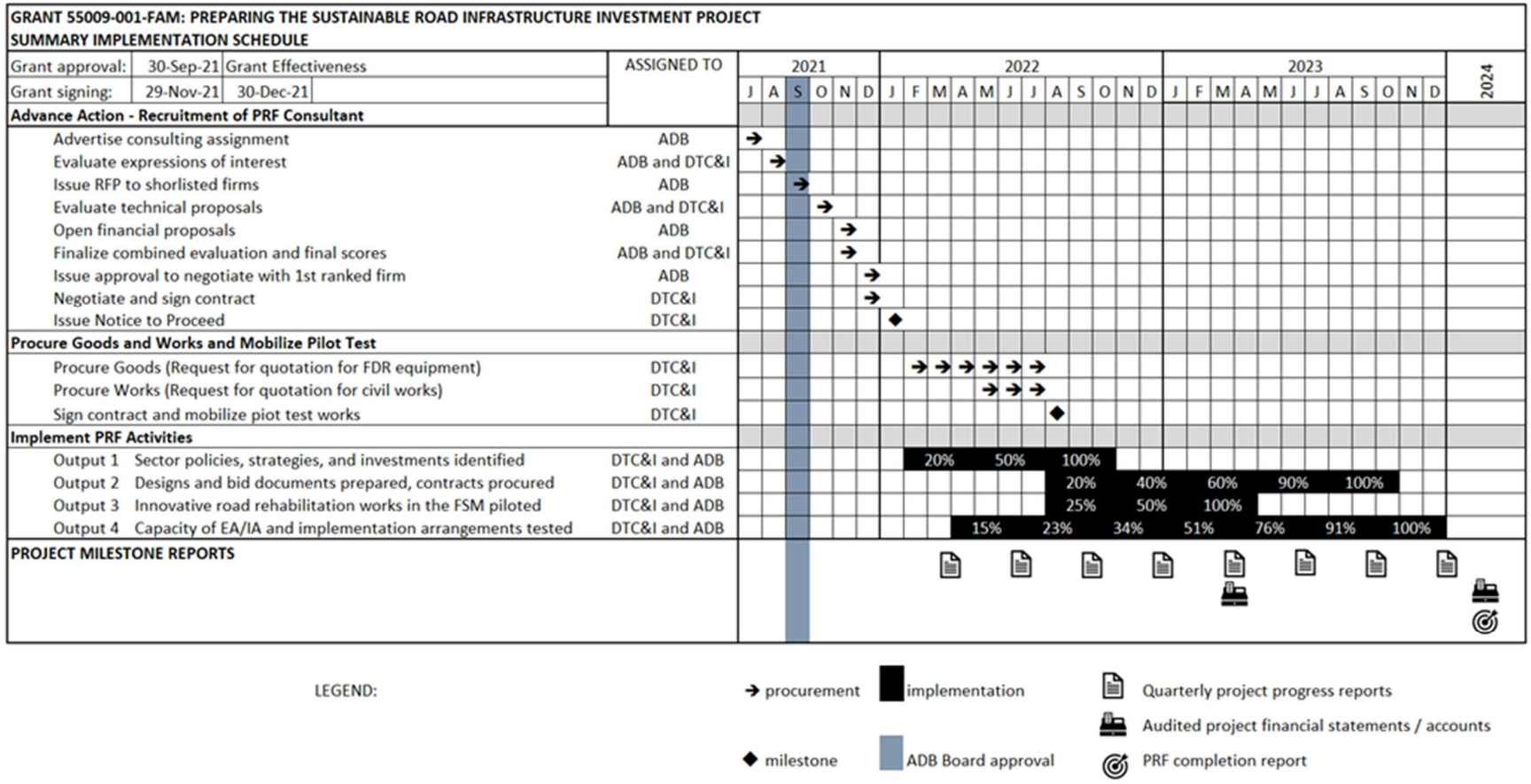
Figure 7

Figure 8

Figure 9

60. **Implementation schedule**. The proposed PRF implementation schedule is shown in Table 2 with the pilot subproject reflected in Output 3 of the PRF activities.

Table 2: Implementation schedule



4. DESCRIPTION OF THE ENVIRONMENT (Baseline Conditions)

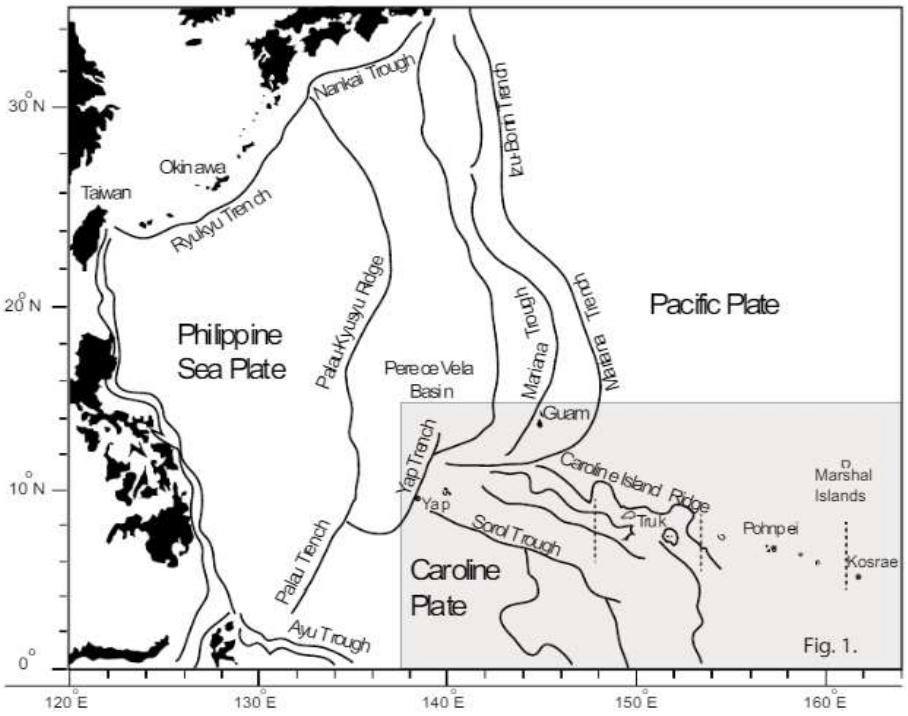
A. Physical Environment

61. **Topography, geology, and soils.** Pohnpei is the main island of Pohnpei state which is located midway between Hawaii and the Philippines in the western Pacific Ocean. It is about 21 km in diameter and 112 km in circumference and including the low-lying lagoon islands of Oroluk, Pakin and Ant to the west; Ngatik, Nukuoro and Kapingamarangi to the south-west; and Mokil and Pingelap to the east, the total land area of Pohnpei is approximately 340 km2. As a high volcanic island, most of the land area on Pohnpei is classified as steep and mountainous with Pohnpei hosting the highest peaks in the FSM with Mt Totolom (Dolohmwar) at 791 meters and Mt. Nahna Laud at 798 meters. As the most elevated island in the FSM, the interior peaks get plenty of rainfall annually and this creates more than 40 rivers that feed the lush upper rain forest. A barrier reef surrounds the island, forming a protected lagoon and there are few beaches on Pohnpei with mangrove swamps surrounding most of the coast.

62. The FSM EEZ can be divided into two broad geologic provinces. The first is a complex array of ancient volcanoes and ridges that makeup the 2,500-kilometer-long Caroline Ridge. The second is a volcanic-arc-subduction zone system comprising the Yap Trench, Yap Arc, Philippine Sea back-arc area, and the southern margin of the Mariana arc-trench system. In addition, among these topographic high areas and at the margins of the EEZ occur regions of sediment-covered abyssal plain.

63. The islands of Yap form an island arc system on the eastern convergent margin of the Philippine Sea Plate and are connected to the Palau island arc in the south and the Izu-Mariana arc system in the north. Tectonically the Yap Island arc is situated on margin of the Caroline Plate which has almost been subducted beneath the Philippine Sea Plate. Other three states of the FSM (Chuuk, Pohnpei, and Kosrae) lie on the Pacific Plate, east of the Mariana-Yap-Palau trench system along the Caroline ridge (Figure 10).

Figure 10: Map of the Pacific Plate, the Philippine Sea Plate, and the Caroline Plate



64. The Yap Arc and Trench represent an Oligocene through Neogene (34-1.8 million years old) subduction margin, but one that is distinct in many ways from other west and southwest Pacific arcs, such as the Mariana Arc. As such, many of the rocks from the arc summit islands are metamorphic rocks which have a compositional signature of oceanic crust. Other rocks are more typical of volcanic origin whereby rocks exposed on Pohnpei are noted to be alkali olivine basalts, trachytes, hawaiites, ankramites, and nephlinites to basanites. Numerous dykes of several centimeters intrude these volcanics.

65. The soils of the Island of Pohnpei can be grouped into 18 different types or subgroups but are generally characterized into two major soil groups known as 'upland' or 'bottom-land' types. Bottom-land soil is characteristic of the geologically older islands, hence present in a higher percentage on Yap (23.1%), Chuuk (24.7%) and Pohnpei (17.6%). The soil in these areas is formed by inorganic deposits and coral sand. This soil is generally poorly drained and limited by wetness but are suitable for coconuts and wetland taro. Upland soils are derived mainly from basic igneous rock and is very well drained. This soil is generally deep and limited by steep slopes and stoniness and support subsistence farming, including production from subsistence trees (e.g., breadfruit, mango).

66. Soils found on Pohnpei are thus limited for agriculture because of mainly physical conditions such as steep slope, stoniness and poor drainess. With high mountainous areas in the interior of the island covering approximately 60% of total area, soil erosion is also an issue with most of the low-lying coastal margin considered at risk of flooding and the majority of 'very high' to 'high' potential erosion hazard areas located in the steeper areas. This often leads to poorer quality soils of the interior occasionally extending towards the coastal margin.

67. **Air quality, climate, and climate change.** Air quality in FSM and Pohnpei is very good, largely due to a small and dispersed population, lack of heavy industries and a relatively small vehicle fleet generating emissions. There are no air quality or emissions standards in FSM and no monitoring is undertaken. Road rehabilitation and upgrading undertaken in Pohnpei has caused significant increases in airborne dust due to construction activities. These increased levels of dust will subside once sealing activities are undertaken. Elevated air quality parameters will need to be mitigated and closely monitored during the construction phase of the pilot subproject.

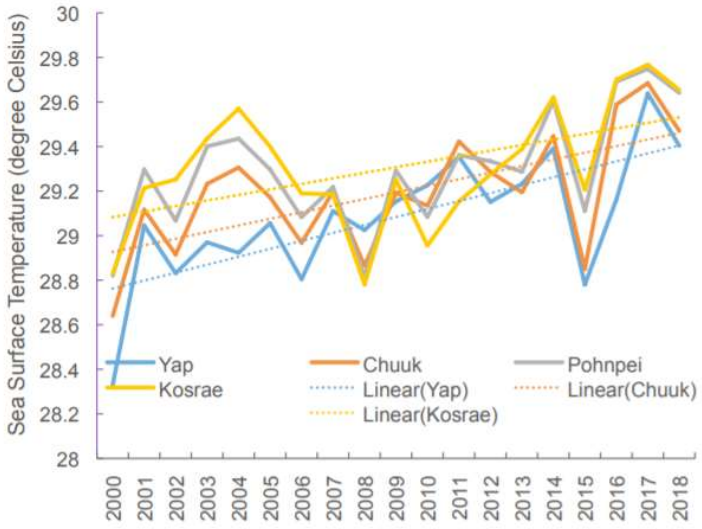
68. Pohnpei has a wet tropical climate with an average annual temperature of 26˚C, with little seasonal variation, and is characterised by two distinct seasons, a wet season from November to April and a dry season from May to October. Due to the geographical spread of the islands, the climate can vary. Recent studies by the Australian Bureau of Meteorology and the National Weather Service Offices of the FSM have divided the country on an east-west basis for analysis. In the FSM climate variation is relatively stable with seasonal variation in temperature of less than 1.5°C between the average hottest and coolest months (Figure 11)[10]. However, while on the west side of the FSM (Yap and Chuuk) annual mean air temperatures show little change (+0.06°C) since the 1950s, on the east side (Pohnpei and Kosrae) annual mean air temperatures have increased (~1°C) since 1951.

69. Climate variability is thus modulated by the El Niño-Southern Oscillation (ENSO). El Niño events are associated with drier conditions and occasional droughts. Fires, water shortages and food shortages have occurred during severe dry events. Tropical cyclones affect the FSM mainly between June and November and are more likely to occur in El Niño years (above-average numbers of tropical storms) and less likely in La Niña years. Droughts, typhoons, storm waves, flooding and landslides all affect the FSM. Impacts vary depending on ENSO years, but affect sea level, precipitation patterns, temperature (air and sea), and storm

[10] Australian Bureau of Meteorology and CSIRO, 2019

patterns resulting in intense flooding and drought. Consistent with global projections, Pohnpei will experience an increase in the number of hot days and warm nights, and a general decline in cool weather. In addition, most models predict an enhanced hydrological cycle, with increases in annual and seasonal rainfall and a reduced frequency of droughts.

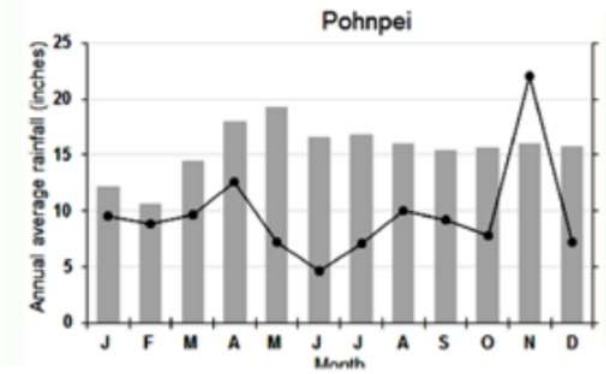
Figure 11: FSM annual air temperature and sea surface temperature



70. Humidity is also high in FSM and on Pohnpei relative humidity is typically above 80% throughout the year. North-easterly trade winds are also dominant between December and February. An increase in westerly winds and reduction in trade winds tends to occur during El Niño with stronger trade winds experienced in La Niña periods.

71. Rainfall in the FSM is also affected by ENSO and the wet season occurs when the Intertropical Convergence Zone strengthens and moves north close to the FSM. The West Pacific Monsoon also impacts rainfall, bringing additional rain during the wet season supporting a switch from very dry to very wet conditions. In Pohnpei and Kosrae, known as one of the wettest places on earth, average annual precipitation can often reach 5000 mm, respectively. Heaviest rainfall tends to occur between July and December, particularly when typhoons, tropical depressions and storms track close to Pohnpei, and when El Niño conditions are developing (Figure 12).

Figure 8: Seasonal rainfall for Pohnpei



72. Many of the typhoons that affect western Micronesia often originate around Pohnpei as tropical depressions or storms developing into full typhoons to the west and north of the island. Short periods of extremely high intensity rainfall are common, for example an hourly rainfall of 100 mm has approximately a 16% likelihood of occurring in any one year.

73. On climate change, observational data shows that annual mean air temperatures have increased by 0.5-1˚C across the FSM since 1951, projected to continue to rise by 0.8˚C by 2030, 1-2˚C by 2050, and 2-4˚C by 2090. Increased air temperatures could result in impacts to human health, increase the energy requirements for cooling systems, in addition to impacting sea surface temperature, storms, precipitation, and water resources. Projections for typhoon frequency and severity in FSM show a decrease in formation (20-50%) however the confidence for these projects is low. Average rainfall is projected to increase by 3% by 2030, 6% by 2050, and 12% by 2090, in addition to more intense heavy rainfall events expected.

74. The FSM also generally experiences higher sea levels during La Niña and lower sea levels during El Niño. During La Niña, higher sea levels associated with wind-driven waves can cause coastal flooding with impacts to public infrastructure and private buildings. These changes in sea level are highly coherent across the region from Yap to Chuuk, Pohnpei, and Kosrae. Protracted La Niña-like conditions during the first decade of the 21st century caused marine inundation that required provision of emergency food and water supplies to some FSM communities. In 2007, and again in 2008, many FSM communities were flooded by a combination of large swells and spring high tides that eroded beaches, undercut, and damaged roads, intruded into aquifers and wetlands, and inundated communities[11].

75. In summary, annual average rainfall is expected to increase while tropical storms and cyclones are expected to decrease in frequency but increase in intensity. Droughts are projected to occur less often, but with increased severity. More intense (heavy) rainfall events are also expected to occur. There will still be wet and dry years and decades due to ENSO-related variability, but most models show that the long-term average is expected to be wetter. Indeed, El Niño and La Niña events will continue to occur in the future, but there is little consensus on whether they will change in intensity or frequency.

76. **Water resources.** In the FSM different types of water resources vary by island. The main volcanic islands of Pohnpei and Kosrae have an abundance of water resources, including surface and groundwater with major concerns associated with degradation of watershed conditions due to deforestation, which increases sediments entering waterways, affecting the surface waters. Other concerns are a lack of proper sanitary systems, shifts in land use, inappropriate management of livestock which can affect groundwater sources.

77. It is noted that on Pohnpei, half of households in the populated northern part of the island use water provided by public utilities which amount to 40% of household resources. This leaves many households in the north and around the periphery of the island to still utilize streams and rivers as opposed to piped water which make up the remaining 60%. Surface water as a source of drinking water, is prone to bacterial contamination and requires extensive and costly treatment to reduce high turbidity, undesirable taste, and odours, and to remove all microorganisms.

78. Water tanks are a ubiquitous feature on islands across the Pacific and rainwater catchment systems are noted to be the primary source of potable water in FSM, however on Pohnpei there is an extremely low percentage of islanders using water catchments. Catchment systems are mainly utilized on the outer islands as these islands would not have the infrastructure for piped water. Additionally, the groundwater may be brackish or contaminated. and because Pohnpei receives rain on an almost daily basis, there is little perceived need to store and collect water for times of scarcity.

79. Rivers and streams are also important recreational sites, and their water quality directly impacts health for the resident population of the main island. A Pohnpei EPA monitoring study discovered that some rivers and streams showed improvement over the years especially in the Pohnpei municipalities of Madolenihmw and Kitti. Freshwater in urban areas however did not

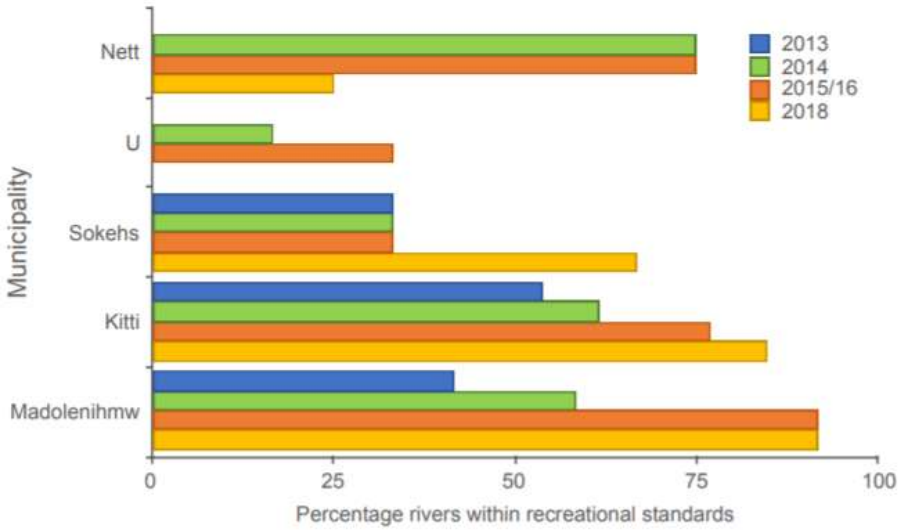
[11] FSM 2nd National Communication to UNFCCC, 2015

show any improvement over the years (Figure 13)[12]. Management of watersheds has thus become a priority issue for protection of inland and coastal waters as a lack of regulations or enforcement, along with climate change impacts, are accelerating the decline of watershed areas. In 1987, the Pohnpei State legislature passed the Pohnpei Watershed Forest Reserve and Mangrove Protection Act in which close to 5,000 hectares (12,500 acres) of upland forest were set aside as a protected Watershed Forest Reserve.

80. The FSM's national water Resolution No. 01–2011, (2011) also recognizes the central role of fresh water for the lives and culture of all island communities, acknowledging its importance for the development of all economic sectors, public health, and population wellbeing. The resolution reaffirms the role and duties of traditional leaders in ensuring secure access to safe drinking water and sanitation, as well as the important role that landowners, non-government organizations, churches, women's groups, and local, state, and national government play in water resource management. In addition, the policy reaffirms the obligation under a variety of Multilateral Environmental Agreements to sustainably use natural resources and conserve the environment, including the management and conservation of watersheds to enable adequate flow of clean water from ridge to reef.

81. In 2018, Pohnpei aligned to the national water Resolution by developing and signing its state water policy. The policy sets the foundation for the sustainable use and conservation of water resources, and it creates the enabling framework for the equitable distribution of water. Importantly, the policy recognizes the distinct difference between the way water management must take place on high islands and atolls. It identifies the need for a holistic approach to water management and distribution, including the recognition of the role played by nature and a healthy environment in supporting water quality and quantity.

Figure 13: Changes in water quality over time in Pohnpei municipalities



82. In summary, water use by residents on Pohnpei is often unrestricted and water-conservation measures are difficult to regulate. Conserving water is not intuitive on an island considered to be one of the wettest-inhabited places on earth. However, an increasing population taxes public utilities system, and water outages spanning from hours to days are not uncommon in Pohnpei. Those without safe access to drinking water often turn to streams and rivers, which are polluted and can lead to disease and even death.

