Pohnpei Port Authority (PPA)

The Federated States of Micronesia (FSM)

Preparatory Survey for the Project for Pohnpei Port Expansion in the Federated States of Micronesia

Final Report

September 2024

Japan International Cooperation Agency (JICA)

Ides Inc.

ECOH CORPORATION

PREFACE

Japan International Cooperation Agency (JICA) decided to conduct the preparatory survey and entrust the survey to a joint venture group consists of Ides Inc. and ECOH CORPORATION.

The survey team held a series of discussions with the officials concerned of the Government of the Federated States of Micronesia, and conducted a field investigation. As a result of further studies in Japan, the present report was finalized.

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

Finally, I wish to express my sincere appreciation to the officials concerned of the Government of the Federated States of Micronesia for their close cooperation extended to the survey team.

September, 2024

Hiroo Tanaka
Director General,
Social Infrastructure Department
Japan International Cooperation Agency

Summary

1. Country Overview

The Federated States of Micronesia (FSM) consists of four major islands (Yap, Chuuk, Pohnpei and Kosrae) located over 2,700 km east and west and surrounding islets of these major islands. With this geographical configuration in the Pacific region, FSM is one of the countries having the largest Exclusive Economic Zones (EEZ). The total catch in the FSM EZs for the three-year period from 2017 to 2019 was reported to be 553,887 tonnes (NORMA 2017-2019 Report).

Until 1997, the population of FSM grew at a rate of 2% to 3% per year, except for the period from 1970 to 1975. However, since 1995, there has been a large outflow of people, and the population has been declining until 2012. The population has been increasing since 2013, but the growth rate is extremely small (the Micronesian Statistics Bureau predicts it to be 0.17% from 2018 onwards). The capital of FSM, Palikir is located in Pohnpei Island.

Pohnpei is a volcanic island with a steep mountain 798 m above sea level inland. The mountains of Pohnpei are the highest in FSM. Pohnpei Island consists of an inner coral reef, 23 small basalt islets, numerous coastal sedimentary islets, and about 15 low coral islets, surrounded by an outer ring of barrier reefs. The outer and inner reefs are separated by a deep lagoon 1.5 to 8 km deep. Within the lagoon are basalt and terrestrial sediment islets. In the southeast, the outer barrier reef and inner fringing reef merge, so no lagoon exists.

2. Background and outline of the Japanese ODA Grants

After the establishment of Pohnpei Port Authority (PPA) in 1991, E.M. Chen and Associates proposed a master plan for Pohnpei Port. This master plan shows not only the expansion of the wharf, but also an image of the future completion including an airport and industrial area, and proposes the following as specific development components (ADB TA8148-FSM Pohnpei Port Development, Inception Report, Feb. 2013, Table 1). The proposed items and the subsequent response status of PPA are as follows:

	Items proposed in the Master Plan	PPA Status
a.	Expansion of the commercial port to the southeast	Takatic Fishing Port, completed in 2002, corresponds to this component
b.	Installation of mooring piers or buoys for purse seiners that do not need to be moored to a quay (Suggested area further south of Takatic Fishing Port (outside the port area managed by PPA))	Secure anchorage only
c.	Extension of the existing main wharf to the south	Change to construction of Takatic Fishing Port

d.	Extending the existing wharf northward: Building a new quay at Misko Beach:	Contrary to the master plan predictions, the number of ships calling at the port and cargo volume have been stagnating, so this is recognized as a long-term development plan.
e.	Ensuring safety (24-hour deployment of tugboats equipped with firefighting equipment)	Purchasing boats to transport pilots and CIQ officers to and from anchorages

In 2006, PPA prepared a Strategic Plan for 2007-2011 to follow up on the Master Plan. According to an Inception Report prepared at the start of the ADB-funded Port Development Plan Study (August 2012), the plan was not actually implemented and the Japanese Government took over to the ADB's development plan.

Pohnpei port plays an extremely important role not only as an international commercial port, but also as a base port for domestic and international tuna fishing boats. The 320 m long main wharf of Pohnpei Port serves as a mooring facility for purse seiners as well as international container ships and inter-island passenger ships. As a result, during the peak tuna fishing season, purse seiners hinder the safe maneuvering of large container ships, increasing the risk of accidents.

Since then, PPA has prepared strategic plans every five years, but the main focus is on training staff and improving the operational efficiency of PPA's internal organizations. Projects proposed in ADB development plans are currently seeking alternative funding sources, as FSM did not approve ADB loans.

PPA is currently formulating a five-year development plan starting in 2023. Meanwhile, under the World Bank's grant aid, the Federated States Maritime Investment Plan (FSMIP), the "Individual Ports Strategic Development Plan and Chuuk Lagoon Maritime Access" was to be launched in 2020 as a 2 years plan, and a 20 years port investment plan and a 5 years implementation plan were to be formulated. It was thought that this 20 years investment plan would be the higher-level plan that was the premise for the implementation of this project, but PPA has not obtained the 20 years investment plan after the 5 years development plan has been prepared, and it is unclear whether the plan has been completed.

Pohnpei Port plays extremely important roles not only as an international and interisland commercial port, but also as a base port for domestic and foreign tuna fishing ships. The 320 m long main quay of the port is the mooring facilities not only for international container ships and interisland passenger-cargo ships but also purse seiners. During high tuna fishing seasons, purse seiners sometimes hinder the safe maneuvering of large container ships in the basin and increase the risk of accidents.

Under this circumstance, FSM government requested Japanese government to construct a new quay under a grant aid scheme with an aim to alleviate the current congestion at the port. In response, a data and information collection survey were carried out by JICA in 2016 for the reconnaissance of the new quay construction site, the assessment of congestion status and the evaluation of the feasibility of the project, as the first step to realize the development of the port. To examine feasibility of the project in further detail, JICA conducted "Data Collection Survey on Port Development in Federated States of Micronesia, 2019",

which is hereinafter referred to as "the Preceding Survey".

This survey will follow the development plan proposed in the previous study and will involve carrying out various natural condition surveys and environmental surveys necessary for planning and design, determining the construction location of the facilities, designing the structure of the new quay, estimating project costs, preparing a construction plan based on the natural condition and environmental surveys conducted in this study, as well as evaluating the impact of the project on the environment and proposing mitigation measures.

In order to ensure the safety of ship operations by eliminating the fundamental causes of congestion within the port, and towards the realization of a complete separation of the commercial port and fishing port functions in the future, it is proposed to develop a quay that is 160 m long and 10 m deep, capable of mooring container ships, taking into consideration the following points:

a. A fundamental solution to the congestion problem would be to separate the mooring facilities (including the water areas) for container ships and fishing boats, and it would be desirable for the mooring facilities for large ships to be located in a location that allows them to moor and unmoor without passing through fishing boat mooring areas where many fishing boats are moored at the same time.
b. The project site (former Misko Beach) is the only site large enough for mooring facilities in Pohnpei Port. It is possible to separate the fishing port area from the commercial port area and secure a site large enough for both areas, and it is necessary to select the layout of facilities and types of structures that will allow each function to be performed effectively. It is desirable to select a facility layout plan and structure type that can effectively demonstrate each function.
c. The existing wharf has been constructed 50 years ago and is expected to deteriorate in the future. Therefore, it is desirable that the newly constructed quay should have a planned layout and structural form that can also be used as a container ship quay in preparation for the aging of the existing wharf.
d. The access route to Pohnpei Port is curved and has water depth restrictions, and the ocean-going container ships that call at the port are on a route via neighboring island countries. Therefore, it is unlikely that the container ships that call at the port in the short term will be larger, and the container ships that currently call regularly will remain the largest ship type. The container ships that currently call the port regularly will continue to be the largest ships in Pohnpei Port.
e. For these reasons, it is desirable to develop facilities targeting container ships in order to make Pohnpei Port a versatile port that can be used by any calling ship and that can flexibly respond to future port development including backwaters.
f. The construction of the quay wall, the most basic component of the mooring facilities, requires large construction equipment, and in addition to the construction cost, a large amount of money is required to transport the construction equipment, therefore, it is desirable to construct the quay wall in a lump sum rather than in stages. Therefore, it is desirable to concentrate funds on quay construction, followed by phased construction of ancillary facilities to build a quay that will function as a general-purpose quay.

3. Outline of Survey Results and Project Component

In this preparatory survey, the survey team was dispatched four times as follows:

Time	Description
First field survey March 11th to June 4th, 2023	Conducting natural condition surveys and environmental surveys, and confirming the survey contents
Additional survey of the first field survey February 22nd to March 1st, 2024	Second bottom sediment survey and bottom sediment collection at the project site
Second field survey April 20th to April 28th, 2024	Explanation and discussion of the Draft Final Report, M/D discussion and signing, survey of taxes and tax exemption system
Additional survey of the second field survey July 25th to August 4th, 2024	Holding of stakeholder meetings, confirmation of implementation status of items borne by the recipient country

This project was initiated with the aim of reducing congestion in the port and ensuring safety in maneuvering by constructing new mooring facilities for purse seiners. However, the root cause of congestion is that purse seiners moored outside the mooring facilities for container ships compromise the safety of container ship maneuvering when entering and leaving the port. On the other hand, considering that the existing wharf is 50 years old and will deteriorate in the future and will require repair or reconstruction in the near future, it was agreed that the new mooring facilities would be designed for container ships. In addition, in order to construct a deep-water quay within the constraints of the project scale, it was agreed that the development of the ancillary facilities necessary for the mooring facilities would be carried out in stages by PPA using other funds after the completion of this project.

The main components are the construction of a new 160m long quay (water depth 10m, apron width 30m), a 190m x 90m yard site (levelled with crushed stone) and an access road to the quay (paved with concrete, 10m wide, 249m long). Ancillary facilities include mooring bollards on both sides of the quay. In order to ensure a water depth of 10m in front of the quay, dredging work of approx. 46,000m^3 is scheduled.

Description	Shape・Dimensions
1.Mooring Quay	Design Water Depth : -10 m
	Quay: Length 160 m, Width of Apron 30 m
	Front Pile: Steel Pipe Sheet Pile D1,000 x t11, L=24.5 m
	Anchoring Pile: Steel Sheet Pile SP-IIIw
	Coping Concrete: Cast-in-Place Concrete
	Apron Pavement: Cast-in-Place Concrete
	Bollard: 700 kN type
	Rubber Fender: SK500H, L=1,500 mm
	Curbing: RC Concrete (300H)
	Aluminum Anode: Cathodic Protection (Service Life 50 years)
2.Mooring Bollard (Both side of the Quay)	Bollard: 700 kN type
3.Access Road	Length 249 m, Width 10 m, Concrete Pavement

4.Container Yard	Area: 190 m x 90 m, Sand Reclamation (Dredged Coral Sand)

4. Implementation Schedule and Project Cost

It is scheduled to take 6 months until the completion of detailed design for the facilities and the approval of tender documents and another 4 months for the tender and construction contract. 34 months is scheduled for the construction period.

The total project cost required for implementing this cooperation project is estimated at approximately **** million yen (Japan side: approximately **** million yen, FSM side: approximately 49 million yen, 1US$ = 135.88).

5. Project Evaluation

(1) Relevance

One of the common problems of major ports in FSM is the lack of facilities, and a long-term improvement plan is currently being developed with World Bank's funds. This project will provide the most cost-effective facilities for the development of Pohnpei Port, which will lead to the early realization of the long-term development plan and is in line with the policy of the Federal Government.

Fuel consumption of purse seiners calling at Pohnpei Port will be reduced due to fewer unnecessary evacuations during their stay at the port. This will reduce the cost of calling Pohnpei Port and unnecessary CO_2 emissions. This will also increase navigational safety in the port,

The project will not only increase the mooring capacity of Pohnpei Port for purse seiners, but also increase the amount of port land area available behind the quay, which provides spaces for the construction of facilities needed for services related to the purse seiners visiting the port. In other words, it will be possible to attract facilities that provide supply, maintenance and repair services for the purse seiners, as well as distribution and processing services for the catches. This will increase employment opportunities.

(2) Effectiveness

1) Quantitative effects

The existing wharf quay has four berths for purse seiners (Berths 2, 3, 4 and 5), and Berths 2 and 3 are used when a container ship calls the port, For safety reasons, purse seiners moored at Berth 5 are moved to the anchorage area.

In light of these operational conditions, the following indicators are focused as quantifiable quantities that are the indicators to monitor the magnitude of congestion.

a. Number of purse seiners evacuated when container ships arrived
b. Number of purse seiners retreated or stayed at anchorages due to lack of mooring space

c. Number of carriers that underwent CIQ procedures at the anchorage due to lack of berth space when arriving at port

The values of the three indicators based on the 2018 ship call data obtained above are summarized as shown below. These three indicators will be used as quantitative indicators to assess the effectiveness of the project.

Indicator	Reference value (2018 Actual)	Target (2031) 3-year after completion
Total number of days of evacuated purse seiners (Ship days)	351	136
Rate of occurrence of evacuation of one or more purse seiners*1	16%	6%
Rate of carriers that conducted CIQ*2 at sea due to congestion.	15%	5%

*1 Denominator is the annual number of port calls by purse seiners.

*2 C (Custom), I (Immigration), Q (Quarantine)

Source: Survey Team

When evaluating the impact of the project after its completion, it is recommended that, instead of the baseline values shown in the table above, the three indicators calculated based on the conditions before the construction of the new quay (the mooring capacity of purse seiners without the new quay) using data for 2031 be used as the baseline values. By calculating and comparing baseline values for each indicator in this way, the impact of the project can be evaluated without being affected by fluctuations in the annual number of port calls by purse seiners.

2) Qualitative Effects

(i) Improving navigational safety when entering, leaving and evacuating ports

The longer quay length and the increased number of mooring berths for purse seiners will reduce multiple moorings. This will improve the safety of purse seiners when maneuvering in and out of port.

(ii) Improving maritime logistics through smooth navigation of cargo ships and fishing boats

With two container berths, even if one berth is unavailable, the other berth can be used to import daily necessities without interruption, ensuring socio-economic security. Furthermore, having multiple container berths allows container ships can berth without having to wait offshore, contributing to smooth maritime logistics.

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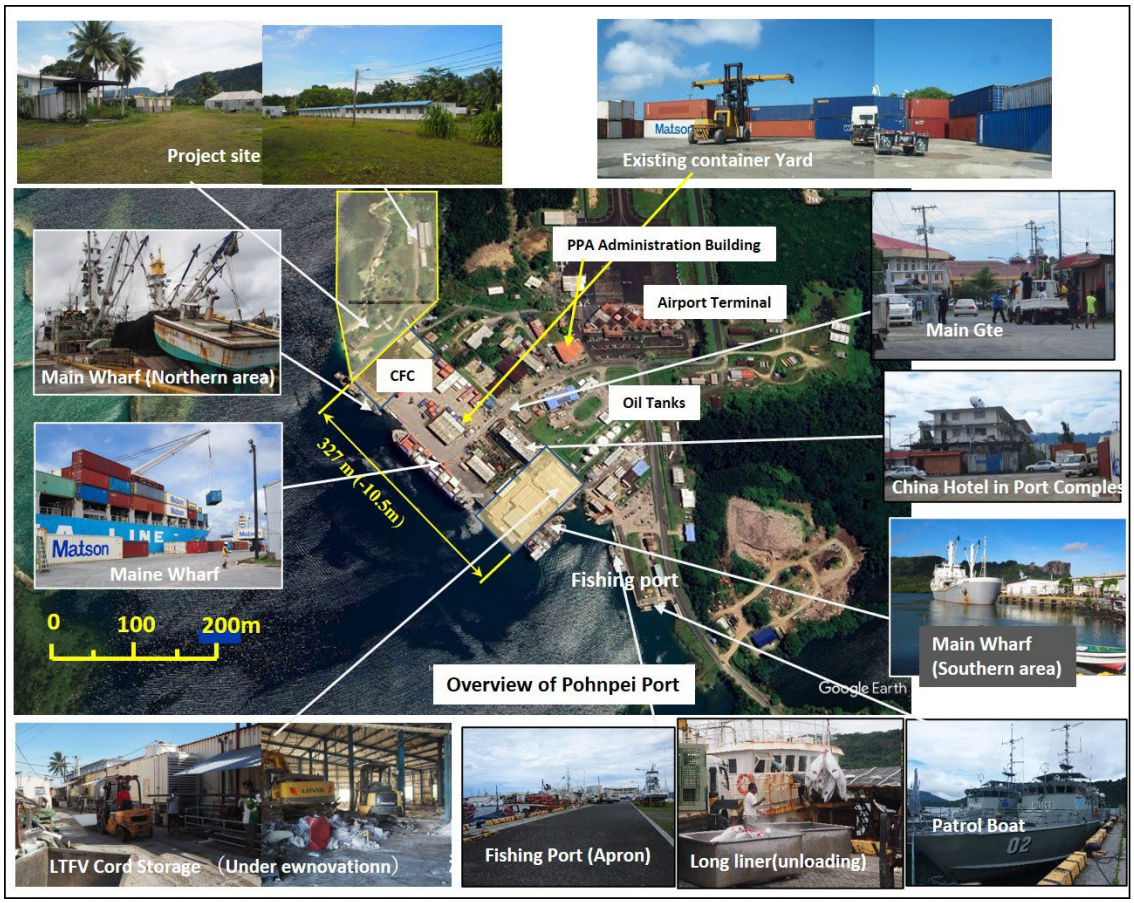
Source: Data Collection Survey on Port Development in Federated States of Micronesia, 2019, JICA

Frontispiece-1 Situation of Pohnpei Port Area



Source: Survey Team

Frontispiece-2 Facilities of Pohnpei Port and the situation of the project site

Source: Survey Team

Frontispiece–3 Rendering image of completed Pohnpei Port Expansion Project (1)

Source: Survey Team

Frontispiece–4 Rendering image of completed Pohnpei Port Expansion Project (2)-

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Abbreviations

ADB	Asian Development Bank
CCME	Canadian Council of Ministers of the Environment
CEDAW	Convention on the Elimination of all Forms of Discrimination against Women
CFC	Caroline Fishing Corporation Inc.
CIQ	Custom, Immigration and Quarantine
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
COD	Chemical Oxygen Demand
COFA	Compact of Free Association
CSP	Conservation Society of Pohnpei
dBA	decibel
DECEM	Department of Environment, Climate Change & Emergency Management
DO	Dissolved oxygen
DWFN	Distant Water Fishing Nation
E. coli	Escherichia coli
EDA	Economic Development Authority
EEZ	Exclusive Economic Zone
EHS	Environment, Health and Safety Guideline
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMoP	Environmental Monitoring Plan
EMP	Environmental Management Plan
EN	Endangered Species
ERL	Effects Range Level
ESW	Economic-Social Wealth
EPA	Environmental Protection Agency
EQS	Environmental quality standards
FAO	Food and Agriculture Organization
FSM	Federated States of Micronesia
GPS	Global Positioning System
HSE	Health, Safety, Environment
IA	Initial Assessment
IFC	International Finance Corporation
ISPS	International Ship and Port Facility Security Code
IUCN	International Union for Convention of Nature and Natural Resources
JICA	Japan International Cooperation Agency
JICAGL	JICA Guideline
KFC	Kasar Fishing Corporation
LC	Least Concern Species

LTFV	Luen Thai Fishing Venture
MQS	Marine and Fresh Water Quality Standard
NADG	Canadian) National Assessment of Guidelines for Dredging
NESHAP	(US) National Emission Standard Hazardous Air Pollutants
NFC	National Fisheries Corporation
NO2	Nitrogen dioxide
NOAA	(US) National Oceanic and Atmospheric Administration
NORMA	National Oceanic Resource Management Authority
NPDES	National Pollutant Discharge Elimination System
OEEM	Office of Environment and emergency Management
OHS	Occupational Health and Safety
OSH	Occupational Safety and Health Administration
PEL	Probable Effect Level
PH	Potential Hydrogen
PM10	Microscopic size particles
PNA	Parties to the Nauru Agreement
Pohnpei EPA	Pohnpei Environmental Protection Agency
Pohnpei R & D	Pohnpei Resource & Development Department
PPA	Pohnpei Port Authority
ppb	parts per billion
R & D	Pohnpei State Marine Resources and Development Department
SO2	Sulphur dioxide
SS	Suspended Solid
TAE	Total Allowable Effort
TEU	Twenty-foot Equivalent Unit
TMC	Taiyo Micronesia Corporation
VU	Vulnerable Species
WB	World Bank
WCPFC	Western Central Pacific Fisheries Committee
WCPO	Western Central Pacific Ocean
WHO	World Health Organization
WWF	Worldwide Fund for Nature

Chapter 1 Background of the project

1-1 Background and outline of the project

The Federated States of Micronesia (FSM) consists of four major islands (Yap, Chuuk, Pohnpei and Kosrae) located over 2,700 km east and west and surrounding islands of these major islands. With this geographical configuration in the Pacific region, FSM is one of the countries having the largest Exclusive Economic Zones (EEZ). The total catch in the FSM EZs for the three-year period from 2017 to 2019 was reported to be 553,887 tonnes (NORMA 2017-2019 Report).

Located at the northernmost of Pohnpei Island, Pohnpei Port plays extremely important roles not only as an international and interisland commercial port, but also as a base port for domestic and foreign tuna fishing ships. The 320 m long main quay of the port is the mooring facilities not only for international container ships and interisland passenger ships but also purse-seine fishing ships. During high tuna fishing seasons, purse-seine fishing ships sometimes hinder the safe maneuvering of large container ships in the basin and increase the risk of accidents.

Under this circumstance, FSM government requested Japanese government to construct a new quay under a grant aid scheme with an aim to alleviate the current congestion at the port. In response, a data collection survey was carried out by JICA in 2016 for the reconnaissance of the new quay construction site, the assessment of congestion status and the evaluation of the feasibility of the project, as the first step to realize the development of the port. To examine feasibility of the project in further detail, JICA conducted "Data Collection Survey on Port Development in Federated States of Micronesia, 2019", which is hereinafter referred to as "the Preceding Survey".

The Preceding Survey examined four potential alternative sites. The site of a former resort, whose lease had ben expired, was identified as the most viable option. This decision was based on several factors, including the overall port operations, the seabed soil conditions and the dual functions (commercial and fishing) of Pohnpei Port. In addition, the survey took into account the aging of the existing main wharf, which is over 50 years old. To ensure the safety of ship operations in the port area during the fishing season and to allow for a complete separation of commercial and fishing port functions in the future, the survey proposed a new -10 m quay would serve as an alternative berth for container ships.

The project is planned to be implemented as a grant aid. Due to budgetary constraints, the study proposed that funds should be concentrated on the costliest part of the project, i.e., the mooring wharf, and that PPA should be responsible for the development of ancillary facilities, which would be phased in later years using other funding sources.

Based on the results of the Preceding Survey, this survey is intended to complete necessary preparatory work to realize the development of a new quay, which is referred to as “the Project”. This survey includes the confirmation of the project site, to prepare structural design of the new quay, to estimate the project cost and to prepare the construction plan based on the natural condition and environmental surveys to be implemented during this survey.

Pohnpei Port functions as both a commercial port and a fishing port, and is the largest port in the country. The existing wharf, which is a very important port facility for maritime logistics, is 327 meters long and is used jointly by cargo ships (container ships, tankers) and purse seiners. While the number of cargo ships calling at the port has remained almost constant at around 50 ships per year, several hundred purse seiners call at the port each year and an expansion of the mooring facilities is desired.

In 2010, the Pacific Regional Infrastructure Facility (PRIF) proposed to expand the existing wharf to the north, and in 2013, the Asian Development Bank (ADB) proposed to expand it to the south. However, the FSM government declined the ADB's loan and instead requested Japanese ODA Grants to JICA.

At the request of FSM government, JICA dispatched a liaison mission in 2018 and conducted the "Basic Data Collection Survey on Pohnpei Port Development Project" in 2019 (hereinafter referred to as the "Pilot Survey"). In this survey, three plans were compared, including the expansion plans mentioned above and a plan to build a new port on the southern side, and it was confirmed that the expansion plan to the north was the optimal plan, taking into consideration ground conditions and the safety of ship operation. In addition, preliminary designs and approximate construction cost estimates were conducted for three alternative plans for the construction location of the quay (on land, on the shoreline, and offshore), and it was confirmed that the plan to construct the quay on the shoreline was the lowest cost plan.

In order to ensure the safety of ship operations by eliminating the fundamental causes of congestion within the port, and towards the realization of a complete separation of the commercial port and fishing port functions in the future, it is proposed to develop a quay that is 160 m long and 10 m deep, capable of mooring container ships, taking into consideration the following points:

a. A fundamental solution to the congestion problem would be to separate the mooring facilities (including the water areas) for container ships and fishing boats, and it would be desirable for the mooring facilities for large ships to be located in a location that allows them to moor and unmoor without passing through fishing boat mooring areas where many fishing boats are moored at the same time.
b. The project site (former Misko Beach) is the only site large enough for mooring facilities in Pohnpei Port. It is possible to separate the fishing port area from the commercial port area and secure a site large enough for both areas, and it is necessary to select the layout of facilities and types of structures that will allow each function to be performed effectively. It is desirable to select a facility layout plan and structure type that can effectively demonstrate each function.
c. The existing wharf was constructed 50 years ago and is expected to deteriorate in the future. Therefore, it is desirable that the newly constructed wharf should have a planned layout and structural form that can also be used as a container ship wharf in preparation for the aging of the existing wharf.
d. The access route to Pohnpei Port is curved and has water depth restrictions, and the ocean-going container ships that call at the port are on a route via neighboring island countries. Therefore, it is unlikely that the container ships that call at the port in the short term will be larger, and the container ships that currently call regularly will remain the largest ship type. The container ships that currently

call the port regularly will continue to be the largest ships in Pohnpei Port.

e. For these reasons, it is desirable to develop facilities targeting container ships in order to make Pohnpei Port a versatile port that can be used by any calling ship and that can flexibly respond to future port development including backwaters.

f. The construction of the quay wall, the most basic component of the mooring facilities, requires large construction equipment, and in addition to the construction cost, a large amount of money is required to transport the construction equipment, therefore, it is desirable to construct the quay wall at one time rather than in stages. Therefore, it is desirable to concentrate funds on quay construction, followed by phased construction of ancillary facilities to build a quay that will function as a general-purpose quay.

1-2 Natural conditions

For the purpose of the facility design and the environmental impact assessment, data collection surveys for meteorological, oceanographic and seismic information and field surveys were conducted.

(1) Meteorological, oceanographic and seismic surveys

Meteorological data of 2022 were provided by Pohnpei Meteorological observatory.

1) Temperature

Pohnpei has a tropical maritime climate, with temperatures that are almost constant throughout the year.

The average annual temperature is 27°C, while the maximum temperature is 30-32°C and the minimum is 24-26°C, with small differences from month to month.

Table 1-2-1 Average Temperature by month

Temperature (°C)	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov	Dec	Mean
Mean of daily highest	30.4	30.3	30.2	30.4	30.7	30.8	30.4	31.3	31.2	30.4	31.8	30.8	30.8
Mean of daily lowest	25.4	26.2	25.1	24.7	24.8	24.6	24.1	24.0	24.0	25.4	24.7	25.8	24.9
Average of the month	27.9	28.3	27.6	27.6	27.8	27.7	27.6	27.7	27.6	27.3	28.2	28.5	27.8

Source: Local Climatological Data, NOAA, National Climatic Data Center (2022)

2) Precipitation

Pohnpei's annual precipitation reaches approximately 5,700 mm.

Table 1-2-2 Table Monthly precipitation

Precipitation	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov	Dec	Mean
Monthly Precipitation (mm)	253.5	442.5	706.1	733.0	592.3	457.7	677.2	500.1	454.9	253.5	321.6	301.2	5.668.3
Rainfall days (day)	14	14	17	15	12	13	13	15	10		13	14	

Note: Rainfall day is defined as a day with 2.5 mm of rainfall.

Source: Local Climatological Data, NOAA, National Climatic Data Center (2022)

3) Wind

The average monthly wind speed is less than 3 m/sec and the monthly maximum wind speed is not more than 8 m/sec. The wind direction is predominantly NE throughout the year.

Table 1-2-3 Monthly average wind speed

Wind speed & direction	Janu.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov	Dec	Mean
Mean wind speed (m/sec)	2.8	3.2	2.6	2.3	2.0	1.9	1.9	1.5	1.3	2.8	1.7	2.5	2.2
Predominant wind direction	NE	NE	NE	E	E	E	SE	SE	SE	NE	SEW	E	NE
Maximumwind speed (m/sec)	6.3	6.3	7.6	6.7	5.4	5.8	5.8	6.7	4.5	0.0	5.8	6.3	

Source: Local Climatological Data, NOAA, National Climatic Data Center (2022)

4) Typhoon

Pohnpei Island is less affected by typhoons than other Micronesian islands. The West Caroline Islands, where Pohnpei Island is located, is a typhoon producing area, and typhoons generally pass north of Pohnpei Island and move westward as they develop.

5) Waves and Currents

Pohnpei Port is sheltered from open sea waves by an offshore barrier reef and is therefore calm. The tidal currents in the port are not considered large enough to affect ship operations.

6) Earthquakes

According to the past earthquake records around Pohnpei Island, the area is not suffered from any major damage since the 1971 earthquake.

Table 1-2-4 Records of earthquake around Pohnpei Island

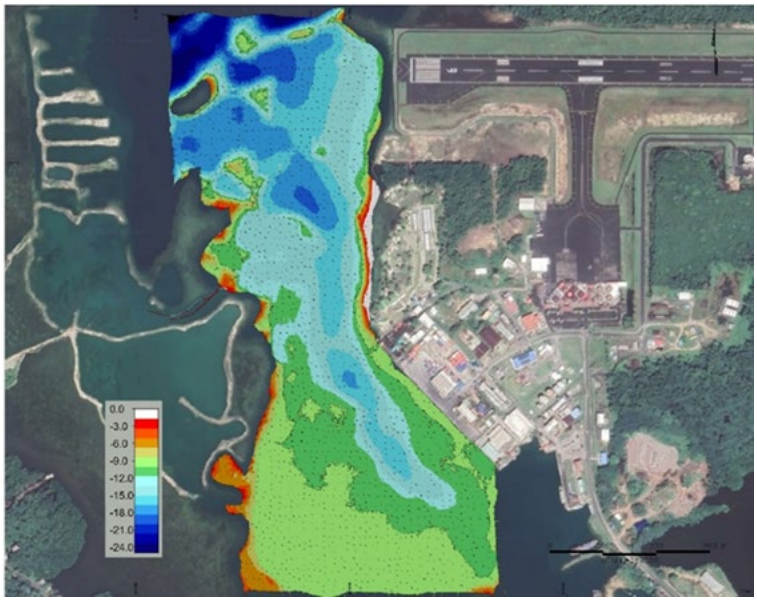
Date	Latitude	Longitude	Depth (km)	Magnitude (dyn cm)	Distance from Kolona (km)	Horizontal acerelation (gal)	Design Seismic intensity
1974/3/12	8º 76' N	150º 95' E	33	5.5	825	4.09	0.004
1981/4/18	6º 91' N	159º 08' E	25	5.0	188	16.84	0.017
1983/12/22	0º 04' S	152º 78' E	33	4.0	972	1.60	0.002
1991/9/5	2º 53' N	153º 99' E	33	4.5	640	3.34	0.003
1993/9/23	9º 01' N	150º 22' E	33	5.0	912	2.83	0.003
1998/6/11	5º 76' N	149º 55' E	33	4.6	955	2.20	0.002
2000/7/26	6º 08' N	149º 56' E	33	4.3	948	1.91	0.002
2003/2/9	7º 14' N	151º 81' E	33	4.2	698	2.60	0.003
2003/6/28	13º 76' N	155º 57' E	33	4.5	839	2.44	0.002
2004/5/11	5º 77' N	149º 43' E	10	4.7	964	2.28	0.002

Source: USGS, Earthquake Hazards Program

(2) **Field surveys**

1) Bathymetric survey

Figure 1-2-1 shows a color-shaded bathymetric map. The turning basin in front of the existing wharf has a water depth of -10 m. The area in front of the proposed project site is the navigation channel to the existing wharf having a channel depth of -12 m.

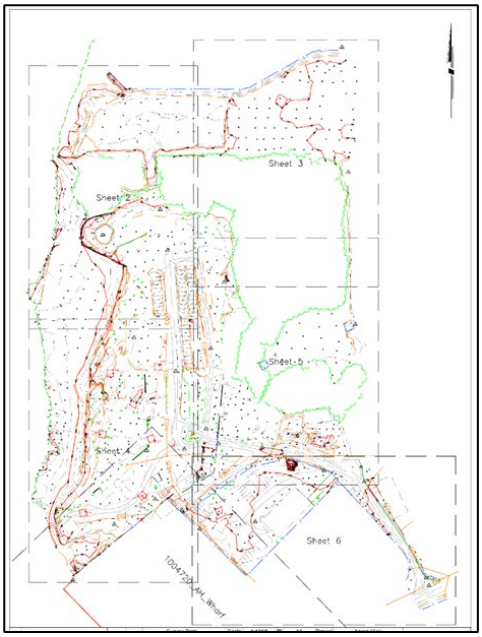


Source: Survey Team

Figure 1-2-1 Bathymetric Survey

2) Topographic survey

An onshore topographic map of the proposed site is shown in Figure 1-2-2. The planned site is almost flat with an elevation of DL+1.8 to 2.0 m.



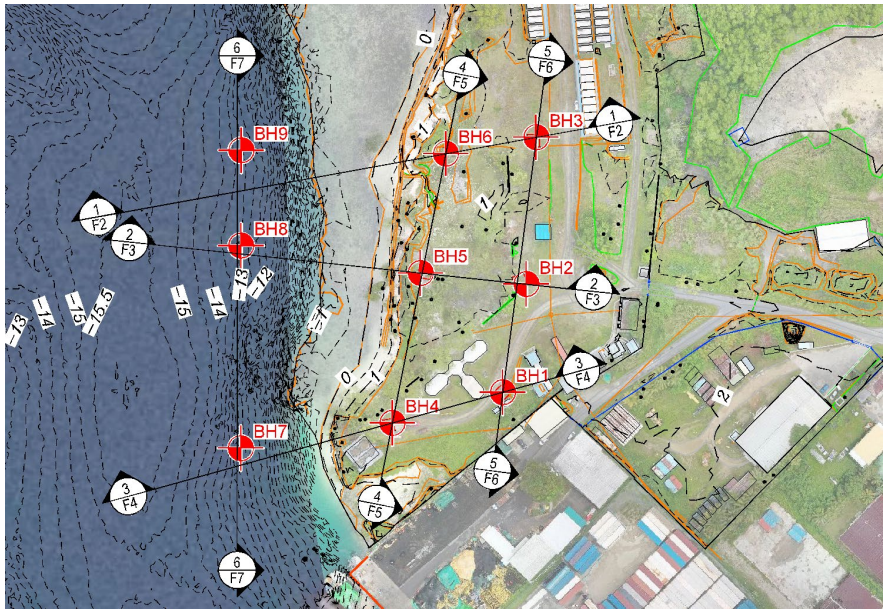
Source: Survey Team

Figure 1-2-2 Topographic map of the project site

3) Soil survey

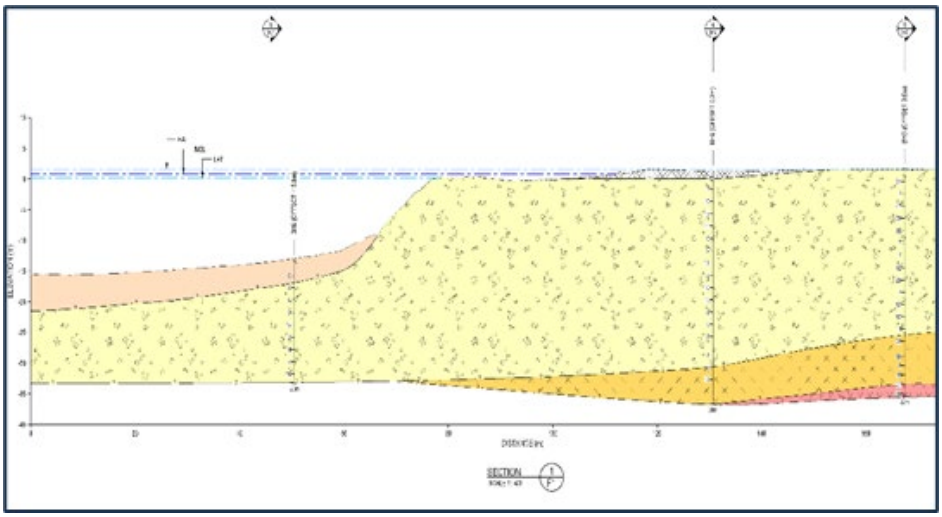
Boring survey at the planned site was begun on March 29, 2023 and completed on April 22, 2023. Laboratory testing of soil samples was done by Geotechnics, an IANZ accredited laboratory in New Zealand. Figure 1-

2-3 is the borehole location maps (BH-1 to BH-9) for the proposed new quay and columnar diagrams of the new quay in cross-sectional direction, cross sections 1-1, 2-2 and 3-3 are shown in Figure 1-2-4 to Figure 1-2-6, respectively and in longitudinal direction, cross sections 4-4, 5-5 and 6-6 are shown in Figure 1-2-7 to Figure 1-2-9, respectively.



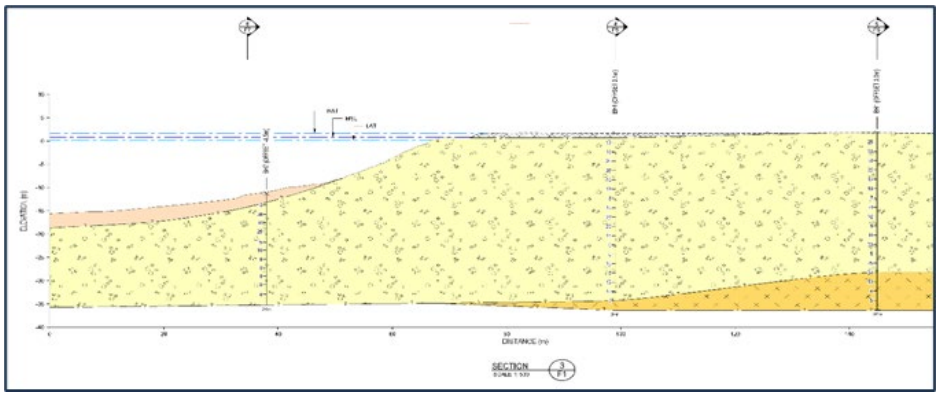
Source: Survey Team

Figure 1-2-3 Location of boreholes (BH-1-BH-9)



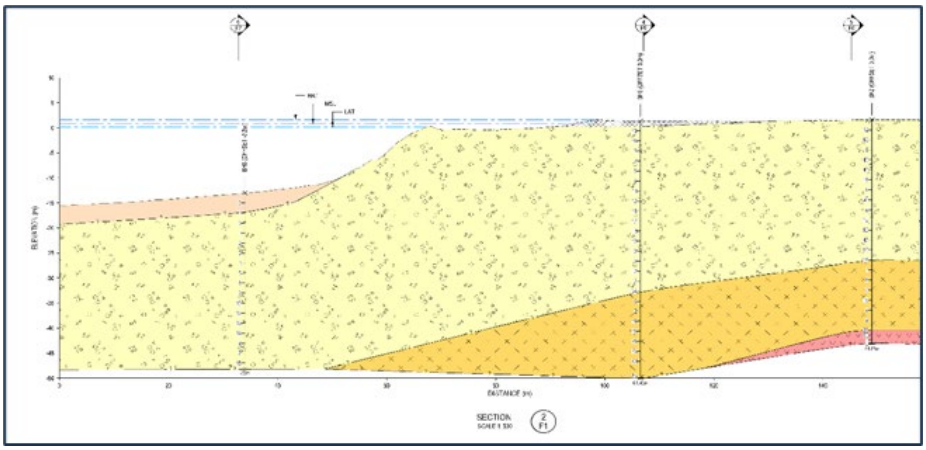
Source: Survey Team

Figure 1-2-4 Cross-section of soil perpendicular to the quay face line (Cross-section 1-1)



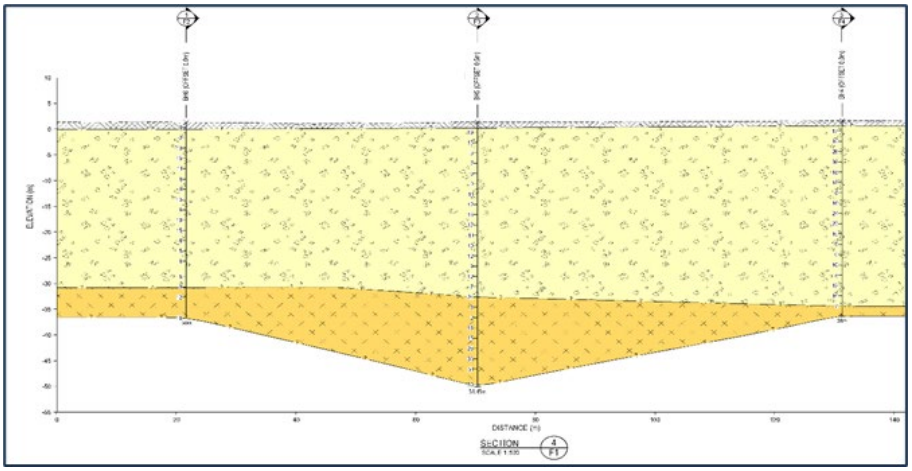
Source: Survey Team

Figure 1-2-5 Cross-section of soil perpendicular to the quay face line (Cross-section 2-2)



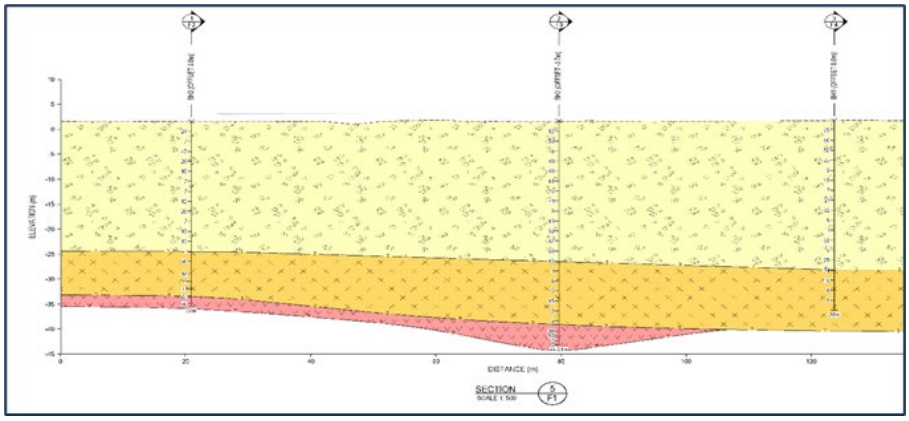
Source: Survey Team

Figure 1-2-6 Cross-sectional of soil perpendicular to the quay face line (cross section 3-3)



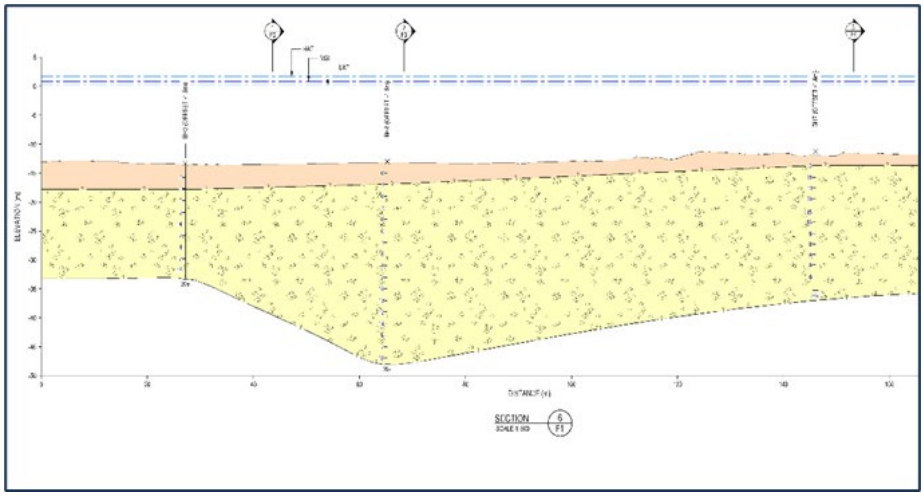
Source: Survey Team

Figure 1-2-7 Cross-sectional of soil parallel to the quay face line (Cross-section 4-4)



Source: Survey Team

Figure 1-2-8 Cross-sectional of soil parallel to the quay face line (Cross-section 5-5)



Source: Survey Team

Figure 1-2-9 Cross-sectional of soil parallel to the quay face line (Cross-section 6-6)

4) Hydrographic survey

Measurements were performed using a direct-reading electromagnetic current meter at spring tide on 21 April 2023 and at neap tide on 28 to 29 April. The results show that the flow direction during flood tide is southward while that during ebb tide is northward.

The current velocity at spring tide ranges between 0.01 and 0.18 m/sec with the tidal range of 1.3 m, while that at neap tide is between 0.01 to 0.10 m/sec with the tidal range of 0.4 m. It is said that the tidal current in the navigation channel and basin is relatively small.

Source: Survey Team

Figure 1-2-10 Measuring point of current

5) Magnetic survey

To ensure the safety of the boring, a magnetic survey was carried out at the 12 points at all the boreholes (see Figure 1-2-3. The size of the area examined was 5 m by 5 m per point. The measurements were conducted from 20 March to 22 March 2023, prior to commencing the boring survey. The result showed that no magnetic anomaly, which indicated unexploded ordnance could be anticipated, was identified.

6) Construction material survey

Stone and crushed sand were collected from two quarries near the proposed site (APISCO and Pohnpei White Sand) on March 22, 2023, and laboratory tests followed. The stone and crushed sand are crushed basalt having a specific gravity of approximately 3.0 and are assessed to be good quality enough for a construction material.

1-3 Social and Environmental Considerations

1-3-1 Environmental Impact Assessment

The full report of the Social and environmental Consideration is attached to this report and please see Appendix 5 for detail.

1-3-1-1 Project Components and Related Construction Activities that may become potential source of Environmental and/or Social Impacts

The location of the project site, the major components of the project and the related construction activities are described in Section 2-2 “Outline Design of the Japanese Assistance” with layout plan and the structural design of the quay.

1-3-1-2 Baseline Survey on Current Environmental and Social Situation and Subcontract Surveys

Baseline environmental and social information was compiled in terms of Pohnpei State (and partially based on FSM data) relating to geology, seismicity, climate, air quality, noise, sediment quality, terrestrial ecosystems, marine ecosystems, corals, population, social organization, household and housing characteristics, religion, land use, land tenure and customary tenure, gender, employment, labor and employment issues and fisheries.

1-3-1-3 EIA and related Environmental Supplementary Approvals required in Pohnpei State

Regarding EIA, the Pohnpei State EIA Regulations will be applied to this project, and not the Federal EIA Regulations (applied only for projects within Micronesian EEZ, but external to inland projects). On the other hand, apart from EIA there are other supplementary procedures, such as earthmoving permit under the jurisdiction of Pohnpei EPA in accordance with earthmoving regulation, the Land Use Permit under the Pohnpei Land Department, the forestry permits as well as the marine resources assessment under the Pohnpei Resources Development (R&D) Department and the Historic Conservation Permit under the Office of Historic Conservation.

EIA procedure specific to Pohnpei State is based on the following basic laws:

a. Pohnpei Environmental Protection Act of 1992 (S.L. No. 3L-26-92)

b. S.L.No.3L-45-93 (S.L.No.3L-26-92 Amendment Act)

c. Pohnpei EPA Environmental Impact Assessment Regulation 1995

The EIA procedure in Pohnpei State is based on two-step process. Following the Initial Assessment (IA) implemented by the project proponent, if the project's activities are considered to cause significant impact by the Board of the Pohnpei Environmental Protection Agency (EPA), then an Environmental Impact Statement (EIS) procedure is adopted and implemented by an EPA-approved independent external EIA consultant hired by the project proponent. Depending on the decision by the Directors of the Pohnpei State EPA Board, public hearings may be held twice during the IA review and draft EIS stages. The IA/EIA procedure specific to Pohnpei State is shown in Figure 1-3 of Section 1.3 of Appendix 5.

As for the project, based on the implementation of above required environmental approval procedures, including the IA (Initial Assessment) /EIA and other related supplementary environmental procedure, along with the stakeholder meeting held on June 24, 2024, the IA/EIA was officially approved by the EPA Board of Directors on July 4, 2024.

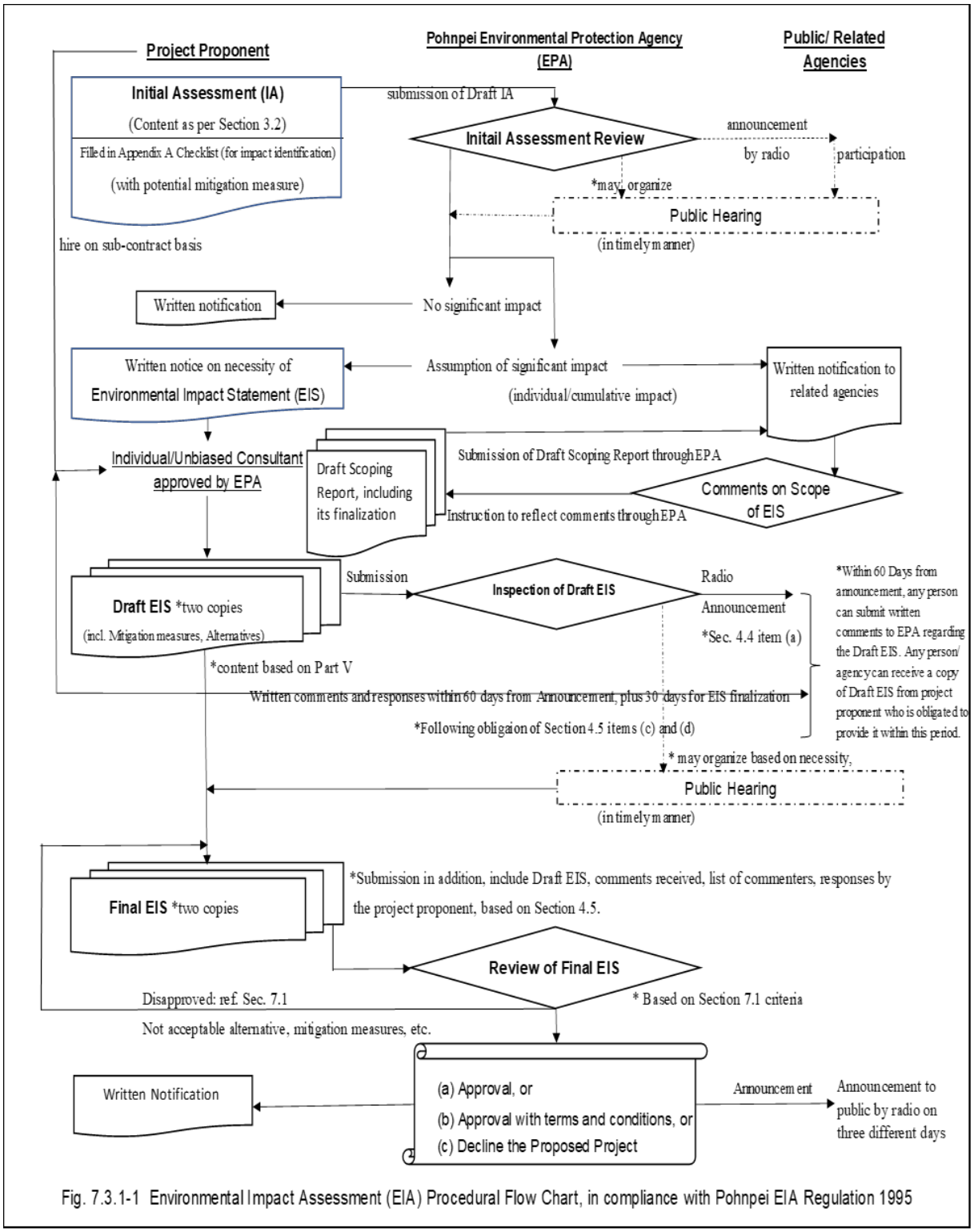


Fig. 7.3.1-1 Environmental Impact Assessment (EIA) Procedural Flow Chart, in compliance with Pohnpei EIA Regulation 1995

Source: JICA Study Team, in reference to Pohnpei EIA Regulation, 1995

Note: Even if after Review of Final EIS, the EPA Board decides to (c) Deline the Proposed Project, the overall process could still be resumed, if the Project Proponent decides to follow suite to EPA's comments, and revise the Final EIS accordingly.

Source: Survey Team

Figure 1-3-1 Environmental Impact Assessment (EIA) Procedural Flow Chart

1-3-1-4 Scoping Draft

A Scoping draft was set up (contents omitted) in respect of project implementing conditions in connection with project components and construction activities as potential source of environmental and/or social impact, current environmental and social situation based on baseline survey, in compliance with studying items that must be incorporated as mandatory requirement under the Pohnpei State EIA Regulation, and in light of the JICA Environmental and Social Consideration Guideline.

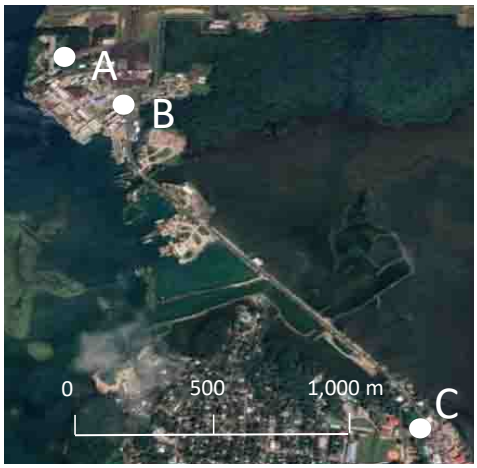
1-3-1-5 Impact Assessment Results

Impact Assessment was then conducted, in terms of study items on Pollution Control (Air Quality, Water Quality, Soil Contamination, Noise Intensity, Land Subsidence, Odor, Bottom Sediment), Natural Environment (Ecosystem, Natural Resource, Hydrological Situation, Topography and Geography), Social Environment (Social Unrest, Gender, Working Environment) and Others (Impact during Construction Phase, Accident Prevention Measures and Monitoring).

The result of the major items is described below.

(1) **Air quality**

Air quality was measured in terms of microparticulate PM10 and NOx and SOx at three locations shown in Figure 1-3-2.



Source: Survey Team

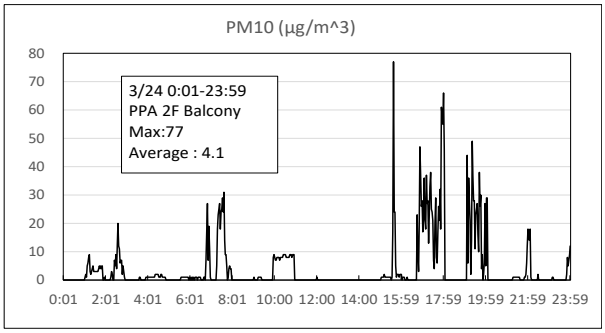
Figure 1-3-2 Location of Observation Points

1) PM10

Continuous observations of PM10 were made over one week on the balcony of PPA Administration Building at Point A in Figure 1-3-2, which is located behind the main wharf and on the second-floor balcony of the JOY Hotel within Kolonia City at Point C in the same figure. Some examples of the observation results are shown in Figure 1-3-3 through Figure 1-3-5.

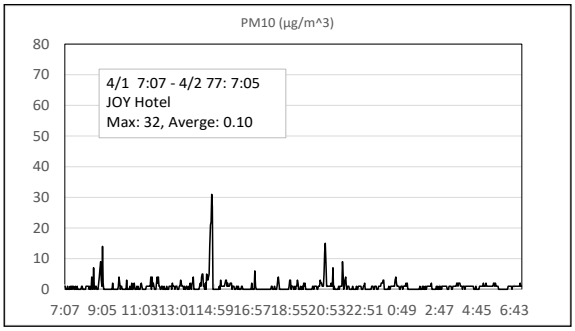
The daily average value was less than 10 μg, which is below the WHO guideline (50 μg). At the project site, where there is little vehicular traffic, PM10 concentration is small and the air quality can be rated as very

clean. Occasionally when PM10 surge up to 10 μg times unit level, it can be assumed as temporary surge of exhaust fumes from vehicles or generations by power outages to be the most possible cause.



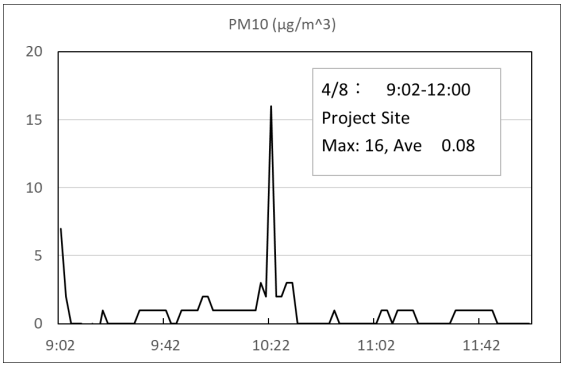
Source: Survey Team

Figure 1-3-3 Particle observation results (Point A)



Source: Survey Team

Figure 1-3-4 Particle observation results (Point C)



Source: Survey Team

Figure 1-3-5 Project site

Table 1-3-1 Particle observation result

Date	PM10	Survey Point	Date	PM10	Survey Point
2023/3/23	0.75	PPA	2023/4/1	0.10	Joy Hotel
2023/3/24	4.1		2023/4/2	2.14	
2023/3/25	1.47		2023/4/3	1.13	
2023/3/26	1.04		2023/4/4	11.38	
2023/3/27	1.85		2023/4/5	3.97	
2023/3/28	12.19		2023/4/6	12.60	
2023/3/29	9.43		**Average**	**5.22**	
2023/3/30	0.10		2023/4/8	**0.88**	Project Site
Average	**3.87**				

Source: Survey Team

Table 1-3-2 PM10 Limit values by WHO and Others

		Japan	US NAAQS	EU AQS (2008)	China AAQS (2012)	WHO AQG (2005/ 2000)
$PM_{2.5}$	Daily Avg.	35μg/m^3	35μg/m^3		70μg/m^3	25μg/m^3
	Annual Avg.	15μg/m^3	12μg/m^3	20μg/m^3	35μg/m^3	10μg/m^3
SPM (PM_7)	Hourly Avg.	200μg/m^3				
	Daily Avg.	100μg/m^3				
PM_{10}	Daily Avg.		150μg/m^3	50μg/m^3	150μg/m^3	50μg/m^3
	Annual Avg.			40μg/m^3	70μg/m^3	20μg/m^3

Source: Survey Team

2) NO_2, SO_2 Observation Result

The values of NO_2 and SO_2 were more than one digit lower than the WHO standard values at PPA office building near the existing wharf (point A shown in the photo), also at the guardhouse of waste disposal site behind the port (point B), and on the second-floor veranda of Fanny Hotel in the city center (point C), all of which were extremely normal. The air quality was therefore confirmed to be in a quite normal state.

Table 1-3-3 Observation result of NO_2, SO_2

Observation Points	NO_2 Concentration value (ppb)			SO_2 Concentration value (ppb)		
	A	B	C	A	B	C
	PPA balcony	Guard House	Joy Hote verandah	PPA balcony	Guard House	Joy Hotel verandah
Mar. 18 (Sat)			3.2			< 0.5
Mar. 19 (Sun)			1.6			< 0.5
Mar. 20 (Mon)			5.8			< 0.5
Mar. 21 (Tue)	1.2		3.3	< 0.5		< 0.5
Mar. 22 (Wed)	3.1		2.3	< 0.5		< 0.5
Mar. 23 (Thu)	4.0		4.3	< 0.5		< 0.5
Mar. 24 (Fri)	2.7		1.4	< 0.5		< 0.5
Mar. 25 (Sat)	1.6		5.2	< 0.5		< 0.5
Mar. 26 (Sun)	1.0		1.7	< 0.5		< 0.5
Mar. 27 (Mon)	1.5	1.1	6.5	< 0.5	< 0.5	< 0.5
Mar. 28 (Tue)	1.6	1.2	1.6	< 0.5	< 0.5	< 0.5
Mar. 29 (Wed)	1.8	1.7	1.9	< 0.5	< 0.5	< 0.5
Mar. 30 (Thu)	2.2	2.3	2.7		< 0.5	< 0.5
Mar. 31 (Fri)		2.2	1.5		< 0.5	< 0.5

NO_2 Standard: Hourly Value per Daily Avg., to be from 0.04 ppm (40 ppb) to 0.06 ppm (60 ppb) or below

SO_2 Standard: Hourly Value per Daily Avg., to be less than 0.04 ppm (40 ppb) as well as 0.1 ppm per one hour

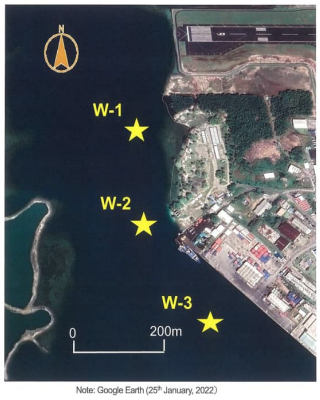
Source: Survey Team

(2) **Water Quality**

Escherichia coli (*E. coli*) values above environmental standards were detected at all sampled water sites, but no other parameters were found to exceed the environmental standard. The high level of *E. coli* bacteria may be mainly due to inadequate treatment systems for domestic wastewater.

It is desirable to improve the port's reception and treatment system as well as effluent regulations for ships calling at the port (especially refrigerated ships that stay at the anchorage for long periods).

The improvement of port reception and treatment systems is desirable.



Source: Survey Team

Figure 1-3-6 Water Sampling point

Table 1-3-4 Results of water quality analysis

Analyte	Location	Pohnpei MQS[1]	Japan EQS[2]	W-1				W-2				W-3			
	Sample ID			HT	HT	LT	LT	HT	HT	LT	LT	HT	HT	LT	LT
	Lab ID			SS	SF	SS	SF	SS	SF	SS	SF	SS	SF	SS	SF
	Date sampled														
Temperature (field)	°C	variation from natural		28.1	27.6	28.5	28.1	28.5	27.9	30.7	31.1	30.2	30.6	29.8	30.4
Dissolved oxygen (field)	%	60*	25**	1.5	1.6	1.5	1.5	1.5	1.5	1.5	1.4	1.5	1.5	1.5	1.4
pH (field)	pH units	7.7-8.5	7.0-8.3	7.17	7.81	8.04	8.07	8.03	8.07	8.13	8.08	8.12	8.09	8.12	8.07
pH (laboratory)	pH units	7.7-8.5	7.0-8.3	8.1	8.2	8.3	8.3	8.1	8.2	8.1	8.3	8.1	8.2	8.1	8.3
Total coliform	MPN/100 mL		1,000	980	196	>2419.6	>2419.6	2,420	1,986	>2419.6	2,420	>2419.6	>2419.6	>2419.6	2,420
E. coli	MPN/100 mL	400		1986.3	186.0	549.3	>2419.6	517.2	770.1	1986.3	280.9	579.4	148.3	866.4	98.4
Total nitrogen (as N)	mg/L	N:P ratio 6-	0.2	0.113	0.098	0.103	0.114	0.117	0.109	0.091	0.083	0.116	0.086	0.102	0.085
Total phosphorus (as P)	mg/L	18%	0.02	0.012	<0.010	<0.010	<0.010	0.012	0.012	<0.010	<0.010	0.012	<0.010	<0.010	<0.010
Salinity	‰ (pp thousand)	29-35		26	30	33	34	28	34	30	35	26	35	33	35
Suspended solids	mg/L			13.2	9	7.2	10.0	5.8	2.4	4.2	3.8	3.6	6.0	3.2	4.8
Turbidity	NTU	2		1.48	1.48	3.67	1.38	1.19	0.856	1.22	0.645	1.16	1.22	1.02	1.17
Zinc	mg/L	0.058	0.02	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

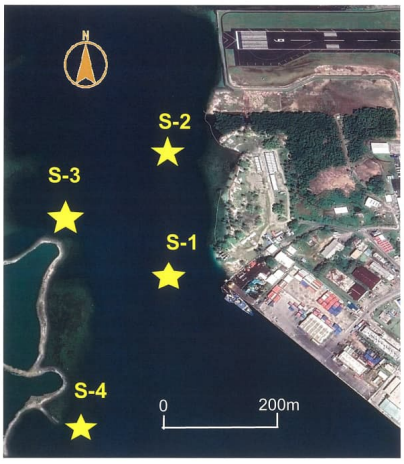
Source: Survey Team

(3) Bottom Sediment

1) Sediment on the navigation channel and basin

Sediment samples were collected from four points: the bottom of the navigation channel in front of the proposed project site (S1 and S2) and the seabed in front of the opposite shore (S3 and S4), as shown in Figure 1-3-7. The analysis was made for clarifying the quantities of the following items:

a. Sieve analyses
b. Total recoverable Phosphorus, Sulphur, Nitrogen, and organic carbon.
c. Heavy metals, trace As, Cd, Cr, Cu, Ni, Pb, Zu, Hg
d. DDT
e. Polycyclic Aromatic Hydrocarbons
f. Polychlorinated Biphenyls
g. Dioxins



Note: Google Earth (25th January, 2022)

Source: Survey Team

Figure 1-3-7 Sediment sampling points

The results of the analysis of the samples regarding those quantities that exceed environmental standard values are listed in Table 1-3-5. At all four points, the arsenic content is higher than the standards of Australia and Canada, which are indicated in the same table. Except for Point S3, the contents of chromium and nickel are also high.

The presence of arsenic and heavy metals in sediment on the seabed is thought to be due to surface soil created by volcanic activity that was washed out to sea by rainfall and deposited on the seabed.

Though it was found that the sediments on the seabed of the navigation channel and anchorage area of

Pohnpei Port contains hazardous substances, it should be noted that the dredging area for the construction of the quay does not include but the area shallower than -10 m where the ground is coral reef.

Table 1-3-5 Results of sediment analysis (Navigation Channel and Basi)

		Japan ES[1]	Japan Sediment Provision	Australian National Assessment	Canadian SQG[4]		S1	S2	S3	S4
					ISQG	PEL				
Arsenic	mg/kg			20	**7.24**	41.6	**28**	**28**	**23**	**28**
Cadmium	mg/kg			1.5	**0.7**	4.2	0.04	0.04	< 0.019	0.04
Chromium	mg/kg			80	**52.3**	160	**93**	**110**	35	**99**
Copper	mg/kg			65	**18.7**	108	16.1	17	5.4	14.9
Lead	mg/kg			50	**30.2**	112	6.6	6.7	1.83	5
Mercury	mg/kg		25	0.15	**0.13**	0.7	< 0.04	< 0.04	< 0.04	< 0.05
Nickel	mg/kg			21			46	54	19.6	47
Zinc	mg/kg			200	**124**	271	63	71	23	60

Source: Survey Team

Note) The Canadian PEL standard, indicated in red in the Table, is a standard that determines that, as a result of potential health hazards, sediment in excess of this standard should be removed.

2) Sediment at Project site

All of the samples for the sediment analysis discussed above were sediments that was washed onto the seabed of the navigation channel and the basin, which has a different formation process to the soil of the coral reef in the project site, which is to be dredged for the construction of the new quay. It is, therefore, essential to analyze the sediment to be dredged for determination of the content of arsenic and other heavy metals and to make a decision on whether the dredged sediment can be used as construction material or dumped at sea. Thus, additional investigations were carried out with following three stages

a. Analysis of samples taken during the soil test
   There were four samples that remain unused for soil testing (near the surface at BHs 1, 2, 3 and 9) and these samples were analyzed for arsenic
b. Analysis of samples from the actual dredging site
   To carry out a compositional analysis of the soil, samples were taken at about two meters below seabed near the shoreline of the project site which is the area to be dredged
c. Considerations of disposal methods of the dredged soil in the light of the result of the analysis

If the content of arsenic and other hazardous substances is below the specified values in the soil analysis results of both a) and b) above, the dredged sediment can be used as construction material or disposed at sea.

On the other hand, if the results of the analysis show that all samples contain arsenic and heavy metals with the values above the standard values, then it is considered that arsenic was contained in the ground at all locations during the creation of Pohnpei Island and that disposal of the dredged material at sea is not possible. Dredged material would therefore need to be disposed within the project site.

(4) **Marine ecology**

The marine ecosystem survey around the project site was conducted between April 14 and 18, 2023, using

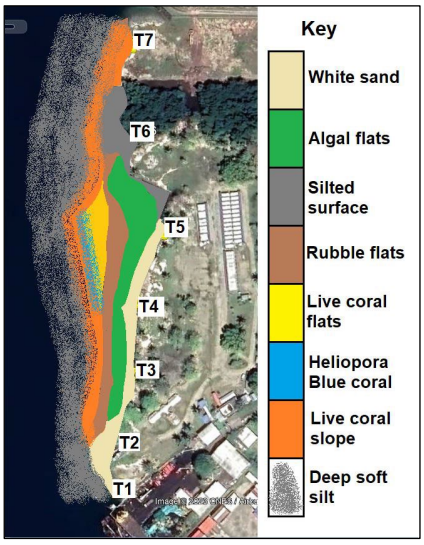
the following three survey methods: namely, a) Manta method, b) Belt transect method, and c) Quadrat method. In the first survey, a survey diver towed by a boat created a rough distribution map of mangroves, coral reefs, seagrass, etc. in the survey area. Next, in the second survey, survey belts (T-1 to T-7) were set up extending from the coast to the offshore, and survey divers observed and surveyed in detail, such as the status of vegetation of mangrove, coral reef and seagrass, as well as the benthic organisms on the seabed and aquatic organisms in the sea. And in the final survey, the state and characteristics of the ecosystem of each quadrat were grasped in detail based on photographic records of 1 square meter quadrats randomly set around areas with a lot of vegetation.

Note: The yellow lines in the figure represent the seven survey lines where corals were observed, and the squares indicate the mangrove survey sites.

Source: Survey Team

Figure 1-3-8 Survey lines of marine ecology

Coral distribution is shown in Figure 1-3-9.



Source: Survey Team

Figure 1-3-9 Coral distribution

The figure shows that the distribution varies with depth, with a white sand belt near the shoreline, followed by an algal zone on the flats, and live corals on the shoulders of the flats, where the slope steepens and deepens. The slope of the reef and the slope deeper than 5 m are covered with dead corals or bottom layers. An area of blue coral (70 m x 5 m), indicated by light blue, was found to be covered by a population of the endangered (UV) blue coral.

The survey results indicate the presence of endangered species listed on the IUCN (the International Union for the Conservation of Nature) Red List. The endangered species identified in the study area were summarized below and in Table 1-3-6.

Corals	Four VU (vulnerable species) vegetation types were found including blue corals. However, except for blue coral, the other species were found in large numbers in Pohnpei Province.
Mangroves	No endangered species were found.
Fish	Two (2) juvenile Humphead wrasse (Napoleon wrasse), which is endangered fish, were observed near the existing wharf.

Measures to deal with valuable species identified at the project site are discussed in 1-3-1-6 Consideration of Mitigation Measures.

Table 1-3-6 Results of marine ecology survey

Corals	Redlist & notes	Fish	Redlist & notes	Invertebrates	Mangroves
Heliopora coerulea Blue Coral	VU Common on T4 and T5 1 – 4m reef crest	*Cheilinus undulatus* Humphead wrasse	EN Two very small juveniles under port wharf on T1	None	Three species LC, none VU EN or CR
Pectina alcicornis	VU Several colonies on T3 and T6				
Pectina teres	VU Single colony on T6				
Pachyseris rugosa	VU Two colonies, one each on T6 and T7				
Heliofungia actiniformis	VU Single unconfirmed colony on T6				

Source: Survey Team

1-3-1-6 Consideration of Mitigation Measures

Based on the result of above impact assessment, consideration of mitigation measures was conducted regarding the same studying items. Basically, this can also be regarded as exactly the same as the environmental management plan.

As for noise intensity, heavy machinery that generates comparatively less noise will be selected for usage, such as usage of vibro-hammer for piling works that generates less noise than others.

Among them, likewise to the impact assessment, the focal issue on Sediment and the Ecosystem should be quoted in detail.

As for soil, installation of earth retaining revetment with crushed stones to prevent reclaimed soil from flowing out to the sea is considered fundamental due to contamination of arsenic and heavy metals. Also proper treatment of dredged soil is necessary.

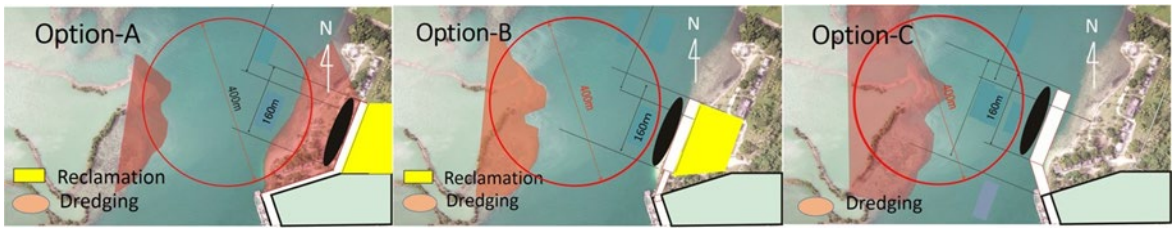
As for the Ecosystem, given the significant loss of blue coral, certain portion of the coral will be transplanted to nearby protected areas prior to the dredging work. The growth conditions of the transplanted coral will be regularly monitored during construction phase. Separately, since the dredging will result in the loss of coral reefs that serve as habitats loss for fish species, 70-meter-long coastal area adjacent to the new quay will be shaped similarly to the existing terrain as an additional compensation measure. And the area will feature a flat section at a depth of approximately 5 meters, installed with a Rubble Mat (a mat-like layer of crushed stones laid to a thickness of 1 meter) from the flat section to the shoreline, that should function and serve like an artificial fish reef.

1-3-1-7 Consideration of Alternatives

The alternative plan not to implement the project was first considered. The objective of the project was to alleviate congestion and improve safety in Pohnpei Port by constructing a new quay with ship mooring facilities in Pohnpei Port, thereby contributing to the improvement of maritime logistics. Therefore, it was assumed that if the option of not implementing the project was pursued, the congestion of ships in Pohnpei Port would not be alleviated, the safety of navigation would be threatened, and the demand of the port as a fishing base would not be met, resulting in the loss of an opportunity for economic development in Pohnpei State in terms of the distribution of fishery products in the region.

On the other hand, through the basic information collection survey, the Survey Team identified the "operational problems" and "quay facility problems" of Pohnpei Port, highlighting issues such as double and triple mooring state, due to a lack of mooring facilities, safety issues in docking and undocking, and the loss of opportunities for economic development of Pohnpei Port in the field of distribution of fishery products due to the decline in services for users (fishing boats, container ships, etc.) caused by the deterioration of wharf facilities including problems of the structural strength of the quays and aprons. In addition, from the perspective of port operations, construction methods related to the soft ground and the amount of dredged soil and construction costs, it was determined that there was no other option other than Misko Beach as the most potential project site for this Pohnpei Port Expansion Plan.

Finally, a comparative study was conducted among alternative plans A, B and C for the location of the wharf at the project site (A: Plan A involved locating the wharf inland, with a large amount of dredging required on land and cutting down some mangrove forests; B: Plan B involved locating the wharf along the shoreline; C: Plan C involved locating the wharf offshore, with an increased amount of dredging required on the opposite shore). In the end, from the perspective of fair amount of construction cost and environmental considerations, alternative plan B was selected as the best option, as it would require a relatively small amount of dredging and would avoid any impact on the mangrove forests.



Source: The proceeding survey, JICA, 2019

Figure 1-3-10 Alternative plans

1-3-1-8 Environmental Monitoring Plan

During construction, items on Air Quality, Water Quality, Soil, Noise, Land Subsidence, Odor, Sediment, Ecology, Waste, Natural Resources, Hydrology, Topography and Geology, Social Unrest, Gender, Working Environment and Accident prevention measure should be monitored, though each frequency and monitoring stations and parameters, etc. conditions differ.

Some focal items for monitoring are discussed below.

As for Noise intensity, monitoring during construction, especially during piling works must be conducted, by measuring noise intensity level at boundary of residential area of the project site opposite coast side, which is Sokehs village.

Secondly as for the sediment, during dredging and reclamation works period in particular, observation should carefully be conducted to check that management and treatment of dredged material is appropriately taken place.

In terms of ecology, before construction, the blue coral treatment on its partial transplantation must be observed to confirm that it will be conducted as planned as well as regarding installation of rubble mat as artificial reef that should be confirmed at construction phase.

1-3-1-9 Stakeholder Meeting

A stakeholder consultation for the project among project stakeholders and local residents, with special consideration given to those directly affected by the project, was held in the conference room of PPA General Building on April 16, 2024. A prior public notice was published in the Official Gazette and publicized through notice boards in PPA Building, Pohnpei State Government Building and Sokehs City Hall, as well as a notice to local fishermen by the Sokehs City Government.

During the stakeholder meeting, questions were raised such as whether there is a development plan for fishing activities at the port, why there are no supporting facilities at the new quay, and whether the IA/EIA process will be carried out appropriately as scheduled, taking into account the local fishermen who will be affected. The consultant explained that the project will provide necessary wharf for mooring purse seine fishing ships and catch carrier ships, and supporting facilities for other fishing activities will be developed by PPA. It was also observed that the IA/EIA process and other environmental procedures will be carried out appropriately as scheduled, with all applications already in the preparation stage, in close liaison with the relevant

authorities. Overall, no objections were raised to the implementation of the project.

Since the Micronesian side, including the Pohnpei State EPA, required to complete the IA/EIA procedure before the EN, it regarded the stakeholder consultation held on April 16, held before the IA/EIA application, as the official IA/EIA-related stakeholder consultation and treated it as part of the official IA/EIA procedure.

In order to supplement the official stakeholder consultation mentioned above, PPA held a follow-up public hearing on August 1, 2024. Although the content of the discussion was limited to an overview of the IA report, which had already been approved on July 4, 2024 (post-approval report of IA approval), the roles and responsibilities of PPA and Micronesian side, related to environmental management and environmental monitoring plans was explained.

1-3-2 Land Acquisition and Involuntary Resettlement

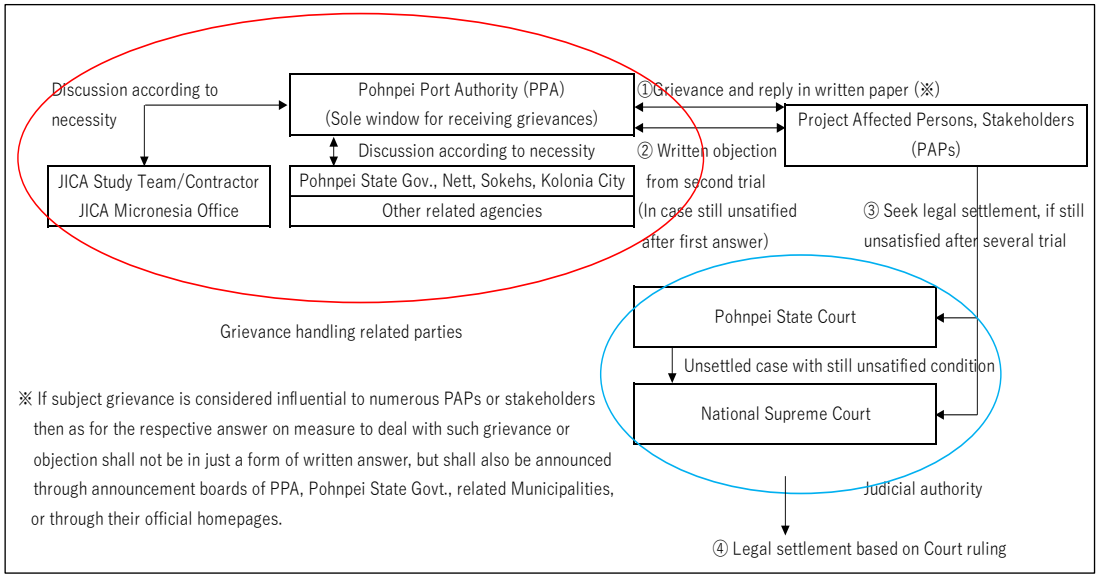
1-3-2-1 Land Acquisition and Involuntary Resettlement

The project site is within PPA owned land and the lease agreement had been already expired and the resort buildings had been demolished. However, there are still facilities that were built to inspect and quarantine returnees and entrants following the phased relaxation of border closures taken as part of the 2020 COVID-19 measures. These facilities will be removed by PPA before the start of construction of this project.

In addition, the Board of Trustees on Public Lands has already granted permission for land use on August 1, 2024.

1-3-2-2 Grievance Redress Mechanism

The grievance handling mechanism will be implemented based on the flowchart below.



Source: Survey Team

Figure 1-3-11 Grievance mechanism flowchart

Points to note regarding the grievance handling mechanism are as follows:

a. PPA, which is the business owner, will serve as the central point of contact for receiving complaints.
b. Complaints made by parties filing complaints or objections to PPA, as well as responses from PPA, will be accepted and processed in writing.
c. PPA will consult with local governments, related organizations and JICA to discuss countermeasures, as necessary.
d. Responses to countermeasures for complaints that are expected to have a wide-ranging impact on affected residents and stakeholders will be disseminated through posting on PPA, the bulletin board of the relevant local government, or on the homepage of the relevant organization.
e. If the party making the complaint/objection is not satisfied even after the second and subsequent objections are answered, the complaint/objection party may file a lawsuit through judicial procedures to the Pohnpei State District Court, then to the National Supreme Court, or be adjudicated by one of the courts.
f. Furthermore, Survey Team/JICA Micronesia Office will not commit to consultations with PPAs regarding complaint handling for the period after 2 years from the date of operation when JICA environmental monitoring reports are required.

Chapter 2 Contents of the Project

2-1 Basic Concept of the Project

(1) Objective of the Project

The objective of this project is to ease congestion and improve safety in the port by constructing a 10 m deep quay at Pohnpei Port. In the future, this project will also realize a complete separation of the commercial port and fishing port functions, contributing to the efficiency and optimization of port operations.