83. **Natural hazards**. The FSM is vulnerable to various natural disasters which are destructive, often unpredictable, and occur frequently. Located in the north western Pacific Ocean known as the Typhoon belt, it is also in the geographical location known as the Pacific

[12] Threshold for recreational standards at 576 mpn 100ml-2 Escherichia coli (Pohnpei EPA)

Ring of Fire, housing one of the world's main tectonic plates and contains over 75% of the world's active volcanoes, and 90% of the world's earthquakes.

84. The frequency of typhoons across the region decreases from the west to the east except during El Niño years when typhoons shift further to the east. During ENSO periods, global atmospheric disturbances including elevated seawater temperatures and lowered sea-level in the centre of the ENSO affected area, rise in atmospheric temperature and the sea-surface temperature, may cause conditions for more frequent and severe storms. The last typhoon in February 2019, was Category 2 Typhoon Wutip which passed over Chuuk, Pohnpei, and Yap states with wind speeds of more than 100 miles per hour. Prior to this event, a strong earthquake with a magnitude of 6.6 struck east-northeast of Yap on December 8, 2017. The quake, initially measured with a magnitude of 6.8 by the Alaska Tsunami Warning Centre, was at depth of 46 km (28 miles). Although it was a strong earthquake, no damages or casualties were reported.

85. On July 2, 2002, approximately 20 inches of rain fell on FSM in a 24-hour period, accumulating over 75 mm per hour, and resulting in approximately 265 landslides over the course of the tropical storm. Most of the landslides and all fatalities took place on the first day, though the landslides continued over several more days. Within twelve hours, forty people were killed, and later, three additional people died from their injuries. The previous landslide reported in FSM took place in the state of Chuuk in 1976, when monthly precipitation levels peaked at 28.4 inches, or 709.75 mm. The overall mortality rate for this event was 1.47 deaths per 1,000 habitants. Additionally, the landslides caused the destruction or damage of 231 structures, including homes, schools, community centres, roads, crops, water supplies, and medical dispensaries.[13]

86. Consequently, the country counts heavy, year-round rainfall, earthquakes and landslides, and typhoons as its main source of natural disasters. Most of the population reside on the high islands of Pohnpei live in the coastal areas exposing them to extreme weather-related hazards due to climate change. The region's scarcity of land, potential for drought and exposure to cyclones, earthquakes and landslides are constant challenges. The country also struggles from man-made disasters due to the results of overfishing, water pollution, toxic pollution from mining and solid waste disposal. These environmental challenges converge with critical socioeconomic vulnerabilities and compound the issues for the people of FSM.

B. Biological Environment

87. **Terrestrial habitats, flora, and fauna**. Mature vegetation on the high volcanic islands is dominated by broadleaf evergreens. These high islands were probably almost completely forested at one time, with a few patches of savanna. Human activities have increased the extent of the savannas to cover large areas, especially in western FSM whereby most of the lowland vegetation has been modified from its original forest state.

88. Pohnpei, at 335 km2, is the second largest island but is also the highest and one of the wettest. The vegetation is less degraded than that of the other high islands to the west, and well-developed mangrove forests and freshwater swamp forests still exist in coastal areas. Some primary montane cloud forest can be found on the slopes of the peaks in the center of the island. These forests are unusual because they are among the lower elevation cloud forests in the world, starting bit higher than 450 meters. Endemism is high, in part because the islands are relatively close to the floristically rich regions of Southeast Asia and in part because of their isolation and great age.

89. This upland forest can be divided into two major associations, with a Maesa carolinensis association at the lower altitudes (450 to 680 m), and a Cyathea

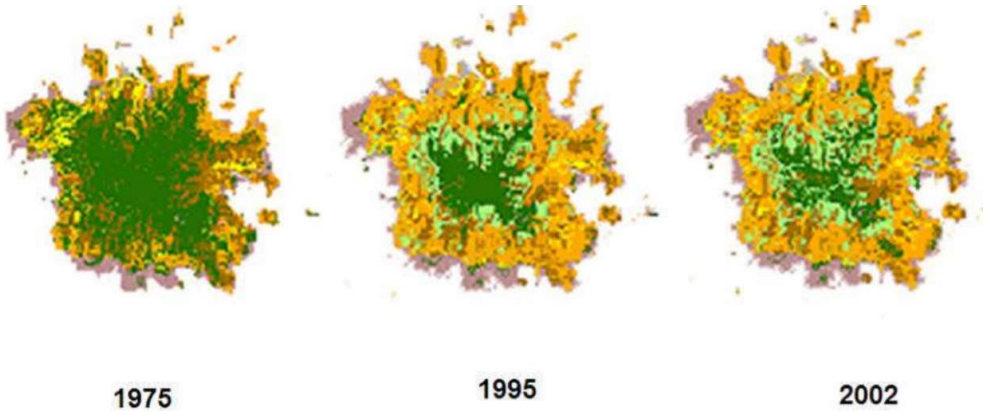
[13] Federated States of Micronesia, Disaster Management Reference Handbook November 2019, Centre for Excellence in Disaster Management & Humanitarian Assistance, USAID

ponapeana/Pandanus patina association on the upper slopes. The endemic palm, Clinostigma ponapensis, forms the upper layer of the Maesa carolinensis association. A tree fern, Cyathea nigricans, is the dominant plant in the lower canopy, and numerous shrubs including Maesa make up the understory. Palms such as Ptychosperma and Metroxylon are also found in the montane forests. Other common broadleaf trees include Glochidion spp., Myrsine, Elaeocarpus, Syzgium, Psychotria, Timonius, Gynotroches, and Astronidium. The forest is tied together with lianas of genera such as Ipomoea, Merremia, Freycinetia, Hypserpa, and Pachygone[14]. There are also many terrestrial and epiphytic ferns. This upland forest constitutes (56%) mostly in the interior of the island.

90. On the lower slopes, the vegetation is almost completely secondary, consisting of either savanna or forest. While the coastal areas and lower slopes are characterised by agroforestry (33%) and secondary vegetation (5%). The steepest of the lower slopes are blanketed with thick, impenetrable tangles of Hibiscus tiliaceus, and approximately 33% of Pohnpei is covered with a rotating system of tree gardens. In summary, the upland forest contains about 34.4% of all plant species found on Pohnpei and 90% of all endemics. It is also habitat for at least 269 species of plants, 110 of which are endemic.

91. Pohnpei is the only State for which there is data on the status of native forest and Figure 14 shows a serious and progressive decline in intact native forest. This has been due to a variety of factors, especially land moving operations such as clearing, and deforestation for agricultural use. Encroachment by squatters growing kava into the upper watershed has also reduced the area of primary forest significantly – from 15,000 ha in 1975 to 5,200 ha in 1995 to 4,200 ha in 2002. Siltation of the fringing reefs, because of deforestation and subsequent erosion, is causing significant damage to traditional marine food supplies.

Figure 14: Map showing progressive decline of native forest on Pohnpei



92. Twenty-four species of reptiles (e.g., skinks and geckos) and amphibians, including four endemics, with one endemic genus, are found in the FSM. The island's fruit bats (Pteropus marianas, P. molosinnus, P. insularis, P. phaeocephalus), the latter three being restricted and are all threatened by habitat loss and commercial hunting for export to Guam. Eighteen restricted-range species of bird occur. Thirteen species are endemic to the ecoregion, including the Truk monarch (Metabolus rugensis), the Pohnpei fantail (Rhipidura kubaryi), the Pohnpei mountain starling (Aplonis pelzeni), and the Pohnpei lory (Trichoglossus rubiginosus). Among the 29 recorded bird species on Pohnpei, 24 make extensive use of the upland forest habitat, with 24 of them known as forest-nesting birds, at least 5 of which are endemic. The tropical moist cloud forest of Pohnpei is also home to 26 species of land snails, representing 74 % percent of the total number of species recorded for the island.

[14] Fosberg, F.R. 1998. Chapter 5: Micronesia. Pages 199-313 in D. Mueller-Dombois and F.R. Fosberg, editors. Vegetation of the Tropical Pacific Islands. Springer-Verlag New York

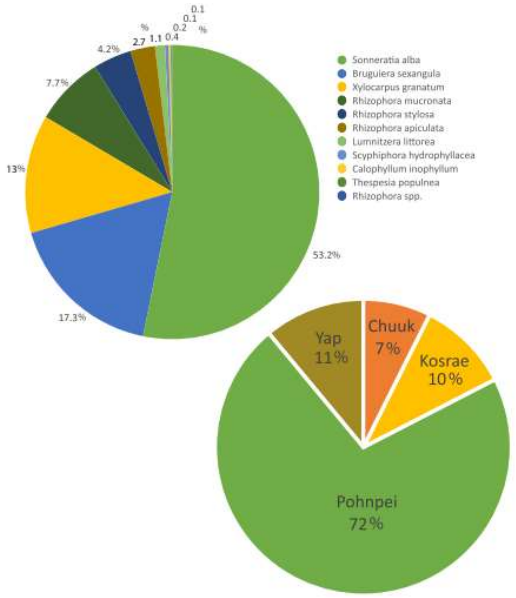
93. Introduced mammals include 3 species of rats, a mouse, deer, pigs, dogs, cats, and from time-to-time goats, rabbits, and cattle, all of which can have damaging impacts on native biodiversity. In response to growing concern about environmental degradation, the Pohnpei State Legislature passed the Pohnpei Watershed Forest Reserve and Mangrove Protection Act (1987) designating 5100 ha of the central upland forest area and 5525 ha of coastal mangrove forests as a protected area.

94. The risk screening exercise for the pilot subproject on Pohnpei was conducted based on the IFC performance Standard 6 (PS6) and based on the information available, the area affected by the pilot subproject to the north-east of the island can be currently considered as Modified Habitat although it could still be Critical Habitat based on ADB's SPS definition. The road corridor through the 1km road pilot section already exists, and no additional habitat fragmentation or ecosystem disruption will occur. Preliminary surveying and road corridor demarcation for the subproject show that the road works footprint will result in very minor degradation of the local ecology through the clearance of very small areas of roadside vegetation, predominantly primary colonizing grass, and weeds on the peripheral margins on both sides of the road corridor. Additional site-specific CH assessments and survey will be conducted by the PRF consultant in the pre-construction stage to update the IEE and EMP and confirm compliance with the ADB SPS.

95. **Marine and coastal habitats, flora, and fauna.** The FSM has an extensive marine environment and is heavily dependent on marine resources for its economy as it has very limited land of 702 sq km but an extensive Exclusive Economic Zone (EEZ) of 2,992,597 sq.km. Pelagic fisheries thus contribute to the economy with the tuna fishery sector providing up to 15% of the FSM's GDP. It is however at risk of overexploitation and climate change impacts with overfishing and other threats also impacting the nearshore coral reefs and its associated fisheries.

96. FSM's mangroves are particularly important to subsistence economies. They provide a series of services such as firewood, building material and other wood products, as well as help in regulating water quality. The mangroves also offer storm wave protection, while harbouring high biodiversity and being a key nursery habitat for the juveniles of many commercial species. In 2016, a survey for the FSM state of the environment report reiterated the differences across the states in mangrove cover extent, with a larger presence of mangroves in Pohnpei inventoried (71%). The dominant species in the FSM is Soneratia alba, which is considered of least concern for the IUCN Red List, although showing a decreasing trend (Figure 15).

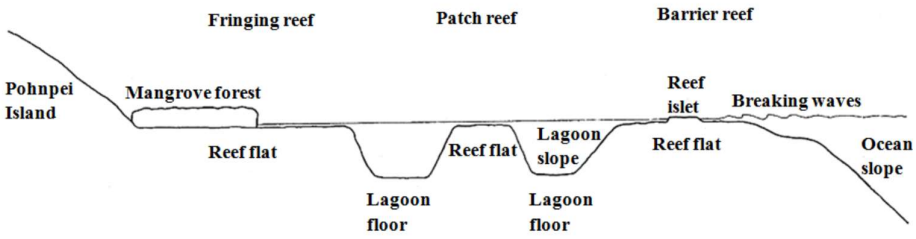
Figure 15: Mangrove coverage and dominance in the FSM



97. Seagrass beds are also common near the mangrove forests and on the inshore fringing reef flats that surround the island and coral islets. The inshore fringing reef has terrigenous sediments, while calcareous sand and rubble deposits are dominant in the open reef flats that support sea grass beds. There are three species (Cymodocea rotundata, Enhalus acoroides, and Thalassia hemprichii) around Pohnpei and two species (Cymodocia rotundata and Thalassia hemprichii) at And Atoll. Like the mangroves, sea grasses are also important sediment traps and nursery areas for juvenile fish. The seagrass beds are also home for jelly fish, sea cucumbers, and bivalve molluscs. Seagrass beds are also known to be turtle feeding grounds.

98. Like other main islands in the FSM, Pohnpei is surrounded by lagoon systems, and nearshore Pohnpei coral reefs comprise mainly of Porites species (massive and weedy forms), while Acropora species are characteristic of the outer reefs exposed to high wave energy. As illustrated in Figure 16, Along the margins and slopes of fringing, patch and barrier reefs, coral development and diversity and fish abundance increase. These habitats of the Pohnpei Lagoon support a remarkable abundance of marine life, including more than 650 species of fish and 350 species of coral. The nearly 350 species of reef-building (hermatypic) corals are in 61 genera from 14 scleractinian families.

Figure 16: Cross section of Pohnpei reef



99. The lagoon hosts some 25 coral islets with their own fringing and patch reef. The patch reefs are enclosed secondary lagoons that are extensions of fringing and barrier reefs supporting moderate coral growth of various sizes and shapes. The coral islets are covered by

white sandy beaches and coral rubble. The vegetation on the coral islets consists of plants that are resilient to salt spray. There are white sandy beaches on some of the smaller islets located on the barrier reefs that encircle the Pohnpei Lagoon. These are home to Hermit crabs, whereas coconut crab, (Birgus latro), are common on the inner forested areas of the coral islets. Numerous species of seabirds, about 26, are common migrants and feed and nest on these coral atolls. The Pacific reef heron (Egretta sacra) is a common resident and is seen in most shallow coastal areas.

100. On the barrier reef, giant clams (Hippopus hippopus), trochus, sea stars and sea cucumbers can generally be found. In sandy areas near the reef crest cowries and sea cucumbers are common. On the reef slope and reef flat areas, byssally-attached giant clams (Tridacna maxima) occur with coral eating Crownof-thorns (COTs) starfish (Acanthaster planci). In the surf zone, sea cucumber (Actinopyga nilolticus) sticks tightly to the reef pavement and massive coral boulders host numerous lobsters. The solid reef rock pavement and terrace walls slip deeply into the wave zone. Green sea turtles (Chelonia mydas) and hawksbill turtles (Eretmochelys mbricate) can be found here. Down the ocean slope, trochus can be sighted again, with flat corals spreading wide in the crystal-clear waters. The leeward side of Pohnpei has steep sea walls, while the windward side has less distinct terrace and slopes. There is high coral diversity at water depth of 15 meters at numerous sites on the outside barrier reef regions.

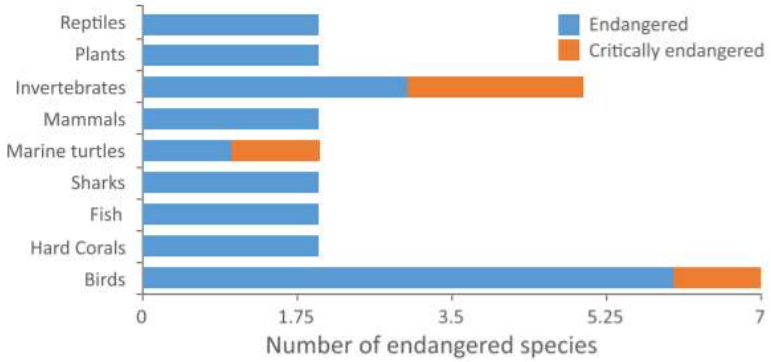
101. In 2005, average coral cover was estimated to be 33% in Pohnpei main, Ant and Pakin. Highest diversity and cover (more than 50%) were observed in the mid-lagoon and outer reef areas with distance from main Pohnpei, while coral reefs close to the populated centres showed signs of degradation with coral covers close to 10% at some sites. Pohnpei's coral reef ecosystems in this context have been adversely affected by sediment runoff, overfishing, dredging and predation which have modified species composition and the structure of coral communities.

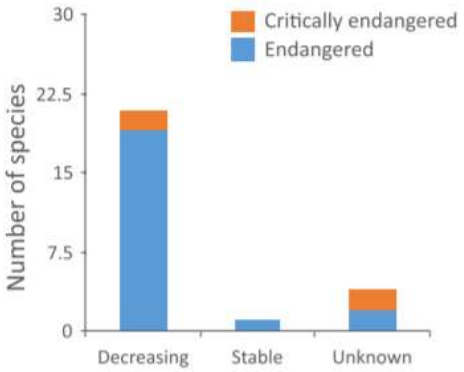
102. The risk screening exercise carried out for the pilot subproject concluded that the area affected by the pilot subproject will not have any impacts on any Critical Habitat based on ADB's SPS definition.

103. **Threatened and endangered species.** Compared to the available land mass and the geography of the nation, the FSM presents high endemism. Endemic plants, marine, reptile and mammal species are found across the four states and the level of endemism is considered to increase from east to west, with increasing distance from landmasses. There are several marine and terrestrial species in the FSM that are threatened to varying degrees and illustrated in Figure 17 is the summary of the International Union for Conservation of Nature (IUCN) red list on the status and number of endangered and critically endangered species. It identifies 26 of these endangered and critically endangered species[15].

[15] IBAT screening

Figure 17: Status and number of endangered and critically endangered species





104. There are 110 species of endemic plants identified in the FSM with 15.7% endemism (species per km2), which is higher than any other island biodiversity hotspot. The highest plant endemism is found in Pohnpei (16%), followed by Kosrae (14%) and Chuuk (13%), while Yap presents the lowest level of plant endemism (8%)[16]. Key species of concern are both identified for marine and terrestrial environments and are defined as: "species endangered and at being at risk of being lost in a State or nationwide". Among them is the Pohnpei Mountain Starling, Aplonis pelzelni, that has shown a steady decrease in population and it is now estimated at being between only one and 49 individuals.

105. The giant clam is listed by the IUCN Red list as critically endangered and of similar concern are some of the sea turtles living and nesting in the FSM. The Leatherback (Dermochelys coriacea) and Olive Ridley (Lepidochelys olivacea), which are considered vulnerable; the Green turtle (Chelonia mydas), which is considered endangered, and the Hawksbill turtle (Eretmochelys imbricata), which is critically endangered.

106. The IUCN also lists 139 marine invertebrate species for the waters around the FSM, including 3 species of sea cucumber that are considered endangered and 4 that are considered vulnerable, 1 vulnerable species of cockle and 3 conservation-dependent clam species. In addition, to the 472 coral species identified in the FSM's waters, 100 are vulnerable and 3 endangered. Among the terrestrial invertebrates, the Pohnpei tree snail (Partula emersoni) and the Pohnpei ground Partula snail (Partula gaumensis) are considered critically endangered.

107. There are 128 native birds in Micronesia with 22 endemic species and 12 threatened species and on the high island of Pohnpei, with its native forest, it is home to 7 endemic species: the Pohnpei Kingfisher (Todiramphus reichenbachii, vulnerable), the Pohnpei Lorikeet (Trichoglossus rubiginosus, near threatened), the Pohnpei Fantail (Rhipidura kubaryi), the Pohnpei Flycatcher (Myiagra pluto), the long-billed whiteeye (Rukia longirostra, near

[16] Micronesia Conservation Trust FSM (2018). The National Biodiversity Strategy Action Plan 2018–2023.

threatened), the Pohnpei white-eye (Zosterops ponapensis) and the Pohnpei starling (Aplonis pelzelni, critically endangered).

108. Risk screening conducted for the pilot subproject site determined very low risk for occurrence of these terrestrial and marine endangered and critically endangered species, although there is some potential that some terrestrial species may pass through the project area on occasion. So based on the information available and the small-scale footprint of the area affected, the pilot subproject can be considered as potentially Critical Habitat, based on ADB's SPS definition. Additional on the ground survey and assessment will be carried out in early project implementation as a validation exercise and inform the update of the IEE and EMP . If the area is confirmed to host the presence of CR and EN species, a Biodiversity and Invasive Species Action Plan will be prepared to confirm compliance with the SPS and ensure no net loss of biodiversity.

109. **Biodiversity and protected areas**. At least 17% of FSM's land mass is in terrestrial protected areas and 27% of its mangrove forests. Each state has at least one terrestrial protected site implemented through the US Forest Service Forest Stewardship Program (FSP), which helps connect private landowners with the information and tools they need to manage their forest and woodlands. Through the FSP, a plan is developed to identify goals for the land and the management activities needed to meet them. Other key terrestrial protected areas in the FSM were identified as Areas of Biodiversity Significance (ABS) through the Blueprint for Conserving the Biodiversity undertaken in 2002[17].

110. The number and status of terrestrial protected areas differ from state to state and on Pohnpei about 22% of Pohnpei's terrestrial habitat is considered protected. This was especially reinforced in 1987, with the Watershed Forest Reserve, which was enacted to protect Pohnpei's upland watershed, which is public land. The reserve is still not demarcated in the municipalities of Kitti and Nett, and while the area is monitored, enforcement is limited. A site on private land, Nanwelin Rohi, was declared through the FSP process. There are also several mangrove areas identified as ABS and declared as community managed areas. These include Einpein, Pwodi and Senpehn/Lehdau.

111. To help mitigate the growing anthropogenic impacts in the Pohnpei lagoon the Pohnpei state government also created a total of 11 Marine Protected Areas (MPA) with 9 in the lagoon and 2 in the outer islands. The MPAs were established and designated under the Pohnpei State Marine Sanctuary and Wildlife Refuge Act, 1999: and are "no-take" reserves, which bans all extraction and disturbance by humans. The MPAs were created according to cultural, historical, and biodiversity importance (Figure 18).

112. As illustrated in Figure 19, only 2 protected areas and 10 key biodiversity areas are found within 50km of the pilot subproject. Of these only the Pohnpei Watershed Forest Reserve is within 1km of the site with Pohndollap Ridge at 10km. The rest of the identified key biodiversity areas are not within proximity and lie within the 50km range of the screening exercise. In total 12 existing and 12 proposed protected areas with 35 Areas of Biodiversity Significance (ABS) are identified for Pohnpei (Figure 20). A summary of the habitat risk screening exercise is in Annex 2.

[17] TNC (2002) *A Blueprint for Conserving the Biodiversity of the Federated States of Micronesia*

Figure 18: Pohnpei marine protected areas

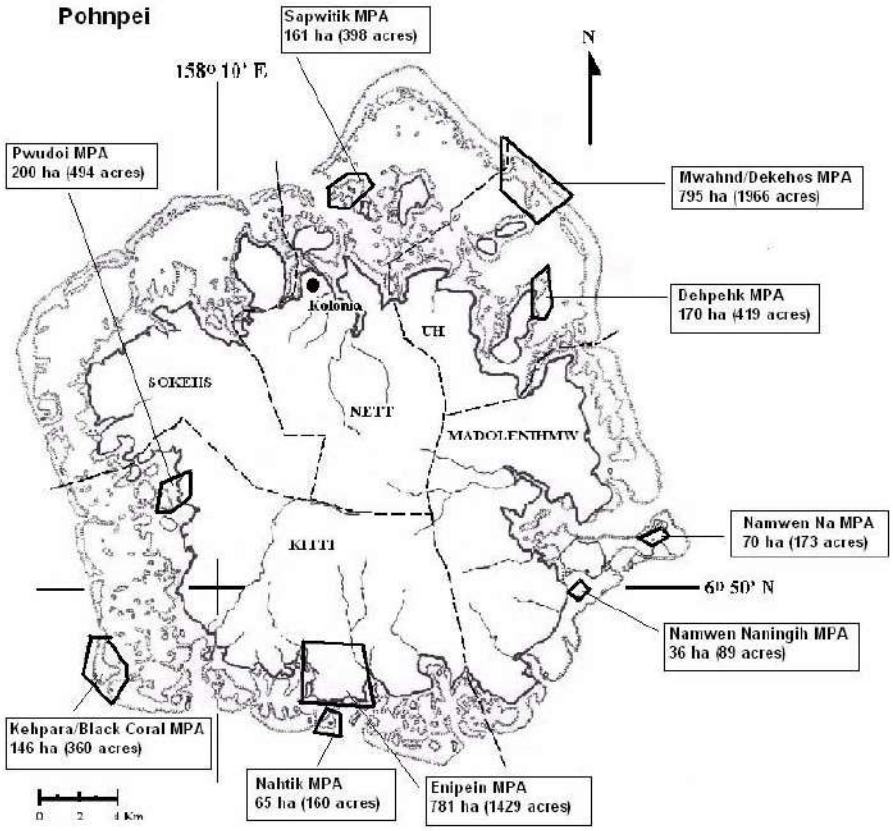


Figure 19: Pilot subproject proximity

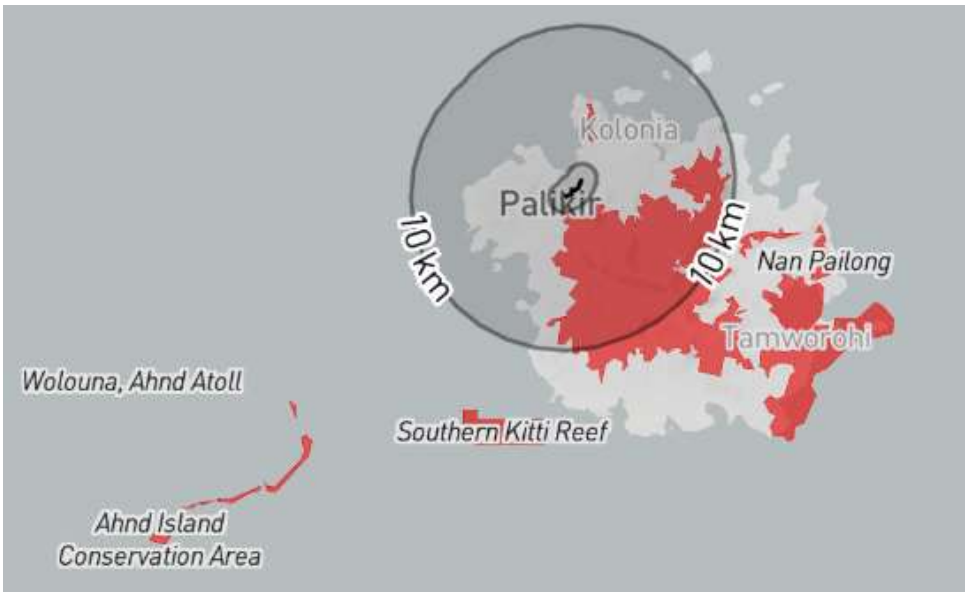
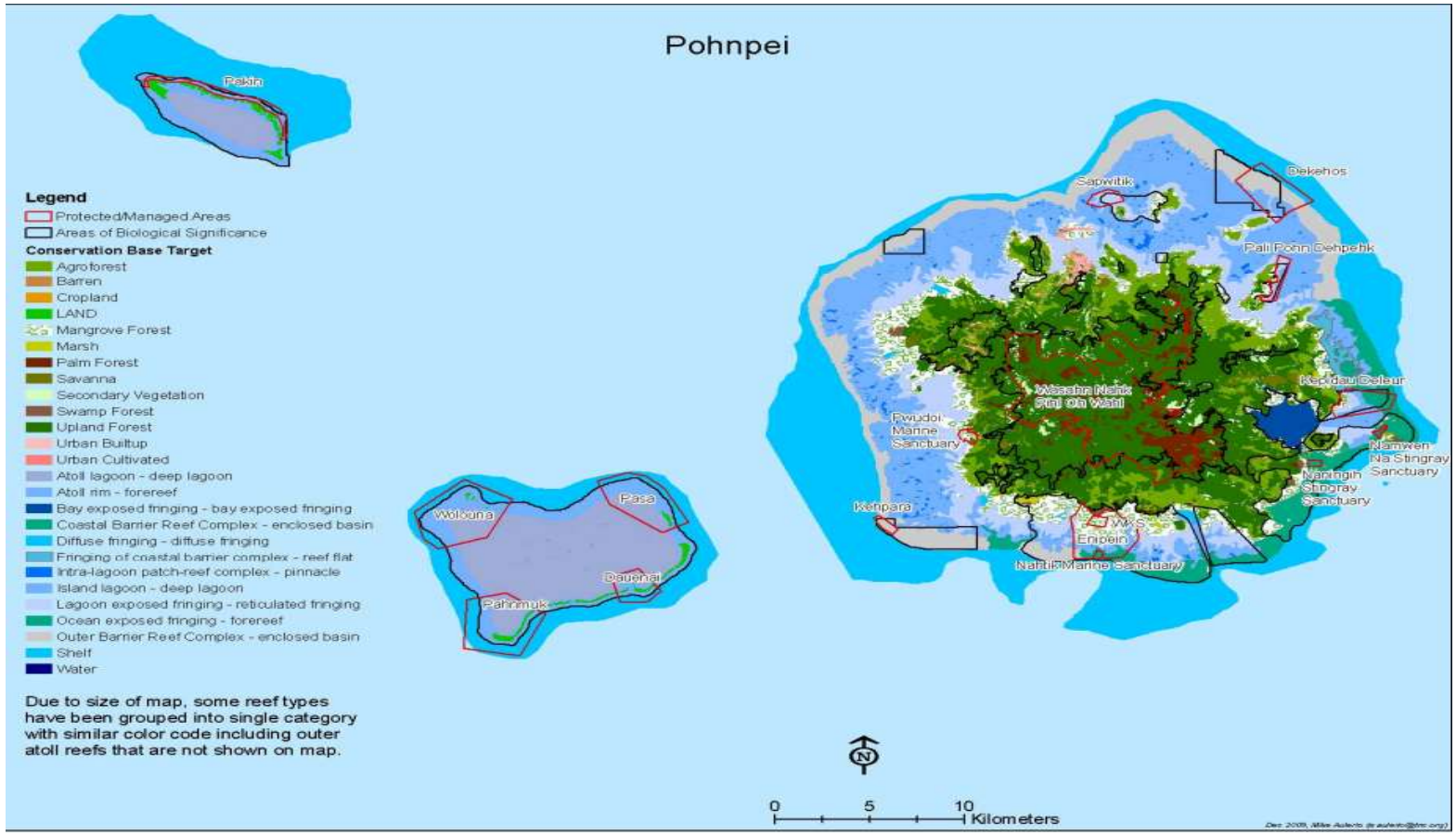


Figure 206: Conservation base Map for Pohnpei[18]



[18] Takesy, A. (2014) *Action Plan for PoWPA and Target 11*. Report by FSM Department of Resources and Development to the Convention on Biological Diversity.

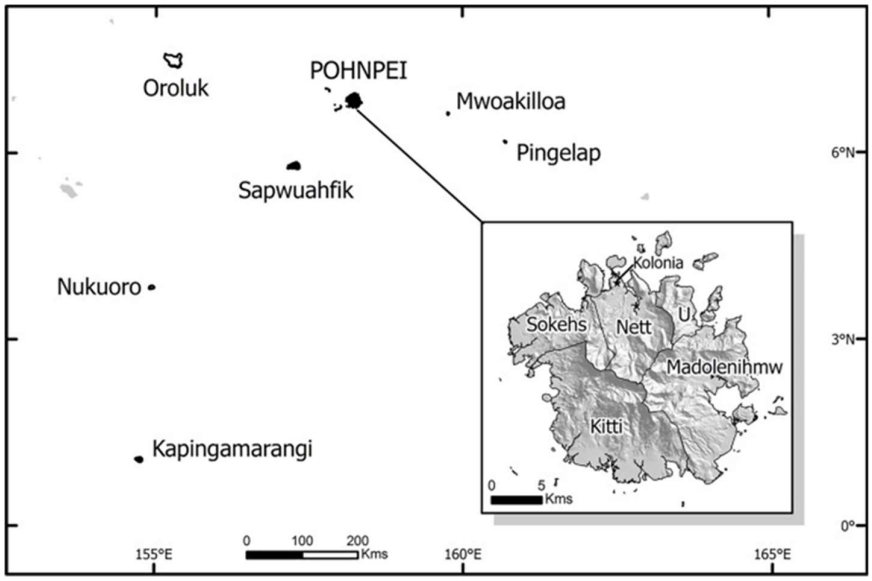
C. Socio-economic Environment

113. **Demography, land tenure & use, health, and education**. FSM's 2010 census recorded a total population of 102,843, comprising of 52,193 males and 50,650 females. This represented a decline in population of 4,178 since the 2000 census, at an average annual growth rate of -0.40%[19]. According to the 2010 census, Yap state had a population of 11,377 (11% of FSM), with 5,741 males and 5.635 females, which represents a population density of 247 people per square mile. By comparison, Chuuk state had the highest population (48,654; 47% of FSM) and population density (993 people/sq mile). Yap state recorded the second highest average annual growth rate (0.12%) after Pohnpei state (0.48%), while Chuck and Kosrae both recorded a declining growth rate because of a declining economy resulting in population movement interstate (Pohnpei) or to other countries[20].

114. Almost the entire population is made up of Pacific Islanders and Asians. The largest ethnic group is the Chuukese, which make up nearly half of the total population (48.8%). This is followed by Pohnpei with 24.2%. English is the official language of Micronesia, but it is not the only language spoken. Some inhabitants speak other languages including Puluwatese, Mortlockese, Ulithian, and Chuukese. Most Micronesians follow some form of Christianity. On Kosrae, most inhabitants are Protestant. On Chuuk and Yap, the majority are Catholic. Pohnpei's population is evenly divided between Catholics and Protestants.

115. The capital of FSM is Palikir and is located on Pohnpei in the Sokehs municipality which is one of the 5 Pohnpei municipalities (Figure 21). The pilot subproject lies on the outskirts of Kolonia Town located in the north central section of the island and is the largest population centre and commercial hub of the state. Kolonia was formerly part of Nett municipality but has been designated a separate municipality. The land area of Kolonia amounts to 1.5 km², with a population of just over 6,000 people with many residents living just outside the town limits. The total population of Pohnpei is approximately 37,000.

Figure 21: Pohnpei municipalities



116. The individual States have separate and distinct land tenure arrangements, with some broad commonalities that persist throughout State land tenure systems. Traditionally, land

[19] Division of Statistics, Office of SBOC (2010) Summary Analysis of Key Indicators from the FSM 2010 Census of Population and Housing.
[20] Division of Statistics, Office of SBOC (2012) 2010 Census of Population and Housing National and State Basic Tables.

ownership in FSM was limited to inheritance within a family or clan. As a result, many land parcels in FSM are subject to the communal use and alienation rights of extended families, clans, and communities. Private landholders influenced to varying degrees by customary land tenure systems nevertheless occupy land.

117. In Pohnpei and Kosrae, land is also both privately and state owned, while aquatic areas are managed by the state as public trusts. Pohnpei appears to have made the greatest progress in the cadastral survey of private lands with ownership of land by title widely recognized and becoming more and more popular as families want to secure their land holdings with clear title and to use these lands as real property collateral for business loans or home improvement. It is noted that neither public nor private lands can be leased for a term greater than 25 years without legislative waiver of the State Constitutional Constraint, and approval of the terms of the lease. The Office of Management and Administration of Public Lands issues and oversees the administration lease and use agreements for public lands in Pohnpei.

Table 3: Landownership in FSM[21]

	FSM		Chuuk		Kosrae		Pohnpei		Yap	
Dry land area (sq miles)	165		16.7		42.3		67.4		38.6	
Public land	52.7	32%	0.2	1%	27.2	64%	24.4	36%	0.9	2%
Private land	111.9	68%	16.4	98%	15	35%	42.8	64%	37.7	98%
Commercial land	0.5	0%	0.1	1%	0.1	0%	0.2	0%	0.1	0%

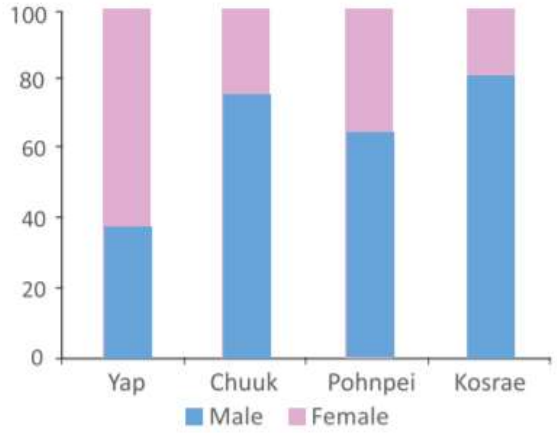
118. Agroforestry is an integral part of land use in FSM's culture and subsistence economy. Crops such as breadfruit, taro, yam, coconut, and banana are the basis of the local diet. In addition to crops used for subsistence, some are cultivated as a source of income. Among these income-generating crops are Sakau (Piper methysticum) or Kava as it is popularly known in the Pacific. The 2010 household census data indicate that out of the 63% of FSM's households that engage in agroforestry, 23% engage in agriculture as their main source of income. Nearly 40% of FSM's households are engaged in agroforestry for subsistence. Overall agriculture and livestock account for 14% of household income in the FSM.

119. Agricultural production varies across states, in relation to the different climatic conditions and traditions. In Yap, the most important food crop is taro, in Pohnpei yam, in Chuuk breadfruit and in Kosrae bananas. In Pohnpei the most valuable non-food crop is Sakau, representing 57% of the income from sales of agricultural products. A recent agriculture census conducted in 2017 indicated that 90% of households in the FSM are engaged in agriculture activities, while 10% do not conduct any type of agricultural activity. Almost 64% of men are engaged in agricultural activity versus 36% of women (Figure 22)[22].

[21] Doran, K. (2004) Private Lands Conservation in the Federated States of Micronesia. A Report by the Natural Resources Law Centre University of Colorado School of Law

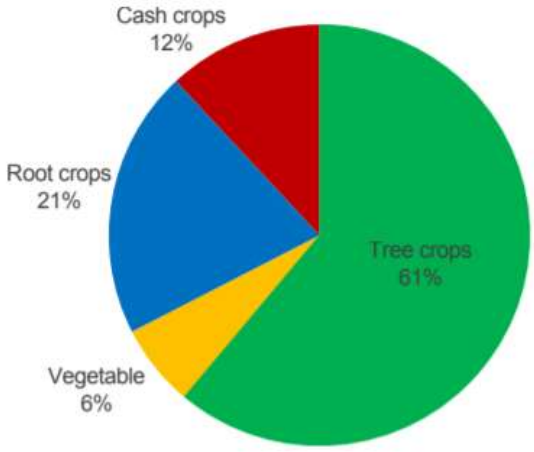
[22] Agriculture data were derived from the raw data collected during the 2017–2018 Agriculture Census from the FSM's Department of Resources & Development.

Figure 18: Percentage of men and women in agricultural activities



120. In addition, more than half of the crops cultivated by the FSM's households are tree crops (e.g., papaya, breadfruit, banana, coconut) and root crops (e.g., taro, tapioca, sweet potatoes) followed by cash crops (Figure 23). Vegetables are less important for FSM households and represent a potential area for development through the production of nutritious crops to replace imported food.

Figure 23: Percentage of crops cultivated.



121. The Department of Health Services in each state provides medical and public health services through a state hospital, community health centres and dispensaries. Each state system is autonomous. Health services are highly subsidized by the state governments, except in private clinics. The national Department of Health and Social Affairs oversees health programmes, including health planning, donor coordination, and technical and training assistance. It is also responsible for public health programmes funded by the United States Department of Health and Human Services.

122. In total, there are 4 state hospitals, 5 health centres and 92 dispensaries in the country. Pohnpei in this context has one of these state hospitals and an additional private hospital (Genesis Hospital). Access to hospital services remains an issue, particularly for outer-islands residents due to transportation difficulties between islands. Furthermore, noncommunicable diseases (NCDs) such as diabetes, cardiovascular diseases and cancers are major health problems. The overconsumption of imported packaged food, lack of physical activity and use of tobacco products are contributing to the high prevalence of NCDs and obesity in the country. Intentional (violence) injury and suicide are other issues, whose contributing factors are likely to be the burden of cultural and economic dislocation, particularly among young adult males.

Alcohol use often leads to violent incidents. Tuberculosis (TB) also has a high prevalence, as does leprosy, the latter being among the highest in the Pacific[23].

123. Education in the FSM is compulsory for children aged 6 to 13 (elementary school). The national education agency is the FSM Department of Education. Each state has its own education agency operating public schools. The curriculum in this eight-year program includes subjects such as science, mathematics, language arts, social studies, and physical education. Public elementary and secondary schools are free for all Micronesian students. There are generally 1 state secondary school per island apart from Pohnpei, which has 2 other private secondary schools. The literacy rate for FSM is quite high at 89%[24].

124. Like the other states, Pohnpei's educational system is patterned after that of the United States. Elementary education is free and compulsory through to grade 8, but entrance into secondary schools is competitive, based on examination results. Both public and private schools are in operation and there are currently 31 elementary schools and 3 high schools on Pohnpei. The three high schools are Bailey Olter High School (formerly Pohnpei Island Central School) in Kolonia; Madolenihmw High School in Madolenihmw municipality and Nanpei Memorial High School in Kitti municipality. The FSM College of Micronesia which provides accredited post-secondary education is also based on Pohnpei but also operates from campuses spread out across the FSM states.

125. **Economy, livelihoods, and income.** In 1986 FSM entered a Compact of Free Association (the Compact) with the US. The Compact is an agreement between FSM and the United States, which provides for US economic assistance (including eligibility for certain US federal programmes), defence of the FSM, and other benefits in exchange for US defence and other operating rights in the FSM. A second Compact agreement, the Amended Compact of Free Association (Amended Compact), came into effect in 2004 and provided $1.8 billion of funding over twenty years, including contributions to a Compact Trust Fund (CTF) intended to replace the direct financial assistance that concludes in 2023.

126. The FSM economy has however languished over the last decade and real GDP growth has averaged -0.4 percent. This has resulted in declining living standards and contributed to net outward migration. An ongoing excess of imports over exports sees a continuing deficit in the trading account of the balance of payments. The economy is firmly tied to overseas aid which is significant relative to domestic revenues at the State level and is dominated by funding coming from the Amended Compact.

127. Economic activity consists largely of subsistence farming and fishing and government activity which employs two-thirds of the adult working population and receives funding largely - 58% in 2013 from Compact assistance. Pohnpei had been the fastest growing with GDP growth averaging 2% per annum in the FY1987-FY2003 period. In the early period FY1987-FY1995 of the Compact, a strong rate of growth 5.4% was experienced. Private and public sector expanded attaining 9.0% and 2.3% growth, respectively[25].