(2) Outline of the Project

1) Details of facilities and equipment

The main components of this project are shown in the table below.

Table 2-1-1 Main components of the project

Type of Work	Description
1.Quay	Design Depth: -10 m
	Quay: Length 160 m, Width of Apron 30 m
	Steel Pipe Sheet Pile: D1,000 x t11, L=24.5 m
	Anchoring Sheet Pile: Steel Sheet Pile SP-IIIw
	Coping Concrete: Cast in place concrete
	Apron: Cast in place concrete
	Bollard: 700 kN
	Rubber Fender: SK500H, L＝1,500 mm
	Car stop: RC concrete (300H)
	Corrosion protection: Cathodic Protection (50 years life)
2.Mooring Post (Outside of the Quay)	Bollard: 700 kN
3.Access Road	Length 249 m, Width 10 m, Concrete pavement
4.Conctainer Yard	Area: 190 m x 90 m, Reclamation Sand (Dredged material)

Source: Survey Team

2) Consulting Services/Soft Components

a. Detail Design (incl. bidding)
b. Construction supervision

3) Procurement and construction method

a. To implement in accordance with the General Grant Aid Procurement Guidelines
b. Construction materials and equipment will generally be procured locally, but materials with quality issues or imports eligible for tax exemptions will be sourced from Japan or

a third country.

c. During construction, necessary mitigation measures will be taken based on the results of an environmental impact assessment conducted by the Government of Micronesia (such as the installation of silt screens to prevent the spread of pollution).

2-2 Outline Design of the Japanese Assistance

2-2-1 Design Policy

(1) Design Standard

Japanese standards such as "Technical Standards for Port and Harbour Facilities in Japan" are to be used since there is no design standard prepared in Micronesia for port structures.

(2) Design Policy of Port Facilities

Port facilities planned in this project are New Quay, Access Road, Land for Container Yard and Bollard. These facilities must be planned with great caution for the followings.

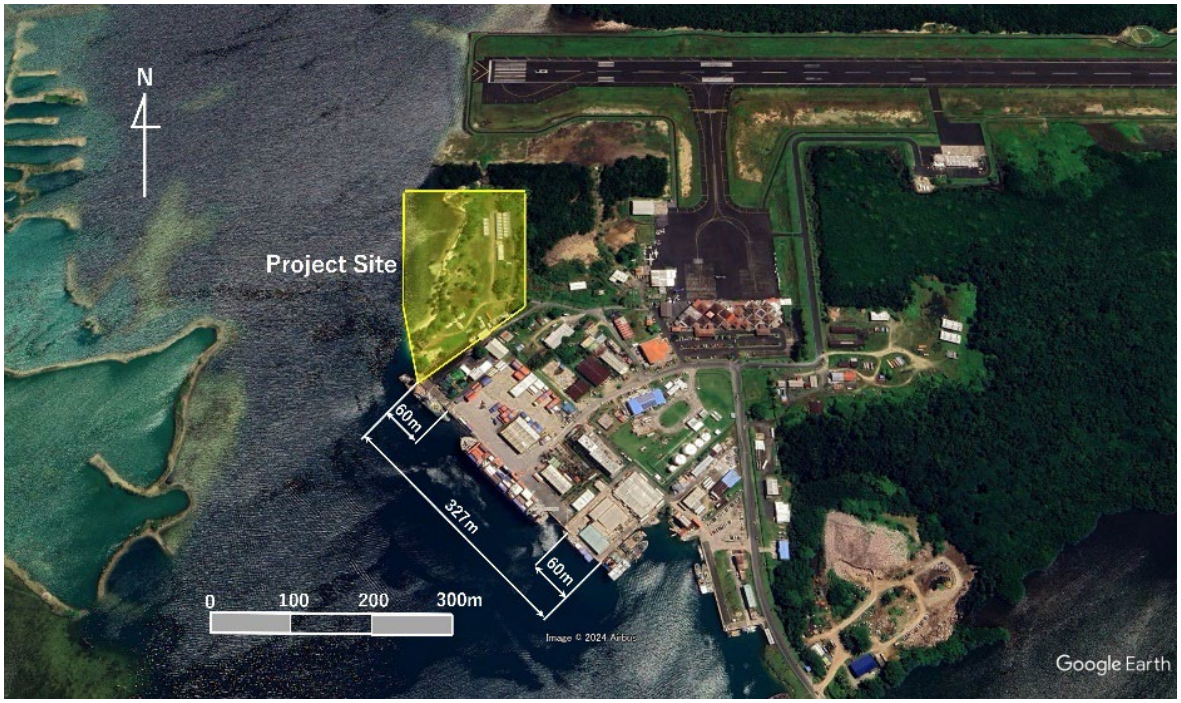
a. To plan facility structures for easy maintenance considering the local natures and social conditions.
b. To make a construction plan so as to minimize the influence to the existing port activities by the construction works.
c. To make the plan as little as possible for the construction cost and construction period considering the local technical constrains in addition to use local materials, equipment and labors and activate the local economy.
d. To execute the construction works based on the laws and standards in Micronesia for the environment.

2-2-2 Basic Plan

(1) Project Site

The project site is located to the north of the existing main wharf of Pohnpei Port, which is shown in yellow shadow in Frontispiece-2 and the former resort Misko Beach. The project site is a PPA owned public land located in Diketik Island of Pohnpei Island (Pohnpei State) within the Federated States of Micronesia.

Pohnpei Port, managed and operated by PPA, has two mooring facilities as shown in Figure 2-2-1: the 327 m long main wharf (moored for container ships and purse seiners) and the adjacent fishing port area to the south (Takatic Fishing Port) used by longline fishing ships. Many purse seiners and longliners use Pohnpei Port as their home port, and during the fishing season, many foreign purse seiners call at the port to transship their catch to refrigerated ships.



Source: Google Earth Edited by Survey Team

Figure 2-2-1 Project Site

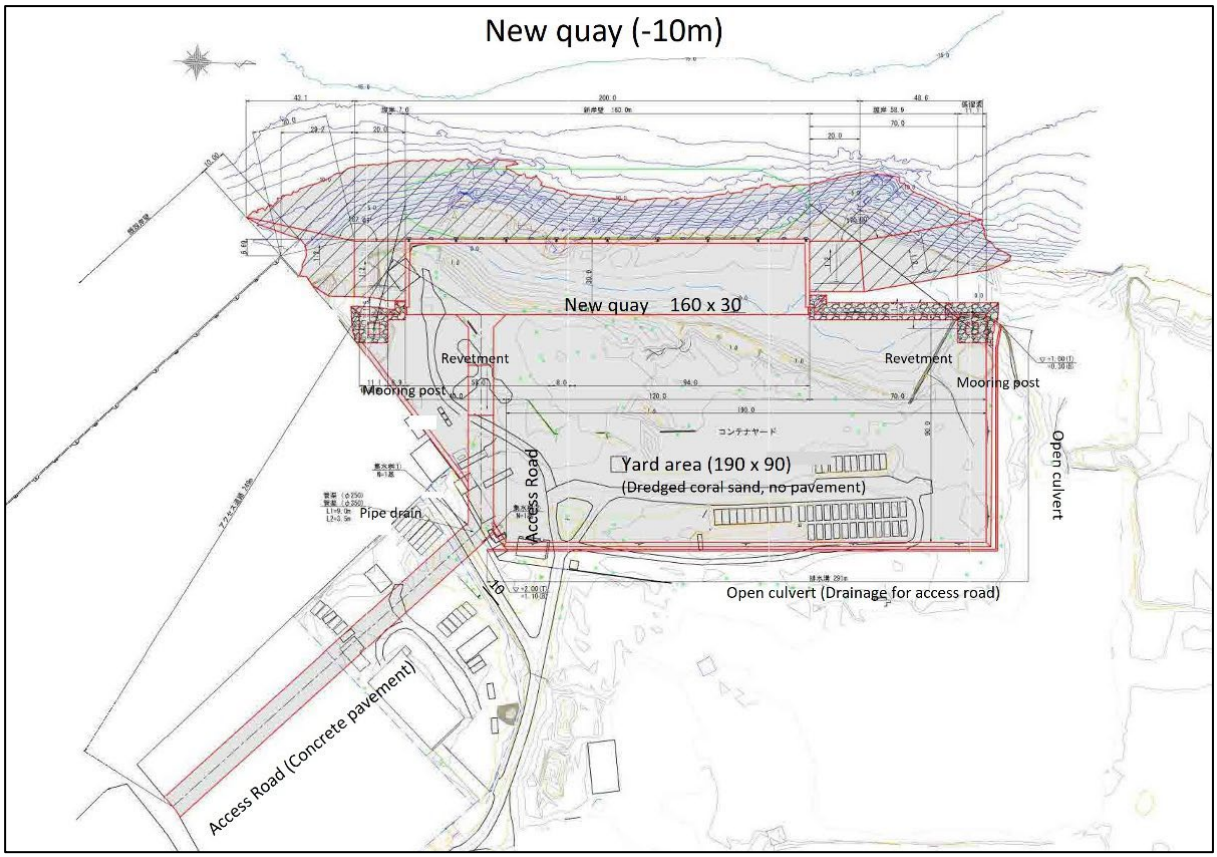
A 60 meters section on each side of the main wharf is reserved for purse seiners, and a 200-meter section in the center is reserved for container ships. However, the length of the mooring area for purse seiners is insufficient, so on days when container ships do not call, not only are purse seiners moored along the entire length of the wharf, but fishing boats are also moored to the moored fishing boats, thus doubling or tripling the number of moorings.

The problem is that the congestion of the port by purse seiners threatens the safety of container ship operations in the port and wastes time and fuel by having the purse seiners retreat to anchor sites each time a container ship arrives in port. To address these issues, a resort area between the main wharf and the airport runway (called Misko Beach) was selected as the site for the new quay development in the "Data Collection Survey on Port Development in Federated States of Micronesia (referred to as the Preliminary Study), JICA, 2019" that preceded this brief study.

(2) **Main Project Components**

The proposed project is shown in Figure 2-2-2. The project consists of three components: a 160 m long quay (water depth -10 m, apron width 30 m), a 190 m x 90 m yard area with leveled surface covered with crushed stones and a concrete paved access road (10 m wide and 249 m long) from the existing port road to the quay. Mooring bollards are also to be constructed on both outer sides of the quay. In order to ensure a water depth of 10 m in front of the quay, dredging work of approx. 46,000 m^3 is scheduled.

Specifications of the main components are listed in Table 2-2-1.



Source: Survey Team

Figure 2-2-2 Proposed Projects

Table 2-2-1 Major Project Components and Specification

Description	Shape・Dimensions
1.Mooring Quay	Design Water Depth : -10 m
	Quay : Length 160 m, Width of Apron 30 m
	Front Pile : Steel Pipe Sheet Pile D1,000×t11, L＝24.5 m
	Anchoring Pile : Steel Sheet Pile SP-IIIw
	Coping Concrete : Cast-in-Place Concrete
	Apron Pavement : Cast-in-Place Concrete
	Bollard : 700 kN type
	Rubber Fender: SK500H, L＝1,500 mm
	Curbing : RC Concrete (300H)
	Aluminum Anode : Cathodic Protection (Service Life 50 years)
2.Mooring Bollard (Both side of the Quay)	Bollard : 700 kN type
3.Access Road	Length 249 m, Width 10 m, Concrete Pavement
4.Container Yard	Area : 190 m x 90 m, Sand Reclamation (Dredged Coral Sand)

(3) **Outline Design Drawing**

1) New Quay

(i) Design Conditions and Terms of Use

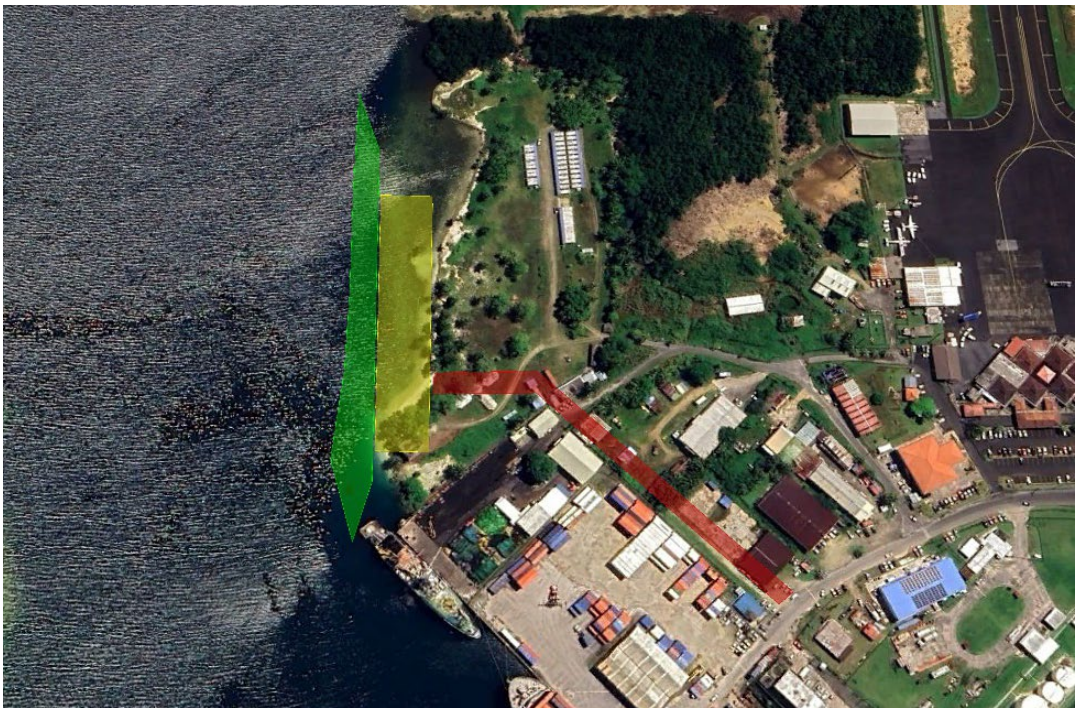
Design conditions and the terms of use of New Quay are summarized in Table 2-2-2.

Table 2-2-2 Design Conditions and Terms of Use

【Design Conditions of New Quay】		
Tide level:	Highest High Water Level	HHWL+1.627 m
	Mean Water Level	MSL+0.796 m
	Lowest Low Water Level	LLWL+0.152 m
	Chart Datum Level	CDL±0.00 m
Wave:	No influence due to inner bay	
Soil Condition:	Result of soil investigation (mainly coral sand)	
Design Seismic Intensity:	Kh=0.05 (same as neighboring Takatik Fishing Port)	
Design Wind Velocity:	30 m/sec (same as neighboring Takatik Fishing Port)	
Terms of Use for New Quay		
Design Ship:	19,000DWT Container Ship (LOA:160 m, Width: 25 m, Draft:9.2 m)	
Design Depth:	DL-10 m (dredging coral leaf being existed in front of quay up to DL-10 m)	
Crown Height:	DL+2.9 m (same as the height of existing wharf)	
Vertical Load:	Usual 2.0 t/m^2	Time of Earthquake 1.0 t/m^2
Axial Load:	40 t Top Lifter (time of handling containers)	
Service Life:	50 years	
Corrosion Protection:	Cathodic Protection	

(ii) Layout Plan of New Quay

Figure 2-2-3 shows the concept plan for New Quay.



Source: Survey Team

Figure 2-2-3 Concept of New Quay Plan

a. New Quay (colored yellow) is arranged moving away about 50 meters from the existing wharf along coral edge in front of Misko Beach.
b. Front water area of New Quay is dredged up to -10 m for berthing container ships.
c. The access road (colored red) will connect the new quay and the existing wharf via the shortest route and will also connect to the port road leading to the existing wharf.
d. Land for container yard is arranged at the back side of the apron of the new quay.

(iii) Structure Type of New Quay

As the result of soil investigations, the soil conditions of Misko Beach and coral leaf where New Quay is planned were found as coral sand having N value of more or less 10. Structure type of Steel Pipe Sheet Pile is planned in accordance with the result of stability computation.

(iv) Quay length, Water depth, Crown height and Apron width of New Quay

LOA of container ship (20,000DWT) is 175 meters according to “Technical Standards for Port and Harbor Facilities in Japan” and the necessary berth length is 220 meters. While, the LOA of the largest container ship (19,000 DWT) currently in service at Pohnpei Port is 160 meters[1], therefore, 160 m x 175 m/220 m=201.1 m and the necessary berth length becomes 200 meters. On the other hand, in order to shorten construction

[1] The standard quay length for a 160m-long ship to berth is 200m, based on the assumption that the mooring lines at the bow and stern of the ship will be moored to mooring posts at a 45-degree angle to the quay. This value is used as the standard when setting up multiple berths on a long, straight quay. Since the new quay is a single berth, the quay length required for mooring is the same as the ship's length, and by installing mooring posts 20m apart on the outside of the quay, a quay with a length of 160m can function the same as a 200m-long quay.

period and save costs, the new quay is planned to be 160 meters long and the mooring bollards are planned to be installed approximately 20 meters from both ends of the quay. And 40 m portion of the face line length is added on the 160 m length of the new quay and the total 200 m portion is dredged up to -10 m. The elevation of the new quay is DL+2.9 m as same as the existing wharf, and the concrete apron behind the new quay is 30 m wide.

a. Design depth of the new quay is DL-10 m from 9.2 m as the maximum draft of design ship
b. The crown height is DL+2.9 m same as the existing wharf
c. The width of concrete apron behind the quay is 30 meters

2) Bollard and ancillary facilities

a. Bollards (mooring post) are arranged at both sides located outside of the new quay for berthing container ship.
b. Rubber Fender, Rubber Ladder, Bollard, Curbing and etc. are arranged at the new quay.
c. Beacon lights are arranged at both ends of the new quay for the visual recognition from the ship at night according to the request of PPA.
d. Beacon buoys are arranged at the both sides of -10 m dredged water area in front of the new quay.

3) Access Road

Access road is paved by concrete with the length of 249 m and road width of 10 m. Stormwater will be discharged to the sea through drainage ditches installed on the north and east sides of the yard. (Figure 2-2-17)

4) Land for Container Yard

(i) Plan of land for container yard

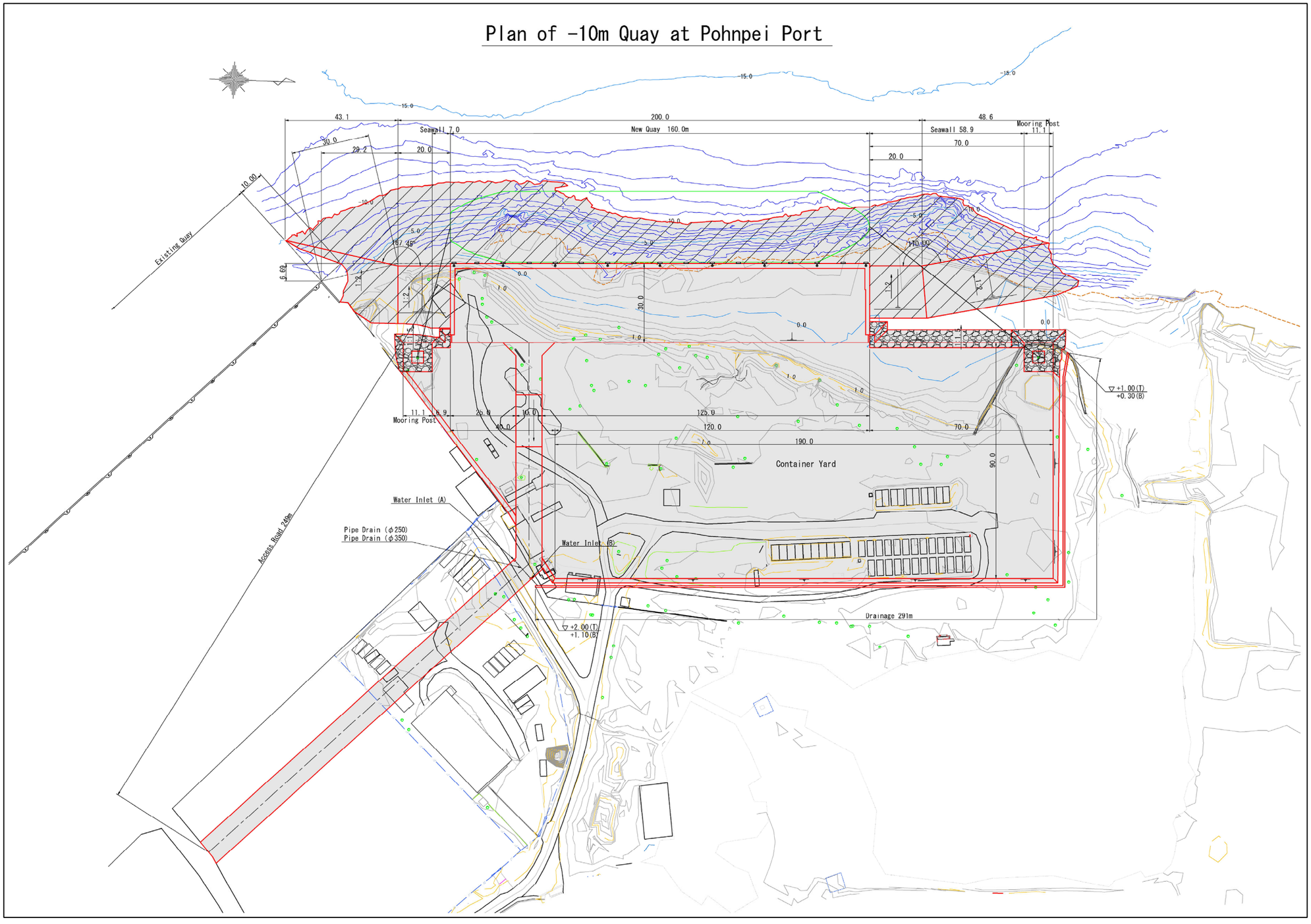
Dredged soil obtained from the area in front of New Quay is used for rising the height of Misko Beach behind the Quay where develops future container yard (190 m x 90 m). The surface of yard is crushed stones finish.

(ii) Seawall for the yard

Seaside of dredged soils for the rising the height of land for container yard is protected by the seawall structure using rubble stones with geotextiles for preventing the erosion of the dredged soil and the erosion by waves.

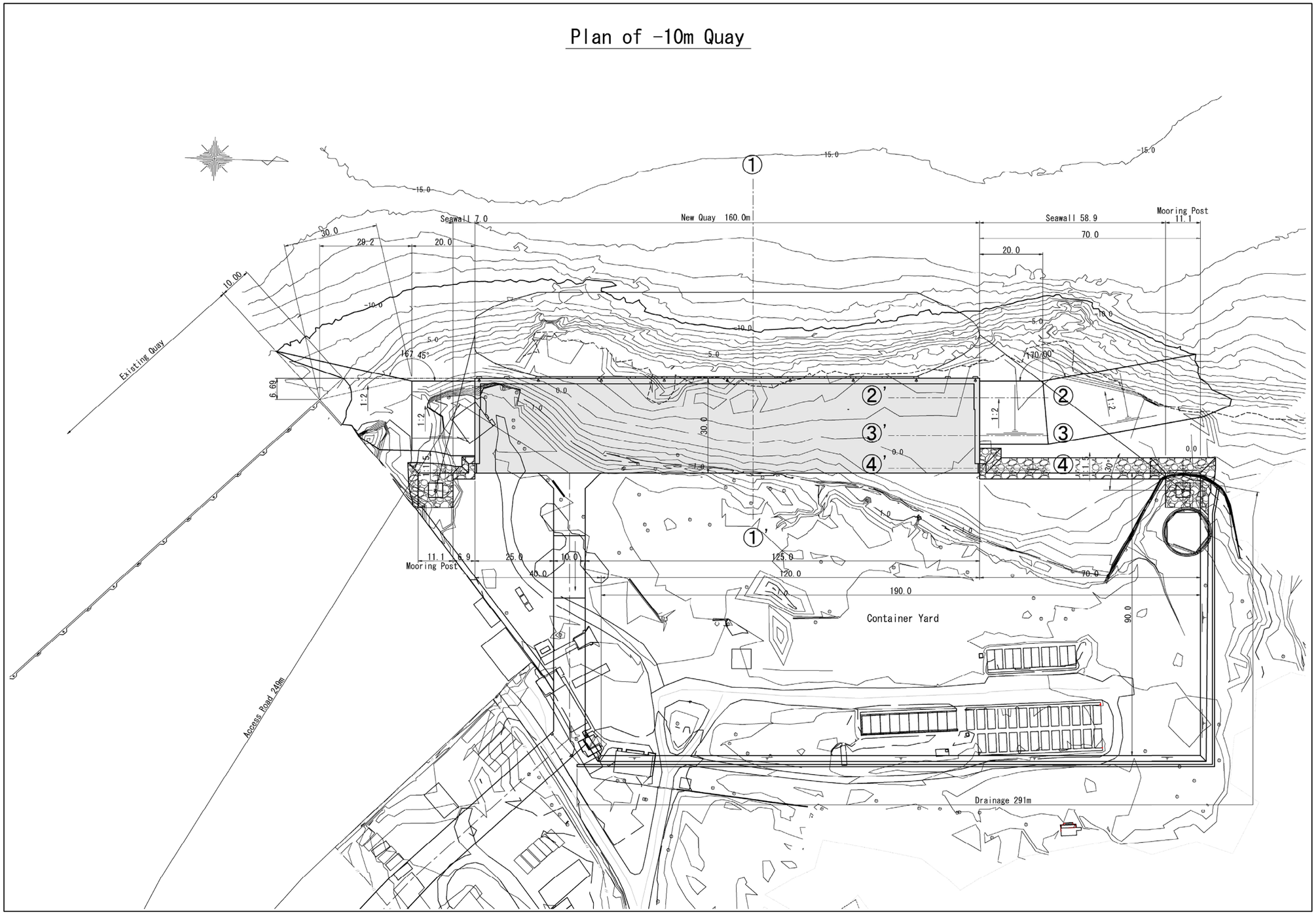
2-2-3 Outline Design Drawing

Figure 2-2-4 to Figure 2-2-8 show outline design drawings.