128. The FSM is heavily dependent on marine resources for its economy and in particular the fisheries sector as with very limited land (702 sq km), it has an extensive EEZ of 2,992,597 sq.km. This has seen an increase in fishing vessels in recent years as well as of the associated economic benefits. The tuna fishery sector has become critical for the national economy, providing up to 15% of the FSM GDP in FY2016. The main species targeted by the tuna fishery industry, for local consumption and for export, are skipjack tuna (Katsuwonus pelamis), yellowfin tuna (Tunnus albacares), bigeye tuna (Tunnus obesus) and albacore tuna (Tunnus

[23] World Health Organization (2018) Country Cooperation Strategy at a Glance – Micronesia.
[24] Division of Statistics, Office of SBOC (2010) Summary Analysis of Key Indicators from the FSM 2010 Census of Population and Housing.
[25] FSM Strategic Development Plan 2004-2023,Department of Environment, Climate Change & Emergency Management (DECEM), FSM

alalonga). The main export destinations for these tuna species are Japan and USA (Yellowfin and Bigeye), Thailand, Philippines, and other tuna cannery industry countries.

129. According to the 2010 FSM Census, FSM is still at an early stage of the process of urbanization with about 22% of its population living in the urban areas (urban areas include Colonia in Yap, Weno in Chuuk, Kolonia in Pohnpei and Lelu in Kosrae), a slight increase from the level estimated in 2000. As such, a lesser percentage of the total population live in the various defined urban areas across the four states compared to the majority who still live in rural and outer island areas. It is expected therefore that like many households in the Pacific, fishing, agricultural and livestock raising activities are quite prevalent among FSM households (71%, 95% and 82% respectively). These activities are mostly carried out for own household or family use and consumption purposes. Only 10% percent of households report to be engaged in these activities for sale or marketing for cash. These activities were common throughout all four states, particularly the outer island households who reported heavy involvement in these activities for family use and consumption.

130. Headed households who are involved in paid work earn on average 36% more than the retired and obviously much higher than the ones who work for free (e.g., home production for consumption or volunteers). Households in FSM are dependent on cash income as over 63% of their total income is cash (76% in Kosrae), with additional income (or its equivalent) gains from a range of other sources (i.e., home production, gifts, imputed rents and in-kind) (Table 3). The less cash dependent households are the one whose heads work for free (not for cash) as they are involved in subsistence activities for own consumption.

131. While approximate 55% of households report cash income from a current wage and salary job (55.5%) the most common source of income for households in FSM was the home production (mainly agriculture items) with 76% of the households involved in some form of subsistence activity. A large proportion of households also receive remittances i.e., cash from family outside of FSM (41.6%).

Table 4: Household income by state 2013/14[26]

	Total annual household income (USD 000)	Average annual income (excluding imputed rent) (USD)			Income source				
		Total	Male	Female	Cash	Home production	Gifts	Imputed rents	Income in-kind
FSM	282,683	16,950	13,311	12,208	63.1	10.3	3.4	22.8	0.4
Yap State	41,807	17,768	16,103	15,085	67.1	16.7	5.3	10.8	0.1
Chuuk State	77,726	11,398	8,858	6,197	58.6	13.2	1.8	26.2	0.2
Pohnpei State	143,042	22,293	17,033	15,517	62.6	7.9	3.8	25.1	0.6
Kosrae State	20,109	18,461	15,190	14,896	75.6	3.0	3.0	18.0	0.4

Cash: wage and salary income, business income, and sales of home production (agriculture, handicraft, livestock and/or fisheries)
Home production: value of home production that the household produces themselves and then consumes.
Gifts: all goods given receive are treated as income
Imputed rents: represent the value of a house for owner if they were to receive rent.
Income in-kind: any income received by the household which was not in the form of cash.

132. **Infrastructure.** FSM has 388 km of roads, 184 km sealed and 204 km unsealed. Most of these roads are on the four main state islands. Few of the outer islands have any roads and islanders rely on small walking tracks to get between villages. None of the states have widely available public transportation options except for taxis, and a school bus service between Yap's capital of Colonia and smaller villages is the only significant public bus network in FSM. Road and pedestrian facilities are largely the responsibility of state departments for

[26] Government of FSM (2014) *Household Income and Expenditure Survey 2013/14 Main Analysis Report*

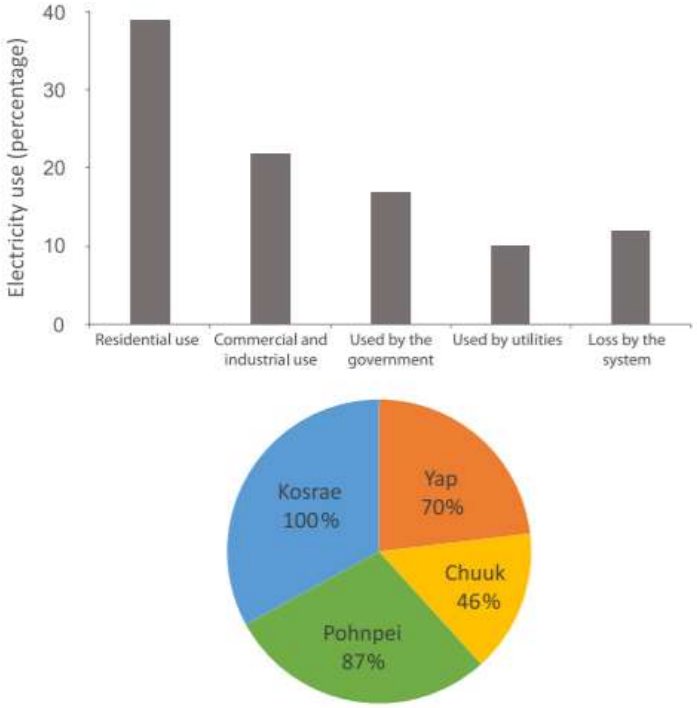
infrastructure/public works. Roads and pedestrian facilities are a key priority sector for expenditure under the FSM Infrastructure Development Plan,[27] with US$120.9 million earmarked for spending in the sector in the 20 years to 2023. An additional US$88.5 million investment for maritime transportation and US$68.4 million for air transportation has also been planned.

133. There are five major airports in FSM, with an international airport located in each state. In addition, there are nine smaller airports located on outer islands, two in Yap state, three in Chuuk state and four in Pohnpei state. Airport development and management is the responsibility of independent authorities in Kosrae and Pohnpei that retain revenue generated from operations and have responsibility for operating costs and making investments. The islands of Yap, Pohnpei, and Chuuk also all contain major international ports which welcome cruise and trading ships from around the world. Port development and management is the responsibility of independent authorities in Kosrae, Pohnpei and Yap that retain revenue generated from operations and have responsibility for operating costs and making investments.

134. The energy sector in the FSM is highly dependent on imported fuel. In 2018, between 78–97% of the energy produced came from diesel with some renewable energy production across the four states. The percentage of households with electricity differs across states. Estimates from 2009 indicate that in Kosrae 100% of the households have access to electricity, this figure is halved for Chuuk (46%) with Pohnpei sitting at 87%. Electricity in this context is largely used by households and commercial units (Figure 24), but 12% of the total use is noted to be energy lost by the system.

[27] FSM Department of Transportation, Communications & Infrastructure (2015) *Federated States of Micronesia Infrastructure Development Plan FY2016-FY2025.*

Figure 24: Electricity use by state and energy consumption by group



135. As of 2010 water access in the FSM reached 88.5% of households while only 56.5% of the households had proper sanitation. The main sources of freshwater are rainfall harvesting, groundwater, and surface water. Water capacity in outer islands is limited, mostly due to the inadequate storage capacity and absence of a water grid for water distribution. In the four states, supply of freshwater differs greatly determined by the characteristics of rainfall, storage capacity, and infrastructure development, however there is a recognized need to upgrade and improve the island water systems to ensure access to water during droughts. In urban centres, the source of water is normally from the water utilities, in rural areas residents use community water tanks, wells or surface water (e.g., rivers and streams). These water systems are not monitored routinely like those provided through the public utilities systems, therefore there is an increased health risk for users.

136. According to the 2010 census, 43.5% of households in the FSM also do not have an improved system of sanitation. Most of the the non-improved sanitation systems (e.g., non-ventilated pits, open defecation) are in the outer islands, where problems with limited water access require alternatives to flush toilets. In Pohnpei, water and wastewater systems are the responsibility of Pohnpei Utilities Corporation (PUC). Commercial operations are centred on Pohnpei island, where there is a broad metering of water supply. In Pohnpei there is a sewage plant that is operated to treat the effluents from the main urban town of Kolonia before reaching coastal waters. The rest of the island households discharge wastewater into private septic tanks.

137. Management of solid waste is also an ongoing problem across the FSM due to physical, resource and human capacity limits. Challenges include siting and proper management of waste sites, access and resources for appropriate collection, management and recycling are limited, and lastly increasing consumption of waste producing goods. In the FSM, the 3 states of Yap, Pohnpei and Kosrae have a public solid waste collection and disposal system. In this context the municipalities manage solid waste collection and disposal to a public landfill disposal site which employs a semi-aerobic method. In Pohnpei, the Office of Transportation and Infrastructure contract an external company for its management.

138. The FSM also has a legacy of scrap metal and derelict vehicles, which are abandoned at the final disposal sites, along roadsides and on vacant lots. Disposal of used oil is also a problem with generation from mechanic shops, the public utilities, and boats. In Pohnpei waste oil is stockpiled at the Dekehtik dumpsite. Medical waste disposal is another problem whereby incinerators are available on hospital premises to treat medical wastes but are not always properly maintained and operated.

139. **Cultural and historic sites and resources.** The FSM boasts a wealth of historical and traditional sites. These sites are conserved for their value and significance to the people of the FSM. Historical and traditional sites refer to sites, structures, buildings, objects, and areas of significance in local history, archaeology, or culture. The protection of the FSM's national heritage is overseen via several bodies including the FSM Office of National Archives, Culture & Historic Preservation, and the four state Historical Preservation Offices. The National and State Offices of Tourism as well as the National and State Departments of Resource and Development also play a role in maintaining historical sites.

140. There are historical and traditional sites scattered throughout Pohnpei, but one of the most well-known is Nan Madol. Nan Madol was the ceremonial and political seat of the Saudeleur Dynasty, which united Pohnpei's estimated 25,000 people until about 1628. The site was added to the list of World Heritage Sites in 2016 and is currently on the List of World Heritage in Danger due to threats, such as the siltation of waterways that is contributing to the unchecked growth of mangroves and undermining existing edifices. The current efforts are to improve accessibility and management of the site.

There are no cultural or historic sites in the pilot subproject area of influence.

5. ANTICIPATED IMPACTS AND MITIGATION MEASURES

A. Overview

141. This section provides an assessment of the subproject's likely impacts on the physical, biological, and socio-economic resources and identifies measures to ensure potential environment impacts will be avoided or managed/reduced to acceptable levels. The also IEE provides an analysis of the anticipated direct, indirect, and cumulative impacts associated with the pilot subproject and where required; mitigation measures are proposed. The impact assessment process follows a methodology whereby sensitive receptors are identified, magnitude of impacts established, mitigation is presented, and eventual residual impacts presented. The safeguard measures will be incorporated into the project phases as follows:

- Pre-construction phase – the period from the preparation of this IEE to the time that the 'notice to proceed' is issued. This IEE and EMP will be included in technical specifications and bidding documents. The successful contractor shall prepare a construction EMP (CEMP) that will be reviewed and approved by the DTC&I PMU and PRF consultant. The PMU will update the IEE based on the detailed design prepared by the contractor. The contractor will incorporate environmental mitigation measures identified in the IEE and EMP into detailed design.
- Construction phase - the period from the time that the 'notice to proceed' is issued to the contractor to when the 'certificate of completion' is issued. The contractor will complete the project as per the design and technical specifications and implement the measures included in the approved CEMP, IEE any conditions issued by the Pohnpei EPA. This process will be monitored and documented by the PMU with assistance of the PRF consultant.
- Operation and maintenance phase - the period starting when the 'certificate of completion' has been issued until the end of the agreed lifetime of the project. DTC&I will be responsible for implementing the measures identified in the operation phase of the EMP.

B. Design and Pre-construction Impacts

142. The level of significance of potential impacts is based on impact screening which rates i) no or negligible impact; ii) low or minor impact; iii) moderate impact; iv) major impact; and v) unknown impact. The duration of impacts is assessed based on the current concept design of the scope of works and the conditions in the subproject influence area. The pre-construction phase will include the following activities:

(i) Ensuring design sufficiently accommodates climate change projections and effects;
(ii) Update of the assessment and EMP based on additional on the ground CH assessment and survey, detailed design, formulation of EAS and development consent application submission and compliance with conditions of development consent;
(iii) Contractor preparation of CEMP for review and clearance requirements;
(iv) Contractor identification of construction material sources and application for appropriate permits;
(v) Vegetation removal during surveying and demarcation of road and drainage pathways if required; and
(vi) Site clearance, site preparation and excavations.

143. Throughout the pilot subproject, for implementation of environmental safeguards to be effective, an environmental management and monitoring system will be established. The PMU will ensure that the EMP is updated, as required, based on detailed design, as well as

incorporating additional on the ground CH assessment and survey findings, and incorporated into the bid documents. The bid documents will also specify other environmental management requirements such as: (i) requirements to comply with applicable standards; (ii) the contractor will designate an environmental, health and safety officer (EHSO) and describe the reporting/communication lines and channels; (iii) the monitoring and reporting requirements; and (iv) delivery of induction, training and awareness sessions for workers and the community.

144. **CEMP**. Prior to works commencing at the project site, the contractor will prepare and submit a site-specific construction EMP (CEMP) to the PMU, the CEMP will be based on the updated project EMP and detail the construction methodology and program to be undertaken at each site, identify the risks associated with that construction methodology and detail mitigation measures to avoid or reduce the risks. The PMU will review and approve the CEMP. The PMU's no objective is required before the Contractor can start work.

145. Once works commence, the EHSO will conduct monitoring of compliance of activities with the approved CEMP and the PMU will undertake inspections and audits of the effectiveness of the contractor's implementation of the approved CEMP. PMU will devise the checklist to be used for the inspections and audits and will consolidate the inspection/audit findings along with summaries of the contractor's monthly reporting. ADB will undertake review missions which will report on, inter alia, overall implementation of social and environmental safeguard requirements.

146. The project has established a grievance redress mechanism (GRM) to address concerns and resolve complaints and issues raised on any aspect of Project and subproject implementation. Safeguards concerns will be addressed through the GRM. The CEMP will outline how the contractor will implement the relevant elements of the GRM and how and when they will provide information about construction activities and timing to the community. The contractor will provide information about the works, impacts and mitigation/control measures to the community in a timely and effective manner.

147. Workers and sub-contractors will be inducted to the site and this will include awareness and training on the provisions and requirements of the CEMP and how it is to be implemented.

148. **Adaptation to climate change**. Climate change resilience is a critical consideration because Pohnpei State is vulnerable to the effects of droughts and frequent flooding. There will be no impacts on stream and waterway flows or impacts associated with marine and coastal habitats and their resources. Minor impacts may occur during the construction on drainage systems but will be mitigated. The subproject will not create any impacts on rainfall or groundwater or create carbon emissions, which induce climate change.

149. **Environmentally responsible procurement**. The PRF consultant will include an international (intermittent) and national environmental specialist to support the PMU to undertake tasks associated with development consent application and inputs to the tender documentation and bid evaluation. Terms of Reference for the environmental specialists are included in the project administration manual.

150. The IEE and EMP will be formatted as an Environmental Assessment Statement (EAS) as per Pohnpei EPA requirements, checked for compliance with requirements of the Environment Act, and submitted to the EPA for clearance and issue of the development consent. The EAS, along with any conditions of the development consent, will be incorporated into technical specifications and bid documents.

151. Following contract award, the contractor, with support as required from the PMU and PRF consultant, will prepare the CEMP responding to the EMP and provide the site-specific drawings, work method statements, sub-plans (as detailed in next sections), and construction methodologies, including specifics around construction method, impact mitigations and spoil disposal.

152. **COVID 19 response**. The project has the potential to transmit COVID 19 to project workers and residents in the pilot subproject area. The contractor in this context shall be required to prepare a COVID 19 Response Plan. The COVID 19 Response Plan will be approved by the PMU, PRF consultant and ADB prior to the mobilisation of any workers to FSM or within FSM. Guidelines for the management of COVID 19 in the workplace and on construction sites have been released by the World Health Organisation[28]. The COVID 19 Response Plan shall at a minimum:

(i) Describe how the contractor will comply with all COVID 19 related requirements of the Government of FSM in force at the time of the preparation of the plan.
(ii) Identify measures to prevent exposure of workers and the public to COVID 19 (e.g., communication and training of workers in COVID prevention, hygiene measures, site cleaning, worksite access, maintenance of distancing at the work site etc).
(iii) Identify measures to detect COVID 19 infection amongst workers (e.g., screening prior to mobilisation to FSM for international workers, worksite screening etc).
(iv) Identify response measures should a possible case of COVID 19 be detected (e.g., self-isolation away from the worksite, compliance with PNG directions etc).
(v) Describe how the plan will be monitored and updated to respond to changes in FSM Government policy.

153. **Mobilization of the contractor**. The mobilization of the contractor and initial establishment of work sites will require the presence of construction workers and subsequent interactions with the local residential (urban and rural) and business communities. Prior to contractor mobilization to the site, the PMU and contractor will establish a communications protocol for the subproject with relevant elements of the grievance redress mechanism (GRM) to be reflected in the contractor's CEMP. The contractor will also establish a code of conduct or protocols to govern the behaviour of workers and will be agreed with community leaders. Measures to minimize disturbance by construction workers and presence of the works site/area include:

(i) Code of conduct/protocols agreed with community leaders and disseminated to workers as part of awareness and mobilization training. The code is to ensure that workers' actions at the work site and in the community are controlled and observed;
(ii) The contractor will identify a member of their staff to be the liaison between the communities and contractor, as well as between the contractor and PMU.
(iii) Adequate signage and security provided at the work sites and prevention of unauthorized people (including children) entering the work sites;
(iv) Provision of adequate protection to the public close to the work site, including notice of commencement of works, installing safety barriers if required by communities, and signage or marking of the work areas; and
(v) Provision of safe access across the works site to people and businesses whose access are temporarily affected during road rehabilitation activities.

154. As the pilot subproject is on a very small scale with a local contractor to be utilized, there will be no need for establishment of a construction camp and work site.

155. **Sources of construction material**. Due to the nature of the FDR process, there will be very little material required for the road base as most existing materials will be recycled and compacted. Any additional materials required for the base as well for the top seal will be

[28] https://www.who.int/publications-detail/considerations-for-public-health-and-social-measures-in-the-workplace-in-the-context-of-covid-19;

identified by the contractor and must adhere to country codes of practice, applicable standards and specifications for abstraction. An Aggregate extraction plan (AEP) will be prepared if there will be any large scale aggregate extraction for the pilot project and included in the CEMP.

156. **Vegetation removal and site clearance**. The road corridor throughout the pilot subproject site is a highly modified environment. The surveying and demarcation of the extent of the physical works footprint for the subproject site is expected not to include the removal of vegetation and/or trees. Very minor removal of weeds and/or grass associated with the road footprint (edge) may occur in isolated sections, however their removal will have no impact on the terrestrial fauna and/or flora within the subproject areas as all work will remain within the existing carriageway footprint.

157. All trees and other plant species present adjacent to the pilot subproject area of influence are either introduced species or ubiquitous native species, which are highly tolerant of disturbances. If the design of the pilot road corridor changes, the below measures need to be included to ensure minimization of impacts from vegetation removal:

(i) Vegetation clearance during updated surveying and demarcation activities, especially of trees along the road corridor roadside to be minimized;
(ii) Contractor, in consultation with PMU and PRF consultant, prepare a site-specific plan, including showing trees and vegetation to be removed, PRF Engineer to approve the plan;
(iii) Under no circumstances is the contractor permitted to fell trees or remove vegetation not confirmed during design and shown on the approved plan; and
(iv) Construction workers will be informed about general environmental protection and the need to avoid un-necessary felling of trees.

158. **Alien and invasive species**. Due to the nature of the FDR methodology and specialized equipment requirements, international bio-security controls for shipping of machinery are required to meet the biosecurity standards of the Pohnpei Department of Agriculture or be refused entry into the country. It is the importer's responsibility to ensure all machinery that arrives in Pohnpei to be free from biosecurity risk material, such as soil, seeds, plant, and animal material. All other construction equipment such as, bulldozers, excavators, backhoes will be sourced locally from FSM and as such will limit any bio-security concerns.

159. **Residual impacts.** Provided all the above measures are implemented and monitored for effectiveness, it is acknowledged that for adaptation to climate change, environmentally responsible procurement, the COVID 19 response, and mobilization of the contractor activities, there should be little or no residual impact. For the following activities of vegetation removal and site clearance, sourcing of construction material, and alien and invasive species; provided biosecurity measures are followed and permitted sources/quarry sites are prioritized, the residual impact will be low to medium.

C. Construction Impacts on Physical environment

160. All potential construction impacts, and appropriate mitigations are to be managed by the contractor. Construction impacts will be caused by the following activities:

(i) Operation of construction plant and vehicles producing dust, noise and vibration;
(ii) Site/location clearing, earth movements, grubbing, excavations and stockpiling of materials;
(iii) Erosion and sedimentation - streams and waterways;
(iv) Sourcing construction materials and aggregation extraction;
(v) Construction waste disposal, pollution for hazardous material and wastewater management;
(vi) Stockpiling of construction material such as sand, gravel and cement;

(vii) Road formation, reshaping, filing and sealing;
(viii) Creation of roadside drains and stormwater drainage; and
(ix) Transportation of construction materials.