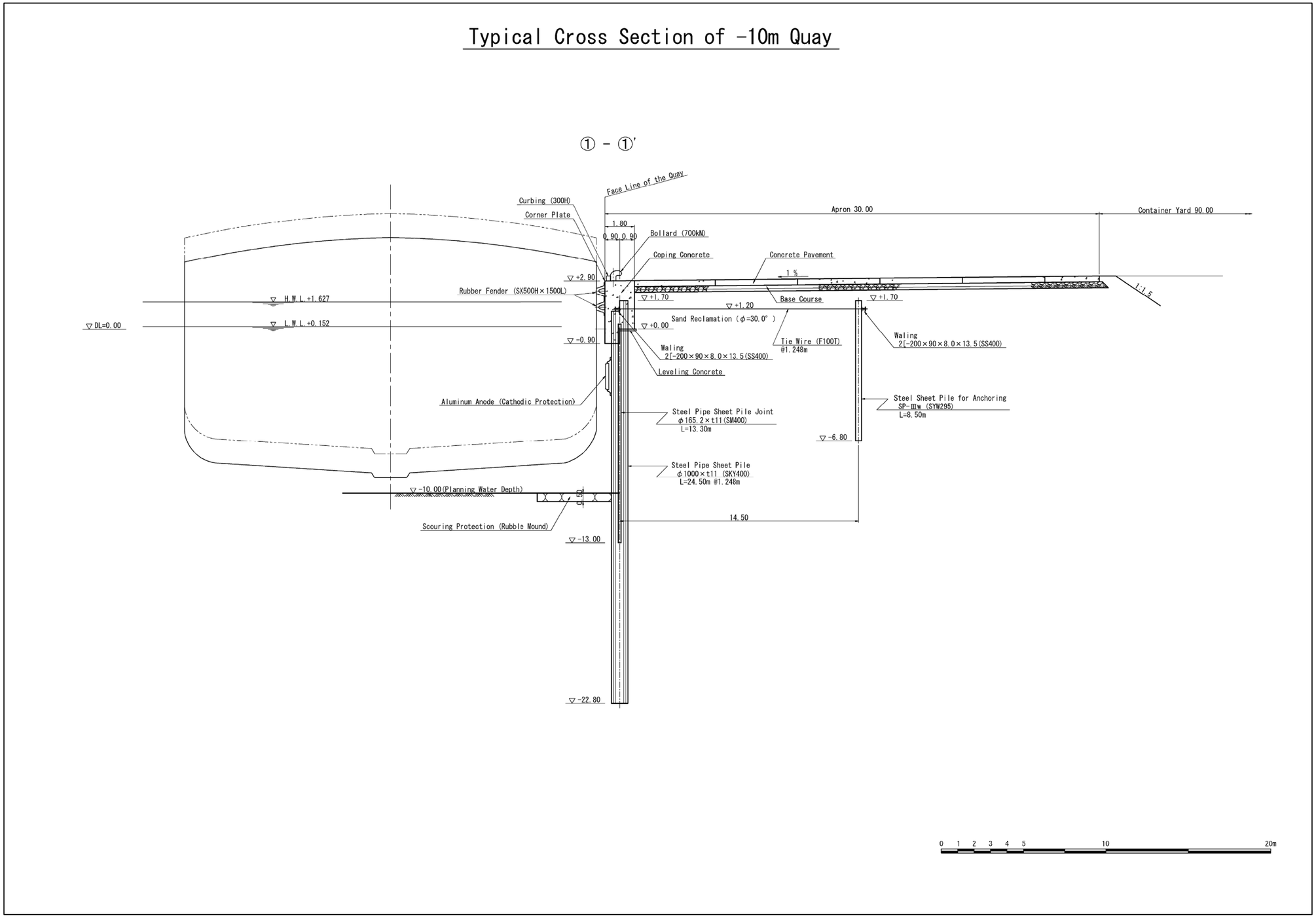
Source: Survey Team

Figure 2-2-4 Plan of New Quay



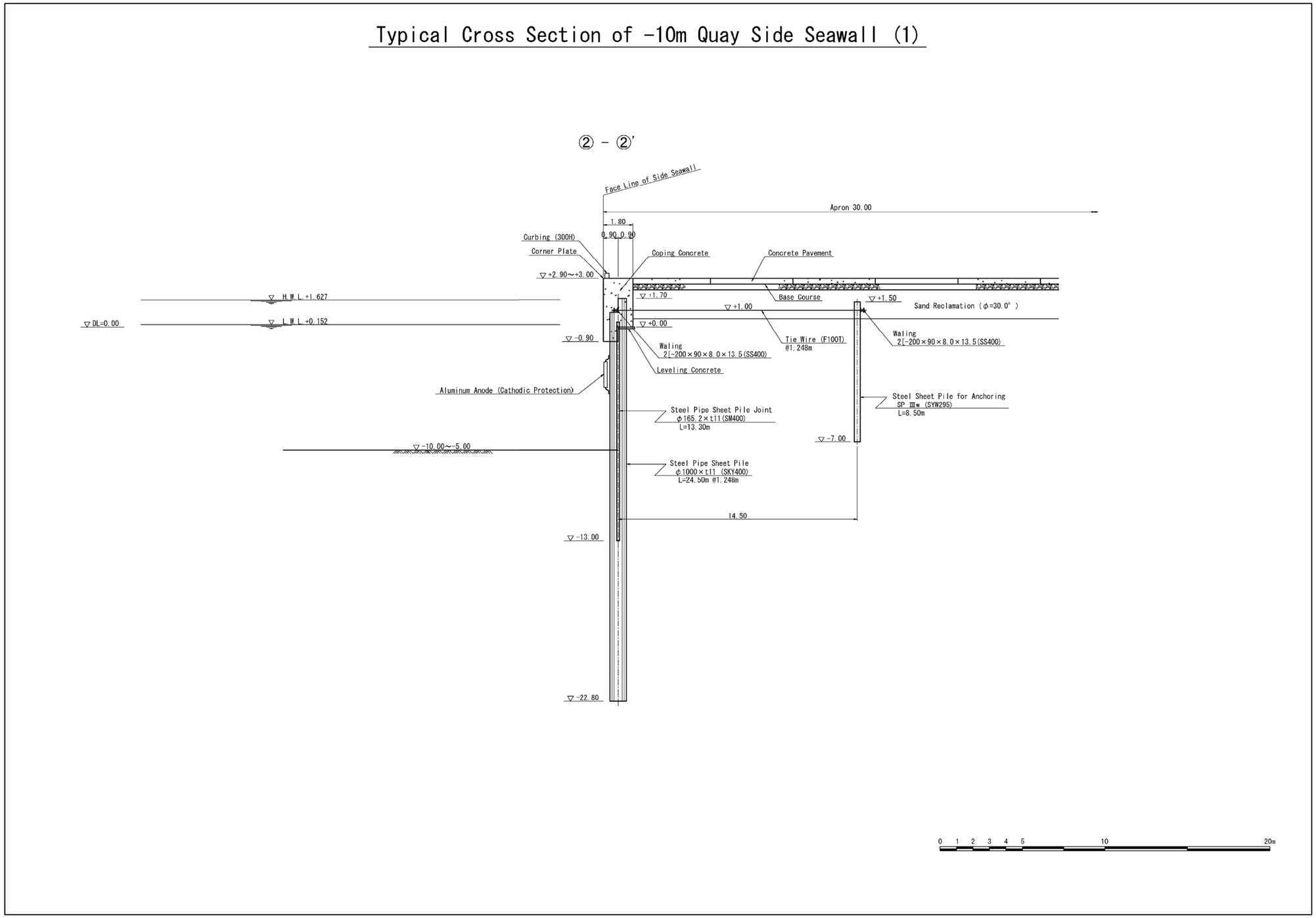
Source: Survey Team

Figure 2-2-5 Typical Cross Section of New Quay



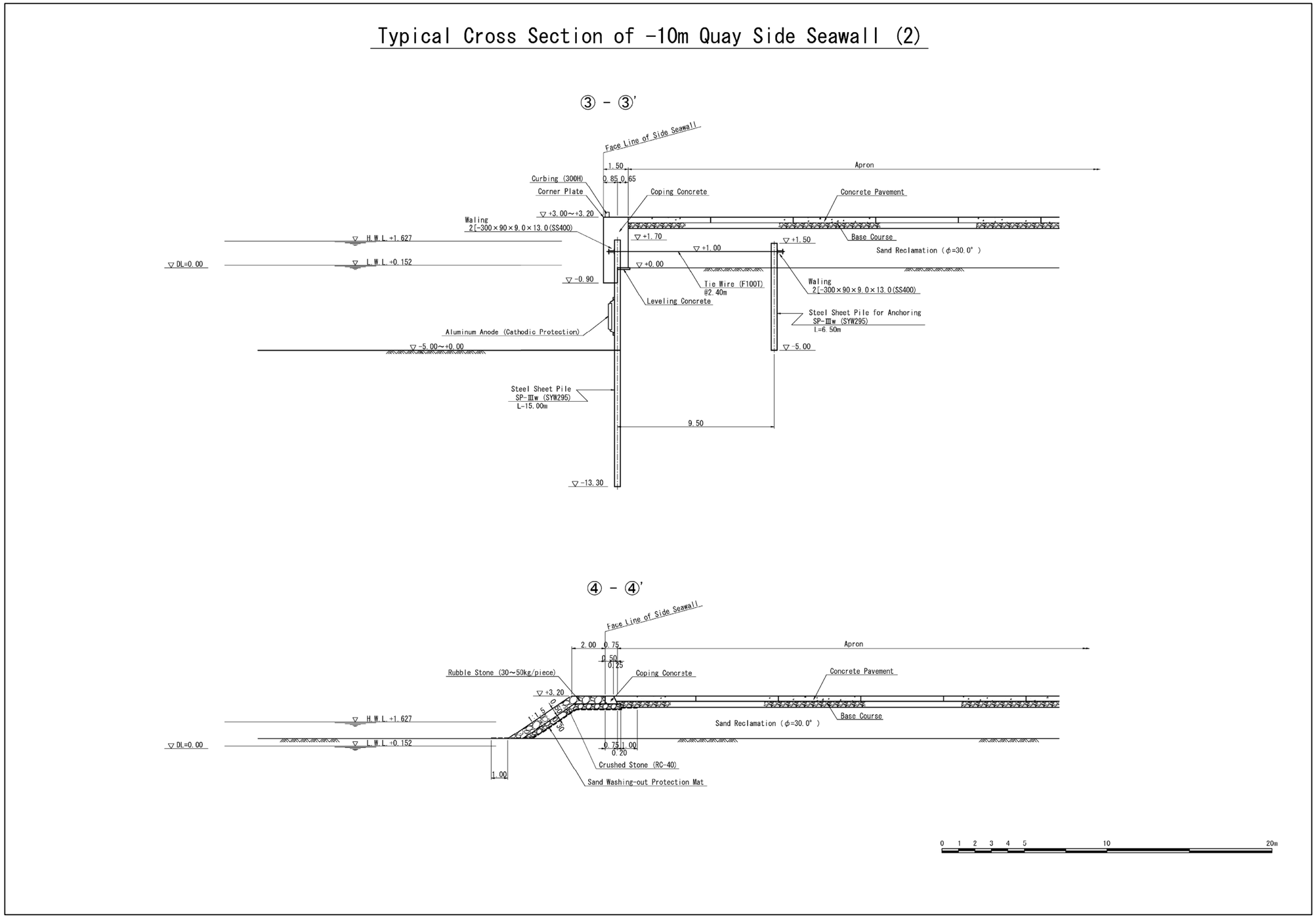
Source: Survey Team

Figure 2-2-6 Plan of Land for Container Yard



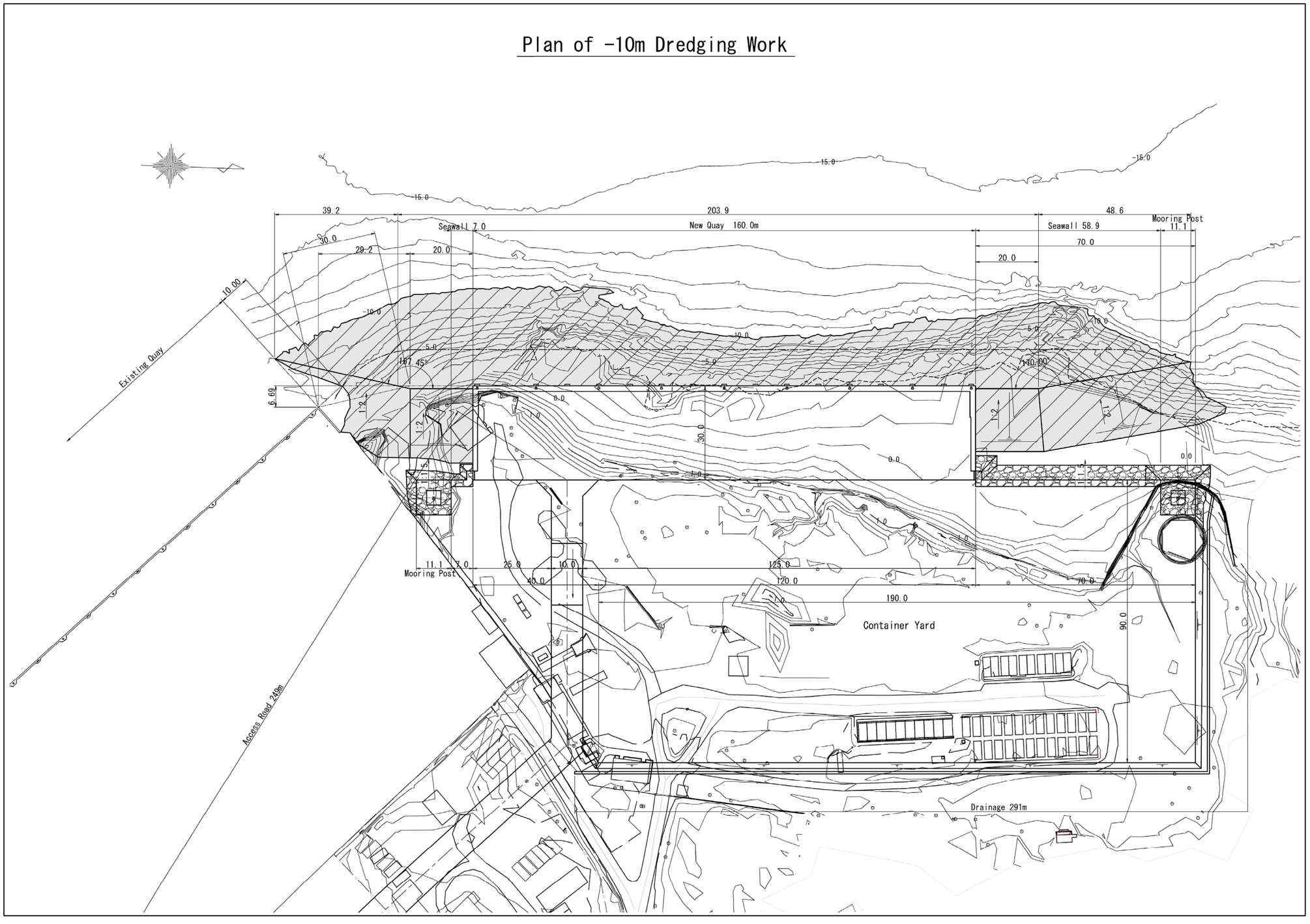
Source: Survey Team

Figure 2-2-7 Typical Cross Section of Container Yard Seawall



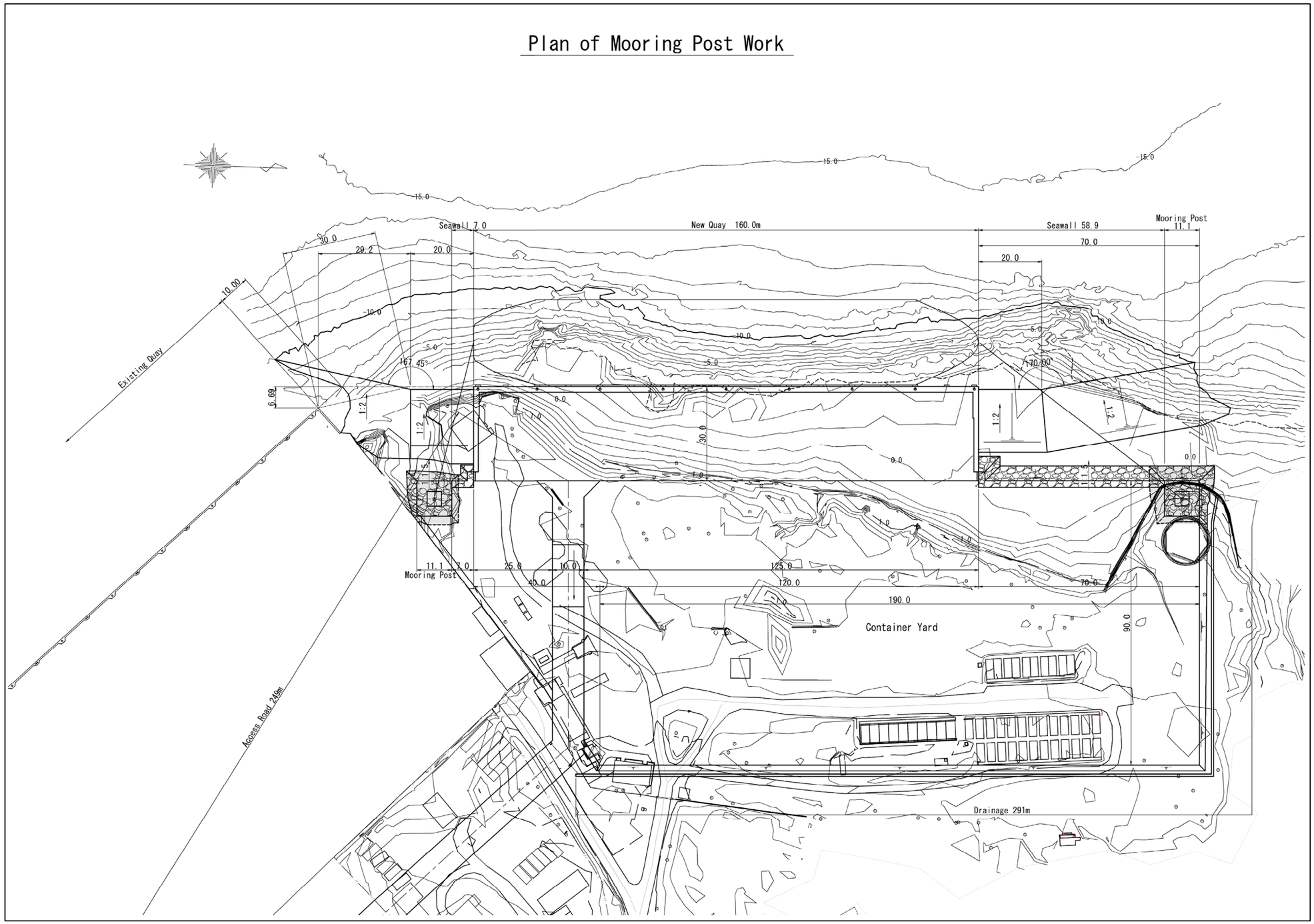
Source: Survey Team

Figure 2-2-8 Typical Cross Section of Access Road



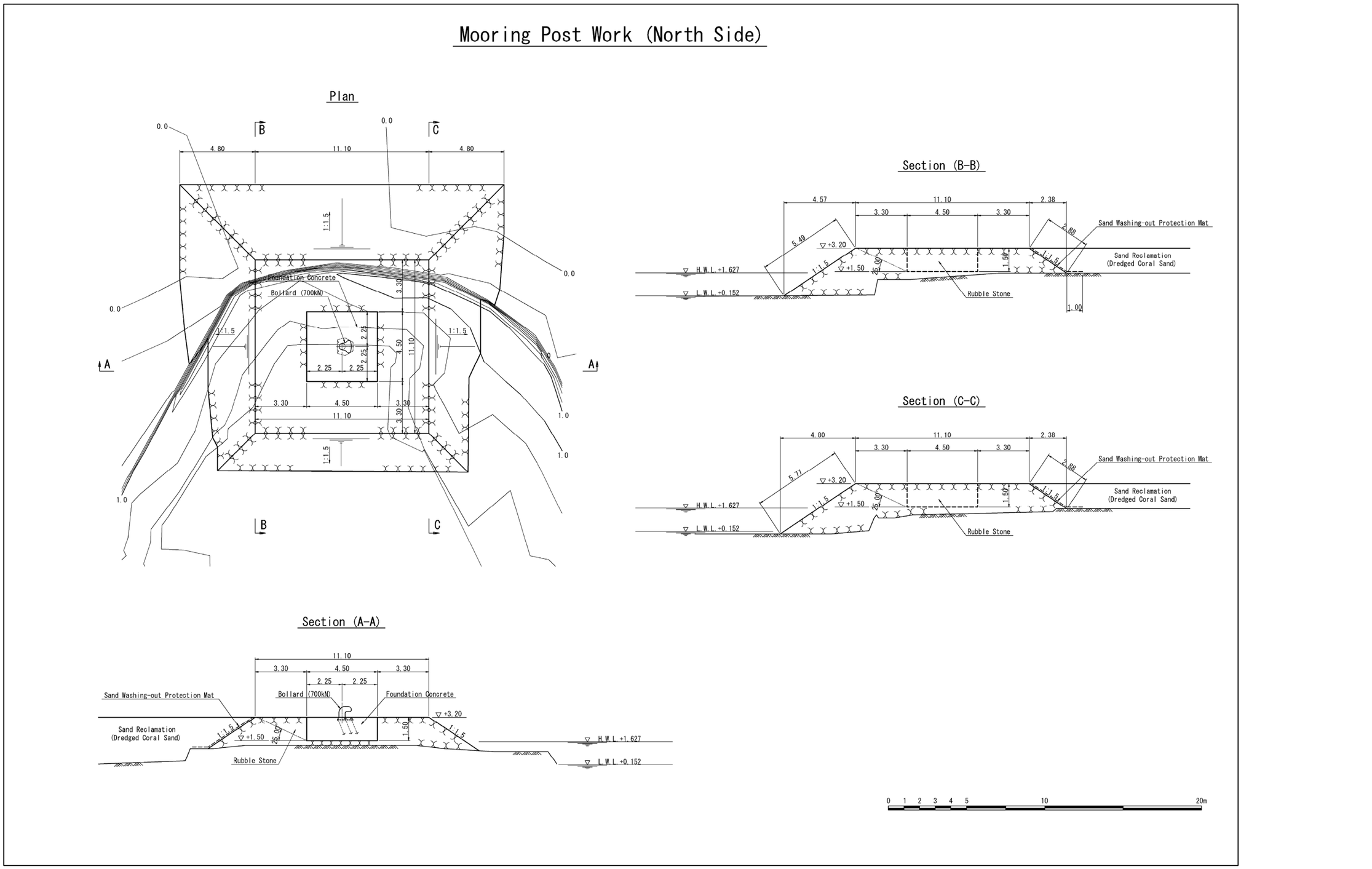
Source: Survey Team

Figure 2-2-9 Typical Cross Section of Access Road



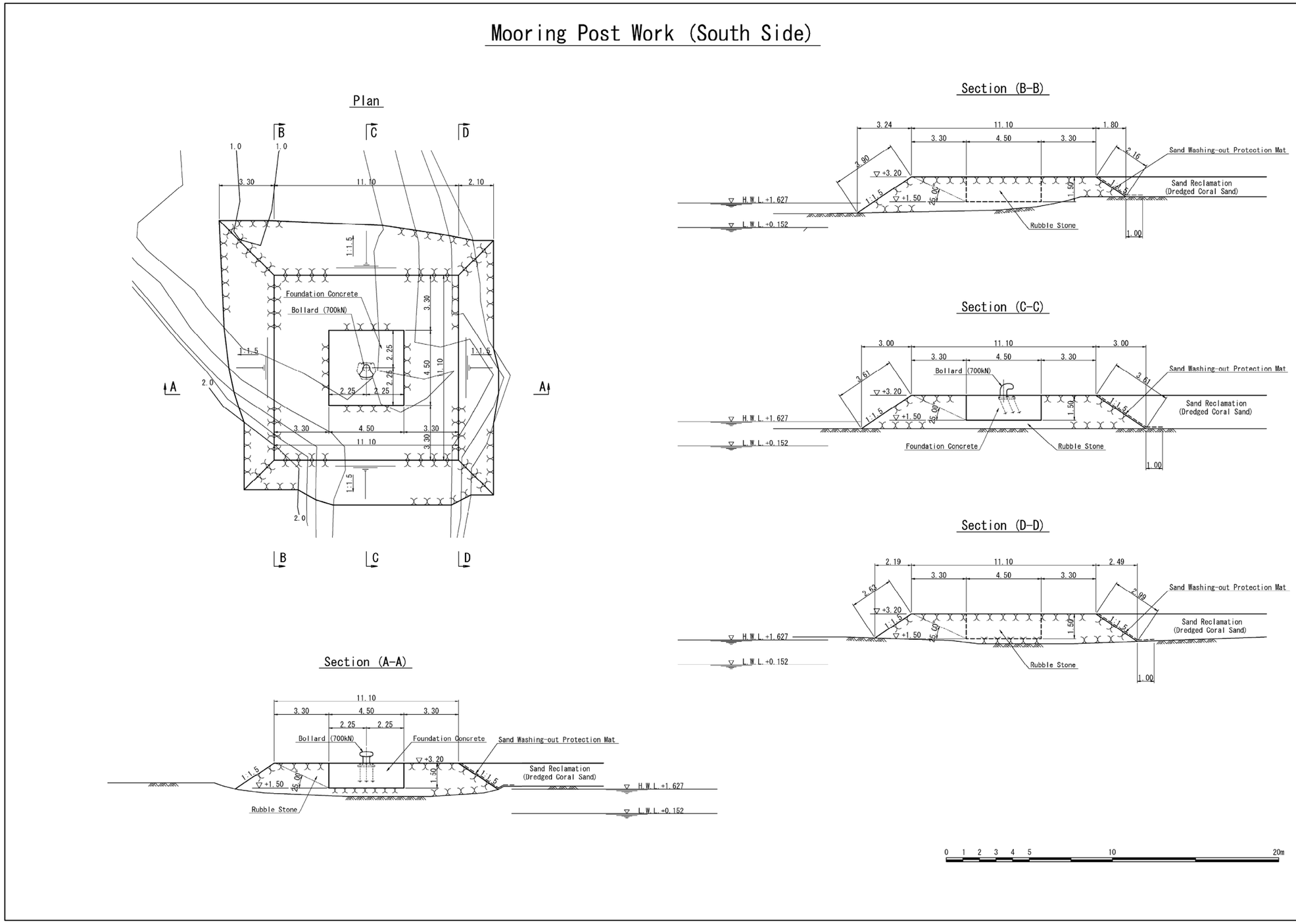
Source: Survey Team

Figure 2-2-10 Typical Cross Section of Access Road



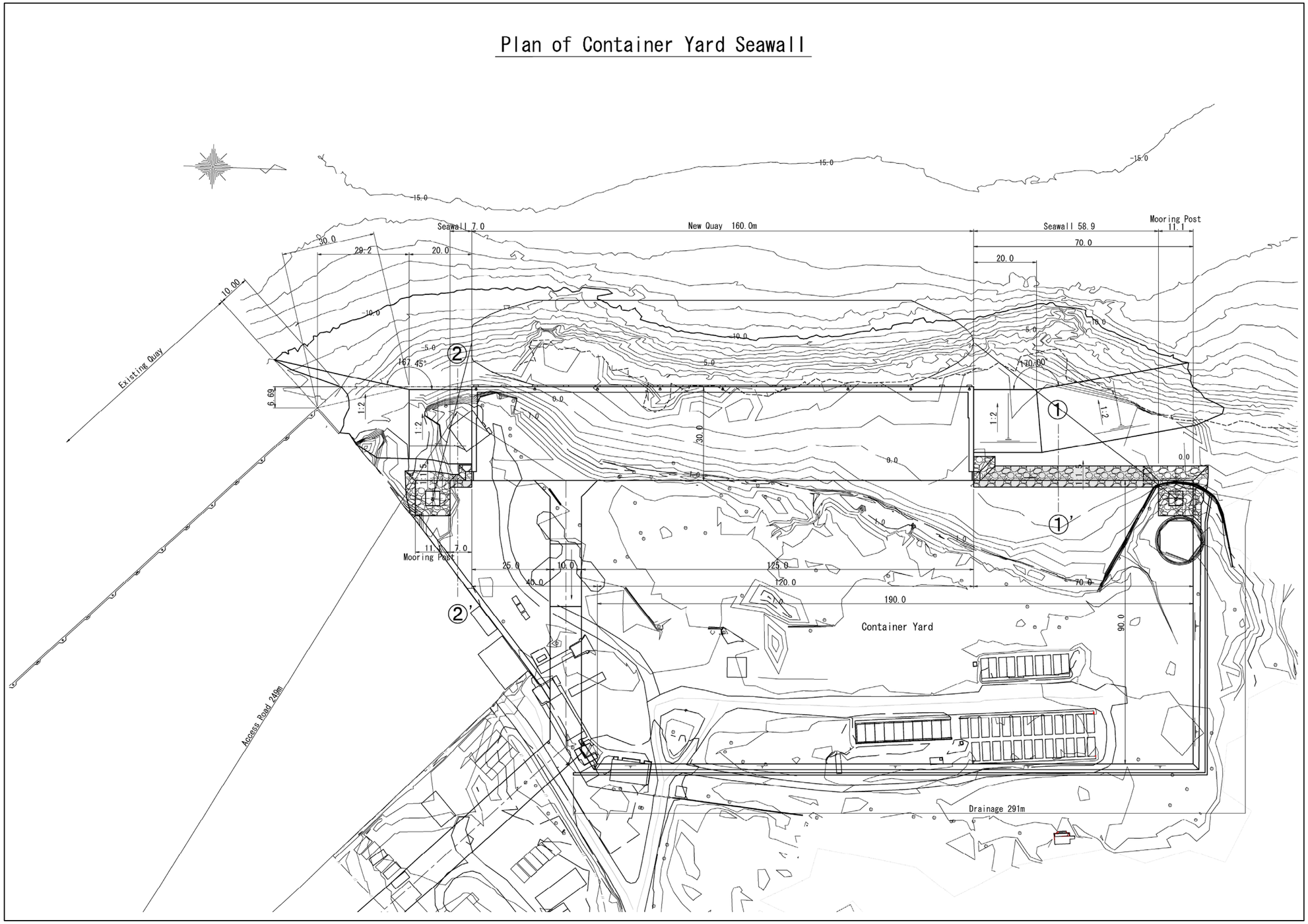
Source: Survey Team

Figure 2-2-11 Typical Cross Section of Access Road



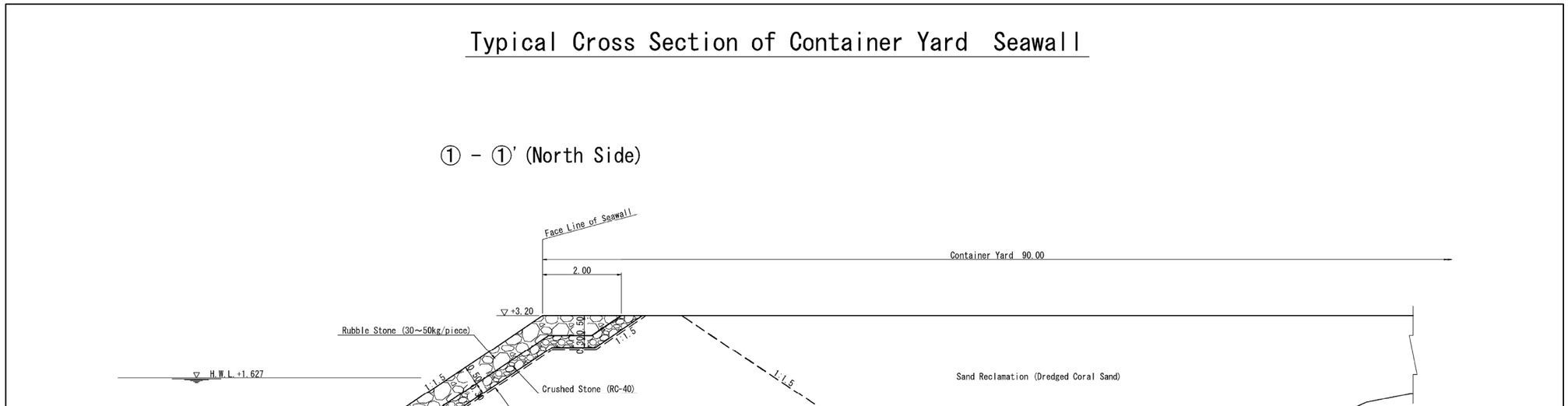
Source: Survey Team

Figure 2-2-12 Typical Cross Section of Access Road



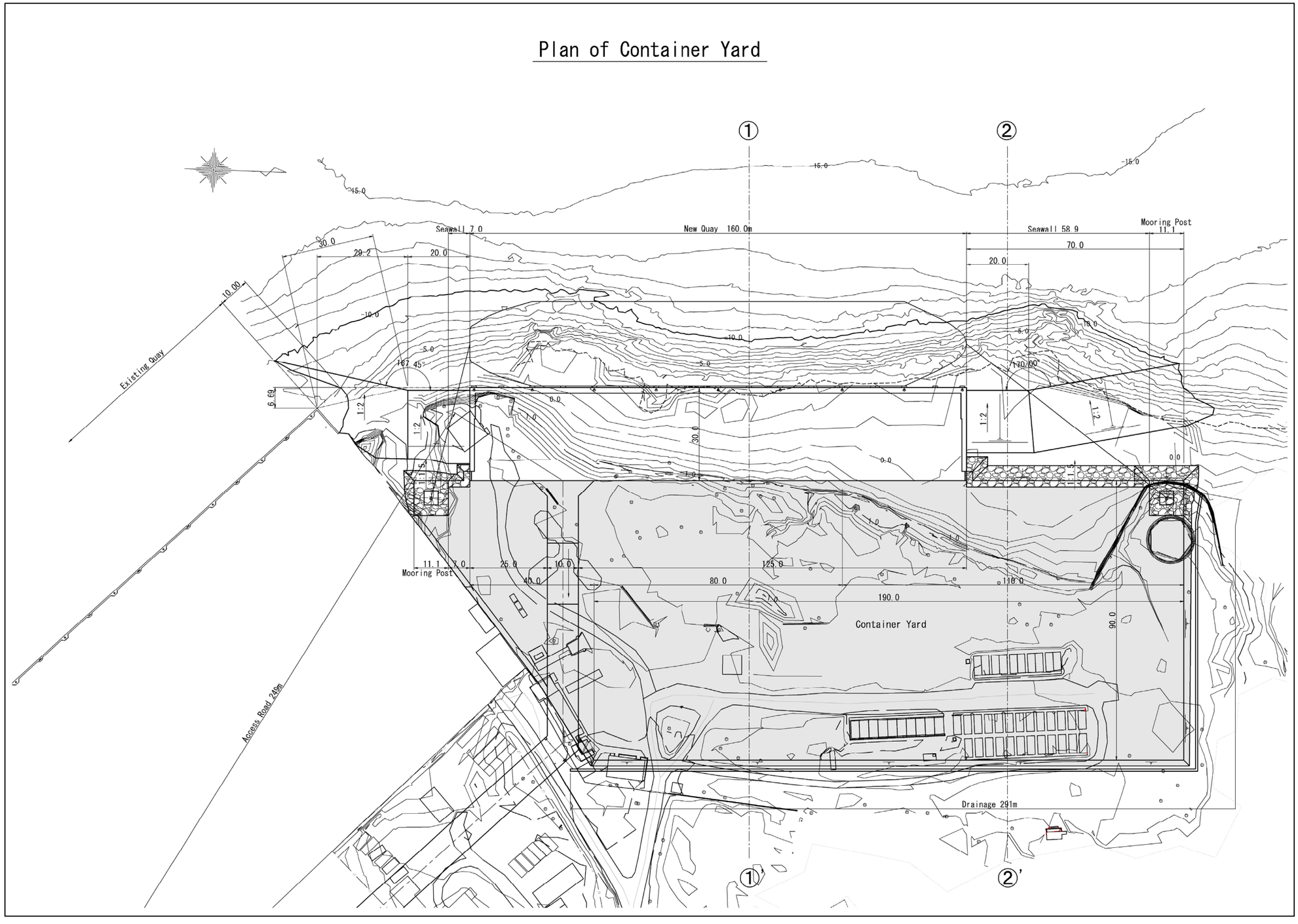
Source: Survey Team

Figure 2-2-13 Typical Cross Section of Access Road



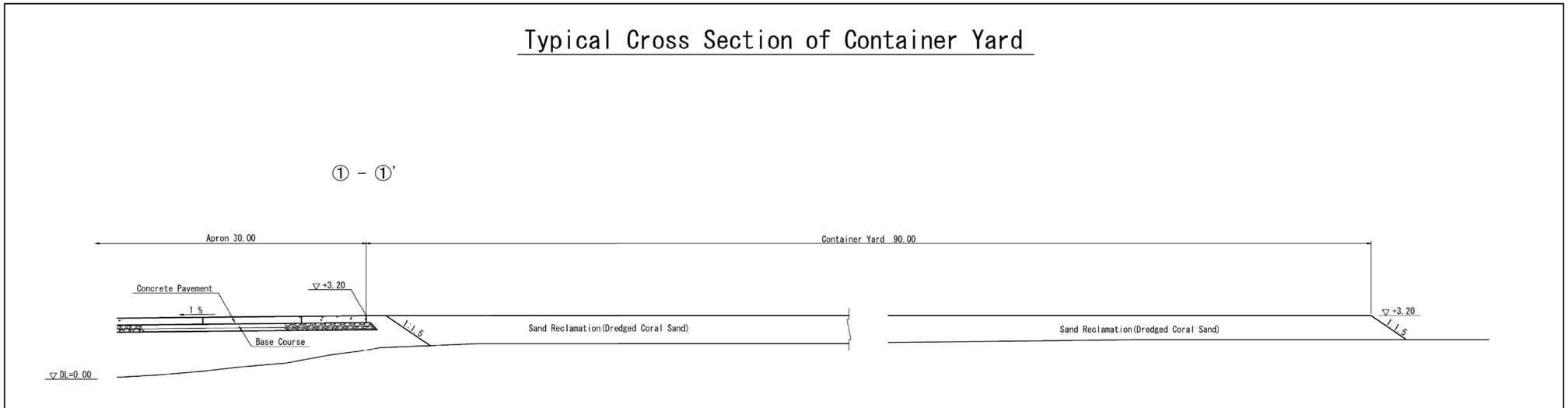
Source: Survey Team

Figure 2-2-14 Typical Cross Section of Access Road



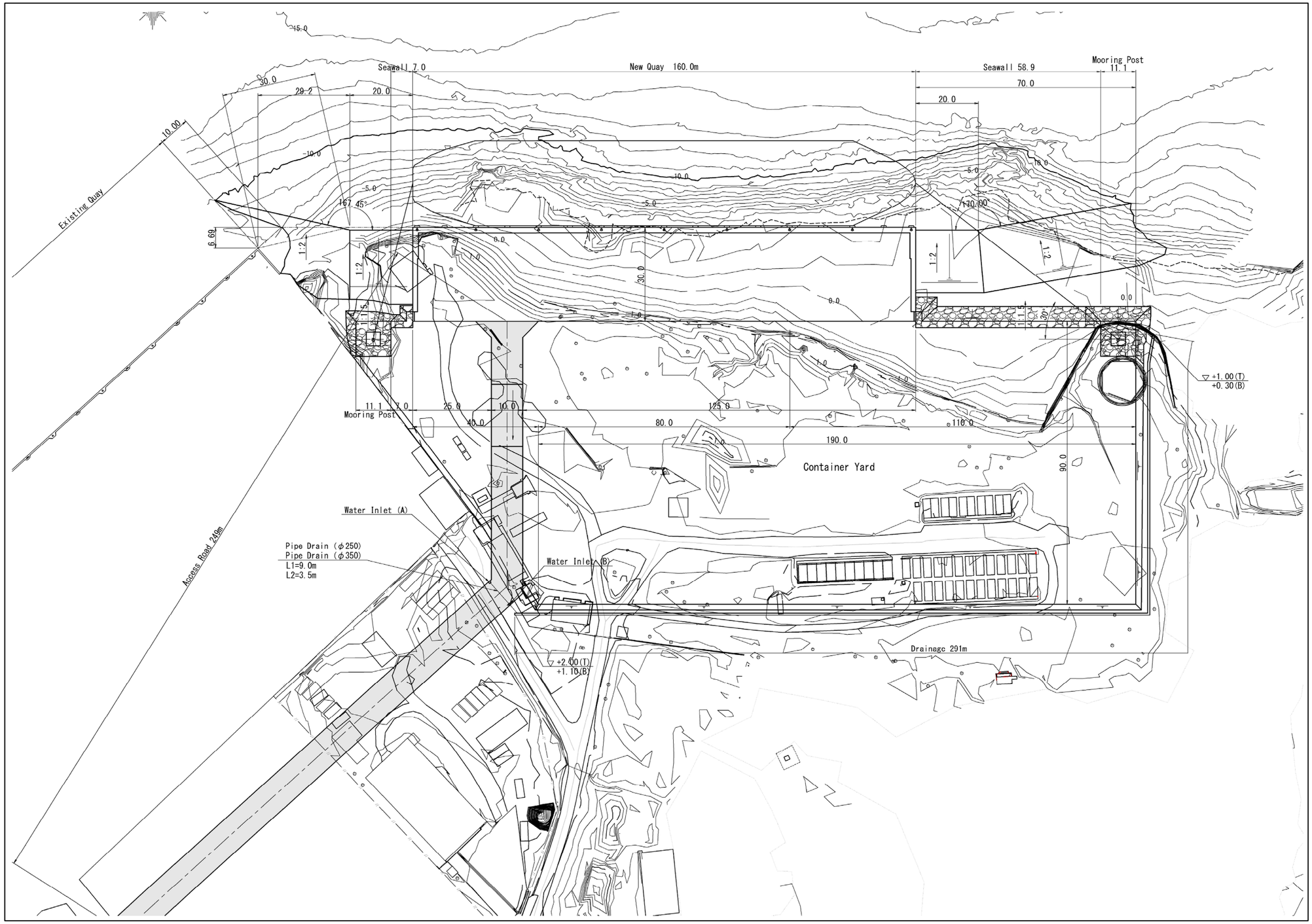
Source: Survey Team

Figure 2-2-15 Typical Cross Section of Access Road



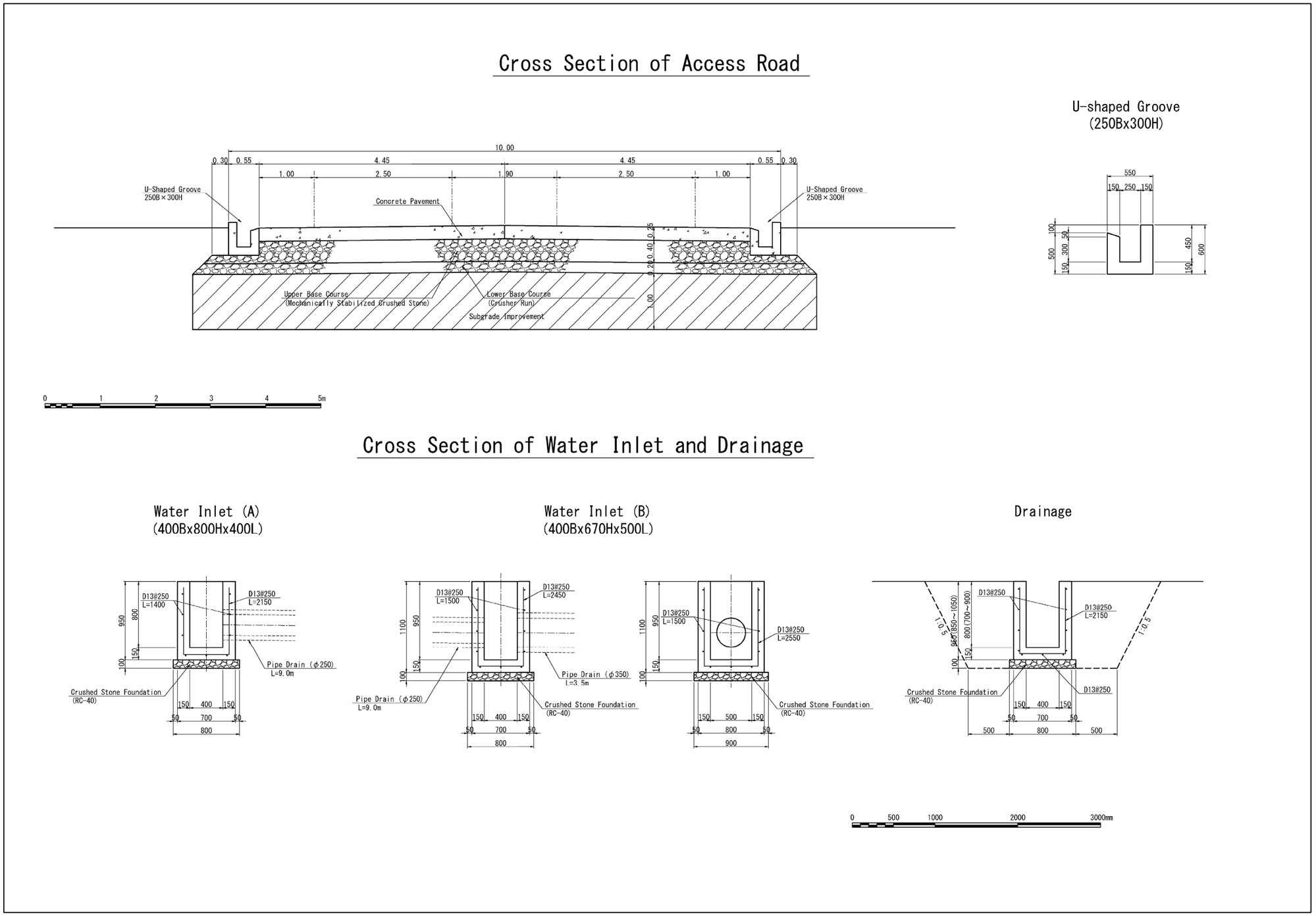
Source: Survey Team

Figure 2-2-16 Typical Cross Section of Access Road



Source: Survey Team

Figure 2-2-17 Typical Cross Section of Access Road



Source: Survey Team

Figure 2-2-18 Typical Cross Section of Access Road

2-2-4 Implementation Plan

2-2-4-1 Implementation Policy

(1) **Basic concept**

This project is implemented after concluding Exchange of Notes (E/N) between the Government of Japan and the Government of Micronesia and Grant Agreement (G/A) between JICA and the Government of Micronesia.

After conclusion of E/N and G/A, Consultant Service Agreement shall be concluded between the Consultant and the Government of Micronesia for the design and the construction supervision and the detailed design shall be commenced.

The Consultant shall produce drawings and specifications being necessary for the construction and necessary documents for the procurement of Contractor and get the approval from the Government of Micronesia. Going through the procedures of prequalification of tenderers and tender documents and the Consultant shall hold the tender and select contractor.

Construction works shall be implemented in accordance with the construction contract concluded between the Government of Micronesia and the Contractor.

(2) **Construction Policy / Procurement Policy**

The quality and supply capacity of construction material and equipment that can be procured locally shall be studied well and the local procurement shall be taken priority as much as possible.

Materials and equipment that are difficult to procure locally will be procured primarily from Japan, which has liner ship routes to FSM.

The project site is adjacent to the existing wharf. Although it is unavoidable that there will be an impact on existing port functions during construction, safety considerations will be taken and the construction plan and the implementation schedule will be prepared to minimize the impact as much as possible.

In order to reduce construction costs, dredged soil, residual soil, and coral chunks, etc. generated at the site will be used to form a temporary mound, and will be reused as backfill material for the quays and material for the revetment.

2-2-4-2 Implementation Conditions

(1) **Construction Circumstances**

1) Construction Company

Although there are several construction companies in Micronesia, most of them are very small in work scales. The biggest construction company is used to work as subcontractor under the supervision of the Japanese construction company in the past Japanese Grants and it may be considered to assign again in this project as well.

2) Labor

Preference will be given to hiring local skilled workers and laborers in general. Dredging using clamshells, steel pipe sheet pile driving and diving work are difficult to hire skilled local workers for, and training by skilled Japanese workers will be required.

3) Construction Equipment

There are no local companies that specialize in leasing construction equipment. Local construction companies own construction equipment, but the models and quantities they own are limited. Maintenance is also not perfect, and if a breakdown occurs, it takes time to procure parts. In this project, from the standpoint of ease of procurement and safety, the main working ships and machinery such as earthmover, crawler cranes and concrete plants, etc. will basically be procured from Japan.

4) Construction Material

The main construction materials that can be procured locally are aggregate for concrete, stones used as rubble and coral sand used for landfill. The distribution volume of other construction materials is limited, and they are imported for each project. In this project, materials such as cement, reinforcing bars, steel pipe sheet piles, fenders and bollards, etc. whose quality and quantity are difficult to secure locally will be procured from Japan.

(2) Important notice on construction works

Safety management shall be ensured based on "The safety policy for ODA facility construction works" and "The Guidance for the Management of Safety for Construction Works in Japanese ODA Projects" issued by JICA.

As this project is an expansion work on an existing operating port (parts of which are also used by fishermen), the construction area will be surrounded by a fence and signs, etc. will be installed to indicate that it is a dangerous area and to prevent intrusion by fishermen and third parties.

The construction plan will take into full consideration ships entering the existing adjacent ports, and construction information will be disseminated to all relevant parties.

As the planned site is adjacent to the approach path of aircraft to the international airport, work plans etc. will be shared with aviation authorities.

When preparing the construction plan, it will be taken into consideration that the new quay is located on the shallow coral edge in front of Misko Beach.

2-2-4-3 Scope of Works

The projects to be borne by Japan and the Micronesia side are classified as follows.

(1) **Projects to be borne by Japan**

a. Consultancy services such as detailed design, bidding assistance and design supervision
b. Procurement of all labor and construction materials and equipment necessary for construction work on the Japanese side of the Project

c.. Implementation of marine and inland transportation of imported materials and equipment necessary for construction work on the Japanese side of the Project, and transportation insurance premiums

d. Quality inspections necessary for construction work on the Japanese side of the Project.

(2) **Projects to be borne by the Micronesia side**

a. Environmental Impact Assessment (EIA)

b. Acquisition of environmental certifications and permits necessary for construction

c.. Securing the construction sites and temporary yard necessary for the project

d. Site clearance of the proposed site (including removal of existing buildings, cutting of existing trees, etc.)

e. Fencing

f. Fees for bank arrangements

g. Customs clearance and duty exemption for imported materials and equipment

h. Facilitating the entry, stay and departure of Japanese and third country nationals engaged in the project

2-2-4-4 Consultant Supervision

Based on the policy of Grant Aid Cooperation by the Government of Japan, consistent and smooth detailed design works and construction supervision works for the project shall be done by the Consultant who well understood the effect of preparatory survey. At the time of construction supervision, the Consultant shall dispatch a resident engineer who has enough experiences of work, supervise the construction works and make contacts to related organizations, in addition, dispatch a specialist engineer and support inspection and instruct construction works when needed.

(1) **Policy of Construction Supervision**

The project shall be completed without delay by maintaining close contact and reporting to relevant organizations and staff in both Micronesia and Japan.

Prompt and appropriate guidance advice to construction related parties in order to ensure that facilities are constructed in accordance with the design documents shall be provided.

Technology transfer will be carried out on construction methods and techniques, and the project will be effective as a Japanese Grants.

Proper advises and instructions shall be made and persuade smooth management for the maintenance after handing over the facilities.

(2) **Construction Supervision Works**

The consultant will conduct the following;

1) Service for Construction Contract

Selecting construction contractors, deciding on the construction contract method, preparing a construction

contract draft, investigating the contents of the construction details sheet and witnessing the construction contract, etc.

2) Inspection and confirmation of shop drawings, etc.

Inspecting the construction drawings, materials, finish samples, equipment and materials submitted by the construction contractor.

3) Supervision

Reviewing construction plans and construction schedules, providing guidance to the Contractors and reporting construction progress to the Client.

4) Safety Control

Reviewing the safety measures/construction plans submitted by the Contractor and instruct the Contractor to ensure that the contents of the safety measures are shared with all related parties, including subcontractors.

5) Assistance with payment approval procedures

Assisting and verifying the contents of invoices and other documents related to payments during and after the completion of construction and in completing payment procedures.

6) Inspection

Inspections are conducted to approve the progress made during the construction period. At the end of the construction period, the consultant will conduct the following; confirming that the work has been completed in accordance with the contract, attending the handover of the contracted items and completing their work after receiving confirmation letter from the Client. Reporting to Japanese Government officials on the progress of construction, payment procedures and necessary matters related to completion and handover, too.

2-2-4-5 Quality Control Plan

The control items, control contents, control methods, quality standards, measurement frequency, and method of compiling results regarding the quality of materials used in this work shall be in accordance with the particular specifications (tender documents, drawings, question and answer, etc.) and "Quality Control Standard for Port and Harbor Construction" described in Port and Harbor Construction Work Common Specifications.

Type of Work		Item	Description
Mixing and Placing Concrete	At site	Compressive Strength Test	- Test mixing should be carried out 35 days before the concrete pouring date. Three specimens each are required for the 7-day and 28-day strength tests, for a total of six. If the 7-day strength test results indicate that sufficient strength is not achieved, the mix design will be reviewed again and test mixing will be conducted. - During pouring, slump and temperature will be measured at least once per 50 m^3 of concrete or per day of pouring work, and six specimens will be taken to conduct compressive strength tests. - The temperature of the concrete during pouring should be kept between 5°C and 35°C.
	At plant	Aggregate	- When aggregate is received, a particle size distribution

		Particle Size Distribution Test	test is conducted and the particle size distribution results are required to be submitted.
		Salinity Test	- During concrete production, the salinity test will be conducted regularly and the test results will be submitted.
Processing and assembly of reinforcement bar		Delivery	- Check the mill sheet, length, diameter, and number. - Check for any abnormalities in appearance. - Ensure that adequate storage measures are in place at the site, such as the placement of sleepers and sheet covering.
		Processing	- Check for any differences from the shop drawing.
		Assembly	- Compare with the reinforcement bar diagram and check for any differences in rebar spacing, joint positions, and joint lengths. - Check for any dirt, etc.
Formwork and Shoring		Before assembly	- Check that the structure is strong enough and appropriate based on the temporary structure design calculations. - Check again to see if there is any dirt on the rebar.
		After assembly	- Check that the minimum covering for the reinforcing bars is sufficient. - Check that the alignment, height, length, width and verticality are within the design tolerances.
Steel Pipe Sheet Pile/ Steel Sheet Pile		Delivery	- Check the length, type, and number. - Check for any external abnormalities.

2-2-4-6 Procurement Plan

Especially, following points shall be taken care for the procurement of necessary material and equipment in this project.

(1) **Procurement Policy**

Regarding materials and equipment that can be procured locally, prioritize local procurement as much as possible based on their quality and supply capacity. Materials that are difficult to be obtained will be procured from Japan.

(2) **Procurement from Japan**

Multipurpose liners equipped with cranes operate from Japan. The procurement plan for equipment and materials from Japan is based on the size that can be transported by this ship.

For materials and equipment procured from Japan that require custom manufacturing or domestic processing, a procurement and transportation plan will be prepared that takes into account the time required for ordering, manufacturing, packing and shipping, while also taking into consideration packaging, transportation, insurance, port costs, and tax exemption measures.

(3) **Procurement Item**

Procurement sources of main construction materials and main construction equipment studied in the previous section are shown in Table 2-2-3 and Table 2-2-4, respectively.