161. **Air quality.** The quality of air in the subproject area is typical of a rural and semi urban setting in the FSM and is of high quality due to the limited and small-scale industry and relatively small vehicle fleet. Construction of the subproject however will have localized and intermittent impacts on air quality through emissions of dust and exhaust from machines and vehicles. Sulphur Dioxide (SO2) and Nitrogen dioxides (NO2) gases are expected from construction vehicles because of the petrochemical (diesel and petrol) fuelled equipment including total suspended solids (TSS) from dust.

162. The contractor is required to maintain all construction equipment and avoid using machines emitting visible smoke. Dust generation will be minimized by regular water spraying of exposed sites in villages to prevent reduced visibility and dust generation. Mitigation measures include:

(i) Construction equipment and vehicles to be regularly maintained to a good standard and maintenance will be monitored and reported;
(ii) Prohibition on the use of equipment and machinery that causes excessive pollution (i.e. visible smoke);
(iii) Spraying and damping down of the road, works yard area and any haulage roads as required;
(iv) Ensuring that all vehicles transporting potentially dust-producing material are not overloaded, are provided with tail and sideboards, and are adequately covered with a tarpaulin (covering the entire load and secured at the sides and tail of the vehicle) during transportation; and
(v) Material stockpiles will be in designated areas that are sheltered and not located near the coast or watercourses and sediment traps are installed to prevent discharge into the neighbouring environment.

163. Periodic qualitative air quality monitoring (by observation rather than testing) as per the EMP will be undertaken.

164. **Site clearance and chance finds.** While discovery of physical cultural sites or resources is unlikely due to the road existing in an already highly modified environment, any site clearance and excavation activities undertaken during the pre-construction phase of the subproject can unearth archaeological sites or resources. In the event this occurs, work shall cease immediately and the appropriate authorities shall be informed of the find. Activities shall not re-commence until the authorities have signed-off that the site/resources have been dealt with appropriately and that work may continue.

165. **Soil and erosion.** Contaminations of soil from hydrocarbon leakages or solid waste are common problems experienced by contractors. The contractor is required to prepare a sedimentation and erosion control plan (SECP) as part of the CEMP. Potential soil impacts and erosion will be mitigated by:

(i) The contractor will prepare a SECP as part of the CEMP;
(ii) All land disturbances will be confined to the minimum practicable working area to ensure that the minimum area of land is exposed to erosion for the shortest possible time;
(iii) If the contractor causes damage to land or gardens, the contractor is responsible for repairing the damage and/or paying compensation
(iv) As per the Health and safety management plan, all chemicals must be stored in an area or compound with a concrete floor and weatherproof roof;
(v) Spill kits (oil/fuel remediation agents, oil pads, oil booms and geo-fabric cloths) will be available and workers will be trained in their use and deployment;

(vi) Refuelling of construction vehicles must be carried out only at a designated area (concrete platform). Refuelling adjacent to the coast or stream/channel will not be permitted;
(vii) Use of silt control devices and sediment traps/fences during all extraction activities, these to be cleaned and dewatered regularly;
(viii) Channel and streamside slopes and culvert approaches will be protected to reduce erosion. Gabion baskets or riprap will be used around abutments to reduce scour and erosion;
(ix) Embankments and in-stream/river activities will be monitored for signs of erosion;
(x) Random and uncontrolled dumping of construction spoil, or any material, will not be permitted.

166. **Waste management.** The construction activities and procurement of materials and equipment will generate waste. The contractor will be responsible for ensuring waste is managed as per the projects waste management plan (WMP) included in the CEMP. All waste collected will be disposed of only at a site/s approved by the Pohnpei EPA. Waste management mitigation measures includes:

(i) The contractor will prepare a WMP as part of the CEMP;
(ii) The WMP will seek to firstly avoid waste and secondly to reuse/recycle waste;
(iii) Suitable permitted waste disposal sites will be designated in consultation with landowners and government were required;
(iv) Waste disposal will not be permitted by roadside, streams/channels, garden land or in areas used for livelihood production;
(v) No wastes will be dumped in waterways or close to the coast;
(vi) At all works sites and office compound, the contractor will ensure safe and clean facilities including sanitation. Work site(s) and office compound will have portable and sanitary latrines respectively; and
(vii) At all times, road sections will be kept free of material and rubbish.

167. **Hazardous substances**. Petrochemicals and other hazardous substances will be used and transported during the project. If not handled and stored properly these can cause harm to people and the environment. The contractor will be responsible for ensuring hazardous waste is managed as per the projects hazardous waste management plan (HWMP) and the Emergency response plan (ERP) included in the CEMP. Mitigation measures include:

(i) Contractor to prepare a HSMP and ERP as part of the CEMP;
(ii) Locate storage areas for all petrochemical products including bitumen at least 500 m from coastline and 100 m from stream/rivers;
(iii) Fuel and oil stored in secured (lockable), weather proofed area including an impervious flooring and bund/containment wall to contain spillage. The bund shall be 110% of largest volume stored;
(iv) All other chemicals and hazardous substances will be stored in lockable and secure areas in clearly labelled containers;
(v) Used oil, other toxic (e.g. bitumen) and hazardous materials shall be disposed of in an authorized facility off-site and any spill waste will be disposed at disposal sites approved by the Pohnpei EPA;
(vi) No smoking or fire of any kind permitted in vicinity of bitumen and kerosene blending tanks. Provide a carbon dioxide fire extinguisher at bitumen tank site for firefighting;
(vii) Road sealing including asphalting and/or concreting activities will be ceased during periods of heavy rainfall;
(viii) Spill kits will be provided at work sites and works yards and staff will be trained in their use and deployment. All spills cleaned as per emergency response plan; and
(ix) Ensure any spills or accidents are reported to PMU and police within 24 hours.

168. **Water resources and quality**. The construction of the subproject has the potential to interfere with local water resources (ground or surface water) through inappropriate abstraction for construction, alteration of surface water flow across the site leading to sedimentation of adjacent environments (refer Soils and erosion control) and pollution of water resources through accidental spillage of hazardous materials (refer Hazardous substances control). As such, many of the measures to manage extraction activities, avoid or manage soil contamination and erosion and manage waste will also address potential impacts on water quality. In addition, the following will also be implemented:

(i) Construction activities adjacent to or in waterways, streams/rivers and drainage channels will be undertaken with extreme care;
(ii) Minimize interference with natural water flow in rivers/streams or watercourses within or adjacent to the subprojects work sites;
(iii) Use of silt control devices and sediment traps/fences during all extraction and construction activities within and/or adjacent to streams and rivers, which are to be cleaned and dewatered regularly; and
(iv) Stockpiles of materials will be at designated areas and will be located at least 50 m from waterways or the coast.

169. **Residual impacts**. Provided the above measures are implemented and monitored for effectiveness, it is acknowledged that for air quality and site clearance activities, the residual impacts will be low. For soil erosion, waste management and water quality activities, the residual impacts will be low to medium. The use, storage and transportation of hazardous substances will have residual impacts considered to be medium.

D. Construction Impacts on Biological environment

170. **Terrestrial flora and fauna**. The pilot subproject road has been in operation for many decades and is associated with a highly disturbed and altered semi urban and rural ecosystem. No significant vegetation is recorded within the impact areas at the subproject sites Plant species located adjacent to the subproject influence areas (they are not impacted) are either introduced species or ubiquitous native species, which are highly tolerant of disturbances.

171. The preliminary habitat screening exercise conducted for the site concludes that the flora located adjacent to the subproject road corridor do not have any conservation significance nor are they representative of the original vegetative cover. Fauna within the subproject road corridors is limited mainly to birds and invertebrates that are associated with the flora (trees, shrubs) and are dominated by insects. This will be confirmed at the pre-construction stage by additional site-specific CH assessment and survey to be conducted by the PRF consultant. Should Critical Habitat be confirmed to be present, the IEE and EMP will be updated to ensure compliance with the SPS requirements. This will entail preparation of a Biodiversity and Invasive Species Action Plan by the contractor to be included in the CEMP.

172. **Marine flora and fauna**. The pilot subproject will have no anticipated impacts on marine and coastal habitat, flora, and fauna (coral reef, seagrass beds and mangrove ecosystems) provided that protection measures when working close to the coast are fully implemented. Potential impacts from road construction activities include effects on coastal and marine habitats from run-off or sedimentation and re-suspension and transport of particulates by currents in river systems discharging into these coastal ecosystems. Inshore coastal fringing reef systems can tolerate variation in sedimentation from natural processes.

173. Provided that the measures identified in the CEMP (including sub-plans) are implemented, any increases in sedimentation affecting marine environment will be very minor (if any) short-term, small in volume and localized.

174. **Freshwater flora and fauna**. The subprojects will have minor impacts, if any, on freshwater river stream ecology, habitat, flora and fauna. Potential impacts from road

construction, (road repair and drainage) may potentially impact riparian habitats and resources, through run-off or sedimentation and re-suspension and transport of particulates by currents within these ecosystems. The likelihood however is unlikely as there no immediate streams in the vicinity of the pilot site.

175. Provided that the measures identified in the CEMP (including sub-plans) are implemented, any increases in sedimentation affecting the river/stream environments will be short-term (if any), small in volume and localized.

176. **Protected areas.** There are no marine or terrestrial protected areas within the pilot subproject area therefore construction activities will have no impact on the national protected area systems or protected flora and fauna species.

177. **Residual impacts.** Provided all the above measures are implemented and monitored for effectiveness, there should be little or no residual impact for all aspects considered under this section except for impacts terrestrial flora and fauna. Pending the findings of the additional CH assessment and survey at preconstruction, the contractor may have to prepare a Biodiversity and Invasive Species Action Plan to be implemented as part of the CEMP. Standard requirements outlined in the plan will manage potential impacts and provided these measures are implemented, the residual impact will be low to medium.

E. Construction Impacts on Socio-economic environment

178. **Public access and traffic.** Traffic management and control, especially during peak traffic times, will be required to ensure safe passage of vehicles and pedestrians. Pedestrian access through or around the work site will be controlled and managed throughout the duration of the works, this is especially relevant when the works are within village or urban boundaries Stakeholders and communities will be notified in advance of the schedule and duration of activities and the access and traffic control arrangements. Mitigation of impacts will include:

(i) Prior to commencement of works, the contractor will prepare, and submit to PMU for clearance, a traffic management plan (TMP) detailing controls, diversions and management/safety measures for works within the sections as well as associated sites, quarry/extraction areas, laydown areas and yards etc;
(ii) The contractor and PMU will inform commuters, providers of transport services and adjacent community/schools/business of duration and scope of works and any alternative traffic arrangements;
(iii) • Clauses will be included in the contract specifying that i) care must be taken during the construction period to ensure that disruptions to access and traffic are minimized and ii) access to/from residences/schools/business along the road will always be maintained;
(iv) Stakeholders and potentially affected people will be consulted if access to specific areas will be disrupted for any time and temporary access arrangements made;
(v) Use of signage, spotters, flaggers and safety barriers to control and regulate traffic flow whilst ensuring safety for workers and pedestrians;
(vi) Ensure public safety across and around work site(s) including barriers to prevent entry to high risk areas (e.g. excavations, area with heavy machinery being used) and ensure safe passages are provided through or around work sites;
(vii) Construction vehicles will use local access roads or negotiate access with landowners to obtain access to material extraction sites. Where local roads are used, they will be reinstated to their original condition after the completion of work;
(viii) At all times, the road will be kept free of debris, spoil, and any other material;
(ix) Disposal sites and haul routes will be identified and coordinated with PMU, local government, and community/village officials. This may mean undertaking

haulage during specific times of the day to avoid further congesting periods of commuter and school traffic.

179. **Noise.** There are no noise standards in the Federated States of Micronesia. Construction noise will be intermittent, quickly attenuates with distance, and depends on the type of operation, location, and function of equipment. During construction, there will be a temporary adverse impact due to the noise of the construction equipment, especially heavy machinery during use to residences, schools and businesses adjacent to the road works. Clearing road, bulldozing, compaction equipment, excavation of existing pavement materials, and grading will produce noise.

180. Noise generated by construction activities should be restricted to the hours of 7 am to 5 pm weekdays (Monday – Friday). Permission from DTC&I and PMU would be required to operate outside of these hours, which may be required for certain activities. It is a requirement of the CEMP that construction machinery and equipment incorporate standard noise mitigation measures. These measures will safeguard project workers and nearby residences, businesses and schools against adverse noise impacts. The restriction of construction works to daylight hours will minimize annoyance to communities and schools.

181. Co-operation between the contractor and the residents, villages, schools, and small business communities is essential. It is the responsibility of the contractor to arrange meetings between these parties and co-ordinate work schedules (hours of equipment operation etc.), locations of work camps and material storage areas.

182. Noise incurred by construction workers from construction machinery is also a safety hazard. All construction workers are to be provided with noise abatement personal protective equipment, to be outlined in the Contractor's health and safety management plan (HSP). Measures to mitigate the effects of noise include:

(i) Construction vehicles and equipment to be maintained in good working order and regular equipment maintenance will be undertaken;
(ii) Construction vehicles and machinery be fitted with mufflers and other noise abatement equipment as necessary;
(iii) Limiting noisy construction activities to be between 7 am and 5 pm on weekdays; As practicable, buffers to be established between work areas and nearby residences and business premises;
(iv) The contractor will prepare a schedule of operations to be approved by the PMU (and police, if required). The schedule will establish days, including identifying days on which there should be no work, and hours of work for each construction activity and identify the types of equipment to be used;
(v) Workers will be provided with noise abatement equipment (PPE) as may be required; and
(vi) Any complaints regarding noise will be dealt with by the contractor in the first instance through the GRM.

183. **Disruption to services and utilities**. Along the pilot road section, there may be a requirement for earthworks and other construction activities to relocate and/or cause disruption or damage to services and utilities. Mitigation measures include:

(i) Consult infrastructure and services providers (Telecommunication providers and PUC) before construction to identify on plans the location of utility lines and pipes;
(ii) Relocation plans, as required, to be agreed and implemented; and
(iii) Any other incidental damage to be immediately advised to the PMU and repaired as agreed with the utility provider.

184. **Worker health and safety**. Construction activities include various hazards and risks including working with heavy equipment and machinery, working on roads/in traffic, and working with particulates and hazardous substances. There are also risks associated with influx of labor such as spread of communicable diseases (including Covid-19, STIs and HIV/AIDS). Mitigation measures include:

(i) The contractor will prepare a health and safety plan (HSP) as part of their CEMP. The HSP is to include key components of the World Bank Group's EHSG;
(ii) The contractor will appoint a full-time environment, Health and Safety Officer (EHSO) responsible for implementation and monitoring of the CEMP and in co junction with the community liaison officer to communicate with the CPIU and residences/villages/businesses in the subproject areas;
(iii) The contractor will provide adequate health care facilities including a health post and first aid facilities at the office compound and mobile first aid kits in vehicles and at work sites;
(iv) The contractor will provide construction workers training on health and safety matters, specific hazards of their work, basic sanitation, hygiene and health care issues and awareness and prevention of communicable diseases (including COVID-19, STIs and HIV/AIDS)/ The training, if required will identify measures that are aligned with the planning guidance based on traditional infection prevention and industrial hygiene practices and which focuses on the need for employers to implement engineering, administrative, and work practice controls and PPE to avoid and control spread of COVID-19, prepared by WHO 2020 Considerations for public health and social measures in the workplace in the context of COVID-19[29];
(v) The contractor will be responsible for providing safety equipment and appropriate personal protective equipment (PPE) to workers, including instructions on how and when to use the equipment;
(vi) The contractor will ensure safe and clean facilities include sanitation and drinking water (at least 2 liters/day) is provided to all workers;
(vii) Septic tanks and garbage receptacles will be set up at work sites and office compound/s. The contractors to prevent outbreak of diseases will regularly clean these facilities. Garbage will be dumped only at a site approved by local authorities and PMU;
(viii) "No smoking zone" signage will be posted throughout work sites and the office compound (e.g. fuel storage areas); and
(ix) Contractor to educate and ensure worker's actions are controlled codes of conduct are strictly observed (work sites and office compound).

185. **Community health and safety.** The contractor's HSP will also address community health and safety impacts as follows:

(i) The contractor will implement relevant elements of the GRM;
(ii) Before construction commences the contractor will conduct training for all workers on their requirements to engage the local community and ensure national laws are complied with. The contractor will agree to a worker code of conduct with village and community leaders which will govern the behavior of workers on and off-site which are to be strictly followed;
(iii) Adequate signage and security will be provided at work sites for prevention of unauthorized people (including children) entering any work site(s) including advanced notice of commencement of works, installation of safety barriers and fences and signage or marking areas where works will be carried out;

[29] https://www.who.int/publications-detail/considerations-for-public-health-and-social-measures-in-the-workplace-in-the-context-of-covid-19;

(iv) Provision of safe access across the works site(s) to people whose residential or business access is temporarily affected during road rehabilitation activities as part of the contractor implementing the TMP that will include traffic control and pedestrian safety measures;

(v) If required, STIs and HIV/AIDS awareness and prevention program delivered through an approved service provider for workers and communities. First community sessions to be delivered prior to commencement of works or presence of workers in the area;

(vi) Child and/or trafficked labor will be strictly prohibited for any activities associated with the subproject with children to be prohibited from entering the worker's accommodation, works area/construction zone and prohibited from playing on any equipment or machinery associated with the project;

(vii) In consultation with PMU, the contractor will clearly fence off 'no go areas' within work site(s) and erect boundary fences to prevent the public from entering during the construction period (or specific construction activities).

186. **Physical and cultural resources**. During the pre-construction stage, the contractor will check with Historical Preservation Office on pilot subproject areas identified (including laydown areas, temporary areas etc). The CEMP will contain a developed chance find procedure, based on the measures set out in the EMP.

187. **Residual impact.** Provided the above measures are implemented and monitored for effectiveness, the residual impacts for public access, noise, disruption to services and utilities and physical and cultural resource activities will be negligible, if any. For community and worker health and safety activities, the residual impacts will be low-medium.

F. Operation Impacts

(I) Operation impacts on Physical Environment.

188. Given the small-scale of the pilot subproject footprint (1km), it is expected that operational impacts will be commensurate to its current scope with impacts likely to result from the following activities:

(i) Increase in number of vehicles resulting in increased traffic and associated increases in vehicle emissions at pilot subproject site;
(ii) Labor and machine-based maintenance to road and drainage assets; and
(iii) Increased water runoff, siltation and possible degrading of nearby natural water ways and coast.

189. **Adaptation to climate change.** Risks of impacts on the road, drainage and associated structures from climate change will be addressed through routine inspections of the roads as part of the tasks of the maintenance contractor. Extreme weather events may cause unexpected damage to the road and drainage structures and their repair will need to be factored into the road/drainage maintenance program.

190. **Air quality.** An increase in traffic volume during the operational phase of the road is expected. It is envisaged the current volume of traffic and future forecast traffic volumes will increase but will be insignificant and no noticeable impact on ambient air quality, due in part to better emission standards associated with all new and used imported vehicles, and dispersal of emissions due to the roads coastal location receiving daily sea breezes. Likely emission sources that would affect air quality will be from vehicles that have ineffective and or damaged emission controllers include hardware (mufflers). Impacts are to be insignificant and as such no significant air quality impacts warranting mitigating actions are anticipated.

191. **Routine maintenance.** It is expected that there will be unlikely to be any impacts in the future associated with the road subproject if routine maintenance works are carried out effectively by the DTC&I. Impacts on the infrastructure associated with subproject could arise when roadways, and drainages are not properly maintained and debris/sediment collecting against the projects infrastructure impedes water movement resulting in flooding of the road and blockage of drainage systems. These impacts and values can be maintained through good design and the long-term implementation of a road and drainage waste management plan.

192. **Soil and erosion**. There are unlikely to be any significant impacts on soil or stream/coastal erosion during the operation phase of the road and drainage project if routine maintenance works are carried out effectively by the DTC&I. Impacts to the environment could arise when roadway, culverts, and drainages systems are not properly maintained and debris/sediment collecting within the projects infrastructure impedes water movement forcing flooding of road and blockage of drainage systems. In addition, the bitumen sealing of the road and associated drainage system will assist in stabilizing the area and further reduce potential silt-laden run-off entering the environment.

193. **Water resources and quality**. Potential impacts on surface water quality or availability of water throughout the subproject area for domestic or agricultural use will be negligible. Potential negative impacts during the operations phase to surface water results from the spillage of hydrocarbons from maintenance vehicles and work activities (refuelling, leakage, accidental spill). These may flow through the drains into waterways or leach into the water system.

194. It is expected that the project will lead to longer term environmental benefits for water quality created by the subproject through proper compacting and sealing of the road surface and greatly reduce the mobilization of sediments during rain events. Those sediments that are mobilized will be captured where required within the drainage utilizing sediment traps. The

maintenance contractor will be responsible for regular clearing of the traps to keep them effective.

195. **Residual impact**. Provided the above measures are implemented and monitored for effectiveness, the residual impacts for all aspects under this section will be negligible, if any. The impacts and values can be maintained through good design and the long-term implementation of a road and drainage maintenance management plan.

(II) Operation impacts on Biological Environment.

196. **Flora and fauna**. Negligible to minor environmental impacts are envisaged on the flora and fauna within and directly adjacent to the road corridor within the subproject due to the potential increase in traffic noise, increased vehicle movement (numbers and speed), accidental spills from hydrocarbons (all vehicles) and solid waste and rubbish from all users. In anticipation of these impacts national and local government legislation, regulations and ordnances should govern activities associated with the operation of the road. Otherwise, no significant impacts are expected. There are no rare or endangered flora and fauna associated with the sub project road corridors and as such there will be no impacts during the operational phase.