Table 2-2-3 Procurement Sources of Main Construction Materials

Construction Material		Procurement Source		
		Local	Japan	3rd Countries
Civil Facility	Cement		X	
	Sand, Aggregate, Stone	X		
	Steel Bar, General Steel		X	
	Steel Pipe Sheet Pile, Steel Sheet Pile		X	
	Port Material (Rubber Fender, Bollard, etc.)		X	

Source: Survey Team

Table 2-2-4 Procurement source of main construction machines

Construction Machines		Procurement Source		
		Local	Japan	3rd Countries
Bulldozer	3 t	X		
Bulldozer	15 t		X	
Backhoe	0.8 (0.6) m^3		X	
Backhoe	1.4 (1.0) m^3		X	
Dump truck	10 t		X	
Truck Crane	25 t lifting capacity	X		
Trailer	20 t	X		
Combined Roller	3-4 t		X	
Uni-float type barge			X	
Crawler Crane	200 t, 90 t lifting capacity		X	
Vibration hummer	180 kVA, 60 kVA		X	
Concrete Plant	45 m^3/h		X	

Source: JICA Survey Team

(4) **Guaranty**

The guaranty period for the facilities provided will be one year from completion until a defect inspection, except for any malfunctions, deformations or accidents caused by human error due to rough handling of the facilities.

2-2-4-7 Operational Guidance Plan

This project does not include the Operational Guidance Plan.

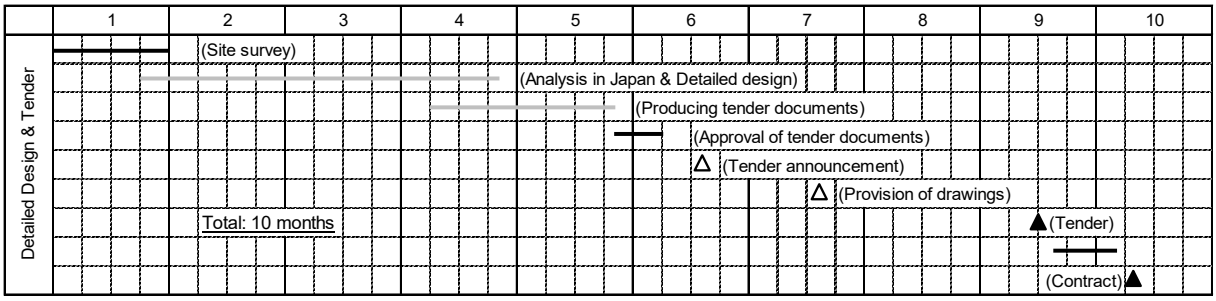
2-2-4-8 Soft Component (Technical Assistance) Plan

This project does not include the Soft Component.

2-2-4-9 Implementation Schedule

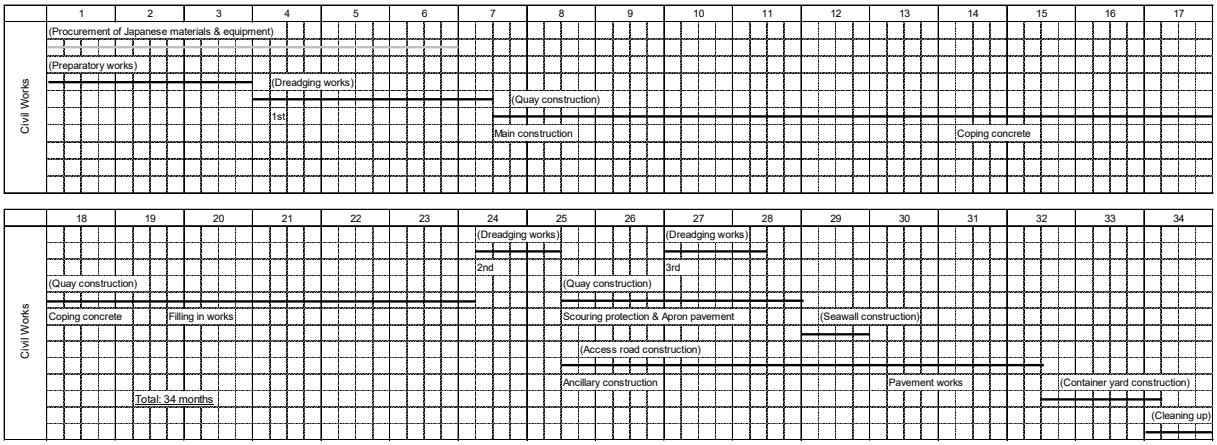
The project is expected to take six months to approve the detailed design and tender documents for the facilities, followed by another four months for the tender and construction contract, for a total construction period of 34 months. Table 2-2-5 shows the final design schedule and Table 2-2-6 shows the Implementation schedule (Construction period).

Table 2-2-5 Implementation Schedule (Detailed design & Tender period)



Source: JICA Survey Team

Table 2-2-6 Implementation Schedule (Construction period)



Source: Survey Team

2-3 Security Plan

At present, there are no particular dangers or infectious disease risks regarding the local security situation. Constantly the consultant will collect and understand local information such as daily crimes, accidents and disease information, and regularly share relevant information with the Japanese Embassy, JICA, and the Contractors.

In addition, in case of injuries or accidents, medical supplies and equipment for first aid will be kept on site, and an emergency contact network will be prepared with contact details for hospitals, police and relevant parties.

2-4 Obligations of Recipient Country

Obligations of Micronesia side are as follows:

Before the Tender				
No.	Items	Deadline	In charge	Estimated Cost
1	To sign the banking arrangement (B/A) with a bank in Japan (the Agent Bank) to open bank account for the Grant	within 1 month after signing of the G/A	DOFA	
2	To issue A/P to the Agent Bank for the payment to	within 1 month	DOFA	

	the consultant	after signing of the agreement with the consultant		
3	To bear the following commissions to the Agent Bank for the banking services based upon B/A			
	1) Advising commission of A/P	within 1 month after signing of the agreement with the consultant	DOFA	30USD
	2) Payment commission for A/P	every payment for the consultant	DOFA	530USD
4	To approve IA	June 2024	PPA/EPA	
5	To secure the necessary budget for implementation of EMP and EMoP	within 1 month after the signing of the G/A	PPA	
6	To clear the following lands 1) Project sites for the quay, the container yard and the access load 2) Demolition of existing buildings abandoned boat, waste, power distribution line and trees 3) Temporary construction yard and stock yard 4) Borrow pit and disposal site near the Project area	December 2024	PPA	184,000 USD
7	To provide facilities for electric power supply and other incidental facilities necessary for the implementation of the Project outside the site(s)	before start of the construction	PPA	
8	To obtain or arrange for license, permission and other necessary procedures for the Project as follows: 1) Earthmoving Permit 2) Department of Land Application 3) Historic Preservation 4) Marine Resources Assessment Report 5) Municipal Government Clearance	before notice of the bidding documents	PPA EPA	
9	To submit Project Monitoring Report (with the result of Detailed Design)	before preparation of the bidding documents	PPA	

B/A: Banking Arrangement
A/P: Authorization to Pay
DOFA: Department of Finance and Administration
EPA: Environmental Protection Agency
PPA: Pohnpei Port Authority

During the Project Implementation				
No	Items	Deadline	In charge	Estimated Cost
1	To issue A/P to the Agent Bank for the payment to the supplier and the contractor	within 1 month after signing of the contract(s)	DOFA	
2	To bear the following commissions to the Agent Bank for the banking services based upon the B/A			

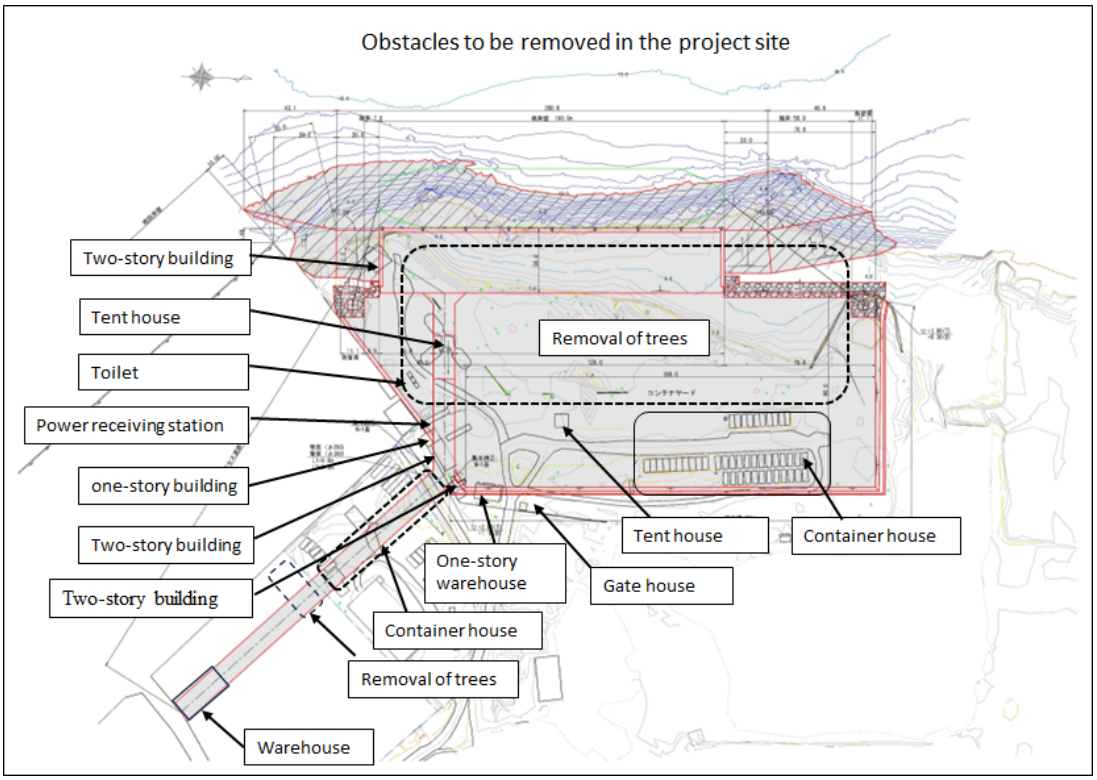
	1) Advising commission of A/P	within 1 month after signing of the contract(s)	DOFA	26,000 USD
	2) Payment commission for A/P	every payment	DOFA	
3	To ensure prompt unloading and customs clearance at ports of disembarkation in the country of the Recipient and to assist the contractor(s) and/or supplier(s) with internal transportation therein	during the Project	PPA CTA	
4	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work	during the Project	PPA	
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be exempted	during the Project	PPA CTA DRT	
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	PPA	
7	To notify JICA promptly of any incident or accident, which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers.	during the construction	PPA	
8	1) To submit Project Monitoring Report	every month	PPA	
	2) To submit Project Monitoring Report (final) (including as-built drawings, equipment list, photographs, etc.)	within 1 month after issuance of Certificate of Completion for the works under the contract(s)	PPA	
9	To submit a notice concerning completion of the Project	within 6 months after completion of the Project	PPA	
10	To relocate the tide gauge	during the Project	PPA	35,000 USD
11	To ensure the safety of persons engaged in the implementation of the Project	during the Project	PPA	
12	To take necessary measures for security and safety of the Project site 1) maintaining the safety of workers and the general public by thorough implementation of safety measures and immediate action in the case of accident 2) traffic control around the site(s) and on transportation routes of construction materials	during the construction	PPA	
13	To implement EMP and EMoP	during the construction	PPA	
14	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	PPA	

CTA: FSM Customs & Tax Administration DRT: Pohnpei State Government, Division of Revenue and Taxation

After the Project				
No.	Items	Deadline	In charge	Estimated Cost
1	To construct the fence	after completion of the construction	PPA	111,000 USD
2	To implement EMP and EMoP	for a period based on EMP and EMoP	PPA	
3	To submit results of environmental monitoring to JICA, by using the monitoring form, semiannually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between PPA and JICA.	for 3 years after the Project	PPA	
4	To operate and maintain properly and effectively the facilities constructed and equipment provided under the Grant Aid, and are not used for military purposes 1) Allocation of operation and maintenance cost 2) Operation and maintenance of facilities/equipment 3) Routine check/periodical inspection	after completion of the construction	PPA	

The project site is located within the port area of Pohnpei Port, which is under the jurisdiction of PPA, but it is planned to use the entire former Misko Beach, including the construction work area, and a 150m x 15m site for the construction of the access road.

COVID-19 isolation facilities (block buildings, toilets, power supply facilities, gatehouses, tent houses, container houses, etc.) shown in Figure 2-4-1 remain on the proposed project site, so they must be removed or relocated before construction begins. Trees located in the project site must also be cut down and removed. Similarly, warehouses, container houses and trees located in the access road construction site must be removed and cut down. The minutes of discussion (M/D) with the Federated Government of Micronesia and PPA have confirmed that PPA will be responsible for these removal works. The removal and relocation costs are estimated to be approximately USD184,000.



Source: Survey Team

Figure 2-4-1 Obstacles in the project site to be removed

2-5 Project Operation Plan

(1) Financial Statements of Pohnpei Port authority

Table 2-5-1 shows the balance sheets of PPA for last 4 years. The balance sheet between September 30, 2021 and 2020 was officially audited and issued on April 4, 2023, which is the latest financial statement at present. Other 3 balance sheets were issued on the basis of the same official process.

Table 2-5-1 Balance Sheets between FY2021 and 2018

FY2021			
Assets		Liabilities	
Current Assets	6,132,742	Current Liabilities	300,145
Capital Assets	6,271,041	Net Position	
Investments	291,222	Invested in Capital Assets	6,271,041
		Unrestricted	6,123,819
TOTAL	12,695,005	TOTAL	12,695,005

FY2020			
Assets		Liabilities	
Current Assets	6,128,967	Current Liabilities	318,037
Capital Assets	6,500,842	Net Position	
Investments	291,222	Invested in Capital Assets	6,500,842
		Unrestricted	6,102,152
TOTAL	12,921,031	TOTAL	12,921,031

FY2019			
Assets		Liabilities	
Current Assets	6,172,422	Current Liabilities	715,327
Advance to FSMNG	229,868	Net Position	
Capital Assets	6,816,371	Invested in Capital Assets	6,816,371
Investments	272,304	Unrestricted	5,959,267
TOTAL	13,490,965	TOTAL	13,490,965

FY2018			
Assets		Liabilities	
Current Assets	6,039,594	Current Liabilities	318,037
Advance to FSMNG	229,868	Net Position	
Capital Assets	6,542,657	Invested in Capital Assets	6,500,842
Investments	242,088	Unrestricted	6,102,152
合　計	13,054,207	TOTAL	12,921,031

Source: PPA

The above mentioned PPA's balance sheet is characterized by very low long-term debt or long-term liabilities relative to its assets. The balance sheets for the four (4) fiscal years are analyzed in Table 2-5-2 the following table from the viewpoint of Equity Ratio, Current Ratio, Quick Ratio and Fixed Ratio. The last ratio is calculated for depreciable assets only.

The analysis shows that PPA maintains the sound financial status.

Table 2-5-2 Financial Analysis of Pohnpei Port Authority

Fiscal Year	2021	2020	2019	2018
Equity Ratio	98%	98%	95%	97%
Current Ratio	2043%	1927%	863%	1505%
Quick Ratio	1899%	1818%	863%	1377%
Fixed Ratio	28%	29%	32%	30%

Source: Survey Team

Table 2-5-3 shows the changes in the income statement and net assets from October 1, 2017 (FY2017) to September 30, 2021 (FY2020), which were published as official accounting reports. In addition, for reference, the income statements for the fiscal years ending September 30, 2022 and 2023 are also shown. These two years have not been officially audited, so they are shown only as a reference to understand the latest financial situation. Note that PPA is exempt from taxes on business income by the federal government, so there is no tax items listed in Table 2-5-3.

Table 2-5-3 Profit and Loss (P/L) Statements from FY2017 to FY2023 (unit: USD)

Fiscl Year	2023	2022	2021	2020	2019	2018	2017
Operating Revenues:							
Seaport charges	3,067,359	1,510,968	1,496,090	1,886,044	2,416,614	3,100,121	2,621,111
Land leases space rentals	684,557	674,413	640,293	646,601	610,052	599,548	614,001
Departure fees	622,545	199,250	110,985	218,195	532,885	516,115	450,105
Landing fees	94,348	68,327	48,244	73,997	117,933	114,319	101,746
Other	161,774	113,727	81,566	165,879	356,471	329,138	433,988
Total operating revenues	4,630,584	2,566,685	2,377,178	2,990,716	4,033,955	4,659,241	4,220,951
Bad debt (expense) revenues	-	-6,685	-	-152,086	-	-30,641	93,081
Net operating revenues	4,630,584	2,560,000	2,377,178	2,838,630	4,033,955	4,628,600	4,314,032
Operating expenses:							
Salaries and benefits	1,740,753	1,496,724	1,577,515	1,678,516	1,666,852	1,517,313	1,582,159
Depreciation	504,207	394,872	378,257	425,874	448,343	417,595	506,806
Contractual services	242,227	146,230	173,359	242,454	510,300	533,998	413,249
Utilities	271,420	198,922	140,547	197,934	257,966	221,639	234,116
Supplies and materials	98,373	78,318	92,816	118,903	139,391	96,463	112,055
Repairs	111,402	101,161	90,117	102,627	95,441	154,321	106,812
Fuel	114,227	82,311	75,776	84,823	98,828	74,118	62,789
Communication	29,316	30,672	38,252	33,185	90,872	31,974	33,656
Travel	83,100	1,600	20,908	49,551	181,324	84,548	94,985
Training	120,885	7,601	-	47,641	32,518	141,115	92,238
Equipment rental	0	3,790	660	1,900	51,308	6,325	7,848
Miscellaneous	40,728	40,792	75,904	74,567	103,489	74,832	77,163
Total operating expenses	3,356,636	2,582,993	2,664,111	3,057,975	3,676,632	3,354,241	3,323,876
(Loss)income from operations	1,273,948	-22,993	-286,933	-219,345	357,323	1,274,359	990,156
Nonoperating revenue (expenses)							
Litigation settlement loss			-	-	-300,000	-	-
Grants	9,372	213,842	64,472	-		-	-
Interest and investment income	34,427	7,072	14,327	39,400	57,321	26,674	29,450
Gain from sale of assets	-	3,501	-	-	8,199	3,193	4,941
Other nonoperating income	-	-52,722	-	7,301	-	-	-
Total nonoperating revenue(expense)	43,799	171,693	78,799	46,701	-234,480	29,867	34,391
Change in net position	1,317,747	148,700	-208,134	-172,644	122,843	1,304,226	1,024,547
Net Position at beginning of year	12,543,560	12,394,860	12,602,994	12,775,638	12,652,795	11,348,569	10,324,022
Net position at end of year	13,861,307	12,543,560	12,394,860	12,602,994	12,775,638	12,652,795	11,348,569

Source: PPA

According to this table, until fiscal 2018, the company had posted net profits of over USD1 million, but in fiscal 2019, as business revenue decreased (the decrease in port charges was particularly notable, which is presumably due to a decrease in the number of port calls by purse seiners), net profits fell to about 90% of the previous year. Then, from fiscal 2020 to 2022, air and sea business slumped due to border restrictions caused by COVID-19, resulting in a negative operating profit.

Although the income statement has not been audited, it is believed that PPA's income statement will return to its previous positive profit structure in fiscal 2023, recovering pre-COVID-19 operating revenues. As such, it can be said that PPA's financial situation is in a position to ensure sufficient soundness unless it is affected by a significant external factor such as COVID-19.

(2) **Operation and Maintenance for the Project**

The implementation of this project will result in the construction of one quay berth. Although the number of facilities managed by PPA will increase, since there will be almost no facilities nor equipment that differ from the current facilities, it is not thought necessary to increase personnel for the new quay. Therefore, it is believed that PPA's facility maintenance and infrastructure development department will be able to handle the work adequately within the current organizational structure, as before.

This section presents the maintenance methods for the quay facilities to be developed, dividing them into two categories: maintenance of the steel pipe sheet piles that form the quay's structural framework and the materials and equipment that make up the quay facilities.

1) Maintenance of Steel Pipe Sheet Piles at the new quay

Structure of the new quay is same as the existing wharf, a general steel sheet pile structure, but considering the ground conditions, steel pipe sheet piles will be used instead of steel sheet piles. Aluminum alloy anodes will be used as a corrosion countermeasure to ensure a service life of 50 years. In addition, the steel pipe sheet piles in the area between low tide and high tide, where corrosion occurs most rapidly, will be covered with concrete to ensure their service life.

As long as the aluminum alloy anodes are properly welded to the steel pipe sheet piles, and unless they fall off due to ship accidents or other reasons, they will function for 50 years.

Periodic inspections require inspection of the potential measuring device and potential measurements. Furthermore, anodes require a detailed inspection once every 10 years, and it is recommended that a diver from PPA visually inspect the anodes and measure their dimensions to check for wear. If any abnormalities in the potential are found during a periodic inspection, a diver will visually inspect the anodes and take appropriate measures, such as replacing the anodes, if necessary.

In addition, in conjunction with the anode inspection surveys conducted by PPA's divers once every 10 years, it is advisable to also observe the condition of rust on the surface of the steel pipe sheet piles below sea level and at their joints to confirm the effectiveness of cathodic protection.

For the maintenance of cathodic protection, the measures shown in Table 2-5-4 are recommended.

Table 2-5-4 Maintenance of Cathodic Protection System and Steel Pipe Sheet Piles

Item	Inspection method	Frequency	Measurement	Remarks
Voltmeter damage	Visual Inspection	Once/1 year	Replacement in damages	General periodical inspection

Item	Inspection method	Frequency	Measurement	Remarks
Electric Potential	Voltmeter	Once/1 year	Specified potential confirmed/Methods to be applied with divers' inspection	General periodical inspection
		Once/10 years		Detailed periodical inspection

Item	Inspection method	Frequency	Measurement	Remarks
Anodes Installation	Visual inspection by divers	Once/10 years	Reinstallation of anodes if needed	Detailed periodical inspection
Sacrificial anodes	Measurement of anodes by divers	Once/10 years	Establishment of anticorrosion method: replacement, repair, etc.	

Source: Survey Team

2) Maintenance of Material and Equipment

The port facilities that require regular maintenance are as follows:

a. Fenders
b. Repainting on bollards, etc.
c. Repairing damage to the apron pavement and access road surface
d. Fences (provided by the Recipient Country)
e. Paint marking on coping concrete of the quay and concrete pavement
f. lighting on buoys in the mooring basin and security lightings on the wharf

PPA has formulated a Preventive Maintenance Plan (PMPS) for all of its facilities and equipment to ensure that they remain fully functional, and will conduct inspections based on this plan and repair or replace as necessary. The PMPS covers all maintenance items required for the new quay, except for lighting for berthing buoys, etc. It is therefore recommended that maintenance be carried out based on this plan. However, it seems desirable to set the frequency of maintenance and repair work for existing facilities and new facilities under this project shorter than the period stipulated by PMPS, such as the repainting.

Additionally, fenders are to be repaired as necessary every three months, but some of the existing fenders were found to be damaged or had come detached from their fixing bolts. In situations like this where fenders are insufficient, it is necessary for PPA officials to provide detailed guidance on docking speeds when ships come alongside to prevent damage to the quay and ships. As there have been instances of rough maneuvering, particularly by purse seine fishing boats, it is believed that it is necessary for PPA officials to be present when limited docking speeds are required.

The anchorage buoys and quay safety lights to be newly installed in this project are essential for ensuring the safe navigation of ships at night, and will require daily visual inspection once the facilities are put into service.

The maintenance plan for the facilities provided in the Project are recommended as shown in Table 2-5-5 in

addition to the PMPS. The recommended inspection items and their timing in the “Preventive Maintenance Plan” are shown in Table 2-5-5.

Table 2-5-5 Maintenance Plan for the Project Facilities

Item	Inspection Method	Frequency	Measures	Remarks
Fenders	Visual inspection	Weekly	Replace seriously damaged ones	Stated in PMPS
Bollards	Visual inspection	Weekly	Record damaged ones	Stated in PMPS
		Quaterly	Remove rust and repaint	Recommendation by Study Team
Apron Concrete/Access Road	Visual inspection	Monthly	Partially repair concrete if needed.	Recommendation by Study Team
Security Fences	Visual inspection	Weekly	Repair or replace if needed.	Stated in PMPS: PPA's responsbility to provide fences
Bulkhead /Apron Marking	Visual inspection	Monthly	Record damaged ones	Staed in PMPS
		Quaterly	Repaint	Recommendation by Study Team
Lamps on buoys and security lamps	Visual inspection	Dauly	Replace lamps if needed.	Recommendation by Study Team

Source: Survey Team

2-6 Project Cost Estimation

2-6-1 Initial Cost Estimation

The total cost of this project will be approximately **** million yen, and the breakdown of the costs between the Government of Japan and the Government of Micronesia is estimated as shown in Table 2-6-1. However, this amount does not indicate the grant limit under the Exchange of Notes.

(1) **Expenses to be borne by Government of Japan**

Estimated Cost Approx. **** million yen

Table 2-6-1 Construction Cost (Obligation by Government of Japan)

Item		Estimated Cost
Civil Works	Dredging Work Quay Construction Seawall Construction Access Road Construction Container Yard Site	****
Detailed Design and Construction Supervision		****

“*"The amount will not be disclosed until the construction and procurement contract are approved."”

(2) **Expenses to be borne by the Government of Micronesia**

The Micronesian side will be responsible for the following aspects of this project as shown in Table 2-6-2:

Table 2-6-2 Obligation by Government of Micronesia

Item	Cost (USD)	Yen Conversion (million yen)
1) Site clearance of this project (existing buildings, removal of trees and etc.)	184,000	25
2) Construction of Fences	111,000	15
3) Temporary removal of tide gauge and the re-installation	35,000	5
4) Cost for Banking Arrangement (0.1% of total project cost)	30,000	4
5) Others		
Total	360,000	49

(3) **Estimation Conditions**

a.	Time of estimation	June 2023
b.	Exchange rate	1USD = 135.88Yen
c.	Construction period	Execution period of detailed design and construction works is shown in "2.2.4.9 Execution schedule"
d.	Other conditions	The cost estimation was made based on the system of Grant Aid Cooperation by the Government of Japan

2-6-2 Operational and Maintenance Cost

The Facility Maintenance and Infrastructure Development Department, which has 20 employees, is responsible for the maintenance of PPA's facilities. Of the expenditures shown in Table 2-5-3, expenditures related to the maintenance of port and airport facilities, excluding personnel expenses, etc., are shown in Table 2-6-3.

Table 2-6-3 Expenditures for Operation and Maintenance in PPA (unit: USD)

Fiscal Year	2023	2022	2021	2020	2019	2018	2017
Contractual Services	242,227	146,230	173,359	242,454	510,300	533,998	413,249
Supplies and Materials	98,373	78,318	92,816	118,903	139,391	96,463	112,055
Repairs	111,402	101,161	90,117	102,627	95,441	154,321	106,812
TOTAL	452,002	325,709	356,292	463,984	745,132	784,782	632,116

Source: PPA

According to this, although facility maintenance costs have varied from year to year over the past seven years, approximately USD200,000 has been spent each year on purchasing equipment and repairs. Over the past seven years, there has been a track record of spending up to approximately USD534,000 on a contract basis. The combined total of these amounts is considered to be the cost of regular maintenance and management.

The annual operation and maintenance costs required for the facilities to be developed in this project are shown in Table 2-6-4. As this table shows, the cost of replacing the fenders is the largest, and the other operation and maintenance cost items are shown in Table 2-5-5, and can be said to be small costs.

The fenders are set to be replaced about two pieces per year, but if the damage is not severe enough to impede use, it is possible to judge to postpone the replacement of the fenders by instructing purse seine fishing boats to approach at a slow speed in the presence of PPA staff. In that case, visual inspection of damaged fenders may be continued, and they may be replaced all at once when the number of damaged fenders increases. In this case, if damaged fenders are replaced all at once every a few years, the contract will be worth tens of thousands of dollars for that year. However, even if the order is significantly delayed due to circumstances within PPA and ends up being on the order of USD200,000 as in the past, as with past contracts, it is unlikely to affect the financial situation with a net profit of over USD1 million per year, as mentioned above. Therefore, it is deemed that PPA has sufficient capacity to bear the operation and maintenance costs necessary for the facilities to be developed in this project.

Table 2-6-4 Annual Maintenance Cost for PPA

Item	Estimated Cost（USD）
Fenders	16,000
Repainting	2,000
Concrete Repair	2,500
Fence Repair	1,000
Total	21,500

Source: Survey Team

Chapter 3 PROJECT EVALUATION

3-1 Precondition

In order for this project to be implemented as a Japanese ODA Grants, the Government of Micronesia is required to take the following measures:

(1) **Clearing the site for the project and removing existing buildings**

Not only the buildings in the former Misko Beach, but also the buildings behind the existing wharf must be removed for the construction of the access road.

(2) **Obtaining all necessary permits and approvals for the construction of the facility**

For the Environmental Impact Assessment (EIA), the Pohnpei State EIA Regulations are applicable to the project. In addition, other environmental permits such as Earthwork Permit and Land Use Permit under the jurisdiction of the Pohnpei Provincial Land Department, Forest Permit and Marine Resource Assessment under the jurisdiction of the Pohnpei Provincial Resource Development (R&D) Office and Historic Preservation Permit under the jurisdiction of the Historic Preservation Office are also required in accordance with the EIA Regulations.

a. Signing of a Banking Arrangement with a Japanese bank
b. To expedite unloading of imported materials/equipment and domestic transportation and to exempt customs clearance fees and tax
c. To exempt customs duties, national taxes (including VAT) and other levies for the purchase of equipment and materials and the performance of services for Japanese nationals entering Micronesia under a certified contract
d. To assist obtaining entry and stay permits for Japanese and third country nationals entering Micronesia to perform work under a certified contract
e. To use the facilities and the equipment provided under the Japanese ODA Grants properly and effectively
f. To bear all expenses necessary for the implementation of the Project that are not covered by the Japanese ODA Grants

3-2 Necessary Inputs by Recipient Country

This project is to provide a quay and an access road to transport goods to the port. To effectively operate this facility, it is necessary to develop various ancillary facilities, which should be phased according to an annual plan. To this end, it is necessary to incorporate it into the long-term plan currently being prepared by the World Bank for Pohnpei Port, and to balance it with the port as a whole.

The construction of the new quay will allow more purse seiners to stay in the port, and PPA should plan to provide not only mooring services, but also services that encourage purse seiners to use the area behind the quay to transship their catches and improve logistical efficiency.

Furthermore, in order to handle container cargo at the new quay in the future, PPA will need to provide

additional facilities such as water and fuel supply pipelines, lighting equipment, monitoring devices, etc., and the new quay users will need to complete yard pavement, warehouses, etc. Regarding the operation of the new quay, further discussions will be necessary as to whether the PPA will operate it as a public facility or whether the private sector will develop the necessary facilities by leasing it to them.

3-3 Important Assumptions

To effectively utilize this facility to alleviate congestion, it is essential that CFC and PPA reach an agreement on the following: 1) changing the berth currently used exclusively by CFC from Berth No. 5 of the existing wharf to Berth No. 3 of the existing wharf, and 2) changing those berths from exclusive use to shared use.

In addition, the WB Group's project to formulate an urgent development plan and master plan, which was carried out in parallel with this preparatory study at DTCI, completed in July 2024, but the plan has not yet been officially announced. Therefore, PPA will be required to develop a development plan and operation plan for the entire Pohnpei Port including the new quay. In addition, it will be necessary to coordinate the DTCI's urgent development plan in order to proceed with the construction of the ancillary facilities of the new quay.

3-4 Project Evaluation

3-4-1 Relevance

This project will achieve its intended objective of alleviating congestion in the port and improving navigation safety by reducing unnecessary evacuation of purse seiners during their stay in the port. This project to construct a new quay at the Pohnpei Port is also included in the long-term development plan for four major ports in FSM, which is currently being formulated with funding from the World Bank.

3-4-2 Effectiveness

(1) Quantitative effectiveness

1) Monitoring Indicators

Pohnpei Port has four berths (No. 2, No. 3, No. 4, and No. 5 from the south) at the existing wharf. Berths No. 3 and No. 4 are exclusively used for container ships and carrier ships, while Berths No. 2 and No. 5 are used for fishing boats. However, when no container ships or carrier ships are calling, fishing boats are moored along the entire length of the existing wharf. When container ships and carrier ships call at the port, the central Berths No. 3 and No. 4 are used. When entering or leaving port, if there are any purse seiners moored at Berth No. 5, they are evacuated to the anchorage for safety reasons.

In light of these operational conditions, the following indicators are used to quantitatively indicate congestion status.

Indicator 1: Total number of evacuated purse seiners (ship/day)

The annual total number of purse seiners in port that exceed the mooring capacity of the purse seiners while a container ship or carrier ship is in port:

{the number of purse seiners calling at the port on the day the container ship or carrier ship calling at the port} - {the purse seiner mooring capacity while the container ship calling at the

port}

Indicator 2: Rate of occurrence of evacuation of one or more purse seiners

This rate is calculated by dividing the number of days that evacuation occurred by the number of days that purse seiners calling at port per year

As for other quantitative effects, the effects on carriers are set as follows.

Carriers (refrigerated ship) are anchored at the anchorage to receive fish catch from the purse seiners calling at Pohnpei Port and transport it to the consumption countries. These carriers must undergo CIQ (Customs, Immigration and Quarantine) inspections when entering and leaving the port. During the peak fishing season, purse seiners occupying the existing wharf cannot leave immediately, resulting in an inefficient situation in which inspections are conducted at anchorages offshore. Furthermore, the cost of the service boat for inspectors to travel to and from the carrier must be paid by the carrier, and PPA has received requests to conduct port entry and departure inspections at the existing wharf.

The construction of the new quay will strengthen the mooring capacity of the entire Pohnpei Port, allowing more carrier ships to berth at the quay for inspection, resulting in more efficient operation. If two consecutive berths, which provide enough berth length to moor a carrier, are available at the existing wharf on the day of arrival or departure of a carrier, the carrier is assumed to undergo CIQ inspections at the wharf, and the following indicator is quantified in the following manner:

Indicator 3: Rate of carriers that conducted CIQ at sea due to congestion

This indicator is expressed as a ratio divided by the number of ship arrivals and departures per year (i.e., number of ships calling at port per year x 2).

2) Current mooring capacity (mooring capacity of the existing wharf)

(i) Mooring capacity with no container ship

It is assumed that purse seine fishing boats are moored at all four berths of the existing wharf, and that three boats can be moored to each of the moored purse seiners, making it possible to moor a maximum of four boats per berth, for a total mooring capacity of 16 boats as shown in Figure 3-4-1.

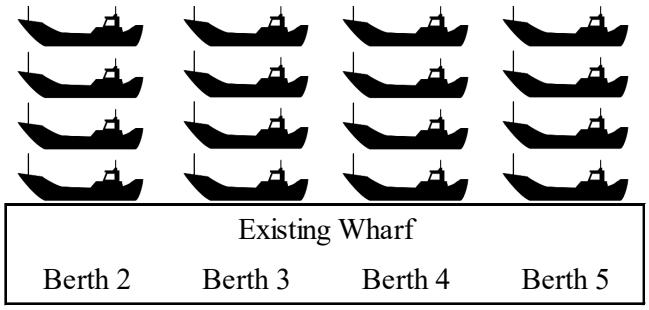


Figure 3-4-1 No container ship in port (capable to moor 16 purse seiners)

(ii) Mooring capacity with a container ship

Safety will be ensured by not allowing purse seiners to moor at berths 3 and 4, where container ships berth, and at berth 5, so mooring capacity will be limited to four ships as shown in Figure 3-4-2

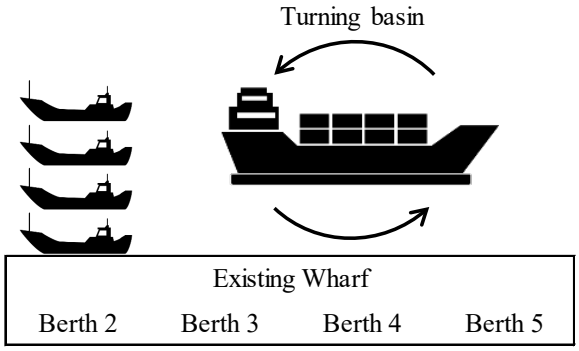


Figure 3-4-2 A container ship mooring at existing wharf (capable to moor 4 purse seiners)

3) Mooring capacity after completion of the project (total of existing wharf and new quay)

(i) Moring capacity with no container ship

It is expected that two purse seiners will be able to berth at the new 160m long wharf, however, multiple mooring of up to two boats will be possible since a waterway is located in front of the new quay. Therefore, the maximum mooring capacity of the new quay will be four boats, and a total of 20 purse seiners will be able to berth including the existing wharf as shown in Figure 3-4-3.

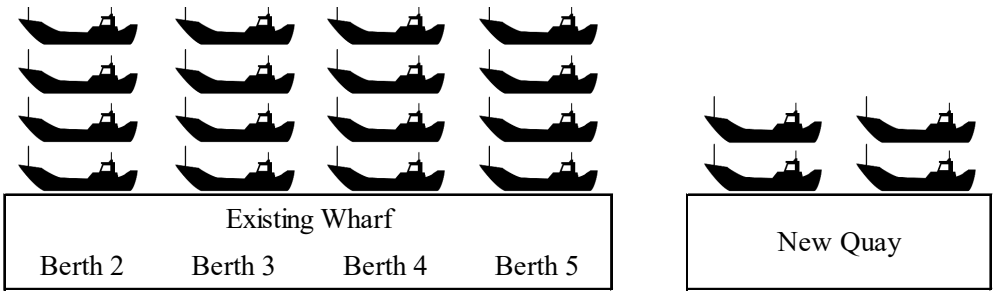


Figure 3-4-3 No container ship in port (capable to moor 20 purse seiners)

(ii) Mooring capacity with a container ship at the existing wharf

Even if container ships berth at the existing wharf, it is assumed that double mooring of purse seiners will be possible at the new quay, and the mooring capacity of the new quay for purse seiners will be four. Therefore, on container ship arrival days, a maximum of eight ships can berth: four at the existing wharf and four at the new quay as shown in Figure 3-4-4.

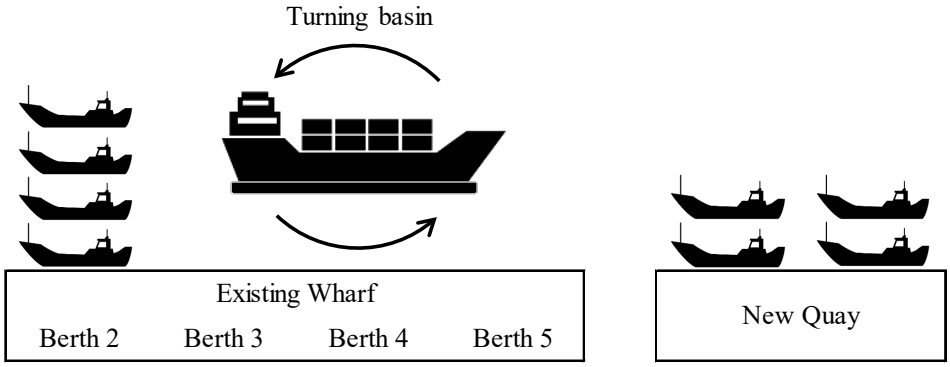


Figure 3-4-4 A container ship mooring at existing wharf (capable to moor 8 purse seiners)

(iii) Moring capacity with a container ship at the new quay

When container ships are moored at the new quay, as shown in Figure 3-4-5, up to 16 purse seiners can be moored at the existing wharf, and the purse seiners will not have to be evacuated every time when a container ship enters or leaves the port.

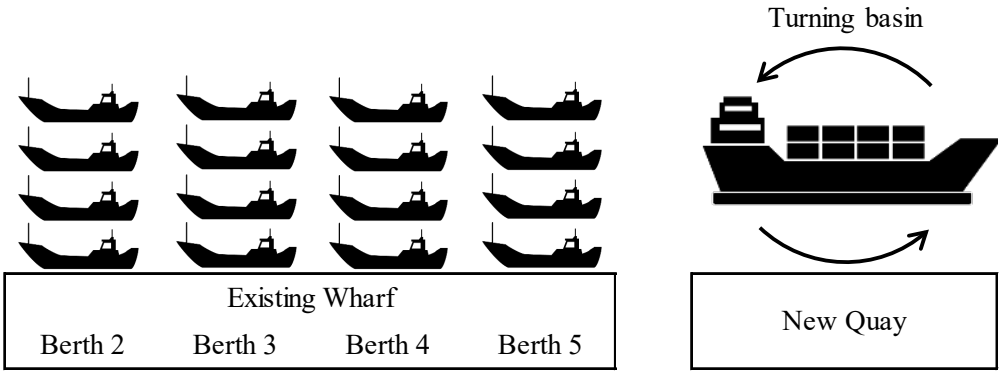


Figure 3-4-5 A container ship mooring at New Quay (capable to moor 16 purse seiners)

4) Points to note when calculating evaluation indicators after project completion

The effectiveness indicators for the projects selected above are all affected by the magnitude of the total number of purse seiner calling at the port. If the number of purse seiners calling at ports decreases, all of the indicators will decrease, making it unclear whether the decrease is due to the project effect or not. Therefore, the benchmark values or the indicators were set carefully. While it is recommended to use the most recent data, FSM has had its borders closed since 2020 due to the spread of COVID-19 for about 2.5 years, and the number of fishing boats calling at the port has dropped dramatically during this period. Therefore, the baseline value was set using data from 2018, when there were no such impacts. In addition, the number of port calls by purse seiners is difficult to estimate as it depends on the amount of catch that year. In setting the target value three years after the completion of the project, it was assumed that the same number of fishing boats would call at the port as in 2018.