197. **Protected area.** There is no terrestrial, freshwater, coastal or marine protected or conservation areas within or adjacent to the pilot subproject area. Therefore, the operation of the upgraded road will have no impacts.

198. **Residual impacts**. Provided the above measures are implemented the residual impact will be negligible, if any. Habitat present adjacent to the pilot road section is modified and unlikely to support, large populations of rare or endangered species. While there is some potential for Critical Habitat to be present due to the presence of endemic species, there is negligible potential for residual impacts on trigger species during operation given the road already exists and is already under operation.

(III) Operation impacts on Socio-economic Environment

199. **Public access and traffic**. Following rehabilitation of the road, local access as well as the performance of a key route in the island transport network will be greatly improved. This will facilitate the increased flow of traffic, goods, and passengers and enhance livelihood and general lifestyle opportunities.

200. **Health and safety**. Traffic and pedestrian safety will be significantly improved following rehabilitation and routine maintenance of the pilot subproject road. Re-compacting and re-sealing the road may allow for increased traffic volume and possibility of higher vehicle speeds can create the potential for accidents involving pedestrians and children. Safety signs showing speed limits and pedestrian crossing need to be clearly marked and maintained to avoid accidents. Awareness raising through community meetings and through road safety programs included in schools will help mitigate this.

201. **Noise.** The expected increase in traffic utilizing the road and resulting ambient noise levels after the completion of the road rehabilitation activities will not be of sufficient magnitude to require mitigation. As a 1km pilot road section, traffic volumes are not expected to double with business-as-usual activity for the residents and typical users, which include access to a local school and a church in the area. Furthermore, the road rehabilitation improvements will ensure ease of vehicle movement reducing current levels of brake and gear change usage required to navigate the existing road thus decreasing engine noise due to changing of speed. As required under the national transport law, public vehicles are liable for inspection periodically and granted a pass when fit to travel the road. Maintenance of vehicles to maintain an acceptable level of, or to reduce noise emissions is beyond the scope of the project.

202. **Residual impacts**. Provided the above measures are implemented the residual impacts for all aspects under this section will be low, except for health and safety which is considered to low-medium.

6. ANALYSIS OF ALTERNATIVES

203. The Government of FSM and ADB have prioritized support to the transport sector for the first time in ADB's country operations business plan for 11 small Pacific island countries for 2021–2023[30]. FSM heavily relies on development partners for investments in the transport sector and have traditionally received bilateral funding from the Governments of the United States, and the People's Republic of China, as well as international financial institutions such as the World Bank and the United Nations' affiliated organizations such as the International Office for Migration, and the Adaptation Fund.

204. The United States assistance–which financed the lion's share of FSM's infrastructure investment needs–supports activities in FSM, including health, education, and related infrastructure, but it cannot meet all of FSM's infrastructure needs. ADB is well positioned to bridge this funding gap and add value in strengthening the transport sector in FSM by leveraging its unique experience and knowledge of the Pacific region's infrastructure constraints and opportunities. ADB's flexible financial instruments, such as this PRF, will ensure that project delivery approach is tested, and the ensuing project is implementation-ready prior to commitment of scarce public resources.

205. Responding to climate resilience and long-term sustainability, the PRF will undertake the small-scale testing of innovative construction methods with the pilot site chosen on Pohnpei in collaboration with the DTC&I PMU.

206. No other state was considered as Pohnpei is the seat of the national federal government and the most developed of all of FSM's four states. The DTC&I PMU is also based on Pohnpei whom can easily supervise and facilitate resources and capacity to effectively implement the pilot subproject. Careful consideration was also taken in choosing the pilot site location considering socio-economic dynamics, public utilities placement and environmental and social safeguard screening processes.

[30] ADB. 2020. Country Operations Business Plan: Eleven Small Pacific Island Countries, 2021–2023. Manila.

7. CONSULTATION AND INFORMATION DISCLOSURE

A. Consultation

207. Following general good practice and the requirements of the SPS and Access to Information Policy 2018, preliminary public consultations were undertaken specifically for development of the IEE (April-May 2021) to determine community attitudes to the project and elicit information relevant to establishing baseline conditions and understanding potential environmental and social effects. A record of consultations is attached as Annex 1.

208. Consultations with stakeholders, government agencies, civil society, and communities, including women's groups, were conducted both on Pohnpei and Kosrae. The purpose of consultations at this stage are to:

(i) Foster partnerships with beneficiary and stakeholder communities;
(ii) Share information on the proposed PRF and pilot subproject and its components and activities;
(iii) Communicate with stakeholders that their co-operation (and possible participation) in project activities including surveys, site investigations, planning, feasibility and potentially future design, construction, monitoring, and maintenance is key to achieving a high quality strategy that most benefits their concerns; and
(iv) Develop and inform the site options analysis, to help develop the recommendation of an overall project scope.

209. The preliminary consultations of project stakeholders and the pilot subproject community have expressed support for the subproject as they clearly see the benefit to the country and their community with improved roads. Additional consultations are required to be held with project stakeholders and communities in respect to finalizing the design for the ensuing project and will incorporate community feedback as well as continued community awareness associated with the projects implementation timing of activities and help to resolve complaints and grievances. Information regarding the approved subprojects and the proposed environmental management measures will be posted at suitable locations within the pilot subproject site.

210. A public communication strategy and consultation and participation plan (CSCP) will be prepared by the PRF consultant and updated accordingly in early implementation of the ensuing project. During implementation, DTC&I through the PMU (supported by the PRF consultant) will ensure that meaningful public consultations, particularly with project affected persons, continue to be undertaken.

211. The contractor will include relevant elements of the CSCP and GRM in the CEMP so that any concerns raised during construction can be addressed. Further consultation and disclosure will be undertaken during implementation through:

(i) The project's CSCP and GRM.
(ii) Disclosure of a summary of the project documents including the preparation and dissemination of a brochure in English and the local language, explaining the project, works required and anticipated timing of the works; and
(iii) The contractor's CEMP outlining how they will comply with the CSCP and GRM.

B. Information Disclosure

212. All safeguard documents are subject to public disclosure, and therefore will be made available to the public. Following clearance of the IEE by ADB and updating as an EAS under the Pohnpei EPA requirements, the document will be posted on government and ADB websites

as per the Access to Information Policy. Provided it does not contain any commercially sensitive information, the approved CEMP will also be posted.

8. GRIEVANCE REDRESS MECHANISM

213. A Grievance Redress Mechanism (GRM) is proposed for the project to receive and facilitate the resolution of affected peoples' (AP) concerns, complaints, and grievances about the project's environmental and social safeguards performance. When and where the need arises, this mechanism will be used to address any complaints that may arise during the construction and operation of the project. The grievance mechanism is scaled to the risks and adverse impacts of the project. It addresses AP's concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of affected people at no costs and without retribution. The mechanism does not impede access to FSMs judicial or administrative remedies.

214. During subproject construction, it is possible that people may have concerns with the environmental management, including the implementation of the approved CEMP. Issues may occur during construction and again during operation. Any concerns will need to be addressed quickly and transparently, and without retribution to the complainant. Based on GRM, the following process is to be used. The first step is to attempt to sort out the problem directly at local level. If it cannot be resolved at this level, then the grievance will be addressed by being referred to the PMU, who will then involve DTC&I management and other agencies, if required.

215. In this context, once subproject implementation begins the PMU will designate a Grievance focal point (GFP) who will lead employing the following mechanism:

(i) Environment complaints will be received through the Grievance Focal Point (GFP), these will be designated personnel from within the PMU who will be responsible for receiving the environmental complaints. PMU will record the complaint in the onsite Grievance Complaints Register (GCR) in the presence of the GFP.

(ii) The GFP will discuss the complaint with the Contractor and have it resolved. If the Contractor does not resolve the complaint within one week, then the GFP will bring the complaint to the attention of the designated PMU Safeguard Specialist. The PMU Safeguard Specialist will then be responsible for coordinating with the Contractor in solving the issue.

(iii) If the Complaint is not resolved within 2 weeks the GFP will present the complaint to the Grievance Redress Committee (GRC). The GRC will be comprised of designated officials from the following organizations: Contractor's Environment Specialist, PMU Safeguard Specialist, community level representative, and a representative from the EA.

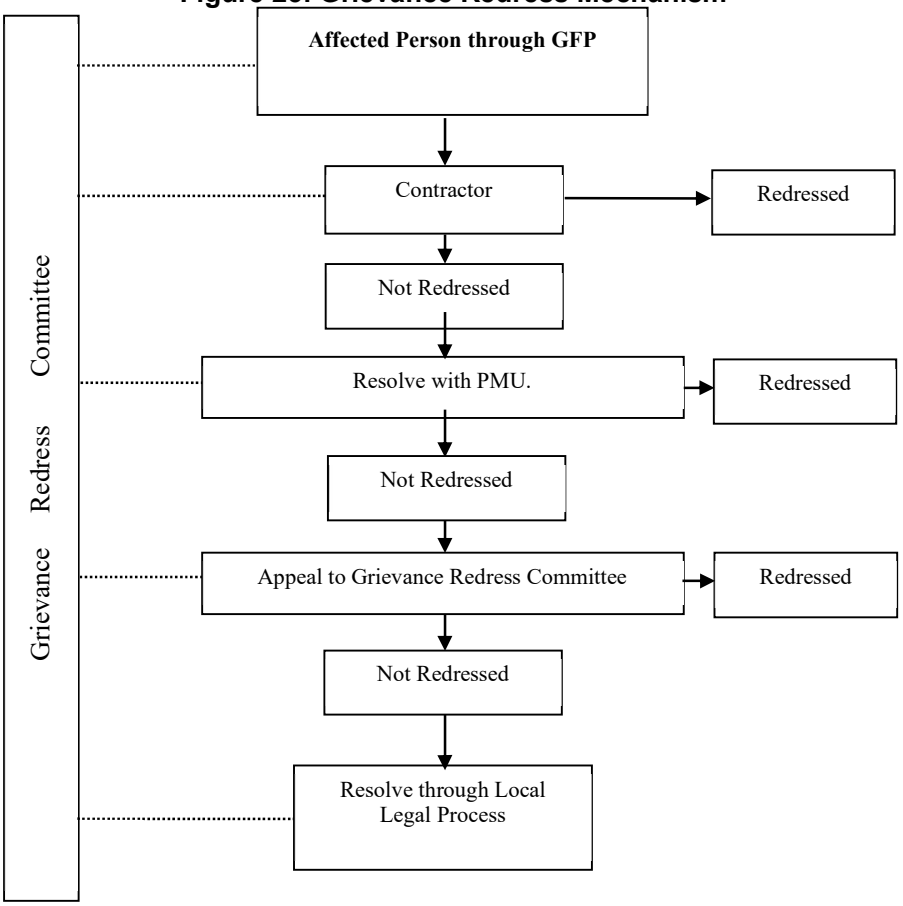
(iv) The GRC will have to resolve the complaint within a period of two weeks and the resolved complaint will have to be communicated back to the AP or community. The GFP and Contractor will then record the complaint as resolved and closed in the Grievance Complaints Register.

216. In parallel to the GCR placed with the Contractor, each GFP will maintain a record of the complaints received and will follow up on their rapid resolution. The EA through IA will also keep track of the status of all complaints through the Monthly Environmental Monitoring Report submitted by the Contractor to the PMU and will ensure that they are resolved in a timely manner. Figure 25 illustrates how the Grievance Redress Mechanism works.

217. During operations, the GRM implemented by the contractor ceases to operate once the construction activities are completed. However, the same procedure is followed except that the complaint is now directed to the DTC&I PMU. During operation, the same conditions apply, i.e., there are no fees attached to the complainant for making a grievance, the complainant is free to make the complaint, which will be treated in a transparent manner and the complainant will not be subject to retribution for making the complaint.

218. In any case, an appropriate public awareness campaign should precede and carry on through project implementation, and that campaign should include advice on where and how to direct any grievances that might arise.

Figure 25: Grievance Redress Mechanism



9. ENVIRONMENTAL MANAGEMENT PLAN

A. Introduction

219. The EMP contains the components crucial to effective environmental management of the project including: i) organizational responsibilities (for various aspects of EMP implementation); ii) consultation and information disclosure (explained in Section 6 and reflected in the EMP); iii) GRM; iv) plan for mitigation of impacts (during pre-construction, construction and operation); and v) monitoring and reporting.

220. An EMP is developed to achieve the following objectives:

(i) To reflect the environmental and social issues and impacts identified during project preparation;
(ii) To implement and monitor mitigation measures within the construction areas; and
(iii) To comply with the laws and regulations of the country and with international standards and best practice guidelines.

B. Institutional arrangements

221. Implementation of environmental safeguards including environmental management provisions and requirements for the pilot road subproject is a joint responsibility between the DTC&I PMU, PRF consultant and contractor(s). DoFA will be the executing agency and will have the overall responsibility for ensuring that the project activities comply with the project agreements and covenants. The PRF consultant will include environmental specialists to support the PMU and Contractor.

222. **Department of Transport Communication and Infrastructure**. The DTC&I, through its PMU, will be the implementing agency for the pilot road subproject and will have responsibility for subproject related activities including inter-ministry coordination. PMU retains responsibly for the environmental management and monitoring tasks of the project. DTC&I will exercise its functions through the PMU and is responsible for the project delivery and day-to-day project management activities. It is expected that the PRF consultant will be appointed for the project implementation, to undertake environmental monitoring. DTC&I will be responsible for ensuring that the contractors do not start construction activities until requisite approvals have been received from Pohnpei EPA, as required by the contract and by law.

223. After the completion of construction, DTC&I will be responsible for operations and ongoing maintenance of all assets.

224. **Program Management Unit**. The PMU will undertake environmental management and oversee inspections and monitoring tasks during the development and delivery of the project. The PRF consultant specialist's will assist in all aspects of implementation of the environmental assessment and permits as required. The PMU, supported by the PRF consultant will:

(i) Update the IEE as an EAS as required to meet the requirements of the Pohnpei EPA and prepare the applications for development consent;
(ii) Ensure the updated EMP and any conditions of the development consent are integrated into the subproject's bid and contract documents;
(iii) Participate and facilitate consultations to advise affected communities of the scope and scheduling of the work;
(iv) Depending on the environmental management experience of the contractor, prior to the preparation and submission of the CEMP, provide induction whereby the details of the CEMP are confirmed, and the contractor informs the community of the schedule of works;

(v) Review the CEMP prepared by the contractor and provide recommendations for revision or strengthening as required. Upon receipt of the CEMP that can be approved, advise the PRF consultant Engineer that approval for commencement of works can be issued;
(vi) Undertake regular site visits to independently inspect and audit the contractor's compliance with the approved CEMP and the PRF consultant's monitoring;
(vii) Should non-compliant work or activities be identified, this will be raised to the PRF consultant Engineer who will issue a defect notice or corrective action request. All notices and requests will be recorded and reported; and
(viii) Prepare and submit i) inputs to quarterly progress reports and ii) semi-annual safeguards monitoring reports.

225. **Project Readiness Financing consultant**. The PRF consultant will include environmental specialists to work closely with safeguards officers of the PMU and will support the PMU to deliver the pilot subproject, the ensuing project and assist in undertaking all tasks identified above.

226. **The contractors**. The civil works contractors will be responsible for translating the EMP in the bid documents into their construction CEMP that reflects the methodology they will use to deliver the works. The CEMP will include all site specific and sub-plans as required. The contractor will engage a full-time EHSO who will be responsible for implementing, and reporting implementation of, the approved CEMP. The PRF consultant will approve the CEMP, upon advice from the PMU before any physical works are undertaken. The environmental management responsibilities of the contractor include:

(i) Preparing and submitting for review and approval the CEMP. Coordinating with PMU and PRF consultant for updating the CEMP as/when required;
(ii) Implementing the approved CEMP including addressing and resolving corrective action requests issued by the PRF consultant Engineer; • Undertake noise measurements and establish the noise baseline for subsequent monitoring;
(iii) Recruiting an approved service provider if required to deliver the STI/HIV/AIDS briefings and awareness and prevention program;
(iv) Coordinating with CPIU and CSC in respect of continued community consultation, implementation of the GRM and information disclosure;
(v) Applying for consent for new materials sources as required and preparing and submitting extraction plans;
(vi) Ensuring that all imported material and equipment is subject to quarantine clearance and receives appropriate national clearances;
(vii) Participating in joint inspections with PMU and PRF consultant as required;
(viii) The EHSO will maintain a site diary and GRM register (including actions taken to resolve the issue and close-out dates); and
(ix) Including status of CEMP (including issue and response to corrective action requests), consultation activities and GRM implementation in the monthly reports.

227. **Pohnpei Environment Protection Authority**. The EPA, under the requirements of the Federal and State legislation, is required to review the EAS and development consent application and assist in monitoring construction activities against development consent conditions. The PRF consultant to provide mentoring and capacity building to the EPA as opportunities arise.

C. Impact Mitigation and Management

228. The EMP includes the description of the environmental impact of project activities during the pre-construction, construction, and operation phases, with mitigation measures and responsibility for implementing the measures. The EMP matrix (Table 5) describes in general

terms how the contractor will meet the specified contractual, regulatory, and statutory requirements during construction phase and how the DTC&I PMU and PRF consultant will meet requirements during pre-construction and operation phases of the project. The contractor will respond to the EMP and provide a detailed and site-specific methodology and risk assessment in their CEMP.

D. Monitoring and reporting

229. Environmental monitoring is an integral component of an environmental impact assessment to, i) combat uncertainties pertaining to unanticipated impacts; ii) ensure mitigation measures are working; and iii) reassure the public on the progress of the development. Progressive monitoring must accompany various stages of the subproject activities (preconstruction, construction, and operational phase).

230. The environmental monitoring plan is based on the potential impacts, significance of the impacts and mitigation approaches identified during the environmental assessment. The plan comprises parameters to be monitored, frequency of monitoring, responsible authorities, and cost estimates. The contractor will be required to prepare a detailed environmental monitoring plan based on the EMP and as set out in the contract documents.

231. Quarterly progress reports will be issued by the PMU and PRF consultant to DoFA, DTC&I and ADB. These will report on all aspects of the project, including those documented in the contractor's monthly reports and environmental monitoring reports prepared by the PRF consultant and contractor.

232. The monitoring and reporting required under the project includes:

(i) Review of the contractor's monitoring plan as part of their CEMP, based on contract documents and grant approval when requirements are met;
(ii) Contractor's monthly reports including status of implementation of the approved CEMP (completed checklists) and corrective action requests;
(iii) PMU and PRF consultant inspection and audit reports reflecting on compliance of the contractor with the approved CEMP;
(iv) Preparation of quarterly progress reports by PMU and PRF consultant for submission to DoFA, DTC&I and ADB;
(v) Preparation of semi-annual safeguards monitoring reports rolling up the information contained in the reports listed above.

233. In consideration of the piloting nature of the road subproject, the overall extent of monitoring activities, including their scope and periodicity, will be commensurate with the pilot subproject's risks and impacts.