Considering the mooring capacity of the purse seiners while a container ship and a carrier ship is in port as shown in Figure 3-4-2, the total number of purse seiners that had to be evacuated in 2018 was 351 (Indicator 1 of pre-project). The number of evaluated purse seiner with the post-completion capacity as shown in Figure 3-4-4 is 136 assuming that the ship arrival and departure pattern is the same as in 2018.

Based on the port entry and departure records of 2018, when the number of purse seiners calling at ports was the highest before the border was closed, the number of purse seiners that exceeded the mooring capacity on the day the container ship arrived and departed was used as the number of evacuated purse seiners.

The number of days when the number of purse seiner in port exceeded the mooring capacity, which means the number of days one or more purse seiners were evacuated are 58 and 35 days for the pre-project and the post-completion conditions, respectively. In 2018, there were 8 days with no purse seiner in port, in other word, on 257 days when one or more purse seiners were in port. Therefore, the percentages of days when one or more carriers were evacuated the port (Indicator 2) are 16% and 10%, respectively.

The number of the days when carriers did not have two berths on arrival or departure and had to perform CIQ procedures at anchorage were 37 ships under the pre-project mooring capacity while 14 ships under post-completion mooring capacity. The number of carriers called during the year was 144 ships, and the percentage of on board CIQ procedures out of total number of 288 arrival and departure (Indicator 3) would be 13% and 5%, for the pre-project and the post-completion capacities, respectively.

The values of the three indicators based on the 2018 ship call data obtained above are summarized in Table 3-4-1. These three indicators will be used as quantitative indicators to assess the effectiveness of the project.

Table 3-4-1 Criteria for quantitative evaluation of congestion easing at Pohnpei Port

Indicator	Reference value (2018 Actual)	Target (2031) 3-year after completion
Total number of days of evacuated purse seiners (Ship days)	351	136
Rate of occurrence of evacuation of one or more purse seiners *1	16%	6%
Rate of carriers that conducted CIQ*2 at sea due to congestion.	15%	5%

*1 Denominator is the annual number of port calls by purse seiners.

*2 C (Custom), I (Immigration), Q (Quarantine)

Source: Survey Team

When evaluating the impact of the project after its completion, it is recommended that, instead of the baseline values shown in the table above, the three indicators calculated based on the conditions before the construction of the new quay (the mooring capacity of purse seiners without the new quay) using data for 2031 be used as the baseline values. By calculating and comparing baseline values for each indicator in this way, the impact of the project can be evaluated without being affected by fluctuations in the annual number of port calls by purse seiners.

(2) **Qualitative Effects**

1) Improving navigational safety when entering, leaving and evacuating ports

The longer quay length and the increased number of mooring berths for purse seiners will reduce multiple moorings. This will improve the safety of purse seiners when maneuvering in and out of port.

2) Improving maritime logistics through smooth navigation of cargo ships and fishing boats

With two container berths, even if one berth is unavailable, the other berth can be used to import daily necessities without interruption, ensuring socio-economic security. Furthermore, having multiple container berths allows container ships can berth without having to wait offshore, contributing to smooth maritime logistics.

Appendices

1. Survey Team Members

Name	Assignment
Koji KOBUNE	Leader/ Port Planning
Masafumi ITO	Port Facilioty Design 1
Hitoshi TAKEMOTO	Natural Condition Survey/Port Facility Design 2
Takafumi TOSHIHARA	Fishery Industry/Product Logistics
Yoshinori MIYAKE	Environmental and Sosial Consideration
Yuhei YAMAMOTO	Construction Planning/Cost Estimate

2. Survey Schedule

(1) First Survey in Pohnpei（March 11, 2023- June 4, 2023）

2023		KOBUNE	TOSHIHARA	MIYAKE	KUDO	TAKEMOTO	ITO	YAMAMOTO
11-Mar	Sa	**Arrival PNI**				**Arrival PNI**		
12-Mar	Su	Preparation				Meeting w/Sub-contracto		
13-Mar	Mo	Call at PPA, PPA				Call at PPA, PPA		
14-Mar	Tu	Call at State/FSM Agencies				Meeting w/Sub-contracto		
15-Mar	We	Preliminary discussion withSeaport Manager				Magnetic Survey		
16-Mar	Th	Presentation of IC/R at PPA				Presentation of IC/R at PPA		
17-Mar	Fr	Meeting at PPA (Schwedule of Field Survey)				Water/Sediment Sampling		
18-Mar	Sa	Meeting w/Sub-contractor	**Arrival PNI**		**Arrival PNI**	Meeting w/Sub-contracto		
19-Mar	Su	Intenal meeting JICA Survey Team			Intenal meeting JICA Survey Team			
20-Mar	Mo	Meeting at PPA (Schwedule of Field Survey)			Meeting at PPA (Schwedule of Field Survey)			
21-Mar	Tu	Information/Data collection	Information/Data collection Call at Agencies concerned		Information/ Data collection Air quality Survey	Fiels work		
22-Mar	We	Call at Agencies concerned				Current Survey		
23-Mar	Th	Discussion of Environment procedures				Field work w/Sub-contractor		
24-Mar	Fr							
25-Mar	Sa	Compilation/analysis of Data			Compilation/analysis			
26-Mar	Su	Intenal meeting JICA Survey Team			Intenal meeting JICA Survey Team			
27-Mar	Mo	Information/Data collection	Information/Data collection Call at Agencies concerned		Information/ Data collection Air quality Survey	Field work w/Sub-contractor		
28-Mar	Tu	Call at Agencies concerned						
29-Mar	We	Discussion of Environment procedures				Current Survey		
30-Mar	Th					Field work w/Sub-contractor		
31-Mar	Fr							
1-Apr	Sa	Compilation/analysis of Data			Compilation of Data			
2-Apr	Su	Intenal meeting JICA Survey Team	Intenal meeting **Leave PNI**		Intenal meeting **Leave PNI**	Intenal meeting JICA Survey Team		
3-Apr	Mo	Information/Data collection				Field work w/Sub-contractor		
4-Apr	Tu	Call at Agencies concerned						
5-Apr	We	Discussion of Environment procedures						
6-Apr	Th							
7-Apr	Fr	Meeting w/PPA & JICA						
8-Apr	Sa	Compilation/analysis of Data						
9-Apr	Su	Internal Meeting **Leave PNI**				Internal Meeting		
10-Apr	Mo					Field work w/Sub-contractor		
11-Apr	Tu							
12-Apr	We							
13-Apr	Th							
14-Apr	Fr							
15-Apr	Sa	Intenal meeting JICA Survey Team						
16-Apr	Su							
17-Apr	Mo					Field work w/Sub-contractor		
18-Apr	Tu							
19-Apr	We							
20-Apr	Th	Consulatation with JICA (On-line Meeting)						
21-Apr	Fr							

		KOBUNE	TOSHIHARA	MIYAKE	KUDO	TAKEMOTO	ITO	YAMAMOTO
22-Apr	Sa					Compilation/analysis of Data		
23-Apr	Su					Field work w/Sub-contractor		
24-Apr	Mo							NRT-GUM
25-Apr	Tu							GUM-PNI
26-Apr	We							Call at PPA/Field
27-Apr	Th							Field work
28-Apr	Fr							
29-Apr	Sa					Internal Meeting		Internal Meeting
30-Apr	Su					Information/Data collection		Data/Informatioin collection Contact w/Agencies concerned
1-May	Mo							
2-May	Tu							
3-May	We							
4-May	Th							
5-May	Fr					Compilation/analysis of Data		
6-May	Sa					Internal Meeting		Internal Meeting
7-May	Su					Data collection		Data/Informatioin collection
8-May	Mo					Analysis of Soil Data		
9-May	Tu						Arrive PNI	
10-May	We					Call at PPA		
11-May	Th					Analysis of Soil Data		Data/Informatioin collection
12-May	Fr	NRT-PNI		NRT-PNI		Field work		
13-May	Sa	Internal Meeting		Internal Meeting		Internal Meeting		
14-May	Su	Reporting intermediate outcome to PPA		Call at PPA		Reporting intermediate outcome to PPA		Data/Informatioin collection Contact w/Agencies concerned
15-May	Mo	Formal Meeting at PPA Explanation and discussioin of the project		Formal Meeting at PPA		Formal Meeting at PPA Field work reparatory consideration of structural design		
16-May	Tu							
17-May	We							
18-May	Th	M/M締結		Meeting w/PPA				
19-May	Fr	Compilation/analysis of Data		Compilation of Data		Compilation/analysis of Data		
20-May	Sa	Internal Meeting Leave PNI		Internal Meeting		Internal Meeting		
21-May	Su			Contact w/agencies concerned Discussion w/PPA on environmental procedures Collection of Information/Data		Compilation of Data	Leave PNI	Compilation of Data
22-May	Mo					Leave PNI		Leave PNI
23-May	Tu							
24-May	We							
25-May	Th							
26-May	Fr							
27-May	Sa			Compilation of Data				
28-May	Su	Reporting outcome of the First Survey in Pohnpei to JICA						
29-May	Mo							
30-May	Tu			Contact w/agencies concerned Discussion w/PPA on environmental procedures				
31-May	We							
1-Jun	Th							
2-Jun	Fr							
3-Jun	Sa							
4-Jun	Su			Leave PNI				

2. Additional Survey of first Field Survey, 22 February, 2024 - 1 March 2024

2024		TAKEMOTO
22-Feb	Thu	NRT-GUM
23-Feb	Fri	GUM-PNI, Inspection of Project Site
24-Feb	Sat	Soil Sampling at Borehole Location
25-Feb	Sun	Soil Sampling at Equipment Yard of Local Construction Company
26-Feb	Mon	Soil Sampling at Dredging Area
27-Feb	Tue	Soil Sampling from Seabed at Dredging Area
28-Feb	Wed	Reporting to JICA Micronesia Office
29-Feb	Thu	Reporting to PPA, PNI-GUM
1-Mar	Fri	GUM-NRT

3. Second Field Survey, 20 April, 2024 - 28 April, 2024

【Accompanying JICA's MD consultations】

2024		KOBUNE	TAKEMOTO
20-Apr	Sat	Arriving at PNI	
21-Apr	Sun	Inspection of Project Site	
22-Apr	Mon	Calling at PPA and Collecting Informationof Tax	
23-Apr	Tue	Inspection of Pohnpei Port and Meeting with PPA	
24-Apr	Wed	Discussion of MD proposal with DTCI and PPA Discussion with World Bank Project Manager	
25-Apr	Thu	MD Consultations	
26-Apr	Fri	MD Signed and Report to JICA office and embassy	
27-Apr	Sat		
28-Apr	Sun	PNI-GUM-NRI	

4. Additional Survey of the Second Field Survey,

25 July, 2023 - 4 August, 2024

2024		KOBUNE	MIYAKE
25-Jul	Thu	NRI-GUM	
26-Jul	Fri	GUM-PNI, Meeting with Port Div. PPA	
27-Jul	Sat	Preparation of draft Final Report and docs. for Stakeholder Meeting	
28-Jul	Sun	ditto above and Inspection of Project Site	
29-Jul	Mon	Courtesy Call at MTCI and the Governor of Pohnpei State	
30-Jul	Tue	Meeting with Asst. Secretary of MTCI	
31-Jul	Wed	Calling at Statistics Dept., Dept. of Resources Development, FSM	
1-Aug	Thu	Calling at Trust Territory Land Board and held Stakeholder Meeting	
2-Aug	Fri	Reporting to President of PPA and meeting Port Director of PPA	
3-Aug	Sat		
4-Aug	Sun	PNI-GUM-NRT	

3. List of Parties Concerned in the Recipient Country

番号	氏名	所属	略記	役職
1	Carlson D. Apis	Departmernt of Transportation, Communication and Infrastructure	DTCI	Secretary
	Thomas F. Kostka	Departmernt of Transportation, Communication and Infrastructure	DTCI	Assistant Secretary
	Lorina Rae Seady	Department Foreign Affairs	DOFA	Custon¥m Operations Manager
2	Francisca S. Obispo			
3	Reed B. Oliver	Pohnpei State Government		Governor
4	Grilly Jack	Pohnpei Port Authority	PPA	General Manager
5	Baron Mendiola	Pohnpei Port Authority	PPA	Seaport Manager
6	Zorro Diego Donre	Pohnpei Port Authority	PPA	Human Reaources Manager
7	Bronson Sam	Pohnpei Port Authority	PPA	Facility Maintenece and Infrastructure Development (FM & ID) Manager
8	Coltrick Albert	Pohnpei Port Authority	PPA	Marketing Manager
9	Francisco Celestine	Pohnpei Environmental Protection Agency	EPA	Excecutive Officer
10	Donna Schering	Pohnpei Environmental Protection Agency	EPA	Environemntal Consultant
	Eugene Joseph	Conservation Society of Phanpei	CSP	Excecutive Director
11	Trasleen Neth	Historic Preservation Office	HPO	Field Researcher
12	Patricia　Jack	National Fesheries Corporation	NFC	President
13	Benson Deng	Luen Cheng Overseas Fishery (FSM) Co. Ltd.		Base Manager
14	Dabte Falen	Caroline Fishing Company	CFC	Port Engineer
15	Jun Tamps	Ocean Care Company	OCC	(President)
16	Eval Pelep	Statistics Division Pohnpei State		Branch Manager
17	Marina loanis	Statistics Division Pohnpei State		Branch Office
18	Brihmer Johnson	FSM Division of Statistics		Assistant Secretary for Statistics Div.
19	Cindy Ehmes	FSM Environment, Climate Change and Disaster Risk Management Office	DECEM	Assistant Secretary
20	Patti Pedrus	FSM Environment, Climate Change and Disaster Risk Management Office	DECEM	Deputy Assistant Secretary
21	Dahker Abraham	Office of Fisheries and Aquaculture	OFA	Administrator
22	Hubert Yamada	Pohnpei State, R ＆ D Department	R & D Dept.	Director, R & D Department
23	Eugene Eperiam	Pohnpei State, R ＆ D Department	R & D Dept.	Director, Forestry Division
24	Scotty Malakai	Pohnpei State, R ＆ D Department	R & D Dept.	Director, Marine Resources Management Div.
25	Luciano Abraham	Department of Land, Office of the Governor, Pohnpei State		Director, Department of Land

4. Minutes of Meeting-1

Minutes of Discussions
on the Preparatory Survey for the Project for Pohnpei Port Expansion

In response to the request from the Government of Federated States of Micronesia (hereinafter referred to as "FSM"), Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Preparatory Survey Team for the Outline Design (hereinafter referred to as "the Team") of the Project for Pohnpei Port Expansion (hereinafter referred to as "the Project") to FSM.

The Team held a series of discussions with the officials of the Government of FSM and conducted a field survey. In the course of the discussions, both sides have confirmed the main items described in the attached sheets.

Pohnpei, 17 May 2023

MORI Hirotsugu
Leader
Preparatory Survey Team

Japan International Cooperation Agency
Japan

Carlson D. Apis
Secretary
Department of Transport, Communication and Infrastructure
Federated States of Micronesia

Grilly Jack
General Manager
Pohnpei Port Authority
Federated States of Micronesia

ATTACHMENT

1. Objective of the Project

The objective of the Project is to reduce congestion and improve safety by construction a new quay with ship mooring facilities at Pohnpei Port, thereby it will contribute to the improvement of logistics in maritime transportation of FSM.

2. Title of the Preparatory Survey

Both sides confirmed the title of the Preparatory Survey as "the Preparatory Survey for the Project for Pohnpei Port Expansion".

3. Project Site

Both sides confirmed that the site of the Project is Pohnpei Port, which is shown in Annex 1.

4. Responsible authority for the Project

Both sides confirmed the authorities responsible for the Project are as follows:

4-1. The Pohnpei Port Authority (hereinafter referred to as "PPA") will be the executing agency for the Project (hereinafter referred to as "the Executing Agency"). The Executing Agency shall coordinate with all the relevant authorities to ensure smooth implementation of the Project and ensure that the undertakings for the Project shall be managed by relevant authorities properly and on time. The organization chart of PPA is shown in Annex 2.

4-2. The Department of Transport, Communication and Infrastructure (hereinafter referred to as "DOTCI") shall be responsible for supervising the Executing Agency on behalf of the Government of FSM.

5. Items requested by the Government of FSM

5-1. As a result of discussions, both sides confirmed that the items requested by the Government of FSM are as follows;

Scope of the Project
1. Construction of a new quay designed for a container ship having a capacity of 15,000 DWT: 160m long, 30m wide, 10m deep below DL including apron pavement and mooring posts
2. Construction of a new container yard
3. Construction of an access road to the new quay

5-2. JICA will assess the feasibility of the above requested items through the survey and will report the findings to the Government of Japan. The final scope of the Project will

be decided by the Government of Japan.

6. Procedures and Basic Principles of Japanese Grant

6-1. The FSM side agreed that the procedures and basic principles of Japanese Grant (hereinafter referred to as "the Grant") as described in Annex 3 shall be applied to the Project. As for the monitoring of the implementation of the Project, JICA require FSM side to submit the Project Monitoring Report that the form is attached as Annex 4.

6-2. The FSM side agreed to take the necessary measures, as described in Annex 5, for smooth implementation of the Project. The contents of the Annex 5 will be elaborated and refined during the Preparatory Survey and be agreed in the mission dispatched for explanation of the Draft Preparatory Survey Report. The contents of Annex 5 will be updated as the Preparatory Survey progresses, and eventually, will be used as an attachment to the Grant Agreement (hereinafter referred to as "G/A").

7. Schedule of the Survey

7-1. JICA will prepare a draft Preparatory Survey Report in English and dispatch a mission to FSM in order to explain its contents around February 2024.

7-2. If the contents of the Draft Preparatory Survey Report are accepted and the undertakings for the Project are fully agreed by the FSM side, JICA will finalize the Preparatory Survey Report and send it to FSM around May 2024.

7-3. The above schedule is tentative and subject to change.

8. Environmental and Social Considerations

8-1. The FSM side confirmed to give due environmental and social considerations before and during implementation, and after completion of the Project, in accordance with the JICA Guidelines for Environmental and Social Considerations (April, 2010).

8-2. The Project is categorized as "B" from the following considerations:
The project is not considered to be a large-scale port project, is not located in a sensitive area, and has none of the sensitive characteristics under the JICA Guidelines for Environmental and Social Considerations (April, 2010), it is not likely to have a significant adverse impact on the environment.

8-3. The FSM side confirmed to conduct the necessary procedures concerning the environmental assessment (including stakeholder meetings, Environmental Impact Assessment (EIA)/Initial Assessment (IA) and information disclosure, etc.) and make EIA/IA report of the Project. The EIA/IA approval shall be received from the responsible authorities and submitted to JICA by within one month after the signing of the G/A.

9. Other Relevant Issues

9-1. Gender Mainstreaming

Both sides confirmed that following gender elements shall be duly reflected in the scope of Preparatory Survey.

(a) Collection of information and gender disaggregated data for assessment of gender needs.

(b) Examination of gender-responsive measures based on the assessment, such as:

- ✓ Facility design that reflects gender-specific needs.
- ✓ Evaluation on possibilities of women's employment opportunities and capacity building regarding port operation.

9-2. The FSM side shall ensure that the customs duties, internal taxes and other fiscal levies, which may be imposed in FSM with respect to the purchase of the products and/or the services, should be either exempted or borne by its designated authority without using the Grant.

9-3. JICA explained that the Japanese government may not approve the grants to cover all the components of the original scope of the Project due to the effects of soaring fuel costs and transportation costs, and the depreciation of Japanese Yen to US dollar. The FSM side understood the current situation and both sides confirmed the priority of the components as follows;

Priority	Scope of the Project
1	Construction of a new quay designed for a container ship having a capacity of 15,000 DWT: 160m long, 30m wide, 10m deep below DL including apron pavement and mooring posts
2	Construction of a new container yard
3	Construction of an access road to the new quay

Annex 1: Project Site

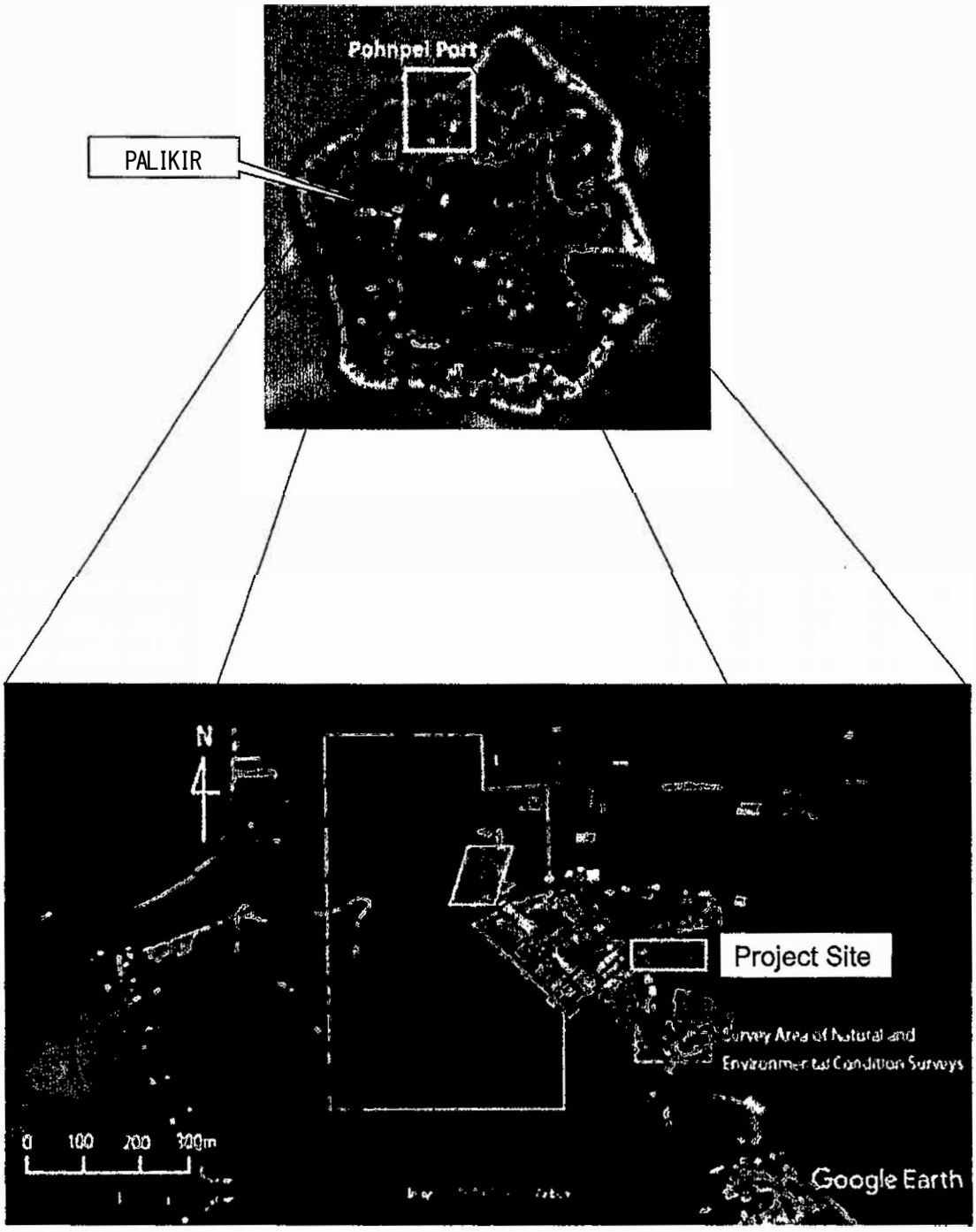
Annex 2: Organization Chart

Annex 3: Japanese Grant

Annex 4: Project Monitoring Report (template)

Annex 5: Major Undertakings to be taken by the Government of FSM

PROJECTSITE



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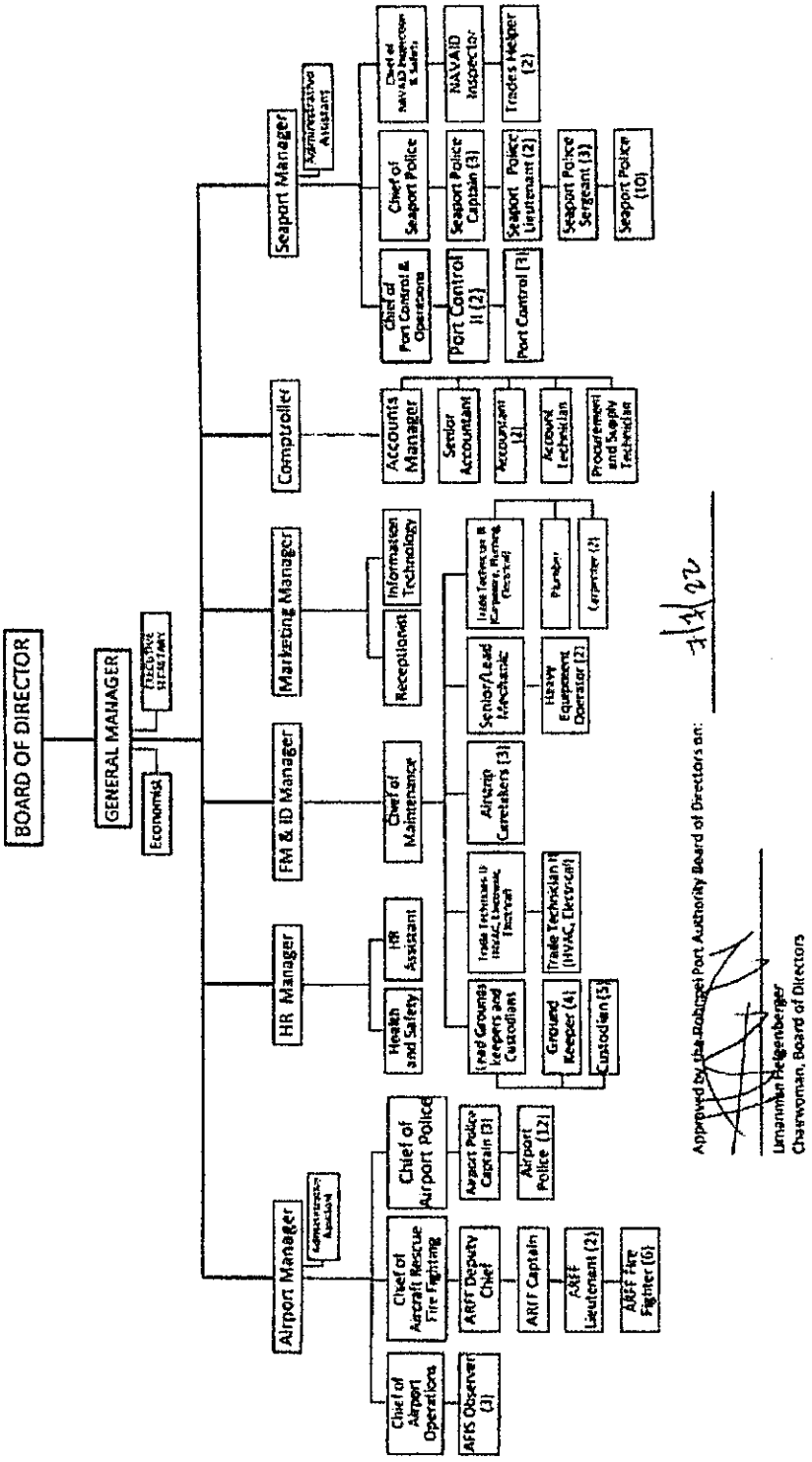
Annex 2

ORGANIZATION CHART OF PPA



Annex 3

JAPANESE GRANT

The Japanese Grant is non-reimbursable fund provided to a recipient country (hereinafter referred to as "the Recipient") to purchase the products and/or services (engineering services and transportation of the products, etc.) for its economic and social development in accordance with the relevant laws and regulations of Japan. Followings are the basic features of the project grants operated by JICA (hereinafter referred to as "Project Grants").

1. Procedures of Project Grants

Project Grants are conducted through following procedures (See "Attachment-1: Procedures of Japanese Grant" for details):

(1) Preparation
- The Preparatory Survey (hereinafter referred to as "the Survey") conducted by JICA

(2) Appraisal
- Appraisal by the government of Japan (hereinafter referred to as "GOJ") and JICA, and Approval by the Japanese Cabinet

(3) Implementation

Exchange of Notes
- The Notes exchanged between the GOJ and the government of the Recipient

Grant Agreement (hereinafter referred to as "the G/A")
- Agreement concluded between JICA and the Recipient

Banking Arrangement (hereinafter referred to as "the B/A")
- Opening of bank account by the Recipient in a bank in Japan (hereinafter referred to as "the Bank") to receive the grant

Construction works/procurement
- Implementation of the project (hereinafter referred to as "the Project") on the basis of the G/A

(4) Ex-post Monitoring and Evaluation
- Monitoring and evaluation at post-implementation stage

2. Preparatory Survey

(1) Contents of the Survey

The aim of the Survey is to provide basic documents necessary for the appraisal of the Project made by the GOJ and JICA. The contents of the Survey are as follows:

- Confirmation of the background, objectives, and benefits of the Project and also institutional

capacity of relevant agencies of the Recipient necessary for the implementation of the Project.

- Evaluation of the feasibility of the Project to be implemented under the Japanese Grant from a technical, financial, social and economic point of view.
- Confirmation of items agreed between both parties concerning the basic concept of the Project.
- Preparation of an outline design of the Project.
- Estimation of costs of the Project.
- Confirmation of Environmental and Social Considerations

The contents of the original request by the Recipient are not necessarily approved in their initial form. The Outline Design of the Project is confirmed based on the guidelines of the Japanese Grant.

JICA requests the Recipient to take measures necessary to achieve its self-reliance in the implementation of the Project. Such measures must be guaranteed even though they may fall outside of the jurisdiction of the executing agency of the Project. Therefore, the contents of the Project are confirmed by all relevant organizations of the Recipient based on the Minutes of Discussions.

(2) Selection of Consultants

For smooth implementation of the Survey, JICA contracts with (a) consulting firm(s). JICA selects (a) firm(s) based on proposals submitted by interested firms.

(3) Result of the Survey

JICA reviews the report on the results of the Survey and recommends the GOJ to appraise the implementation of the Project after confirming the feasibility of the Project.

3. Basic Principles of Project Grants

(1) Implementation Stage

1) The E/N and the G/A

After the Project is approved by the Cabinet of Japan, the Exchange of Notes (hereinafter referred to as "the E/N") will be signed between the GOJ and the Government of the Recipient to make a pledge for assistance, which is followed by the conclusion of the G/A between JICA and the Recipient to define the necessary articles, in accordance with the E/N, to implement the Project, such as conditions of disbursement, responsibilities of the Recipient, and procurement conditions. The terms and conditions generally applicable to the Japanese Grant are stipulated in the "General Terms and Conditions for Japanese Grant (January 2016)."

2) Banking Arrangements (B/A) (See "Attachment 2: Financial Flow of Japanese Grant (A/P Type)" for details)

1) The Recipient shall open an account or shall cause its designated authority to open an account under the name of the Recipient in the Bank, in principle. JICA will disburse the Japanese Grant in Japanese yen for the Recipient to cover the obligations incurred by the Recipient under the verified contracts.

2) The Japanese Grant will be disbursed when payment requests are submitted by the Bank to JICA under an Authorization to Pay (A/P) issued by the Recipient.

3) Procurement Procedure

The products and/or services necessary for the implementation of the Project shall be procured in accordance with JICA's procurement guidelines as stipulated in the G/A.

4) Selection of Consultants

In order to maintain technical consistency, the consulting firm(s) which conducted the Survey will be recommended by JICA to the Recipient to continue to work on the Project's implementation after the E/N and G/A.

5) Eligible source country

In using the Japanese Grant disbursed by JICA for the purchase of products and/or services, the eligible source countries of such products and/or services shall be Japan and/or the Recipient. The Japanese Grant may be used for the purchase of the products and/or services of a third country as eligible, if necessary, taking into account the quality, competitiveness and economic rationality of products and/or services necessary for achieving the objective of the Project. However, the prime contractors, namely, constructing and procurement firms, and the prime consulting firm, which enter into contracts with the Recipient, are limited to "Japanese nationals", in principle.

6) Contracts and Concurrence by JICA

The Recipient will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be concurred by JICA in order to be verified as eligible for using the Japanese Grant.

7) Monitoring

The Recipient is required to take their initiative to carefully monitor the progress of the Project in order to ensure its smooth implementation as part of their responsibility in the G/A, and to regularly report to JICA about its status by using the Project Monitoring Report (PMR).

8) Safety Measures

The Recipient must ensure that the safety is highly observed during the implementation of the Project.

9) Construction Quality Control Meeting

Construction Quality Control Meeting (hereinafter referred to as the "Meeting") will be held for quality assurance and smooth implementation of the Works at each stage of the Works. The member of the Meeting will be composed by the Recipient (or executing agency), the Consultant, the Contractor and JICA. The functions of the Meeting are as followings:

a) Sharing information on the objective, concept and conditions of design from the Contractor, before start of construction.

b) Discussing the issues affecting the Works such as modification of the design, test, inspection, safety control and the Client's obligation, during of construction.

(2) Ex-post Monitoring and Evaluation Stage

1) After the project completion, JICA will continue to keep in close contact with the Recipient in order to monitor that the outputs of the Project is used and maintained properly to attain its expected outcomes.

2) In principle, JICA will conduct ex-post evaluation of the Project after three years from the completion. It is required for the Recipient to furnish any necessary information as JICA may reasonably request.

(3) Others

1) Environmental and Social Considerations

The Recipient shall carefully consider environmental and social impacts by the Project and must comply with the environmental regulations of the Recipient and JICA Guidelines for Environmental and Social Considerations (April, 2010).

2) Major undertakings to be taken by the Government of the Recipient

For the smooth and proper implementation of the Project, the Recipient is required to undertake necessary measures including land acquisition, and bear an advising commission of the A/P and payment commissions paid to the Bank as agreed with the GOJ and/or JICA. The Government of the Recipient shall ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the Recipient with respect to the purchase of the Products and/or the Services be exempted or be borne by its designated authority without using the Grant and its accrued interest, since the grant fund comes from the Japanese taxpayers.

3) Measures to ensure more efficient implementation of the Grant

i) In the event that the E/N and the G/A concerning a project cannot be signed by the end of the following Japanese fiscal year of the cabinet decision concerned by the GOJ, the authorities

concerned of the two Governments will discuss the cancellation of the project.

ii) In the event that the period, specified in the G/A, during which the grant is available expires before the completion of the disbursement, the authorities concerned of the GO J will thoroughly review the status, situation and perspective of the implementation of the project concerned before extending the said period. The authorities concerned of the two Governments will discuss the termination of the project including a refund, unless there are concrete prospects for its completion.

iii) Regardless of the period mentioned in ii) above, the authorities concerned of the two Governments will, in the event that five years have passed since the cabinet decision concerned by the GOJ before the completion of the disbursement, except as otherwise confirmed between them, discuss the termination of a project including a refund, unless there are concrete prospects for its completion

4) Proper Use

The Recipient is required to maintain and use properly and effectively the products and/or services under the Project (including the facilities constructed and the equipment purchased), to assign staff necessary for this operation and maintenance and to bear all the expenses other than those covered by the Japanese Grant.

5) Export and Re-export

The products purchased under the Japanese Grant should not be exported or re-exported from the Recipient.

Attachment 1 (Annex 3)

PROCEDURES OF JAPANESE GRANT

Stage	Procedures	Remarks	Recipient Government	Japanese Government	JICA	Consultants	Contractors	Agent Bank
Official Request	Request for grants through diplomatic channel	Request shall be submitted before appraisal stage.	x	x				
1. Preparation	(1) Preparatory Survey Preparation of outline design and cost estimate		x		x	x		
2. Appraisal	(2)Preparatory Survey Explanation of draft outline design, including cost estimate, undertakings, etc.		x		x	x		
	(3)Agreement on conditions for Implementation	Conditions will be explained with the draft notes (E/N) and Grant Agreement (G/A) which will be signed before approval by Japanese government.	x	x (E/N)	x (G/A)			
	(4) Approval by the Japanese cabinet			x				
3. Implementation	(5) Exchange of Notes (E/N)		x	x				
	(6) Signing of Grant Agreement (G/A)		x		x			
	(7) Banking Arrangement (B/A)	Need to be informed to JICA	x					x
	(8) Contracting with consultant and issuance of Authorization to Pay (A/P)	Concurrence by JICA is required	x			x		x
	(9) Detail design (D/D)		x			x		
	(10) Preparation of bidding documents	Concurrence by JICA is required	x			x		
	(11) Bidding	Concurrence by JICA is required	x			x	x	
	(12) Contracting with contractor/supplier and issuance of A/P	Concurrence by JICA is required	x				x	x
	(13) Construction works/procurement	Concurrence by JICA is required for major modification of design and amendment of contracts.	x			x	x	
	(14) Completion certificate		x			x	x	
4. Ex-post monitoring & evaluation	(15) Ex-post monitoring	To be implemented generally after 1, 3, 10 years of completion, subject to change	x		x			
	(16) Ex-post evaluation	To be implemented basically after 3 years of completion	x		x			

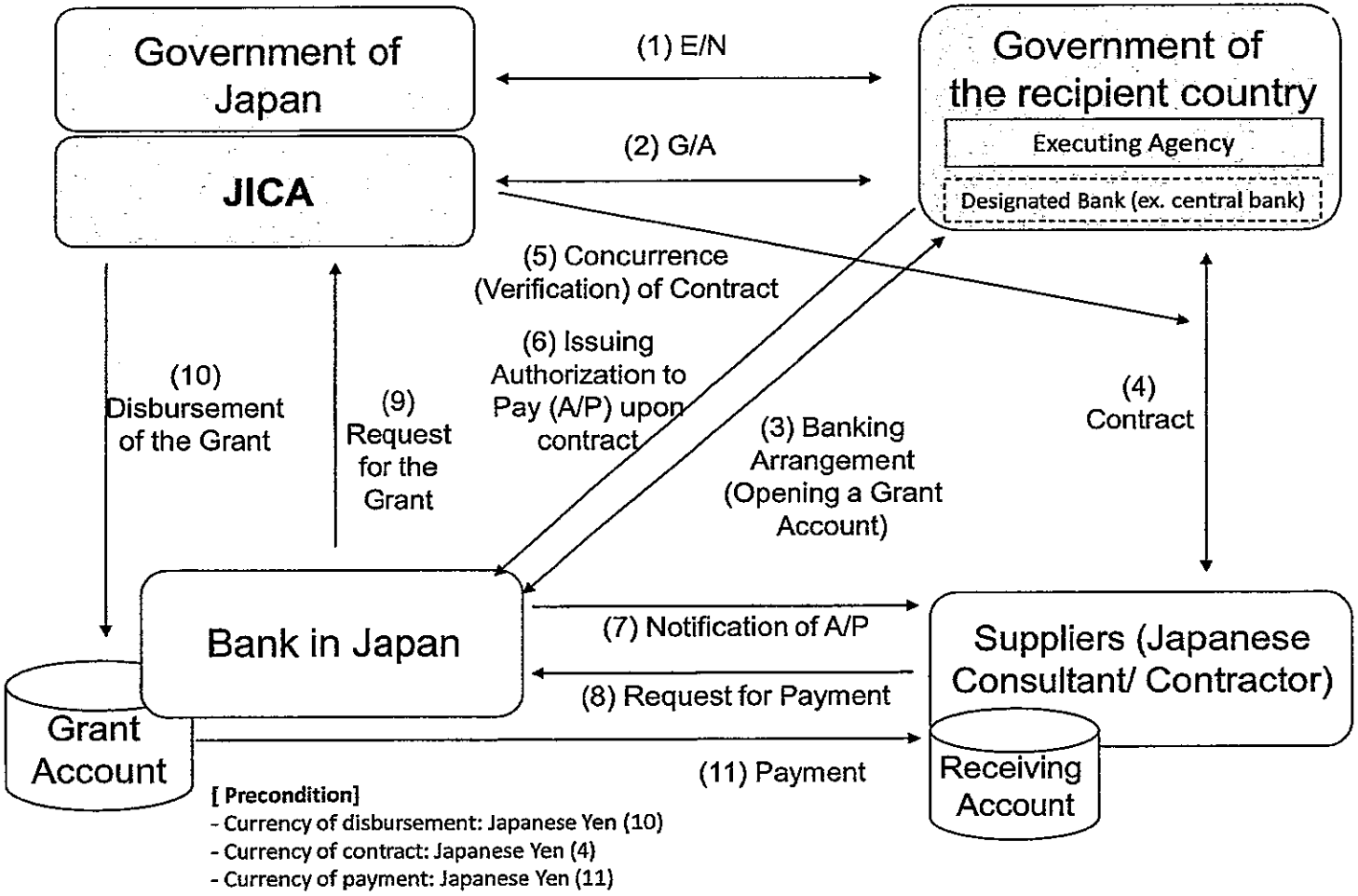
Notes:

1. Project Monitoring Report and Report for Project Completion shall be submitted to JICA as agreed in the G/A.

2. Concurrence by JICA is required for allocation of grant for remaining amount and/or contingencies as agreed in the G/A.

Attachment 2 (Annex 3)

FINANCIAL FLOW OF JAPANESE GRANT (A/P TYPE)



資Appendix 18

Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXX

20XX, Month

Organizational Information

Signer of the G/A (Recipient)	Person in Charge	(Designation)
	Contacts	Address: Phone/FAX: Email:
Executing Agency	Person in Charge	(Designation)
	Contacts	Address: Phone/FAX: Email:
Line Ministry	Person in Charge	(Designation)
	Contacts	Address: Phone/FAX: Email:

General Information:

Project Title	
E/N	Signed date: Duration:
G/A	Signed date: Duration:
Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____

1: Project Description

1-1 Project Objective

1-2 Project Rationale

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

1-3 Indicators for measurement of "Effectiveness"

Quantitative indicators to measure the attainment of project objectives		
Indicators	Original (Yr)	Target (Yr)
Qualitative indicators to measure the attainment of project objectives		

2: Details of the Project

2-1 Location

Components	Original *(proposed in the outline design)*	Actual
1.		

2-2 Scope of the work

Components	Original* *(proposed in the outline design)*	Actual*
1.		

Reasons for modification of scope (if any).

(PMR)

2-3 Implementation Schedule

Items	Original		Actual
	(proposed in the outline design)	*(at the time of signing the Grant Agreement)*	

Reasons for any changes of the schedule, and their effects on the project (if any)

2-4 Obligations by the Recipient

2-4-1 Progress of Specific Obligations

See Attachment 2.

2-4-2 Activities

See Attachment 3.

2-4-3 Report on RD

See Attachment 11.

2-5 Project Cost

2-5-1 Cost borne by the Grant(Confidential until the Bidding)

Components			Cost (Million Yen)	
	Original *(proposed in the outline design)*	Actual *(in case of any modification)*	Original[1),2)] *(proposed in the outline design)*	Actual
	1.			
Total				

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar = Yen

2-5-2 Cost borne by the Recipient

Components			Cost (1,000 Taka)	
	Original *(proposed in the outline design)*	Actual *(in case of any modification)*	Original[1),2)] *(proposed in the outline design)*	Actual
	1.			

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar =

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

(PMR)

2-6 Executing Agency

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original *(at the time of outline design)* name: role: financial situation: institutional and organizational arrangement (organogram): human resources (number and ability of staff):
Actual *(PMR)*

2-7 Environmental and Social Impacts

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

3: Operation and Maintenance (O&M)

3-1 Physical Arrangement

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spareparts, etc.)

Original *(at the time of outline design)*
Actual *(PMR)*

3-2 Budgetary Arrangement

- Required O&M cost and actual budget allocation for O&M

Original *(at the time of outline design)*
Actual *(PMR)*

4: Potential Risks and Mitigation Measures

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

Assessment of Potential Risks *(at the time of outline design)*

Potential Risks	Assessment
1. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
2. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
3. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
Actual Situation and Countermeasures	
(PMR)	

5: Evaluation and Monitoring Plan (after the work completion)

5-1 Overall evaluation

Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

5-3 Monitoring Plan of the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

Attachment

1. Project Location Map
2. Specific obligations of the Recipient which will not be funded with the Grant
3. Monthly Report submitted by the Consultant

Appendix - Photocopy of Contractor's Progress Report (if any)
- Consultant Member List
- Contractor's Main Staff List

4. Check list for the Contract (including Record of Amendment of the Contract/Agreement and Schedule of Payment)
5. Environmental Monitoring Form / Social Monitoring Form
6. Monitoring sheet on price of specified materials (Quarterly)
7. Report on Proportion of Procurement (Recipient Country, Japan and Third Countries) (PMR (final)only)
8. Pictures (by JPEG style by CD-R) (PMR (final) only)
9. Equipment List (PMR (final) only)
10. Drawing (PMR (final) only)
11. Report on RD (After project)
12. Report on the Management of Safety for Construction Works

Monitoring sheet on price of specified materials

1. Initial Conditions (Confirmed)

	Items of Specified Materials	Initial Volume A	Initial Unit Price (¥) B	Initial total Price C=A×B	1% of Contract Price D	Condition of payment	
						Price (Decreased) E=C−D	Price (Increased) F=C+D
1	Item 1	●●t	●	●	●	●	●
2	Item 2	●●t	●	●	●		
3	Item 3						
4	Item 4						
5	Item 5						

2. Monitoring of the Unit Price of Specified Materials

(1) Method of Monitoring : ●●

(2) Result of the Monitoring Survey on Unit Price for each specified materials

	Items of Specified Materials	1st ●month, 2015	2nd ●month, 2015	3rd ●month, 2015	4th	5th	6th
1	Item 1						
2	Item 2						
3	Item 3						
4	Item 4						
5	Item 5						

(3) Summary of Discussion with Contractor (if necessary)

-
-
-

Appendix 26

Report on Proportion of Procurement (Recipient Country, Japan and Third Countries)
(Actual Expenditure by Construction and Equipment each)

		Domestic Procurement (Recipient Country) A	Foreign Procurement (Japan) B	Foreign Procurement (Third Countries) C	Total D
Construction Cost		(A/D%)	(B/D%)	(C/D%)	
	Direct Construction Cost	(A/D%)	(B/D%)	(C/D%)	
	others	(A/D%)	(B/D%)	(C/D%)	
Equipment Cost		(A/D%)	(B/D%)	(C/D%)	
Design and Supervision Cost		(A/D%)	(B/D%)	(C/D%)	
Total		(A/D%)	(B/D%)	(C/D%)	

Report on the Management of Safety for Construction Works

Month/Year 2022年×月	Cumulative number of labor 労働延人数	Cumulative number of public accident 公衆災害件数	Cumulative hours worked 延べ実労働時間数	Number of deaths and injuries due to industrial accidents 労働災害による死傷者				Frequency rate 度数率	Severity rate 強度率
					Death and injuries 死傷者数	Aggregated number of calendar days absent 延べ休業日数	Aggregated number of work-days lost 延べ労働損失日数		
This Month 当月				Death 死者					
				More than 4 calendar days absent 休業4日以上					
				1 to 3 calendar days absent 休業1～3日					
				Total 計					
Total including this month 当月迄累計				Death 死者					
				More than 4 calendar days absent 休業4日以上					
				1 to 3 calendar days absent 休業1～3日					
				Total 計					

Note 注)

1. Frequency rate is the frequency of occurrence of industrial accidents.
   Frequency rate = (Number of deaths and injuries due to industrial accidents ÷ Cumulative hours worked) × 1,000,000
   度数率＝（労働災害による死傷者数÷延べ実労働時間数）×100万時間
2. Severity rate is degree of seriousness of the industrial accident.
   Severity rate = (Aggregated number of work-days lost ÷ Cumulative hours worked) × 1,000
   強度率＝（延べ労働損失日数÷延べ実労働時間数）1000時間
3. Aggregated number of work-days lost = Aggregated number of calendar days absent ×(300÷365)
   Death (7,500 days) : death as a result of an industrial accident includes not only instantaneous death but also death as a result of occupational injury or disease.
   延べ労働損失日数＝延べ休業日数×（300÷365）・・・死亡 7500日（即死のほか負傷が原因で死亡したものを含む）
4. Frequency rate and severity rate are rounding off the third decimal place.
   度数率・強度率は小数点第3位以下四捨五入

Annex 5

MAJOR UNDERTAKINGS TO BE TAKEN BY THE GOVERNMENT OF FSM

1. Specific obligations of the Government of FSM which will not be funded with the Grant

(1) Before the Tender

No.	Items	Deadline	In charge	Estimated Cost	Ref.
1	To sign the banking arrangement (B/A) with a bank in Japan (the Agent Bank) to open bank account for the Grant	within 1 month after signing of the G/A	DOFA		
2	To issue A/P to the Agent Bank for the payment to the consultant	within 1 month after signing of the agreement with the consultant	DOFA		
3	To bear the following commissions to the Agent Bank for the banking services based upon B/A				
	1) Advising commission of A/P	within 1 month after signing of the agreement with the consultant	DOFA		
	2) Payment commission for A/P	every payment for the consultant	DOFA		
4	To approve EIA/IA (Conditions of approval should be fulfilled, if any) and secure the necessary budget for implementation for Environmental Management Plan(EMP) and Environmental Monitoring Plan (EMoP) (and fulfilling conditions of approval, if any).	within 1 month after the signing of the G/A	PPA		
5	To secure the necessary budget and implement land acquisition and resettlement (including preparation of resettlement sites), and compensation with full replacement cost in accordance with RAP	before notice of the bidding documents	PPA		
6	To compensate with full replacement cost in accordance with RAP	before any physical impact by land acquisition such as resettlement	PPA		
7	To secure the lots of land necessary for the Project including land for site office, plant yard, material storage yard, motor pool, temporary construction yard, and waste disposal site with good access to the Project sites.	before notice of the bidding documents	PPA		
8	To obtain or arrange for license, permission and other necessary procedures for the Project.	before notice of the bidding documents	PPA		
9	To clear, level and reclaim the following sites 1) remove utilities 2) existing facilities 3) leveling and reclaiming the sites	before notice of the bidding documents	PPA		

10	To submit Project Monitoring Report (with the result of Detailed Design)	before preparation of the bidding documents	PPA		

B/A: Banking Arrangement
A/P: Authorization to Pay
DOFA: Department of Finance and Administration
PPA: Pohnpei Port Authority

(2) During the Project Implementation

No	Items	Deadline	In charge	Estimated Cost	Ref.
1	To issue A/P to the Agent Bank for the payment to the supplier and the contractor	within 1 month after signing of the contract(s)	DOFA		
2	To bear the following commissions to the Agent Bank for the banking services based upon the B/A				
	1) Advising commission of A/P	within 1 month after signing of the contract(s)	DOFA		
	2) Payment commission for A/P	every payment	DOFA		
3	To ensure prompt unloading and customs clearance at ports of disembarkation in recipient country and to assist the contractor(s) and/or supplier(s) with internal transportation therein	during the Project	PPA		
4	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work	during the Project	PPA		
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be exempted by its designated authority without using the Grant	during the Project	PPA		
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	PPA		
7	To notify JICA promptly of any incident or accident, which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers.	during the construction	PPA		
8	1) To submit Project Monitoring Report	every month	PPA		
	2) To submit Project Monitoring Report after each work under the contract(s) such as shipping, hand over, installation and operational training	within 1 month after completion of each work	PPA		
	3) To submit Project Monitoring Report (final) (including as-built drawings, equipment list, photographs, etc.)	within 1 month after issuance of Certificate of Completion for the works under the contract(s)	PPA		
9	To submit a notice concerning completion of the Project	within 6 months after completion of the Project	PPA		

10	To provide facilities for electric power supply and other incidental facilities necessary for the implementation of the Project outside the site(s)	before start of the construction	PPA		
11	To ensure the safety of persons engaged in the implementation of the Project	during the Project	PPA		
12	To take necessary measures for security and safety of the Project site 1) maintaining the safety of workers and the general public by thorough implementation of safety measures and immediate action in the case of accident 2) traffic control around the site(s) and on transportation routes of construction materials	during the construction	PPA		
13	To implement EMP and EMoP	during the construction	PPA		
14	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	PPA		

(3) After the Project

No.	Items	Deadline	In charge	Estimated Cost	Ref.
1	To implement EMP and EMoP	for a period based on EMP and EMoP	PPA		
2	To submit results of environmental monitoring to JICA, by using the monitoring form, semiannually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between PPA and JICA.	for 3 years after the Project	PPA		
3	To operate and maintain properly and effectively the facilities constructed and equipment provided under the Grant Aid 1) Allocation of operation and maintenance cost 2) Operation and maintenance of facilities/equipment 3) Routine check/periodical inspection	after completion of the construction	PPA		

2. Other obligations of the Government of FSM funded with the Grant

No.	Items	Deadline	Amount (Million Japanese Yen)*
1	To construct the following facilities 1) New quay designed for a container ship having a capacity of 15,000 DWT: 160m long, 30m wide, 10m deep below DL including apron pavement and mooring posts 2) New container yard 3) Access road to the new quay ※Subject to change (depending on the project cost) and/ or other donor's intention.		
2	To implement detailed design, bidding support and construction supervision (Consulting Service)		
3	Contingencies		
	Total		To be estimated

* The Amount is provisional. This is subject to the approval of the Government of Japan.

4. 協議議事録（2）

Minutes of Discussions
on the Preparatory Survey for the Project for
Pohnpei Port Expansion
(Explanation on Draft Preparatory Survey Report)

With reference to the minutes of discussions signed between the Government of Federated States of Micronesia (hereinafter referred to as "FSM") and the Japan International Cooperation Agency (hereinafter referred to as "JICA") on May 17th, 2023, and in response to the request from the Government of FSM dated August 16th, 2019, JICA dispatched the Preparatory Survey Team (hereinafter referred to as "the Team") for the explanation of Draft Preparatory Survey Report (hereinafter referred to as "the Draft Report") for the Project for Pohnpei Port Expansion (hereinafter referred to as "the Project").

As a result of the discussions, both sides agreed on the main items described in the attached sheets.

Pohnpei, April 26th, 2024

尾崎 誠一

Ozaki Seiichi
Leader
Preparatory Survey Team

Japan International Cooperation Agency
Japan

Carlson D. Apis
Secretary
Department of Transport, Communication and Infrastrature
Federated States of Micronesia

for

Grilly Jack
General Manager
Pohnpei Port Authority
Federated States of Micronesia

ATTACHEMENT

1. Contents of the Draft Report

   After the explanation of the contents of the Draft Report by the Team, the FSM side agreed to its contents. JICA will finalize the Preparatory Survey Report based on the confirmed items. The report will be sent to the FSM side around August 2024.

2. Cost estimate

   Both sides confirmed that the cost estimate including the contingency explained by the Team is provisional and will be examined further by the Government of Japan for its approval. The contingency would cover the additional cost against natural disaster, unexpected natural conditions, etc.

3. Confidentiality of the cost estimate and technical specifications

   Both sides confirmed that the cost estimate and technical specifications of the Project should never be disclosed to any third parties until all the contracts under the Project are concluded.

4. Timeline for the project implementation

   The Team explained to the FSM side that the expected timeline for the project implementation is as attached in Annex 1.

5. Expected outcomes and indicators

   Both sides agreed that key indicators for expected outcomes are as follows. The FSM side will be responsible for the achievement of agreed key indicators targeted in year 2031 and shall monitor the progress for Ex-Post Evaluation based on those indicators.

[Quantitative indicators]

Indicator	Base Value (Before implementation)	Target Value (After implementation)
The ratio of the days when purse seiners were evacuated to that of call per year	16%	8%
The ratio of the total number of purse seiners evacuated to that of call per year	15%	6%
The ratio of the total number of fish carriers that conduct CIQ at sea due to congestion to that of call per year	13%	5%

[Qualitative indicators]

To improve safety at port entry/ departure and evacuation

To improve maritime logistics through smooth navigation of cargo and fishing vessels

6. Ex-Post Evaluation

JICA will conduct ex-post evaluation after three (3) years from the project completion, in principle, with respect to five evaluation criteria (Relevance, Effectiveness, Efficiency, Impact, Sustainability). The result of the evaluation will be publicized. The FSM side is required to provide necessary support for the data collection.

7. Undertakings of the Project

Both sides confirmed the undertakings of the Project as described in Annex 2. With regard to exemption of customs duties, internal taxes and other fiscal levies as stipulated in 1. (2) 5 of Annex 2, both sides confirmed that such customs duties, internal taxes and other fiscal levies, which shall be clarified in the bid documents by the Pohnpei Port Authority (hereinafter referred to as "PPA") during the implementation stage of the Project.

The FSM side assured to take the necessary measures and coordination including allocation of the necessary budget which are preconditions of implementation of the Project. It is further agreed that the costs are indicative. More accurate costs will be calculated at the Detailed Design stage.

Both sides also confirmed that the Annex 2 will be used as an attachment of G/A.

8. Monitoring during the implementation

The Project will be monitored by the Executing Agency and reported to JICA by using the form of Project Monitoring Report (PMR) attached as Annex 3. The timing of submission of the PMR is described in Annex 2.

9. Project completion

Both sides confirmed that the project completes when all the facilities constructed by the Grant are in operation. The completion of the Project will be reported to JICA promptly by the Executing Agency, but in any event not later than six months after completion of the Project.

10. Environmental and Social Considerations

10-1 General Issues

10-1-1 Environmental Guidelines and Environmental Category

The Team explained that 'JICA Guidelines for Environmental and Social Considerations (January 2022)' (hereinafter referred to as "the Guidelines") is applicable for the Project. The Project is categorized as B because the Project is not considered to be a large-scale port project, is not located in a sensitive area, and has none of the sensitive characteristics under the JICA guidelines for environmental and social considerations (January 2022), it is not likely to have a significant adverse impact on the environment.

10-1-2 Environmental Checklist

The environmental and social considerations including major impacts and mitigation measures for the Project are summarized in the Environmental Checklist attached as Annex 4. The FSM side assured that they shall take the necessary measures in accordance with the Environmental Checklist. Both sides agreed that in case of major modification of the content of the Environmental Checklist, the FSM side shall submit the modified version to JICA in a timely manner.

10-2 Environmental Issues

10-2-1 Environmental Impact Assessment (EIA)

Both sides confirmed the IA (Initial Assessment) report will be submitted to Environmental Protection Agency in May 2024 and approved by Environmental Protection Agency in June 2024 and the EIA report will not be required for the Project in the state's legal system.

10-2-2 Environmental Management Plan and Environmental Monitoring Plan

Both sides confirmed Environmental Management Plan (EMP) and Environmental Monitoring Plan (EMoP) of the Project are as Annex 5, respectively. Both side agreed that environmental mitigation measures and monitoring shall be conducted based on the EMP and EMoP, which may be updated during the detailed design stage.

10-2-3 Consultation with Local Stakeholders

The FSM side explained that local stakeholder meeting on the Project with relevant stakeholders and local residents with particular attention to directly affected peoples by the Project was held at the conference room of PPA administration building on April 16th, 2024. Advance announcements were posted on the bulletin boards of PPA administration building, Pohnpei State Government office and Sokehs Municipal Government office. Questions about the development plans for fishery activities and the future plan for use of the quay to be constructed in the Project were raised by attendees. There were no objections to the implementation of the Project. Details of the discussions in the stakeholder meeting are summarized as per Annex 6.

10-2-4 Other specific environmental issues which need to be confirmed/agreed between the parties.

Both sides confirmed that mitigation measures for the impacts on coral reefs will be implemented by placing rubble mats on the north side of the quay wall as alternative habitats for reef dwelling, and that partial relocation of the blue corals will be implemented. During the Project implementation, the contractor will monitor the survival and growth of transplanted corals. After the Project, the periodic monitoring by the FSM side is recommended

10-3 Environmental and Social Monitoring

10-3-1 Environmental Monitoring

Both sides agreed that the FSM side will submit the results of environmental monitoring to JICA as a part of Monthly Progress Report by using the monitoring form attached as Annex 7. The timing of submission of the monitoring form is described in Annex 2. In case JICA finds that there is a need for improvement in a situation with respect to environmental considerations after the agreed monitoring period, JICA may request to extend the period of monitoring and reporting until JICA confirms the issues have been properly addressed. The extension of the monitoring will be decided in accordance with the agreement between the Government of FSM and JICA.

10-3-2 Information Disclosure of Monitoring Results

Both sides confirmed that it will take stipulated procedures for information disclosure in accordance with the state's legal system. In addition, the Team requested the FSM side to disclose the results of environmental and social monitoring to local stakeholders and the FSM side agreed to disclose monitoring results through their website / in their field offices by date.

The FSM side agreed JICA will disclose the results of environmental and social monitoring submitted by the FSM side as the monitoring forms attached as Annex 7 on its website. If the third parties request further information, JICA disclose the information, which is subject to approval by FSM.

11. Other Relevant Issues

11-1 Disclosure of Information

Both sides confirmed that the Preparatory Survey Report from which the cost estimate and technical specifications of the Project are excluded will be disclosed to the public after completion of the Preparatory Survey. The comprehensive report including the project cost will be disclosed to the public after all the contracts under the Project are concluded.

Annex 1 Project Implementation Schedule

Annex 2 Major Undertakings to be taken by the Government of FSM

Annex 3 Project Monitoring Report (template)

Annex 4 Environmental Check List

Annex 5 Environmental Management Plan/Environmental Monitoring Plan

Annex 6 Details of the Discussions in the Stakeholder Meeting

Annex 7 Environmental and Social Monitoring Form

PROJECT IMPLEMENTATION SCHEDULE

The estimated timeline of the Project Implementation is as follows:

- Exchange of Note (E/N): July 2024
- Grant Agreement (G/A): August 2024
- Opening of Bank Account for Grant: September 2024
- Consulting Service Agreement: September 2024
- Detailed Design: September 2024 – January 2025
- Procurement of the Contractor/Supplier: January 2025 – May 2025
- Construction Works: June 2025 – April 2028
- Defect Liability Inspection: April 2029

MAJOR UNDERTAKINGS TO BE TAKEN BY THE GOVERNMENT OF FSM

1. Specific obligations of the Government of FSM which will not be funded with the Grant

(1) Before the Tender

No.	Items	Deadline	In charge	Estimated Cost	Ref.
1	To sign the banking arrangement (B/A) with a bank in Japan (the Agent Bank) to open bank account for the Grant	within 1 month after signing of the G/A	DOFA		
2	To issue A/P to the Agent Bank for the payment to the consultant	within 1 month after signing of the agreement with the consultant	DOFA		
3	To bear the following commissions to the Agent Bank for the banking services based upon B/A				
	1) Advising commission of A/P	within 1 month after signing of the agreement with the consultant	DOFA	30USD	
	2) Payment commission for A/P	every payment for the consultant	DOFA	530USD	
4	To approve IA	June 2024	PPA/EPA		
5	To secure the necessary budget for implementation of EMP and EMoP	within 1 month after the signing of the G/A	PPA		
6	To clear the following lands 1) Project sites for the quay, the container yard and the access load 2) Demolision of existing buildings abondaned boat, waste, power distribution line and trees 3) Temporary construction yard and stock yard 4) Borrow pit and disposal site near the Project area	December 2024	PPA	184,000 USD	
7	To provide facilities for electric power supply and other incidental facilities necessary for the implementation of the Project outside the site(s)	before start of the construction	PPA		
8	To obtain or arrange for license, permission and other necessary procedures for the Project as follows. 1) Earthmoving Permit 2) Department of Land Appplication 3) Historic Preservation 4) Marine Resources Assessment Report 5) Municipal Government Clearance	before notice of the bidding documents	PPA EPA		
9	To submit Project Monitoring Report (with the result of Detailed Design)	before preparation of the bidding documents	PPA		

B/A: Banking Arrangement

A/P: Authorization to Pay
DOFA: Department of Finance and Administration
EPA: Environmental Protection Agency
PPA: Pohnpei Port Authority

(2) During the Project Implementation

No	Items	Deadline	In charge	Estimated Cost	Ref.
1	To issue A/P to the Agent Bank for the payment to the supplier and the contractor	within 1 month after signing of the contract(s)	DOFA		
2	To bear the following commissions to the Agent Bank for the banking services based upon the B/A				
	1) Advising commission of A/P	within 1 month after signing of the contract(s)	DOFA	26,000 USD	
	2) Payment commission for A/P	every payment	DOFA		
3	To ensure prompt unloading and customs clearance at ports of disembarkation in the country of the Recipient and to assist the contractor(s) and/or supplier(s) with internal transportation therein	during the Project	PPA CTA		
4	To accord Japanese nationals and/or physical persons of third countries whose services may be required in connection with the supply of the products and the services such facilities as may be necessary for their entry into the country of the Recipient and stay therein for the performance of their work	during the Project	PPA		
5	To ensure that customs duties, internal taxes and other fiscal levies which may be imposed in the country of the Recipient with respect to the purchase of the products and/or the services be exempted	during the Project	PPA CTA DRT		
6	To bear all the expenses, other than those covered by the Grant, necessary for the implementation of the Project	during the Project	PPA		
7	To notify JICA promptly of any incident or accident, which has, or is likely to have, a significant adverse effect on the environment, the affected communities, the public or workers.	during the construction	PPA		
8	1) To submit Project Monitoring Report	every month	PPA		
	2) To submit Project Monitoring Report (final) (including as-built drawings, equipment list, photographs, etc.)	within 1 month after issuance of Certificate of Completion for the works under the contract(s)	PPA		
9	To submit a notice concerning completion of the Project	within 6 months after completion of the Project	PPA		
10	To relocate the tide gauge	during the Project	PPA	35,000 USD	
11	To ensure the safety of persons engaged in the implementation of the Project	during the Project	PPA		
12	To take necessary measures for security and safety of the Project site 1) maintaining the safety of workers and the general public	during the construction	PPA		

	by thorough implementation of safety measures and immediate action in the case of accident 2) traffic control around the site(s) and on transportation routes of construction materials				
13	To implement EMP and EMoP	during the construction	PPA		
14	To submit results of environmental monitoring to JICA, by using the monitoring form, on a quarterly basis as a part of Project Monitoring Report	during the construction	PPA		

CTA: FSM Customs & Tax Administration
DRT: Pohnpei State Government, Division of Revenue and Taxation

(3) After the Project

No.	Items	Deadline	In charge	Estimated Cost	Ref.
1	To construct the fence	after completion of the construction	PPA	111,000 USD	
2	To implement EMP and EMoP	for a period based on EMP and EMoP	PPA		
3	To submit results of environmental monitoring to JICA, by using the monitoring form, semiannually - The period of environmental monitoring may be extended if any significant negative impacts on the environment are found. The extension of environmental monitoring will be decided based on the agreement between PPA and JICA.	for 3 years after the Project	PPA		
4	To operate and maintain properly and effectively the facilities constructed and equipment provided under the Grant Aid, and are not used for military purposes 1) Allocation of operation and maintenance cost 2) Operation and maintenance of facilities/equipment 3) Routine check/periodical inspection	after completion of the construction	PPA		

2. Other obligations of the Government of FSM funded with the Grant

No.	Items	Deadline	Amount (Million Japanese Yen)*
1	To construct the following facilities 1) New quay 2) Yard 3) Access road to the new quay	April 2028	
2	To implement detailed design, bidding support and construction supervision (Consulting Service)		
3	Contingencies		
	Total		**

* The Amount is provisional. This is subject to the approval of the Government of Japan

** Amount will be available in the JICA Library after completion of construction and procurement contract certification

Project Monitoring Report
on
Project Name
Grant Agreement No. XXXXXXX

20XX, Month

Organizational Information

Signer of the G/A (Recipient)	Person in Charge	(Designation)
	Contacts	Address: Phone/FAX: Email:
Executing Agency	Person in Charge	(Designation)
	Contacts	Address: Phone/FAX: Email:
Line Ministry	Person in Charge	(Designation)
	Contacts	Address: Phone/FAX: Email:

General Information:

Project Title	
E/N	Signed date: Duration:
G/A	Signed date: Duration:
Source of Finance	Government of Japan: Not exceeding JPY _____ mil. Government of (_____): _____

1: Project Description

1-1 Project Objective

1-2 Project Rationale

- Higher-level objectives to which the project contributes (national/regional/sectoral policies and strategies)
- Situation of the target groups to which the project addresses

1-3 Indicators for measurement of "Effectiveness"

Quantitative indicators to measure the attainment of project objectives		
Indicators	Original (Yr)	Target (Yr)
Qualitative indicators to measure the attainment of project objectives		

2: Details of the Project

2-1 Location

Components	Original *(proposed in the outline design)*	Actual
1.		

2-2 Scope of the work

Components	Original* *(proposed in the outline design)*	Actual*
1.		

Reasons for modification of scope (if any).

(PMR)

2-3 Implementation Schedule

Items	Original		Actual
	(proposed in the outline design)	*(at the time of signing the Grant Agreement)*	

Reasons for any changes of the schedule, and their effects on the project (if any)

2-4 Obligations by the Recipient

2-4-1 Progress of Specific Obligations

See Attachment 2.

2-4-2 Activities

See Attachment 3.

2-4-3 Report on RD

See Attachment 11.

2-5 Project Cost

2-5-1 Cost borne by the Grant(Confidential until the Bidding)

Components			Cost (Million Yen)	
	Original *(proposed in the outline design)*	Actual *(in case of any modification)*	Original[1),2)] *(proposed in the outline design)*	Actual
	1.			
Total				

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar = Yen

2-5-2 Cost borne by the Recipient

Components	Cost (1,000 Taka)

	Original *(proposed in the outline design)*	Actual *(in case of any modification)*	Original[1),2)] *(proposed in the outline design)*	Actual
	1.			

Note: 1) Date of estimation:
2) Exchange rate: 1 US Dollar =

Reasons for the remarkable gaps between the original and actual cost, and the countermeasures (if any)

(PMR)

2-6 Executing Agency

- Organization's role, financial position, capacity, cost recovery etc,
- Organization Chart including the unit in charge of the implementation and number of employees.

Original *(at the time of outline design)* name: role: financial situation: institutional and organizational arrangement (organogram): human resources (number and ability of staff):
Actual *(PMR)*

2-7 Environmental and Social Impacts

- The results of environmental monitoring based on Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- The results of social monitoring based on in Attachment 5 (in accordance with Schedule 4 of the Grant Agreement).
- Disclosed information related to results of environmental and social monitoring to local stakeholders (whenever applicable).

3: Operation and Maintenance (O&M)

3-1 Physical Arrangement

- Plan for O&M (number and skills of the staff in the responsible division or section, availability of manuals and guidelines, availability of spare parts, etc.)

Original *(at the time of outline design)*
Actual *(PMR)*

3-2 Budgetary Arrangement

- Required O&M cost and actual budget allocation for O&M

Original *(at the time of outline design)*
Actual *(PMR)*

4: Potential Risks and Mitigation Measures

- Potential risks which may affect the project implementation, attainment of objectives, sustainability
- Mitigation measures corresponding to the potential risks

Assessment of Potential Risks *(at the time of outline design)*

Potential Risks	Assessment
1. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
2. (Description of Risk)	Probability: High/Moderate/Low

	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
3. (Description of Risk)	Probability: High/Moderate/Low
	Impact: High/Moderate/Low
	Analysis of Probability and Impact:
	Mitigation Measures:
	Action required during the implementation stage:
	Contingency Plan (if applicable):
Actual Situation and Countermeasures	
(PMR)	

5: Evaluation and Monitoring Plan (after the work completion)

5-1 Overall evaluation

Please describe your overall evaluation on the project.

5-2 Lessons Learnt and Recommendations

Please raise any lessons learned from the project experience, which might be valuable for the future assistance or similar type of projects, as well as any recommendations, which might be beneficial for better realization of the project effect, impact and assurance of sustainability.

5-3 Monitoring Plan of the Indicators for Post-Evaluation

Please describe monitoring methods, section(s)/department(s) in charge of monitoring, frequency, the term to monitor the indicators stipulated in 1-3.

ENVIRONMENTAL CHECK LIST

JICA Environmental Checklist 11: Ports and Harbors

Points to Note:

1. Answers should not be limited to only Yes/No, but the rationale of the answer and mitigation measures should also be described in the "Confirmation of Environmental Considerations" column.
2. If you have any questions about terminology, etc., please refer to "Japan International Cooperation Agency Guidelines For Environmental and Social Considerations (January 2022)" (the JICA Guidelines) and "Answers to Frequently Asked Questions about the Japan International Cooperation Agency Guidelines For Environmental and Social Considerations (January 2022)" (FAQ).

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1. Permits and Consultations	(1) Environmental Assessment and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Are the EIA reports written in the official or widely used language of the host country? (c) Have EIA reports been approved by authorities of the host country government? (If not yet approved, write the expected date of the approval in the "Confirmation of Environmental Considerations" column.) (d) Have EIA reports been approved with any conditions? If conditions are imposed on the approval of EIA reports, are ま the conditions satisfied? (e) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) N (b) Y (c) N (d) Y (e) N (f) Y (g) Y	(a) IA (Initial Assessment) Application form, including IA result, is currently under preparation. (b) In correspondence with Pohnpei EIA Regulation, the IA/EIA documents shall also be published by Micronesian language. (c) Currently preparing IA application. (d) Land use permit, Earthmoving permit, Forestry clearance, Marine resource assessment, and Historical Preservation Review Permits are required to be approved or acquired. The applications are currently under preparation. (e) Following permits or approvals are required to be acquired from each respective departments or office of Pohnpei State. Land Use permit： Land Dept., EIA, Earthmoving Permit : Pohnpei EPA, Forestry Clearance, Marine Resource Assessment: Pohnpei Resource & Development (R & D) Dept., Historic Preservation Permit: Historic Preservation Office. (f) Yes they are covered. (g) There is a plan to have a certain one company facilities to be moved to an adjacent land of the project site, but apart from that, there are no other projects that are indivisible to the subject project.
		(f) Do the EIA reports cover the items described in Appendix 2 of the JICA Guidelines? (The scope and detail of the impact assessment may be adjusted according to the impact of the project.) (g) Do the environmental and social consideration confirmation cover the project's whole scope, cumulative impacts, derivative and secondary impacts, as well as impacts of indivisible projects?		

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Explanation and Consultation with Local Stakeholders	(a) Are local stakeholders properly analyzed and identified? (b) Does the project provide appropriate explanations to local stakeholders about the content and impact of the project, and gain their understanding, through the process of ensuring meaningful consultation including information disclosure? (c) For local stakeholder consultations, are records of consultations prepared, including the gender and other attributes of the participants? (d) Have comments from local stakeholders (such as local residents) been reflected to the project design, etc.?	(a) Y (b) N (c) N (d) N.A.	(a) Conducted stakeholder analysis, including project proponent, related agencies, municipal governments, beneficiaries, NGOs and project affected persons, etc., and identified on relative stakeholders that should be invited to the stakeholder meeting. (b) To be held during IA Draft stage. (c) Participants list, including gender information shall be taken as part of the minutes record. (d) If any comments are raised from the stakeholders, they will be incorporated into the IA/EIA document, including project designing if necessary.
	(3) Examination of Alternatives	(a) Is the project/plan's scope of multiple alternatives adequately considered? (b) Are alternatives that are feasible in terms of technical, financial, and environmental and social aspects considered from the view point of environmental and social items and, if necessary, reducing total greenhouse gas emissions? (c) Are comparisons made with the "without project" scenario?	(a) Y (b) Y (c) Y	(a) Consideration of Alternatives was conducted, including confirmation on project site selection, alternative of not implementing the project, and alternatives regarding the new wharf designing. (b) Proposed on alternative of facilities that emit less or no GHG emission. (c) Alternative including alternative of not implementing the project was considered.
2. Pollution Control	(1) Air Quality	(a) Do air pollutants, such as sulfur oxides (SOx), nitrogen oxides (NOx), and soot and dust emitted from ships, vehicles and project equipment comply with the emission standards of the host county, etc. ? (b) Do air pollutants emitted from the project cause areas that do not comply with the ambient air quality standards of the host country, etc. ? (c) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a) Y (b) N (c) N	(a) As for all measured parameters, had all met the environmental standard. (b) No result on ambient air pollution was detected through the baseline survey, and throughout all construction phase and after operation phases, it is assumed that the level of ambient air quality will remain clean meeting with the environmental standard. (c) Mitigation measures, such as regular maintenance of construction vehicle and/or equipment, etc., regular sprinkling of water, mitigation measures, and posting traffic control personnel, etc. will be considered.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
2. Pollution Control	(2) Water Quality	(a) Do effluents from the project facilities comply with the effluent standards of the host county, etc. ? (b) Do effluents from ships and ancillary equipment such as dock comply with the effluent standards of the host country, etc. ? (c) Are adequate measures taken to prevent leakages of oil and hazardous materials into surrounding waters? (d) Do oceanographic changes, such as alteration of ocean currents and reduction in seawater exchange rates (deterioration of seawater circulation) due to modification of water areas such as shoreline modifications, reduction in water areas, and creation of new water areas, cause changes in water temperature and water quality?	(a)Y. (b)Y. (c)Y (d)N (e)N (f)Y (g)N (h)Y	(a) Based on water treatment facility, general wastewater will be treated, therefore, treated wastewater shall meet with the environmental standard. (b) Treated wastewater to be discharged from vessels shall meet with the environmental standard, since the Pohnpei Port Rehabilitation Masterplan incorporates compliance with the IMO Conventions in terms of docking vessels to Pohnpei Port. (c) Waste oil and other pollutants will be properly managed on daily basis at a designated area. (d) The new quay is designed parallel to the shoreline, therefore, water current change should not be anticipated (e) Measures will be taken to prevent leachates from leaking into the ecosystem. (f) Same as above item (a). (g) There will be no section that will not comply with the environmental standard. (h) Monitoring and prevention measure to avoid spread of turbid water shall be taken place, at dredging works period, due to expectation of impact on seawater turbidity that will be anticipated during its period.
		(e) In the case of the projects including land reclamation, are adequate measures taken to prevent contamination of surface water, seawater, and groundwater by leachates from the reclamation areas? (f) Does the quality of sanitary wastewater and stormwater comply with the effluent standards of the host country? (g) Do effluents from the project cause areas that do not comply with the ambient water quality standards of the host country? (h) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?		

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(3) Wastes	(a) Are wastes generated from ships and the related facilities properly treated and disposed of in accordance with the regulations of the host country? (b) Is offshore dumping of dredged materials and soils properly treated and disposed of in accordance with the regulations of the host country to prevent impacts on the surrounding water areas (or land areas)? (c) Are adequate measures taken to prevent discharge or dumping of hazardous materials to the surrounding water areas? (d) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)Y (c)Y (d)N	(a) Wastes to be generated from vessels shall be properly managed and disposed, since the Pohnpei Port Rehabilitation Masterplan incorporates compliance with the IMO Conventions in terms of docking vessels to Pohnpei Port. (b) Dredged soil will be reused as reclamation material (c) Adequate measures will be adopted. (d) Negative impact will not be anticipated, but wasted will be daily managed at a designated area.
	(4) Soil Contamination	(a) Has the soil at the project site been contaminated in the past? (b) Are adequate measures taken to prevent soil contamination? (c) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)Y (c)N	(a)Several heavy metal concentration rate are high, most probably by natural phenomenon reason. (b) Measures will be taken to prevent leachates from leaking into the ecosystem. (c)No negative impact is anticipated.
	(5) Noise and Vibration	(a) Does the noise generated by operation comply with standards of the host country, etc.? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)N	(a)Baseline noise intensity measurement reveals that at present the noise is meeting with the environmental standard. (b)There is a certain amount of distance between the construction area and residential area, and so no specific impact should be anticipated, however, monitoring will be required during construction periods when large noise intensity is expected.
	(6) Subsidence	(a) Is there a possibility that the extraction of a large volume of groundwater causes subsidence? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a)No plan to pump up large volume of groundwater, therefore, inapplicable (b)No negative impact anticipated.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
2. Pollution Control	(7) Odor	(a) Are there any odor sources? Are adequate odor control measures taken? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)N	(a)Dredged soil may become a source of offensive odor, however, since they will be reused as reclamation material, and so impact should be limited. (b)Impact is limited, but monitoring will be required by observation/
	(8) Sediment	(a) Are adequate measures taken to prevent contamination of sediments by discharges or dumping of hazardous materials from ships and related facilities? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)N	(a) Hazardous waste will be stored and managed properly at a designated area, and will also be transported and disposed properly. (b) No negative impact is anticipated, since bottom sediment quality at dredging area basically meets with the environmental standard.
3. Natural Environment	(1) Protected Areas	(a) Is the project site located in protected areas designated by the country's laws or international treaties/ conventions? (b) Does the project affect the protected areas? (c) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N	(a) Not applicable (b) Adequate measures will be taken not to cause impact. (c) Impact will not be anticipated to occur.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Biodiversity	(a) Does the project site encompass primary forests, natural forests in tropical areas, habitats with important ecological value (coral reefs, mangrove wetlands, tidal flats, etc.)? (b) Does the project site encompass habitats of rare species that require protection under domestic legislation, international treaties, etc.? (c) Are there any concerns about the significant impact on biodiversity by the project, with significant conversion or significant degradation of critical habitats or critical forests? If yes, are appropriate measures taken to address the impact on biodiversity? (d) Does the project have negative impacts on aquatic organisms?	(a)N (b)Y (c)N (d)N (e)Y (f)N (g)N	(a)Although there is a mangrove forest at hinterland of the project site, the construction activity will not cause any negative impact to it. (b) The blue coral is a vulnerable species under IUCN category, and will be a subject of impact. (c) Confirmed the distribution of blue coral in other waters off the coast of Pohnpei State and, in the opinion of the Pohnpei State Resource Development (R&D) Department, that there is no legal obligation to take compensatory measures such as transplantation associated with dredging work based on such existence also in other areas of the State. However, in accordance with the consultation with two Japanese experts of coral regarding common procedure in Japan for mitigation of the removal of corals, it was decided that some portion of blue coral would be transplanted. (d) Humphead wrasse, an endangered species, was observed in the water area of the project site during a subcontracted survey. However, the situation was recognized as not of an issue, since observed species were two juveniles and so the subject water area was not considered as a spawning ground, but only migratory fish by the R&D Department. (e) Same as (c) above (f) Following confirmation of (c) above, no special measures will be taken. (g) Monitoring the same species distributed around the construction area to confirm whether there is any impact from the construction.
		(e) Does the project have negative impacts on vegetation or wildlife of coastal zones? (f) If there are any other concerns about significant impacts on biodiversity, are measures taken to reduce the impacts on biodiversity? (g) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?		