Table 5: Environmental Management and Monitoring Plan

Project activity	Environment impacts	Management and mitigation			Monitoring		
		Mitigation measures	Institutional responsibility	Costs (US$)	Parameters	Frequency & verification	Institutional responsibility
Design and pre-construction phase							
Land access	Subproject delays or future legal land challenges.	• Right of way (ROW)/Land ownership / lease arrangements validated, and agreements to be confirmed in a Social Safeguards Due Diligence Report (DDR). • Social Safeguards DDR updated during detailed design.	DTC&I PMU, PRF	DTC&I budget	As per DDR	Once, visual inspection of agreements	PMU, PRF
Adaptation for climate change	Climate change accommodated in subproject design	• Ensure climate proofing incorporated into design. • Design modified to accommodate extreme whether events – increased rainfall, run off and coastal erosion.	DTC&I PMU, PRF	Incl. in PRF services and contract.	Flooding frequency. Localized erosion	After rainfall event. Visual - rainfall and localized flooding data	PMU, PRF
Update of EMP, bid and contract documentation, bid evaluation	Environmentally responsible procurement and compliance with CSS.	• Updated EMP and development consent conditions included in bid documentation. • Develop EAS and development consent application submitted. • Contractor prepares and submits CEMP. • PMU and PRF reviews and approves CEMP. • Clearance issued to contractor for commencement of works.	PMU, PRF, EPA, Contractor	Incl. in PRF services and contract	Bid documents, development consent, CEMP, and approval.	Prior to construction activities commencing	PMU, PRF
Import of materials and equipment.	Introduction and/or spread of invasive and alien species.	• All imported materials and equipment subject to quarantine inspection and clearance.	Contractor, FSM Biosecurity	Incl. in contract	Import Certificates and clearances.	Prior to materials and equipment transported to site.	PMU, PRF, FSM Biosecurity

Project activity	Environment impacts	Management and mitigation			Monitoring		
		Mitigation measures	Institutional responsibility	Costs (US$)	Parameters	Frequency & verification	Institutional responsibility
Additional CH assessment and survey	High sensitivity of biodiversity in subproject area with potential for invasive species	• If CH triggered, requirement for development of a Biodiversity and Invasive Species Action Plan	PMU, PRF & EPA	Incl. in PRF services and contract	IEE & EMP, Bid documents, development consent, CEMP, and approval.	Prior to update of CEMP	PMU, PRF
Mobilization of contractor, presence of construction worker	Social disruption Spread of communicable diseases (incl. Covid-19, STIs and HIV/AIDS)	• Code of conduct (community protocols) agreed, and workers' awareness provided. • Signage and security at work site(s) and office compound – i.e., prohibition on unauthorized people (especially children) entering work site(s) etc and workers' accommodation. • Maximization of local labour • Implementation of awareness and prevention program – workers. • Implementation of STI and HIV/AIDS awareness and prevention program if required.	Contractor	Incl. in contract	GRM register. and Number and effectiveness of signage.	During works program – monitoring records for complaints, consultation with workers about protocols	PMU, PRF
Aggregate extraction, construction materials.	Land/resource owner issues	• Application and extraction plan submitted for review and permit issue. • Agreements with, and royalty payments to, resource owner. • Limits to volume of material extracted from any one source will be set considering the ability of the source to regenerate and likely environmental impact due to extraction. • Dredging or similar operational machinery will not be permitted. • Maximum volumes and rates of extraction will be governed by the extraction plan. • Site and pit restoration will follow the completion of works in full compliance with all applicable standards and specifications	Contractor	Incl. in contract	Extraction plan implemented. Agreements and payments to owners.	Prior to and during extraction activities	PMU, PRF, Contractor

Project activity	Environment impacts	Management and mitigation			Monitoring		
		Mitigation measures	Institutional responsibility	Costs (US$)	Parameters	Frequency & verification	Institutional responsibility
Surveying, demarcation of centreline, clearing of corridor	Loss of vegetation, tree removal not expected. Potential impact on Critical habitat	• Detailed design modified as required to minimize impacts on vegetation. • Implementation of Biodiversity and Invasive Species Action Plan as part of CEMP	Contractor	Incl. in contract	Modified detailed design. Biodiversity and Invasive Species Action Plan implemented.	During survey and activities - visual inspection before, during and after works	PMU, PRF, Contractor
Construction phase							
Operation of construction plant and vehicles generating emissions – dust and pollution.	Emissions of exhaust from vehicles and machinery, dust from: aggregate crushing plants; generated by heavy vehicle transporting material on roads; uncovered loads on trucks; Dust from exposed stockpiles.	• Construction equipment and vehicles to be regularly maintained in good standard, check emissions. • Prohibition on use of equipment and machinery that causes excessive pollution (smoke). • Spraying and damping of road, works yard and haulage routes according to approved schedule. • Ensure that vehicles hauling dust producing materials are not overloaded, are provided with side and tailboards, and adequately secured at all sides. • Material stockpiles will be in designated areas that are sheltered and not located near the coast or watercourses. • Inform nearby business/residents about the duration of dust generating operations. • Dust removal (cleaning/sweeping) on road, frequency allocated to prevailing conditions.	Contractor	Incl. in contract	Air quality, emissions, dust, particulate matter. Use of tarpaulins and loading of Vehicles. Stockpiles.	Daily/weekly during dust generating activities. After complaint – periodic visual inspection. Any particulate matter and smoke managed as per EMP	Contractor, PMU, PRF
Site clearance, site preparation, earthworks, and excavations.	Impacts on physical cultural resources and/or sites.	• Chance finds procedures included in CEMP. • Consultations as required with Heritage Protection Office. • Cease activities immediately. • Inform Heritage Protection Office, DTC&I	Contractor	Incl. in contract	Approved CEMP (incl. 'chance find' procedures).	Prior to and during site clearance and earthworks activities – visual inspection	Contractor, PMU, PRF, Heritage Protection Office

Project activity	Environment impacts	Management and mitigation			Monitoring		
		Mitigation measures	Institutional responsibility	Costs (US$)	Parameters	Frequency & verification	Institutional responsibility
		• Recommence works upon instruction					
Materials sourcing incl. aggregate extraction.	Extraction from quarries or burrow pits results in unusable land, exposed water table, attracts rubbish dumping and reduces visual values	• All requirements as per pre-construction stage (above).	Contractor	Incl. in contract	Materials only obtained from designated – permitted sites (locations and method) as per extraction plan. Rehabilitation is conducted as per extraction plan.	Review of extraction plan	Contractor, PMU, PRF
Construction waste disposal and wastewater run-off.	Construction material washed out of stream/rivers into coastal waters. Ground contamination	• Preparation of waste management plan as part of CEMP • Suitable permitted waste disposal sites will be designated in consultation with local government and landowners. • Waste disposal will not be permitted by roadside, streams, channels, gardens or close to the coast. ▪ • All solid waste removed immediately from the project site/s to designated off site locations, including all non- hazardous wastes to be disposed of at the projects approved waste management site. • At all times, road sections will be kept free of material, debris, and rubbish	Contractor	Incl. in contract	Sediment and erosion control plan implemented. Disposal of waste as per waste management plan	Daily/weekly, after rainfall. Visual inspection of culverts, drainage systems, extraction sites, and work areas.	Contractor, PMU, PRF
Use, storage, and transportation of petrochemicals (oil, fuel, bitumen) and other hazardous substances	Pollution from use, storage, and accidental spills of hazardous substances. Accidents placing people and environment at risk.	• Contractor to prepare hazardous substances management plan (HSMP) and emergency response plan (ERP) (as part of the CEMP). • Spill kits to be provided at work sites and works yards and staff trained in their deployment. • Locate storage areas for all petrochemical products including bitumen at least 500 m from coastline and 100 m from stream/rivers.	Contractor	Incl. in contract	CEMP. Ensure storage sites are using concrete base and bunds. Spill areas cleaned and rehabilitated. Record of spills and accidents	Weekly or after event or as required - review and approval of emergency response plan. Visual inspection of storage facilities.	Contractor, PMU, PRF

Project activity	Environment impacts	Management and mitigation			Monitoring		
		Mitigation measures	Institutional responsibility	Costs (US$)	Parameters	Frequency & verification	Institutional responsibility
		• Chemicals including fuel stored in secured (lockable), weather proofed area including an impervious flooring and bund/containment walls (110% of largest volume) to contain spillage. • Used oil and other hazardous materials will be disposed of in an authorized facility off-site. • Spill waste will be disposed at disposal sites approved by local authorities. • Stop road asphalting and/or concreting activities during periods of heavy rainfall. • All spills cleaned as per emergency response plan. • Ensure any spills or accidents are reported to PMU/PRF and police and recorded in register					
Earthworks, construction activities near streams, rivers and coast, activities in works yard	Impacts on water quality, pollution of streams and rivers	• Implementation of CEMP incl subplans mentioned above. • No discharge into stream/river, surface waters or coastal areas. • No liquid wastes to be dumped in water ways or on coast. • Pollution of all water resources not permitted. • Diversion ditches to be placed around stockpiles. • Discharge zones for drains and culverts identified and protected for erosion control. • Spoil and stockpiles will not be located near the coast (50m minimum), on slopes or within 15m of riverbanks. • Completion of works - all areas especially streams to be restored to original condition as quickly as possible.	Contractor	Incl. in contract	Implementation of CEMP. Storage of hazardous substances and pollutants.	Daily/weekly or after rain events or spills. Visual observation. Register of spills and accidents. GRM.	Contractor, PMU, PRF
Construction activities close to, and sediment	Impacts on marine & freshwater flora and fauna.	• Implement measures and controls specified in sub-plans and other elements of CEMP.	Contractor	Incl. in contract	As per sub-plans and CEMP.	As per CEMP. Visual observation and	Contractor, PMU, PRF

Project activity	Environment impacts	Management and mitigation			Monitoring		
		Mitigation measures	Institutional responsibility	Costs (US$)	Parameters	Frequency & verification	Institutional responsibility
laden run-off discharges to marine – coastal river environment.						spot site inspections.	
Construction activities affect road use and/or access to properties	Public access affected and traffic disruption during construction.	• Prior to commencement of works, the contractor will prepare, and submit to PMU for clearance, a traffic management plan (TMP) detailing controls, diversions, and management/safety measures. • The contractor and PMU will inform commuters, providers of transport services and adjacent community/schools/business of duration and scope of works and any alternative arrangements. • Clauses will be included in the contract specifying that; (i) care must be taken during the construction period to ensure that disruptions to access and traffic are minimized and (ii) access to residences/schools/business along the road will always be maintained. • Stakeholders and potentially affected people will be consulted if access to specific areas will be disrupted for any time and temporary access arrangements made. • Use of signage, spotters and flaggers, safety barriers to control and regulate traffic flow and ensure safety for workers and pedestrians. • Ensure public safety across and around work site(s) including barriers to prevent entry to high-risk areas (e.g., excavations, area with heavy machinery being used) and ensure safe passages are provided through work sites. • Construction vehicles will use local access roads or negotiate access with landowners to obtain access to material extraction sites. Where local roads are used, they will be reinstated to pre-project condition after the completion of work. • At all times, the road will be kept free of debris, spoil, and any other material.	Contractor	Incl. in contract	TMP approved as part of CEMP. Number of accidents or events recorded. Maintenance of access for residence. Signage. Road free of materials and debris. Haulage routes rehabilitated as required.	During activities - visual inspection. Consultations with communities. Review of traffic management plan.	Contractor, PMU, PRF

Project activity	Environment impacts	Management and mitigation			Monitoring		
		Mitigation measures	Institutional responsibility	Costs (US$)	Parameters	Frequency & verification	Institutional responsibility
		• Disposal sites and haul routes will be identified and coordinated with local officials.					
General construction activities, working at height, working on road	Risk of hazards to or accidents of workers, risk of spread of communicable diseases.	• Contractor will provide: (i) health facilities, first aid kits, appropriate safety equipment and procedures for medical evacuation; (ii) adequate training and information to workers in relation to all health and safety issues, equipment and training; (iii) an approved service provider to conduct a Covid-1911[31] , STI and HIV/AIDS awareness and prevention program for workers and local community; and (iv) access to safe drinking water, mosquito management, sun/shade management, portable, septic latrines and garbage receptacles at all work sites and office compound. • The contractor will prepare a health and safety plan (HSP) as part of their CEMP. The HSP is to include key components of the World Bank Environmental, Health and Safety Guidelines (EHSG). • The contractor will appoint a full-time environment, health, and safety officer (EHSO) responsible for implementation of the CEMP and to liaise with the PMU and residences/businesses in the subproject area. • The contractor will provide adequate health care facilities including a health post and first aid facilities at the office compound and mobile first aid kits in vehicles and at work sites. • The contractor will provide construction workers training on health and safety matters, specific hazards of their work, basic sanitation, hygiene and health care issues and awareness and prevention of communicable diseases (including Covid-19 and STIs, HIV/AIDS). • The contractor will be responsible for providing safety equipment and appropriate personal protective equipment (PPE) to workers, including instructions on how and when to use the equipment.	Contractor	Incl. in contract	Approved HSP being implemented. Provisions of PPE to all workers. Training delivered on safety and work protocols. Barriers erected managing worksite. Potable water (drinking) and lavatory service provided at all job sites. Frist aid kit provided. GRM processes understood and worker's obligations with communities.	Ongoing during activities – visual inspection and spot checks. Training records. PPE provided. Record books, accident register and complaints. Job site inspections for OH&S requirements. GRM.	Contractor, PMU, PRF

[31] https://www.who.int/publications-detail/considerations-for-public-health-and-social-measures-in-the-workplace-in-the-context-of-covid-19

Project activity	Environment impacts	Management and mitigation			Monitoring		
		Mitigation measures	Institutional responsibility	Costs (US$)	Parameters	Frequency & verification	Institutional responsibility
		• The contractor will ensure safe and clean facilities include sanitation and drinking water (at least 2 liters/day) is provided to all workers. • Septic tanks and garbage receptacles will be set up at work sites and office compound. These facilities to be regularly cleaned by the contractors to prevent outbreak of diseases. Garbage will be dumped only at a site approved by local government and PMU. • "No smoking zone" signage will be posted throughout work sites and the office compound (e.g. fuel storage areas). • The contractor to educate and ensure worker's actions are controlled codes of conduct are strictly observed (work sites and office compound).					
General construction activities, presence of workers in communities	Risk of hazards to or accidents of members of community, risk of spread of communicable diseases.	• The contractor will implement relevant elements of the GRM. • Contractor will agree worker code of conduct and protocols with village and community leaders. Code of conduct will be included as part of workers' contract and will be discussed during awareness raising as well as part of mobilization process. • Before construction commences the contractor will conduct training for all workers on their requirements to engage the local community and ensure national laws are respected, special consideration and respect for women, elderly, and children (including school) are to be strictly followed. • Adequate signage and security will be provided at work sites for prevention of unauthorized people (including children) entering any work site(s) or the office compound. • The public will be adequately protected near work sites, including advanced notice of commencement of works, installation of safety barriers and fences and signage or marking areas where works will be carried out. • Provision of safe access across the works site(s) to people whose residential or business access is temporarily affected during road rehabilitation activities.	Contractor	Incl. in contract	Approved HSP being implemented. Worker code of conduct. Provisions of PPE to all workers. Approved service provider engaged to provide HIV/AIDS etc awareness and prevention. Training delivered on safety and work protocols. Barriers erected managing worksite. Potable water (drinking) and lavatory service	Ongoing during activities – visual inspection and spot checks. Training records. Safety and other equipment provided. Record books, accident register and complaints. Job site inspections for HSP requirements. GRM.	Contractor, PMU, PRF

Project activity	Environment impacts	Management and mitigation			Monitoring		
		Mitigation measures	Institutional responsibility	Costs (US$)	Parameters	Frequency & verification	Institutional responsibility
		• COVID 19, STIs and HIV/AIDS if required awareness and prevention program delivered through an approved service provider for workers and communities. First community sessions to be delivered prior to commencement of works or presence of workers in the area. • Child and/or trafficked labor will be strictly prohibited for any project activities, and will be prohibited from entering the worker's accommodation, works area/construction zone and prohibited from playing on any equipment or machinery associated with the project. • The contractor will implement the traffic management plan that will include traffic control and pedestrian safety measures. • In consultation with PMU, the contractor will clearly fence off 'no go areas' within work site(s) and erect boundary fences to prevent the public from entering during the construction period (or specific construction activities).			provided at all job sites. Frist aid kit provided. GRM processes understood and worker's obligations with communities.		
Relocation of or damage to existing utilities and services.	Disruption of, interference with and/or damage to existing infrastructure and/or services.	• Consult infrastructure and services providers (telecommunication, PUC) before construction to identify on plans the location of utility lines and pipes. • Relocation plans, as required, to be agreed and implemented. • Any other incidental damage to be immediately advised to the PMU/PRF and repaired as agreed with the utility provider.	Contractor	Incl. in contract	Services relocated as per agreed plans. Damaged and rehabilitated utilities repaired Service disruption minimized.	As per agreed plans. Visual inspection, consultation with service providers.	Contractor, PMU, PRF
Operation of construction plant and equipment.	Noise and vibration in community (residential and commercial). Impact on construction workers.	• Prior to activities commencing, contractor to establish baseline noise levels for sites identified. • Construction vehicles and equipment to maintained in good working order and regular equipment maintenance will be undertaken. • Construction vehicles and machineries will be fitted with mufflers and other noise abatement equipment, as necessary.	Contractor	Incl. in contract	Implementation of CEMP. Baseline of ambient noise levels as per agreed table and plans. Adherence to agreed schedule. Complaints (no. logged with	During noisy activities or after complaint. Consultation (ensure schedule being adhered to). GRM.	Contractor, PMU, PRF

Project activity	Environment impacts	Management and mitigation			Monitoring		
		Mitigation measures	Institutional responsibility	Costs (US$)	Parameters	Frequency & verification	Institutional responsibility
		• Limiting noisy construction activities to be between 7am and 5pm on weekdays. • As practicable, barriers or buffers to be established between work areas and nearby residences and business premises. ▪ • The contractor will prepare a schedule of operations to be approved by PMU (local government and police if required). The schedule will establish days, including identifying days on which there should be no work, and hours of work for each construction activity and identify the types of equipment to be used. • Workers will be provided with noise abatement equipment as may be required. • Any complaints regarding noise will be dealt with by the contractor in the first instance through the GRM.			resolution). Barriers/buffer installed. Workers' PPE		
Operation phase							
Operation of vehicles creating emissions.	Increase particulate matter and toxic gasses (e.g., hydrocarbons, Carbon Monoxide, Nitrous compounds, Sulphur Dioxide) due to increased traffic.	• Forecasts of traffic growth indicate that emissions will be low and not have a noticeable effect on air quality.	DTC&I routine maintenance contractor.	Maintenance contract or DTC&I budget.	Air quality, particulates, and smoke. Number of complaints. Incidents logged with resolution	Monthly or as required. Consultations and visual inspection. Complaints.	Contractor, DTC&I
Routine and ongoing maintenance.	Increased accumulation of dirt on road surface. Increased accumulation of dirt and garbage (plastics, cans organic material) in drainage systems resulting in failure of the system.	• Roads inspected and cleaned to reduce levels of airborne dust and contaminants through mechanical (e.g., street sweeper) or workers physically cleaning the road. • All drainage system inspected, cleared of any debris, and cleaned. • All material disposed at permitted location. • All maintenance work conducted according to pre-announced time schedule in consultation with key stakeholders, preferable	DTC&I routine maintenance contractor	Maintenance contract or DTC&I budget	Condition of road	Routine maintenance records. Visual inspections.	Contractor, DTC&I

Project activity	Environment impacts	Management and mitigation			Monitoring		
		Mitigation measures	Institutional responsibility	Costs (US$)	Parameters	Frequency & verification	Institutional responsibility
		outside peak business hours to limit inconvenience to business and community.					
Run-off from road.	Use of the road results in problems with runoff, loss of soils and other forms of erosion. Water quality in rivers and nearshore areas may be affected by use of the new roads.	• Maintenance of erosion mitigation control structures. • Roads sealed (bitumen) with improved culverts and drainage systems. • Improved vegetation along road and green zone prevent run –off and siltation load in drainage and subsequent streams.	DTC&I routine maintenance contractor	Maintenance contract or DTC&I budget	Erosion. Flooding patterns. Drainage and culverts cleared of debris. Water quality in streams/rivers. Sedimentation in drainage and culvert areas.	Half yearly for 3 years, mid-term and post evaluation monitoring. Visual assessments. Review of flooding patterns/records.	DTC&I PMU, ADB
Increased traffic.	Increases in noise nuisance for residents. Increased traffic volumes and higher speeds leading to more frequent and server accidents.	• Increased traffic forecasts and corresponding population density growth indicates increased ambient noise levels will increase. • Improved vehicle maintenance and decreased age of vehicles will reduce noise. • General safety will be improved through providing a shoulder and sealed road and installation of road safety signage. • Work with police to carry out enforcement of traffic regulations once road is upgraded. ▪ • Awareness raising of stakeholder through meetings will be needed to create road safety programs. ▪	DTC&I PMU, local police	Maintenance contract or DTC&I budget	Accidents and collisions. Safety issues discussed in schools. Effectiveness of traffic calming measures (e.g., speed signs).		

10. CONCLUSIONS

234. **Project benefits**. The piloting subproject of the PRF imposes minimal adverse environmental impacts and will result in the demonstration of innovative pavement methodologies that will increase efficiency of proposed road rehabilitation works in the ensuing project for FSM.

235. **Findings of the impact assessment**. The pilot subproject will not directly traverse any protected areas, areas of conservation value, including primary forests, terrestrial reserves, marine and coastal protected areas, or culturally important sites. Key findings of the assessment of the subprojects include:

(i) The proposed road upgrade is in an existing road corridor on urban, semi-rural and rural land that can be currently considered as Modified Habitat although it could still be Critical Habitat based on ADB's SPS definition. Additional site-specific CH assessments and survey however will be conducted by the PRF consultant in the pre-construction stage to validate and update the IEE and EMP and confirm compliance with the ADB SPS.
(ii) The subproject area does not include any native forests or mangroves and commercial and community based agricultural activities are undertaken in adjacent environments and are outside of the subprojects influenced area.
(iii) Impacts on the ecosystem (flora or fauna) from the subproject are expected to be minor due to sediment and pollution management systems incorporated into the projects design and EMP.
(iv) FSM laws and regulations associated with labour, employment, occupational health, and safety and ADB's environmental safeguards will be complied with and monitored during all construction activities.
(v) Due diligence and proactive management of all construction aspects of the road upgrade will ensure limited disturbance to the daily business activities undertaken in the area (e.g., traffic, noise, dust), and the collection, storage and correct disposal of waste material generated during construction.
(vi) The subprojects will not create adverse social impacts through land acquisition as the road rehabilitation works will be conducted on the existing footprint and 'right of way'.
(vii) Other social impacts – access, health and safety, noise, relocation of utilities and services - are manageable through the actions and controls identified in the EMP.
(viii) Climate change adaptation measures to build resilience have been included in the project planning and design phases. This includes measures to mitigate the project and its nearby environment from the effects of such hazards and the affects from the project on the environment due to such prevailing hazards.

236. **Conclusion.** The IEE concludes that there are no significant adverse environmental impacts nor is the subproject deemed environmentally sensitive. Impacts arising from the subproject are minor, localized/site specific, largely temporary during the construction phase, and are manageable providing that the mitigation measures set out in the EMP are incorporated in the design, implemented, and monitored properly through the contractor's EMP.

237. Future tasks related to this IEE are for, (i) DTC&I to update this IEE as recommended based on detailed design and additional CH assessment and survey. The IEE will then be employed as an EAS, for submission and approval of development consent by the Pohnpei EPA; (ii) the contractors to prepare a CEMP based on EMP included in this IEE; and (iii) the subproject's impacts and mitigation thereof, be monitored as per the monitoring plan.

ANNEX 1: RECORD OF CONSULTATION

KOSRAE STAKEHOLDER CONSTULATION MEETING NOTES

Project:	Proposed ADB Project Readiness Grant for FSM Sustainable Road Infrastructure Investment Project		
Venue:	Governor's Conference Room		
Date:	April 29th, 2021	Time:	10:00 am – 12:00 pm
Chairperson:	Andy George	Recorder:	Andy George

Attendees: *[Note: Please refer to attached attendance list]*

PURPOSE:

- Present an overview of the proposed ADB Project Readiness Grant
- Provide Stakeholders with an opportunity to ask questions and raise issues for clarification.
- Identify and document issues of concern to Stakeholders which should be considered in the design of the project facilities.

PROCEEDINGS

No.	Discussions
1	Welcome & Introductions. Opening Prayer – Reverend Takeo Likiaksa, Chairman of the Kosrae Council of Pastors, delivered the opening prayer. The Honourable Arthy G. Nena, Lt. Governor of the state of Kosrae, opened the meeting to welcome participants from government, private sector, and the civil society to the stakeholder consultation meeting. The Honourable Lt. Governor Nena expressed his appreciation for all the assistance and support from ADB to FSM and its states. He noted that the ADB Project Readiness Grant will clearly support the efforts of the FSM and the states to improve the road infrastructure. Lt. Governor Nena also emphasized the importance of ensuring that relevant stakeholders are properly engaged and consulted in the planning and implementation of key infrastructure and development projects in our state, and he expressed his appreciation for the good turnout of participants and encouraged everyone's participation in the meeting. There was a clear show of support from the stakeholders toward the intent and purpose of the ADB Project Readiness Grant and overall comments from participants on the project readiness activities were very positive.
2	[Discussion Item #1: Full Depth Reclamation Method] The video captured everyone's attention in the meeting. Lt. Governor Nena commented that the video showed exactly the situation in Kosrae now in that potholes and cracks on the road are being filled, covered, and overlaid by layers of asphalt constantly but the condition of the road continues to deteriorate. The Lt. Governor and others in the meeting showed great enthusiasm about the new FDR method to improve our road infrastructure. Senator Alokoa Sigrah also indicated his support of the FDR and the Readiness Activities but sought clarifications on the extent of ADB's assistance to Kosrae after the Readiness activities are completed. He enquired whether the ADB project will be focusing entirely on road paving as shown in the video or it could support installation of proper sidewalks and drainage along the road segments.
3	[Discussion Item #2: Preparing for Kosrae's Ensuring Project] The Lt. Governor inquired whether the submission of the three Kosrae road segments by the Governor's Office for ADB support is considered final or whether the state of Kosrae will have another chance during the Project Readiness stage to identify other potential road segments or bridges that may require immediate and

No.	Discussions
	necessary improvements. The Lt. Governor explained that the PRIME project is also looking to improve and build climate-resilient roads in Kosrae but it has yet to identify specific road segments that will be funded and improve with the exception of the Lelu causeway. The bottom line from the Lt. Governor's concern was that he wanted to make sure that ADB and PRIME projects do not end up planning and designing improvement work on the same road segments. Director Jackson highlighted that road easement is not an issue in Kosra as his office holds the easement records for the main road network in Kosrae. Director Jackson questioned whether the ADB funding support toward the Readiness Grant and potentially the Sustainable Road Infrastructure Investment Project is in any way connected to the $604 M contributed by the US government though the Compact Infrastructure Grant and he insisted that it is important to recognize that the US is a key development partner and the compact sector grant is a great source for the FSM Road Improvement Program. There was also some discussion on the need to develop technical capabilities of the FSM states to be able carry out necessary design and survey work to support the road improvement works in the states. Kosrae stakeholders discussed and agreed that a Survey Drone would drastically improve road construction and maintenance in Kosrae and therefore ADB to consider procuring one for the state of Kosrae under the Readiness Grant or the Sustainable Road Infrastructure Investment Project.
4	[Discussion Item #3: Readiness Activities Cost Estimates] There were some questions on the budget for activities and outputs of the Readiness Grant and how much each state is getting from the 5M Readiness Grant. There was also a question on the cost of implementing the proposed pilot project in Pohnpei and replication cost in the other states. In response, Table 2. Summary Cost Estimates from the FSM Transport Sector PRF document was shared with the stakeholders to show the summary cost estimate for Output 3: Innovative tools for road rehabilitation works in the FSM piloted as well as cost estimates for the other outputs of the project. Furthermore, it was explained that the detailed budget breakdown is not readily available to share during the consultation. Another question was raised regarding consulting fees for international consultants and whether these fees are incorporated into the budget/cost estimates. In response, the local consultant again stated that the only information available to him is the cost estimates shown in Table 2 and perhaps the detailed budget breakdown can be accessed directly through PMU. Mayor Charley of Malem suggested that the budget and cost of project Readiness activities can be reduced, and project funds could be retained in-country if FSM utilizes and/or employs its own qualified technical resource people and consultants.
5	[Discussion Item #4: Project Steering Committee] There was one question on whether ADB will require FSM to set up a Project Steering Committee to help plan for and oversee project implementation and progress. Mr. Bruce Howell from PMO office pointed out that a steering committee will eventually be formed but there is not one at this stage.
6	Other Matters 1. There was an extensive discussion on the PRIME project. Participants were interested to know about the status of the project and how soon it will be implemented. Questions were also raised as to whether a suspension bridge could be designed to replace the causeway. Mr. Bruce Howell provided the following updates to the participants: a) Specific road segments for improvement under PRIME will be determined after the Vulnerability Assessment is completed and that the contract for the VA has been awarded. b) After the VA for PRIME is completed, we will have to see how we can integrate the scope of both projects. If there are road segments in poor condition in the main roads that PRIME will not address, we may want to see if reprioritizing the current scope for ADB project will be needed. c) The priority project site for Kosrae under PRIME is the Lelu Causeway and a RFP has been sent out to 6 companies/firms that have been shortlisted for the design work for the causeway. d) Four of six deliverables for the Environment & Social Impact Assessment have been approved by WB. 2. The Vice Chairman of the Civil Society of Kosrae highlighted the need for non-state actors to participate in stakeholder consultations such as this and he extended his deepest appreciation to the government for inviting civil society and community groups to attend the meeting. 3. Lt. Governor Nena requested that the same presentation on the Proposed Project Readiness Grant be shared again at the IPIC committee meeting on Tuesday, May 4th, 2021. Lt. Governor requested the presence of the local consultant as well as Mr. Bruce Howell at this meeting.

No.	Discussions
7	Meeting closed. The meeting adjourned at 12:00 pm. Andy George gave the closing remark and thanked everyone for attending the stakeholder consultation meeting.

Stakeholder Meeting
Proposed ADB Grant for Sustainable Road Infrastructure Project
April 29, 2021
Pohnpei Governor's Conference Room

Welcoming Remarks: Shirley Ann Lihgor,
Overseas Development Assistance Program Officer
– Pohnpei State Government

Opening Prayer Meninkeder lapalap,
Madolenihmw Mayor

Proposed Project Readiness
Grant Presentation Eugene Joseph

Full Depth Reclamation (FDR) Short Video

Q&A All

Question	Answer
Q: Iso Nahnken (John Adolf), Madolenihmw – Pohnpei T&I The concern I have may not be a major one with regards to the selected site. We are all aware that Sokehs road leading to Palikir is in great shape. Overlaying of pavement recently completed. Why is the project targeting a site that is recently repaired and why not focus on areas that require repairing such as Madolenihmw or Kitt where the road is 90% damaged?	**A: Robert Goodwin – FSMTC&I** That's a good question. We haven't finalized the decision yet. We can do both (Sokehs and Madolenihmw or Kitti). We only have 1 mile for the pilot project so we can do half a mile in one site and another mile from a different site depending on mobility of the equipment. That is still open for discussion. **Comment: Iso Madolenihmw** The quality of asphalt we have right now, we cannot be certain if the proposed method will improve the already improved road exist in Sokehs.
Q: Iso Madolenihmw Is the $5M earmarked for Pohnpei or for the whole nation?	**A: Robert Goodwin** Asian Development Bank (ADB) has a different project approach in comparison to other donors such as World Bank (WB). The first step is to get the $5M to help get the project ready. There are so many sites that requires repair, and the money may not be enough. The $5M is for preparedness stage where we will do studies and consultations to select the final pieces and areas to be targeted or follow-on projects. So, this is to prepare and do all the engineering, surveys, designs and bidding documents. Once this phase is done, they will approve a grant to actually do the construction, which will be the next phase. During this phase, we going to test this pilot project and if it does work, then we can buy the equipment and expand to other states. This new method seems to be working very effectively and efficiently as it brings down cost and recycling of materials. This preparedness

	is to get the project ready for the next phase, which will come in 2023. Our recent consultation meeting with ADB, we were given confirmation that this $5M grant will likely to be approved in October 2021.
Q: Shirley Ann Lihgor – Overseas Development Officer ADB $5M and WB $40M both at design phase? Are we going to get mixed up when both projects kick in?	**A: Robert Goodwin** Yes, both are in design phase. For ADB, once the agreement confirmed in October, we will initiate design work in partnership with the state government. WB we just issued the request for proposal for potential engineering firms to submit proposal and that includes the Awak bridge.
Q: Iso Madolenihmw Can you update us on the WB $40M?	**A: Robert Goodwin** According to original schedule, this project was supposed to be started in May 2021, but there were some delays. They are meeting with their board of directors next month (June 2021) to get approval of the $40M. But we already started some activities on the WB project by going through the selection of consultants to do the designs, we are also going through the vulnerability assessment. Actual constructions will start next year.
Q: Hubert Yamada – Department of Resources and Development (R&D) Is this new technology or method going to be piloted in Pohnpei or has it been tested somewhere else?	**A: Robert Goodwin** It is a pilot for us in FSM since this method hasn't been tested. But the actual FDR method has been around since the 60s and has been tested and proven in many places. We had a meeting with PTC once and the staff did mention they've seen the method during one of their trainings in Japan and they recommended that Pohnpei look into that particular method.
Q: Hubert Yamada I noticed you mentioned the $5M will be this year so what is going to be approved for 2023?	**A: Robert Goodwin** The $5M will be October this year, but when we say 2023, that will be the follow-on project or ensuing projects. The pilot will be part of the $5M and the equipment we found that will carry out the new method will cost about two-hundred thousand dollars ($200K). The proposed 1-mile pilot site (or sites) will cost about $1M. Adding all other cost will be under the $5M and it will be most likely be done next year.
Q: Shirley Ann How long will it take to do 1 mile?	**A: Robert Goodwin** We may be looking at a month or less and we will be utilizing PTA.

Q: Winciner David – Department of Health and Social Services I can recall during Governor Ehsa's administration, he did a road improvement plan presentation that costed out about $80M that Pohnpei will require to fix the primary road. Now, I'm hearing $40 for all states. What is the actual milage of road that needs improvement today and how much will be required to fix them?	**A: Robert Goodwin** We may all recall President Panuelo in his inaugural address mentioned about "Pave the Nation" as his flagship program for infrastructure. Both ADB and WB are this administration's first major efforts to get this effort moving. We have estimated that we will need about $400M just to improve our existing road networks and that does not include extensions or new roads and as we all know, Kosrae and Chuuk is looking into road extensions. What we have now are just the start and will help us figure out our priorities. We are also looking into other sources of funds. We are currently in negotiation with our compact hoping to convince our friends from USA to also consider assistance to our infrastructure (roads and bridges).
Q: Mark Johnny – Sokehs Menin Katengensed We all know that designing is key. Where there are no ditches and drainage, we can guarantee the pavement will give in. Is this project going to consider designing of drainages, bridges, streetlights and waterways?	**A: Eugene Joseph – Consultant** Believe PTA will have the most appropriate answer to this important question. We were also hoping both FSMTC and PUC will show up or participate as invited stakeholders, but there needs to be coordination between the road construction and utilities companies/entities. We've seen road improvement projects so close to telephone pedestals that often restricts designing of drainage. Also, with electric poles, if require relocation due to designing and construction advise, coordination have to be made as well. During the WB project assessment, we found that 90% of our existing drainage on the primary road alone is in poor shape. Engineering and designing all the way to construction will consider your concerns. In fact, without those important components, this project would not be called sustainable road project.
Q: Hubert Yamada What is the duration of the new method or technology? Are we expecting the improved pavement will last for 20 years or less? What is the assurance or warranty?	**A: Robert Goodwin** Because the technology is using recycled products and really focusing the base, we believe it will last more than 20 years. In fact, in many countries have lasted even longer. If we do this right, we can expect 20 years minimum.
Q: Winciner David That is really my concern because the current water project in Kitti is cutting sections in the middle of the road to run the main waterline and	**A: Robert Goodwin** I agree. Water is the worst enemy when it comes to road construction. That particular issue should be addressed in the contract between the state the construction company.

I'm sure it will weaken the road by allowing water into the base.	They should put the pavement patch as soon as possible. **Input: Francisco Celestine – Pohnpei Environmental Protection Agency (EPA)** We look forward to work whoever will be the project implementer whether state PTA or private contractor to make sure all permits are squared away. There are several projects are currently put on hold because of permitting procedures. EPA kindly ask whoever DTC&I and T&I decides to implement the project to also work with EPA.
Q: Hubert Yamada With this FDR technology, can we expect this project be done by our local construction companies or we will rely on outside expertise?	**A: Robert Goodwin** Absolutely. That is why we have already been in consultations with T&I and PTA. PTA is willing to do it. If the technology works here, the other states can also buy for their own. Although, I am not sure about other states for they do not have similar entities like PTA so they might hire private contractors.
Q: Raynard Bardelas - Pohnpei Transportation Authority (PTA) In this project, are we also looking at bridges?	**A: Robert Goodwin** Definitely. In fact, the project with WB will be focusing on bridges. Similarly, with this ADB project, we will also be looking at bridges.
Certified by Eugene Joseph, Consultant April 30, 2021	

Stakeholder Meeting
Proposed ADB Grant for Sustainable Road Infrastructure Project
April 27, 2021
Governor's Conference Room

NAME	AFFILIATION	SEX (M/F)
Mark J. Joseph	Sokehs Municipal MP	M
Fermin Scalien	PNI EPA	M
Francisco Celestine	EPA	M
Salvador Nennis	PTA	M
Raymond Barnabas	PTA	M
Michael Lieman	SMG	M
Charity Edwards - Salvador	FSM TC&I	F
Robert Goodwin	PMU, DTC&I	M
Eileen Y. Mackenzie	PMU (DTC+I	F
Caroline Phillip	FSCO	F
Nancy Peter	Rary ch Dars	F
[illegible] Harper K.	R&D	M
Beterigo Jacob	Kolonia Town Gov'T	M
James Samuel	Kitti	M
Frank Santos	Kitti	M
John Rensle	Madol. Municipal Gov	M
Fredrick Albert	Kitti (Kosrapw Diadi)	M
Patrick Carl	PNI DPS	M
Darito [illegible]	PUC	M
Herbertson Santos	KMG	M
Suannita Ladore	Public Affairs	F

Procurement of Consulting Services for Design and Supervision of Urgent Climate Resilience improvement Works for Identified Road Network Assets

---

Date: May 5, 2021

PRESENT:

FSM TEAM

1. Mr. Robert Goodwin, PMU Program Manager
2. Ms. Jane Mukiri, Procurement Advisor
3. Mr. Steve Mendiola Jr, Procurement Officer
4. Mr. Wilmer Kilmete, Safeguard Specialist
5. Ms. Eileen Mackenzie, Administrative Officer
6. Ms. Sonia Kephas, Project Officer

CONSULTING FIRMS

1. Mr. Rovaly Sike, FinnOC
2. Narendra Dugar,
3. Lara S. Luis, SMEC
4. Shivan Bharat, ICT
5. Songky Jung, Dong Il
6. Graeme Roberts, BECA
7. Peter Wards, BECA
8. Will Park, OCG (Associating Company with SMEC)
9. Rachelle, OCG (Associating Company with SMEC)
10. Mohammad Igbal, SMEC
11. Vidyanand, ICT
12. Shahit, SMEC

VENUE: Program Management Unit (PMU), Department of TC&I

AGENDA:

1. INTRODUCTION OF PARTICIPANTS
2. OVERVIEW OF THE PROJECT
3. CONFIRMATION OF RECEIPT OF DOCUMENTS
4. OPEN DISCUSSION
5. POSSIBLE DISCUSSION OF ADDENDUM
6. ADJOURNMENT

Ref.	Discussion Points	Outcome of Discussion
Agenda Item 1.1 Introductions	The zoom meeting was called to order at 3pm. The Program Manager, Mr. Goodwin chaired the meeting and introduced FSM Team to the participating five (5) consulting firms. He then asked the firms to introduce each one of them.	All participants duly introduced themselves.
Agenda Item 1.2 Overview of the Project	The Program Manager gave an overview of the PRIME Project that the grant is expected to be approved within couple of weeks. The focus of this project component needs urgent works which identified as “quick fixed” and these are urgent priority works that needs to be done	Road data collections in the State of Chuuk will be uploaded in the TC&I’s website for viewing within a week.

	before undertaking the technical assessment of the project. He mentioned that the project has already awarded contracts for Road Safety Audit, and Vulnerability Assessment and Climate Resilient Road Strategy. Given the urgency need of works to be done long ago, for instance the bridge in the State of Yap which needs to be fixed urgently, therefore in consultation with the Bank, the project has identified the project in Yap as the first stage of PRIME Project. He further alluded to Weno Road in Chuuk, Awak bridge in Pohnpei and Lelu Causeway in Kosrae – these are priority works under the PRIME Project. For purpose of information, the Program Manager identified some accomplishments of the PRIME Project; the completion of Safeguards Instruments which consist of Stakeholders Engagement Plan, Environmental and Social Management Framework. These documents are uploaded publicly on TC&I website. He also expressed that IT Specialist will be travelling to Chuuk to conduct data collections for the project. Financial Proposal – Proposal needs to be complete, covering all costs, inclusive of the geotechnical investigation, topographical surveys, etc. Issue on Travel – Proposal has to be prepared on the assumption that the ports will be opened, and consultants can travel to FSM to meet with Stakeholders, communities, share conceptual design, conduct topographical survey, etc.	
Agenda Item 1.3 Confirmation of receipt of documents	The Program Manager asked all participating firms to confirm receipt of documents sent to then.	All confirmed receipt of documents.
Agenda Item 1.4 Open Discussion	All five firms were given the opportunity to raise questions.	Questions were tabled on a separate paper. (See attached)
Agenda Item 1.5 Possible Discussion of Addendum	Prior to closing of the meeting, the Program Manager alluded that there is internal discussion to extend the closing date by three weeks. However, an addendum must be issued and approved by the Bank to clarify discrepancies on the TOR and RFP.	Addendum will be distributed to all 5 firms.
Agenda Item 1.6 Adjournment	The Program Manager thanked the participating firms and the FSM Team. There being no other business, the meeting was adjourned at approximately 4:30pm.	

Prepared by: _____ Date:_____

Sonia T. Kephas, Project Officer

Prepared by: _____ Date:_____

Eileen Mackenzie, Administrative Officer

Endorsed by: _____ Date:_____

Robert Goodwin, Program Manager

ANNEX 2: SUMMARY OF HABITAT RISK SCREENING FOR PILOT SITE

Protected Areas	1 km: 0	10 km: 0	50 km: 2	2
World Heritage (WH)	1 km: 0	10 km: 0	50 km: 0	0
Key Biodiversity Areas	1 km: 1	10 km: 1	50 km: 8	10
Alliance for Zero Extinction (AZE)	1 km: 1	10 km: 0	50 km: 0	1
IUCN Red List				29
Critical Habitat				Likely

Summary of Protected and Key Biodiversity Ares

Protected Areas				
Area name	**Distance**	**IUCN category**	**Status**	**Designation**
Ant Atoll	50km	Not applicable	Designated	UNESCO-MAB Biosphere Reserve
Nahmwen Na Stingray	50km	V	Designated	Sanctuary
Key Biodiversity Areas				
Area name	**Distance**	**IBA**	**AZE**	**Remarks**
Pohnpei Watershed Forest Reserve	1km	Yes	Yes	High risk
Pohndollap Ridge	10km	No	No	Assess
Ahnd Island Conservation Area	50km	No	No	Assess
Edienleng / Pohn Tehnmei Ridge	50km	No	No	Assess
Lepinsed Madoledihmw	50km	No	No	Assess
Nan Pailong	50km	No	No	Assess
Senpehn-Lehdau Mangroves	50km	No	No	Assess
Southern Kitti Reef	50km	No	No	Assess
Temwen Island	50km	No	No	Assess
Wolouna, Ahnd Atoll	50km	Yes	No	Assess

Species with potential to occur

Area Taxonomic group	Total assessed species	Total (CR, EN & VU)	CR	EN	VU	NT	LC	DD
REPTILIA	12	7	1	2	4	0	5	0
GASTROPODA	86	2	2	0	0	0	82	2
ACTINOPTERYGII	1012	11	1	1	9	6	962	33
AVES	68	11	1	3	7	9	48	0
INSECTA	30	6	2	1	3	0	23	1
MAGNOLIOPSIDA	46	3	1	2	0	1	41	1
CHONDRICHTHYES	24	19	0	9	10	2	3	0
MAMMALIA	12	2	0	2	0	0	10	0
HOLOTHUROIDEA	32	4	0	1	3	0	19	9
ANTHOZOA	367	85	0	0	85	107	164	11
LILIOPSIDA	11	0	0	0	0	1	10	0
HYDROZOA	5	0	0	0	0	0	5	0
MALACOSTRACA	9	0	0	0	0	0	9	0
BIVALVIA	3	0	0	0	0	0	1	2

FSM Pilot Map with KBA proximity