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(3) Hydrology	(a) Does the installation of the port and harbor facilities cause oceanographic changes? (b) Are there any impacts on groundwater system (drawdown, salification, etc.) due to landfill construction and harbor excavation, etc.? (c) Does the project have negative impacts on current conditions, waves and tides, etc.? (d) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N (d)N)	(a)The new wharf is designed parallel to the shoreline, therefore, no Impact to the hydrologic situation to the current. (b)No such impact anticipated. (c)Same as above item (a), therefore, no impact is anticipated. (d)Ditto
	(4) Topography and Geology	(a) Does the installation of port and harbor facilities cause a large-scale alteration of topographic features and geological structures in the surrounding areas or limination of natural beaches? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a)No impact to be anticipated (b)Ditto

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4. Social Environment	(1) Resettlement and Land Acquisition	(a) Is land acquisition with involuntary resettlement caused by project implementation? If yes, please describe the scale of land acquisition and resettlement. (b) Are efforts made to minimize the impacts caused by the resettlement? Are there any other land acquisition or loss of livelihoods? (c) Is adequate explanation on compensation and livelihood restoration program given to affected people prior to resettlement? (d) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards, developed based on socioeconomic studies on resettlement? (e) Are the compensations paid prior to the resettlement?	(a)Y (b)Y (c)N (d)N (e)Y (f) Y (g)N (h)N (i) N (j) N (k)N	(a) There was a land dispute related to the project site, but the issue was resolved after the rulings of the Pohnpei State District Court and the Supreme Court. (b) Compensation will be paid to the complainant who brought the land dispute in accordance with the outcome of the trial, and the residents of the former hotel at the business site that was illegally managed by the complainant will be subject to a rental contract with the same operator. After fulfilling the terms and conditions and paying the rental contract fee, the case has been resolved by voluntarily moving to another area. (c) As stated in (a) and (b) above, the land dispute issue has been resolved and the need for related measures before the project has been eliminated.
		(f) Are the compensation policies prepared in document? (g) Does the resettlement plan pay particular attention to vulnerable social groups, such as women, children, elderly peoples, people in poverty, persons with disabilities, refugees, internally displaced persons, and minorities? (h) Are the compensation to be agreed are explained to the project affected persons in writing, and are agreements with the affected people obtained prior to resettlement? (i) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (j) Are any plans developed to monitor the impacts of resettlement? (k) Is the grievance redress mechanism established?		(d) Resolved according to (b) above. (e) Compensation to the litigant who caused the land dispute has already been paid by the PPA in accordance with the court outcome. (f) The judgment materials of the court fall under the certification document. (g) There are no socially vulnerable people affected. (h) As per (b), (e), (f) above. (i) As shown in (a) to (c) above, this problem has been resolved and the measures and systems for resident relocation are not applicable. (j) The problem has been resolved and is not indicated. (k) Same as above.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Living and Livelihood	(a) Does the project adversely affect the living conditions of the inhabitants? Are adequate measures considered to reduce the impacts, if necessary? (b) Do the changes in water uses (including fisheries and recreational uses) in the surrounding areas due to the project adversely affect the livelihoods of inhabitants? (c) Do the port and harbor facilities adversely affect the existing water traffic and road traffic in the surrounding areas? (d) Does the project have a negative impact on ecosystem services (provisioning services and regulating services) and affect health and safety of the community (especially indigenous peoples who depend on the services)? (e) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N (d)N (e)N	(a) Rehabilitation of port facilities is expected to have a positive impact on the local economy. However, in order to avoid negative impacts on the residents and fishermen of the fishing village on the opposite shore of the project site, noise, water quality, and sediment monitoring will focus on the catch of traditional fisheries, the income and living standards of traditional fishermen (some of which will continue even after operation). (b) Rehabilitation of port facilities will have a positive impact on local fisheries. (c) Construction of the new quay and access road will make accelerators more convenient and no negative impact is expected. (d) No negative impact is expected. (e) No negative impact is expected. However, in view of the possibility that the construction will have a certain impact on the fishing villages and fishermen on the opposite bank of the project site, we will monitor noise, water quality, traditional fishing catches, etc. during the construction stage, and will Through interviews with local fishermen, we will confirm whether there will be any negative impact on the income and standard of living of traditional fishermen.
	(3) Vulnerable Social Groups	(a) Is appropriate consideration given to vulnerable social groups, such as women, children, elderly peoples, people in poverty, persons with disabilities, refugees, internally displaced persons, and minorities? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a) Target group has not been identified (b) Due to the above reasons, no negative impact is expected.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
4. Social Environment	(4) Heritage	(a) Does the project damage any archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the laws of the host country? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a) There are no valuable cultural sites within or adjacent to the project site area. Scheduled to obtain historic site preservation approval (b) No negative impact is expected.
	(5) Landscape	(a) Does the project adversely affect landscapes that require special considerations? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a) No negative impact is expected. (b) No negative impact is expected.
	(6) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources to be respected? (c) Is an indigenous peoples plan prepared and published, if necessary? (d) Do the project make efforts to obtain the Free, Prior, and Informed Consent (FPIC) of the affected indigenous peoples? (e) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N (d)N (e)N	(a) There are no indigenous people, but the understanding and consent for project implementation has been obtained in advance from the local chief. (b) Same as above. (c) Not applicable due to the same reason (d) Same as (a) above. (e) No impact is expected.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(7) Working Conditions	(a) Does the project comply with laws related to occupational health and safety of the host country? (b) Are tangible safety considerations in place for individuals involved in the project, such as installation of safety equipment which prevents industrial accidents, and management of hazardous materials, etc.? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as development of health and safety plans, and conducting safety trainings (including traffic safety and public health) for workers etc.?	(a)Y (b)Y (c)Y	(a) HSE related laws and regulations will be complied with. (b) Safety measures will be taken. (c) Training on safety and health, safety education, emergency preparedness, HIV countermeasures, etc. will be provided.
	(8) Health, Safety and Security of Local Communities	(a) Are there any negative impacts on health/hygiene of the local community, such as disease outbreaks (including HIV and other infectious diseases) due to the influx of workers, etc. associated with the project? Are there any mitigation measures in place for the impacts? (b) Are there any negative impacts on the safety of the local community, such as deterioration of public safety, due to the influx of workers, etc. associated with the project? Are there any mitigation measures in place for the impacts? (c) When security guards are hired for the project or other personnel are deployed to ensure and maintain the security of the project area as well as the persons related to the implementation of the project during the project preparation and implementation, are any appropriate measures taken for such personnel not to use any force to provide security except for preventive and defensive purposes? (d) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N (d)N	(a) HIV/AIDS control programs shall be implemented. (b) Education and training for workers will be carried out. (c) Security in compliance with Micronesian-related laws will be applied and education and training will be provided. (d) No impact expected.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
5. Others	(1) Monitoring	(a) Does the project proponent develop and implement monitoring program for the environmental and social items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the project proponent establish an adequate monitoring framework (organization, personnel, equipment, and budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reporting the monitoring results from the project proponent to the regulatory	(a)Y (b)Y (c)Y (d)Y (e)Y	(a) To be carried out; (b) Mitigation measures and monitoring plans are organized. (c) Shall be established (d) Prescribed (e) A Grievance Redress Mechanism will be established in which the business owner is the point of contact for receiving grievances.
		authorities? (e) Is the grievance redress mechanism regarding environmental and social considerations established?		
6. Note	(1) Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Roads, Railways, and Bridges checklists should also be checked (e.g., projects including construction of access road to the port).	(a)N	(a) An access road of just under 120m is planned to be constructed, but it is a very small road and therefore negative impact is thought to be limited. Water sprinkling and noise monitoring tower measures will be taken during construction.
	(2) Note on Using Environmental Checklist	(a) Where necessary, the impacts to transboundary or global issues should be confirmed (e.g. the project includes factors that may cause problems, such as transboundary waste treatment or global warming). (b) For projects that are expected to generate more than a certain amount of greenhouse gas emissions, is the total amount of the greenhouse gas emissions estimated before the project implementation?	(a)N (b)N.	(a) Type of facilities that may emit GHG gas will not be constructed and since this is a small-scale rehabilitation project, so therefore inapplicable. (b) Same as above.

ENVIRONMENTAL MANAGEMENT PLAN/ ENVIRONMENTAL MONITORING PLAN

Environmental Management Plan

No.	Items (Impacts)	Proposed Mitigation Measures	Implementing Organization	Responsible Organization	Cost
Before Construction:					
12	Natural resource	When procuring materials that require the mining of original natural resources, we will confirm in advance whether the mining site has obtained environmental permits such as EIAs and earthwork permits, and whether the validity period of these permits is appropriate for this project.	Contractor	PPA, Pohnpei EPA	Included in construction cost
During Construction:					
1	Ambient air quality	Regular water sprinkling will be performed on days when dust is expected to be generated due to construction. Periodic instrument measurements will be taken at the boundaries of the residences to confirm the results.	Contractor	PPA, Pohnpei EPA	Included in construction cost
2	Water Quality	Visually check for turbidity and if turbidity is expected to occur due to construction, reduce its spread by silt protectors. Periodically check by instrumental measurements.	Contractor	PPA, Pohnpei EPA	Included in construction cost
3	Soil	Take measures to prevent leakage from the source to outside the premises.	Contractor	PPA	Included in construction cost
6	Noise	Use low-noise, low-vibration vehicles/vessels and heavy equipment and perform regular maintenance.	Contractor	PPA, Pohnpei EPA	Included in construction cost
7	Ground	Periodically check for visual	Contractor	PPA	Included in

No.	Items (Impacts)	Proposed Mitigation Measures	Implementing Organization	Responsible Organization	Cost
	subsidence	settlement.			construction cost
8	Odor	Designate and publicize temporary storage sites for waste (general and special), and periodically check for proper disposal of waste when it is taken out of the system. When temporarily storing dredged soil, take measures to prevent the diffusion of odors outside the site.	Contractor	PPA	Included in construction cost
9	Sediment	Proper treatment and disposal of dredged soil, including diversion of dredged soil to landfill material and consideration of construction methods to prevent soil from being discharged into the ocean.	Contractor	PPA	Included in construction cost
11	Ecosystem	Periodically check the transplanted blue corals survive or not.	Contractor	PPA, Pohnpei EPA	Included in construction cost
12	Natural Resource	Construction materials will be procured from locations that have obtained environmental permits.	Contractor	PPA	Included in construction cost
13	Hydrological Situation	Periodically check for changes in current conditions in the surrounding waters due to the construction.	Contractor	PPA	Included in construction cost
14	Topography & Geography	Periodic checks will be made to ensure that there are no changes in the shoreline of the surrounding sea area as a result of the construction.	Contractor	PPA	Included in construction cost
19	Social Unrest	Periodic checks will be made to determine if the construction has affected the fishing industry in the surrounding waters.	Contractor	PPA	Included in construction cost
27	Gender	When hiring construction workers, be aware of equal employment opportunities for men and women.	Contractor	PPA	Included in construction cost

No.	Items (Impacts)	Proposed Mitigation Measures	Implementing Organization	Responsible Organization	Cost
28	Working Environment	Periodic audits of construction workers' compliance with environmental, health, and safety standards.	Contractor	PPA	Included in construction cost
29	Impact during construction phase	Regularly check that appropriate mitigation and monitoring measures are in place.	Contractor	PPA	Included in construction cost
30	Accident prevention measures	In cooperation with the local police, provide traffic control personnel on access roads and other roads to the project site.	Contractor	PPA	Included in construction cost
32	Monitoring	Periodic checks to ensure that the conditions attached to the environmental permit are being complied with.	Contractor	PPA	Included in construction cost
During operation					
7	Ground subsidence	Check to see if settlement has occurred over the long term.	PPA	PPA	Included in operating expenses

Environmental Monitoring Plan

Env. Item	Analyzing item: parameter, etc.	Monitoring Stations	Frequency	Responsible Agencies	Supervising Institutions	Cost
Air Quality	SPM (PM_{10}, SO_2, NO_2), Equipment measurement	Construction area boundary, residential area boundary	During const. once a week	Contractor	PPA, Pohnpei EPA	Included in construction cost
Water Quality	Turbidity Visual observation, Equipment measurement	Two locations around the area scheduled for dredging (one location is a blue coral distribution area and the other location is an offshore area that	Once before construction During construction: Once a week during construction where muddy conditions occur.	Contractor	PPA, Pohnpei EPA	

Env. Item	Analyzing item: parameter, etc.	Monitoring Stations	Frequency	Responsible Agencies	Supervising Institutions	Cost
		will not be affected by dredging and reclamation work)				
Soil	Outflow from outside the system, Visual observation	Sea area around the construction area	Under construction: every rainy day	Contractor	PPA	
Noise	Noise (dB), equipment measurement	Construction area boundary, Residential area boundary	During Const: Once a week and once a day during construction that produces loud noises	Contractor	PPA, Pohnpei EPA	
Land Sub-sidence	Land subsidence situation, Visual confirmation	Inside the construction area	During Const: Once a month	Contractor	PPA	
Odor	Visual check	Inside the construction area	During Const: Once a week	Contractor	PPA	
Sediment	Appropriate management of dredged soil Measures to prevent ocean spills Visual confirmation	Inside the construction area	During Const: Once a week	Contractor	PPA	
Ecology	Periodically check every 3 months whether the tlansplanted blue corals survive or not.	Transplanted area	Under construction: every three months	Contractor	PPA, Pohnpei EPA	Included in construction cost
Waste	Status of securing temporary storage space, management, proper disposal, etc. Visual confirmation	Inside the construction area	During Const: Once a week	Contractor	PPA, State Department of Health and Public Services	
Natural resources	License status of material suppliers, Visual confirmation	Pohnpei State	Dring construction: every six months	Contractor	PPA	

Env. Item	Analyzing item: parameter, etc.	Monitoring Stations	Frequency	Responsible Agencies	Supervising Institutions	Cost
Hydrology	Changes in flow conditions in surrounding waters Visual confirmation	Around the construction area	During construction: every six months	Contractor	PPA	
Topography and Geography	Coastline changes Visual confirmation	Around the construction area	During construction: every six months	Contractor	PPA	
Social Unrest	Impact of traditional fishermen on fishing grounds Confirmation through hearing etc.	Around the construction area	During construction: every six months	Contractor	PPA	
Gender	Employment status Confirmation through hearing etc.	Around the construction area	During construction: every six months	Contractor	PPA	
Working Environment	1. Compliance with EHS activities 2. Implementation of HIV/AIDS control programs Visual confirmation	Inside the construction area	During construction: everyday & every six months	Contractor	PPA	
Impact during construction phase	Compliance with mitigation measures and implementation of monitoring Confirmation with report	Inside the construction area	During construction: once a month	Contractor	PPA	Included in construction cost
Accident prevention measures	Traffic director placement status Visual confirmation	Around the construction area	During construction: once a week	Contractor	PPA	
Monitoring	Compliance status with additional conditions Confirmation with report	Inside the construction area	During construction: once a month	Contractor	PPA	

DETAILS OF THE DISCUSSIONS IN THE STAKEHOLDER MEETING

POHNPEI PORT AUTHORITY

P.O. Box 1150 Kolonia, Pohnpei
Federated States of Micronesia96941
Telephone +691 320 2793
Website: www.ppa.fm

Stakeholder Meeting-PPA Port Expansion Project
April 16, 2024
PPA Conference Room

General Manager, Grilly Jack called the meeting to order at 2:09 pm in the PPA Conference Room

The present members includes: PPA, OFA, MSP, Soulik en Ehir(Sokehs), EPA, FSCO, PNIsurf, Pohnpei Tourism, Liancheng, AMCRES, Sokehs Municpal, Pohnpei Fishing Club, Marine Surveillance, FSM TC&I, NORMA, Micronesian Conservation Society

General Manager welcome every one and introduce the purpose of the meeting and turn the floor to Koji Kobune.

Mr. Kobune introduce the agenda of the meeting as stated below

Project presentation
Project Objectives
Layout Plan
Construction schedule
Environmental and social considerations
Q&A and discussion

Mr. Kobune presented the PPA Port expansion project

- **Background survey**:
  - History surveys and plans – enhance the port to the north and south to ease the congestion and expand the capacity of mooring for purse seiners-surveys and plans started in 2010 and extended to August 2022 due to covid 19.
- **Development Concept-Objectives**
  - New quay needs to be developed to ease the capacity of mooring of purse seiners as well as in the long run in the case of increasing of fishing vessels

05

- In the case of increase fishing purse seiners, the existing wharf don't have the capacity to accommodate.
- Existing Wharf is old and exceeded the designated life of its capacity usage
- Commercial and fishing zones should be separated

- **Layout plan of new quay**

- Accommodate ship of 160LOA, 15,000 DWT
- Quay should be in length of 160m, apron width of 30m, water dept-10m, with steel pipes, the apron should be reinforced concrete, the access road should be concrete paved and expanded to 249m x 10m, the yard should be landfill with dredged coral sand and the surface should be covered with gravel.

- **Construction Plan and Schedule is as provided below:**

- Exchange of note-August 2024
- Grant Agreement – October 2024
- Detail Design – February 2025
- EIA – August 2024
- Bidding- July 2025
- Construction begins and ends – September 2025 to April 2028

- **Environmental and social considerations**

- Social environmental consideration reports which include the description of the project, present status of environment and society, legal & organization of social & environmental considerations, alternative plans, scoping, social and environmental survey result, environmental evaluation impact, mitigation plan and cost, monitoring plan, implementation structure, stakeholder meeting, complaint handling mechanism.
- Natural condition and environmental surveys-includes bathymetric, topographic, magnetic prospecting soil investigation, air quality, current water quality, bottom, sediment, and Mangrove, Coral vegetation
- Responsibilities of Micronesian side includes site clearance, procedure of IEE & EIA, waiving of taxes (sales & import tax) and other necessary activities needed before the construction of the project.

- **Questions & Answers**

Q: For this expansion project, is there any designated area for clearing of customs for Yacht?

A: Expansion project is only focusing on fishing vessels activities

Q: Are the two manholes for water bunkering part of the project?

A: No manhole is included in the project

Q: Is it possible to share the presentation to everyone

A: Yes

Q: Is the project expansion specifically for fishing activities or is it supporting other activities and is it in line with the fisheries investment policy

A: The port is specifically for fishing activities and they have done their surveys and understand the need to collect all sorts of permits before the start of the project. The believe that fishing activities should have a separate dock

Q: Is the expansion project not going to alter the Norma building that will be build next to the port expansion

A: It will not have any affect.

Q: As it's mention that the EIA will start in August 2024, are there any survey plan in place, and if there is any consideration of the neighboring community in the plan as in if there is any risk to the neighboring community?

A: Yes, they are keen about the social impact especially on the land dispute of Misko Beach and it has been settled based on a court ruling. Yes,

Q: Are there any social surveys of the area and the surrounding area

A: PPA will help collect other necessary items to help the project moving forward

Q: Is the project going to impose on the villagers due to dredging?

A: In monitoring the noise effect, they will be using piping hammers as it comes with no noise effect.

Q: Is there any mitigation plan?

A: Yes

Q: Is there any plan to disclose to the public the plan for the port expansion?

A: Yes

Requesting any comments from fishermen, but there's none. Stakeholders are in support of the project as it will bring in more revenue due to its enhancement capabilities of fishing activities for the fishing vessels.

ENVIRONMENTAL AND SOCIAL MONITORING FORM

-Monitoring is carried out by the project implementation body regularly submitting measured values, etc. to JICA for items that are determined to require monitoring by JICA through environmental reviews. The following monitoring form is required for submission. Please refer accordingly.

- When determining monitoring items, frequency, methods, etc., pay attention to the project phase or life cycle (construction phase and operation phase, etc.).

1. Permits/resident explanation

Monitoring items	Status during the reporting period
Securing a temporary storage site for hazardous waste and the status of necessary permits (if not obtained, as needed)	
Status of necessary permits such as drainage permits (if not obtained, as needed)	
Permit status of construction material procurement sources (IA/EIA acquisition for necessary resource excavation, such as quarry)	
Additional conditions for environmental permit by Pohnpei State EPA	

2. Pollution control

-Air quality

Item (unit)	measured value (Average value)	measured value (Maximum value)	local standards	Referenced international standards	remarks (Measurement location, frequency, method, etc.)
Suspended particulate matter (PM_{10})				WTO AQG (2005/ 2000): Daily average 50 $\mu g/m^3$, annual average 20 $\mu g/m^3$	Measurement with digital dust meter

[Note] Due to the availability of measuring instruments, the parameters to be analyzed are limited.

-Water quality

Item (unit)	Measured value (A) (Average value of several measurements)	Standard value (B) (Average value of several measurements)	local standards	Referenced international standards	remarks (Measurement location, frequency, method, etc.)
	construction area boundary	Unaffected offshore waters	AB＜5NTU		
Turbidity (NTU)				-	Simple turbidity meter

Monitoring items	Status during the reporting period
Item: Turbidity Location: 2 locations around the construction area (1 location is on the border of the construction area, 1 location is in offshore waters not affected by dredging and reclamation work) Method: Visual observation and instrumental measurement Frequency: Once a week during dredging and reclamation work where turbidity is likely to occur	

-Soil contamination

Monitoring items	Status during the reporting period
Item: Outflow from construction area Location: Sea area around the construction area Method: Visual observation Frequency: Every time it rains during construction	

-Noise

Item (unit)	measured value (Average value)	measured value (Maximum value)	local standards	Referenced international standards	remarks (Measurement location, frequency, method, etc.)
Noise level (dBA)			-	IFC's Environmental Occupational Safety (EHS) Guidelines : -Residential areas, educational facilities, public institutions : 55dBA (daytime) , 45dBA (nighttime) Industrial/commercial areas : 70 dBA both daytime and nighttime	Measurement location: Construction area boundary, residential area boundary (Sohkes village)

[Note] Observation of vibration levels will be omitted due to instruments that can be measured on site.

-Ground subsidence

Monitoring items	Status during the reporting period
Item: Ground subsidence situation Location: Inside the construction area Method: Visual observation Frequency: Once a month during construction	

- Odor

Monitoring items	Status during the reporting period
Item: Presence or absence of bad odor Location: Inside the construction area Method: Visual observation Frequency: Once a week during construction	

-Sediment

Monitoring items	Status during the reporting period
Item: Appropriate management of dredged	

soil, status of measures to prevent spillage into the sea area Location: Inside the construction area Method: Visual confirmation Frequency: Once a week during construction	

-Waste

Monitoring items	Status during the reporting period
Item: Management status and sanitary status of general waste and hazardous waste storage locations Location: Inside the construction area Method: Visual confirmation Frequency: Every day during construction	
Item: Collection, transportation, treatment and disposal status of general waste and hazardous waste Location: Inside the construction area Method: Attend visual confirmation Frequency: Every collection during construction	

-Hydrology

Monitoring items	Status during the reporting period
Item: Changes in flow conditions in surrounding waters Location: Sea area around the construction area Method: Visual observation Frequency: Every six months during construction	

-Natural resources

Monitoring items	Status during the reporting period
Item: License status of material suppliers Location: Pohnpei Method: Visual observation Frequency: Every six months during	

construction	

-Topography/geology

Monitoring items	Status during the reporting period
Item: Coastline changes Location: Around the construction area Method: Visual observation: Frequency: Every six months during construction	

3. natural environment

-Ecosystem

Monitoring items	Status during the reporting period
Item: Status of coral reefs and Hamphead wrasse Location: Rubble mat maintenance location Method: Diving visual observation Frequency: Every six months during construction	

4. social environment

-Social anxiety

Monitoring items	Status during the reporting period
Item: Impact on fishermen's livelihood, protests, etc. Location: Around the construction area Method: Confirmation by interview etc. Frequency: Every six months during construction	

-Gender:

Monitoring items	Status during the reporting period
Item: Employment status Location: Inside the lecture area Method: Confirmation by interview etc. Frequency: Every six months during construction	

-Working environment:

Monitoring items	Status during the reporting period
Items: 1) Status of compliance with EHS activities, 2) Status of implementation of HIV/AIDS control programs Location: Inside the construction area Method: Visual confirmation Frequency: 1) Every day during construction, 2) Every six months during construction (when the program is implemented)	

-Impact during construction

Monitoring items	Status during the reporting period
Item: Compliance with mitigation measures, implementation of monitoring Location: Inside the protest area Method: Confirmation by visual inspection, hearing, etc. Frequency: Once a week during construction	

- Preventive measures:

Monitoring items	Status during the reporting period
Item: Traffic director deployment status Location: Around the construction area Method: Visual confirmation Frequency: Once a week during construction	

-Monitoring:

Monitoring items	Status during the reporting period
Item: Compliance status of incidental conditions Location: Inside the construction area Method: Confirmation by report Frequency: Once a month during construction	

Environmental Impact Assessment

1. Overview of components with environmental and social impact

1.1 Environment and Social Consideration

(1) Project Site

The project site is located at the Misko Beach area of PPA owned public land located in Diketik Island of Pohnpei Island (Pohnpei State) within the Federated States of Micronesia (see Figure 1. 1).

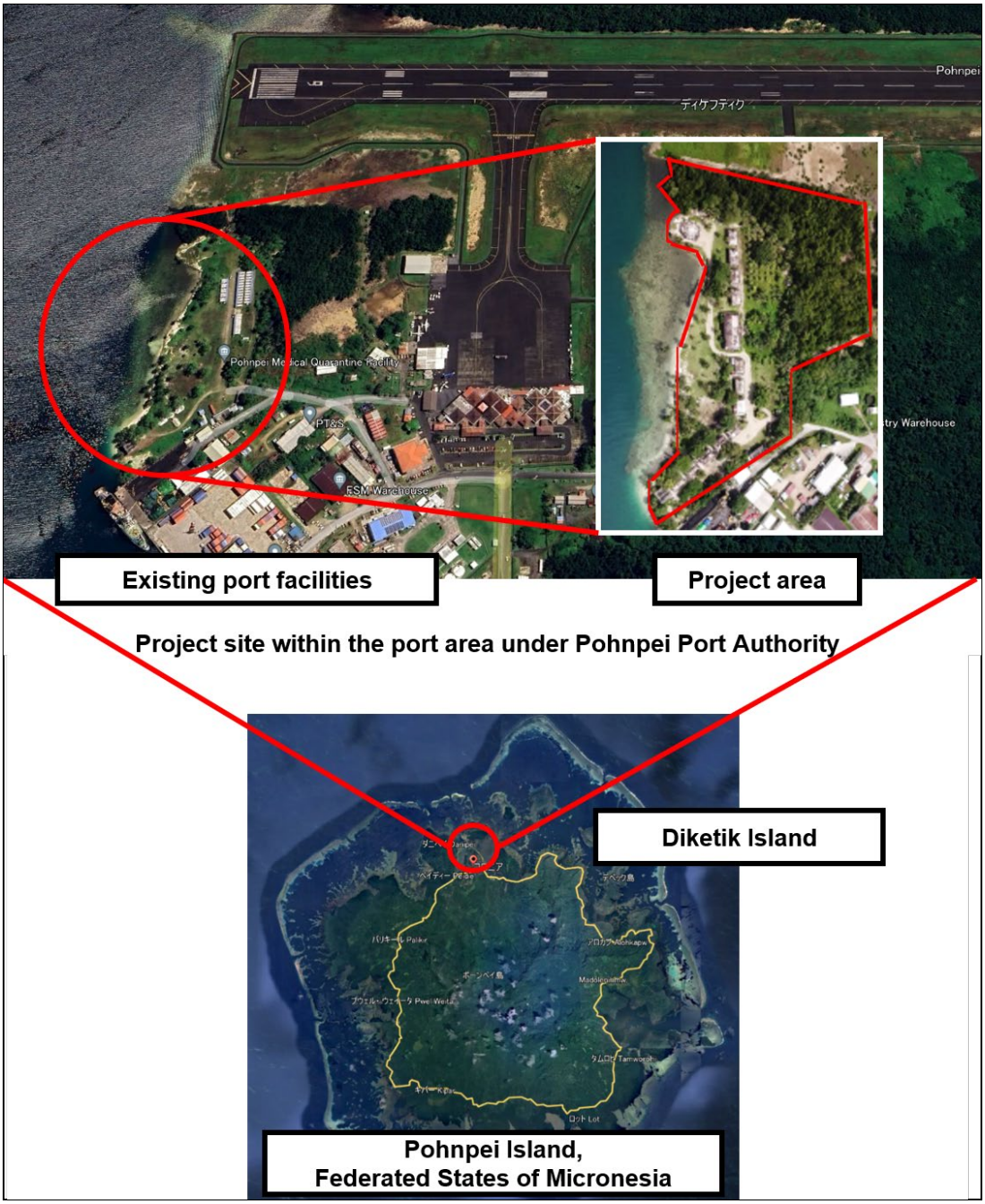


Figure 1. 1 Pohnpei Island, Federated States of Micronesia

(2) Main Project Components as potential source of Environmental and Social Impact

The Pohnpei Port, managed and operated by the PPA, has two mooring facilities as shown in Figure 1. 2: the 327m long main wharf (moored for cargo vessels and purse seiners) and the adjacent fishing port area to the south (Takatic Fishing Port) used by longline fishing vessels. Many purse seiners and longliners use the Pohnpei Port as their home port, and during the fishing season, many foreign purse seiners call at the port to

transship and replenish their catch to refrigerated vessels.

A 60-meter section on each side of the main wharf is reserved for purse seiners, and a 200-meter section in the center is reserved for cargo vessels. However, the length of the mooring area for purse seiners is insufficient, so on days when cargo vessels do not call, not only are purse seiners moored along the entire length of the wharf, but fishing boats are also moored to the moored fishing boats, thus doubling or tripling the number of moorings.

The problem is that the congestion of the harbor by purse seiners threatens the safety of cargo ship operations in the harbor and wastes time and fuel by having the purse seiners retreat to anchor sites each time a cargo ship arrives in port. To address these issues, a resort area between the main wharf and the airport runway (called Misco Beach) was selected as the site for the new quay development in the "Micronesia Region Port Development Basic Information Collection and Confirmation Study (referred to as the Preliminary Study), JICA, 2019" that preceded this brief study.

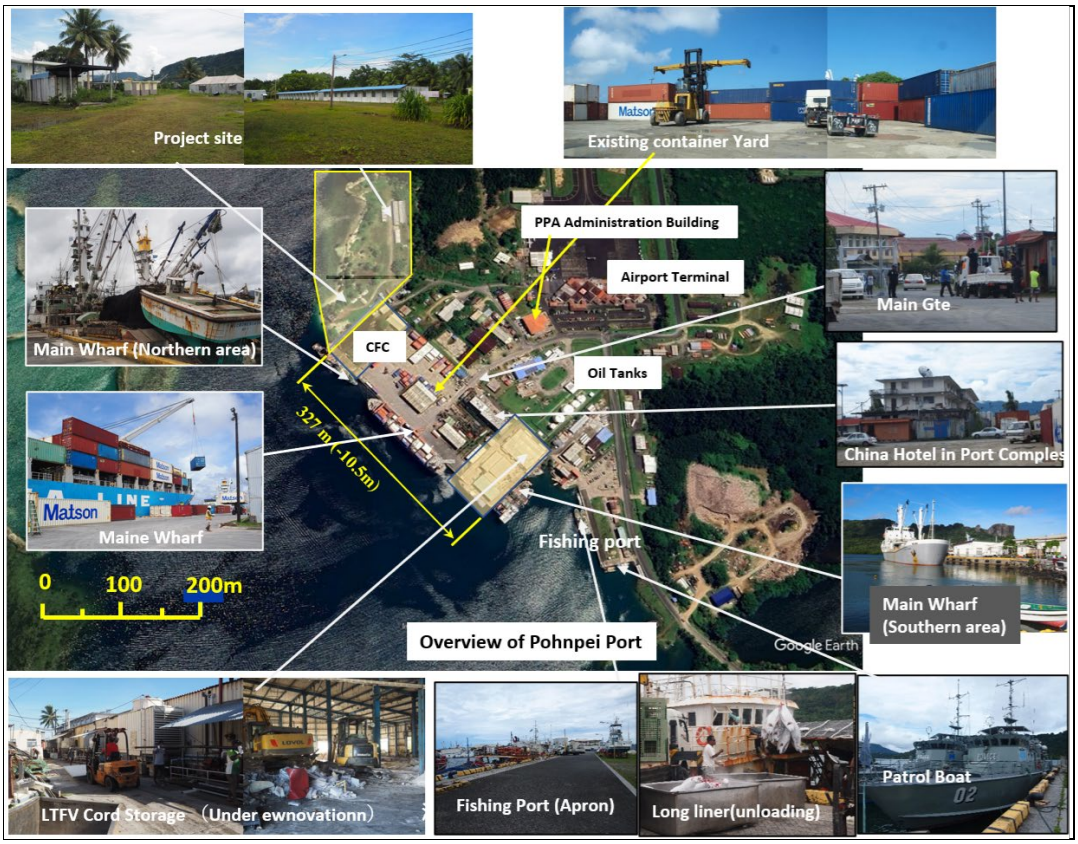


Figure 1. 2 Panoramic view of Pohnpei Port and its facilities

In Figure 1. 2, the yellow shaded site to the north of the main wharf is the project site. The project site is shown in Figure 1. 3 and consists of a new 160m long quay wall (water depth 10m, apron width 30m), a 190m x 90m yard site behind the quay wall (graded with crushed stone), and a concrete paved access road (10m wide and 249m long) to the quay wall. Mooring poles are to be constructed on both sides of the quay.

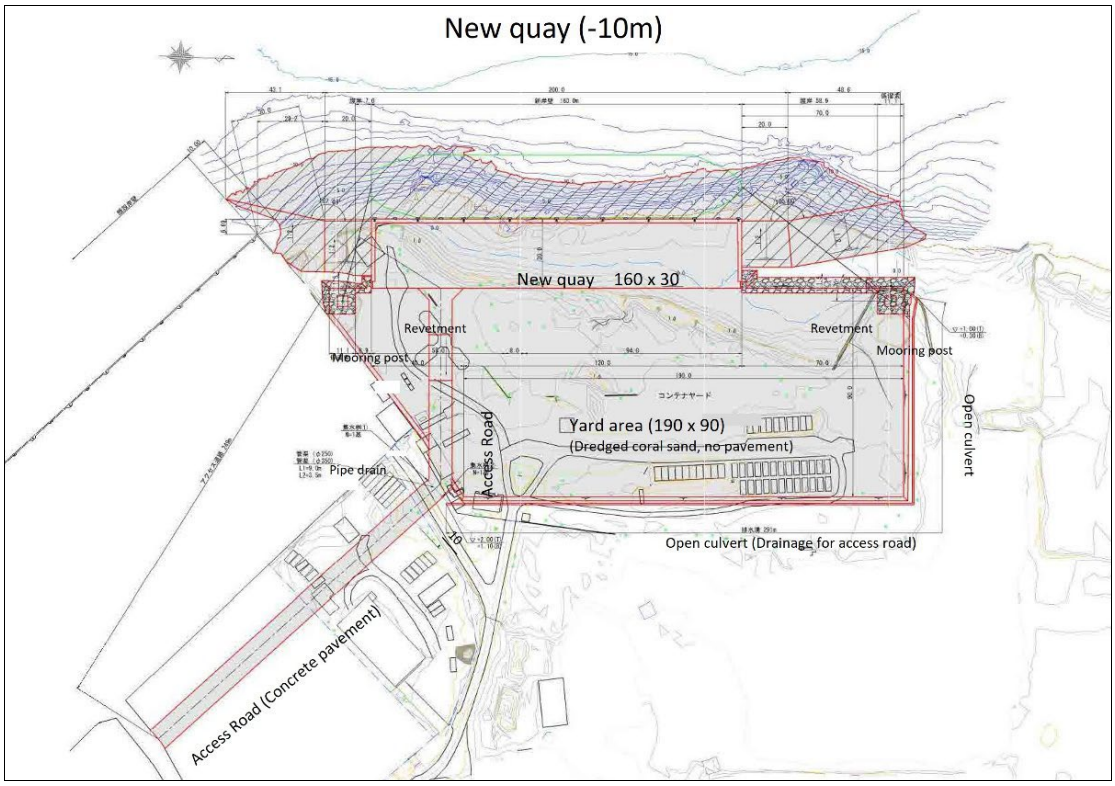


Figure 1. 3 Projects subject to environmental and social consideration surveys

The construction sequence in this project is as follows.

Prior to sheet pile placement, a crawler crane is used to dredge 11.5 m from the normal to the front of the quay wall (primary dredging). Then, after the front steel pipe sheet piles and antechamber steel sheet piles are driven to construct the quay wall, the area of land to about 10m in front of the quay wall is further dredged to a depth of -10m (secondary dredging). The entire dredging area (shaded area in Figure 1. 3) will be dredged from the sea using a crawler crane mounted on a barge to a depth of -10 m. The dredged material will be coral sand.

The dredged soil is coral sand and gravel, all of which will be used as fill behind the quay wall to raise the yard site to the height of the top of the quay wall. A seawall with broken stones will be constructed on the seaward side of the yard fill, and anti-absorption mats will be placed under the broken stones to prevent the reclaimed soil from flowing out and eroding due to waves. Rainwater from the access road will be discharged to the seaside through a gutter constructed around the land side of the yard.

Table 1. 1 Major Project Components and Specification

No.	Project Components	Specification	Other Specification, Construction Method	Remarks
1	Mooring Quay	160m(Quay Extension) ×30 m (Width of Apron) [Steel Pipe Arrow Structure, Water Depth 10m]	Apron pavement, reinforced concrete, fender	
2	Access road maintenance	249m x 10m	Concrete pavement	
3	Container Yard	190m x 90m	Leveling and Compaction Crushed stone pavement	North of the access road (including the entire isolation facility)
4	Mooring post (on the quay)	On the quay and on both sides of the quay		The mooring post outside the quay will be newly installed on land on the side of the quay.

Table 1. 2 Related civil, construction works with scale, and remarks

No.	Related civil works	Location	Scale, Specification	Remarks
1	Dredging work, Sediment collection	Water area in front of the quay and on both sides of the quay (shaded area in Figure 1. 2)	Approx. 46,000 m^3 dredging material planned to be dredged.	1. Also serves as soil collection for use as reclamation material. Before driving the front steel pipe sheet pile, the area from the normal line of the quay to 11.5m in front will be dredged from land using a crawler crane at a slope of 1:2 (primary dredging). 2. Before driving the front steel pipe sheet pile, the area from the normal line of the quay to 11.5m in front was dredged from land using a crawler crane at a slope of 1:2 (secondary dredging). 3. After placing the front steel pipe sheet pile and retaining steel sheet pile, install tie wires, and after placing the upper concrete, dredge the area from the top of the quay to 11.5 m in front of the quay to a depth of -10 m (tertiary dredging). 4. The crawler crane mounted on the barge will dredge the area that cannot be reached by the crawler crane on the quay to a depth of -10m (fourth dredging).
2	Reclamation work	Container yard area behind the quay (see Figure 1. 3)		Possibility of turbidity caused by landfill

1.2 Baseline Environmental and Social Situation of Pohnpei State, FSM[1]

(1) Baseline Environmental Situation of Pohnpei State, FSM

[Stratum]

The geology of Micronesia is complex, comprising six district geological sub-regions varying in age from about 97 million years in the Marshall Islands, the oldest coral atolls on earth, to relatively young islands with active volcanoes in the Northern Marianas.

There are four types of islands. These being;

a. Volcanic 'High islands' which can be highly rugged in their basalt interiors and typically surrounded by fringing or barrier reefs;
b. Low lying atolls;
c. Raised coral islands; and
d. Low coral islands.

Pohnpei is a high volcanic island, having a rugged, mountainous interior with peaks as high as 798m above sea level. The mountains of Pohnpei are the highest in the FSM. Pohnpei consists of one main island surrounded by an inner coral reef, 23 small basaltic islets, a number of inshore deposit islet, and an outer encircling barrier reef with about 15 low coral islets. The outer reef and the inner fringing reefs are separated by a deep lagoon ranging from 1.5 to 8 km across. Within the lagoon are the basaltic and inshore deposit islets. In the southeastern section, there is no lagoon, as the outer barrier and inner fringing reefs have been joined together.

Both the outer barrier reef and the main volcanic island are roughly pentagonal in shape. Pohnpei is about 21 km in diameter and 112km in circumference. Including lagoon islands, the land of Pohnpei covers approximately 340km^2. The soils of the island of Pohnpei are grouped into 18 different types.

Dekehtik Island, where the port is located, is a low coral island, which at one time was completely covered by mangroves. Surrounding most of Dekehtik are alluvial deposits of silky soil cover ranging in depths from 150mm to 300mm (UH Technical Report No. 189). An extensive and frequently impassable mangrove swamp has developed in this area. Much of the swamp is exposed at low tide and covered with about 1m of water during high tide.
The soil in the vicinity of the port area of Dekehtik consists of two types: very deep, very poorly drained, level and nearly level soils in coastal tidal marshes; moderately to very deep, moderately well drained and somewhat poorly drained, nearly level to sloping soils on old lava flows, terraces and branches.

[Seismic activity]

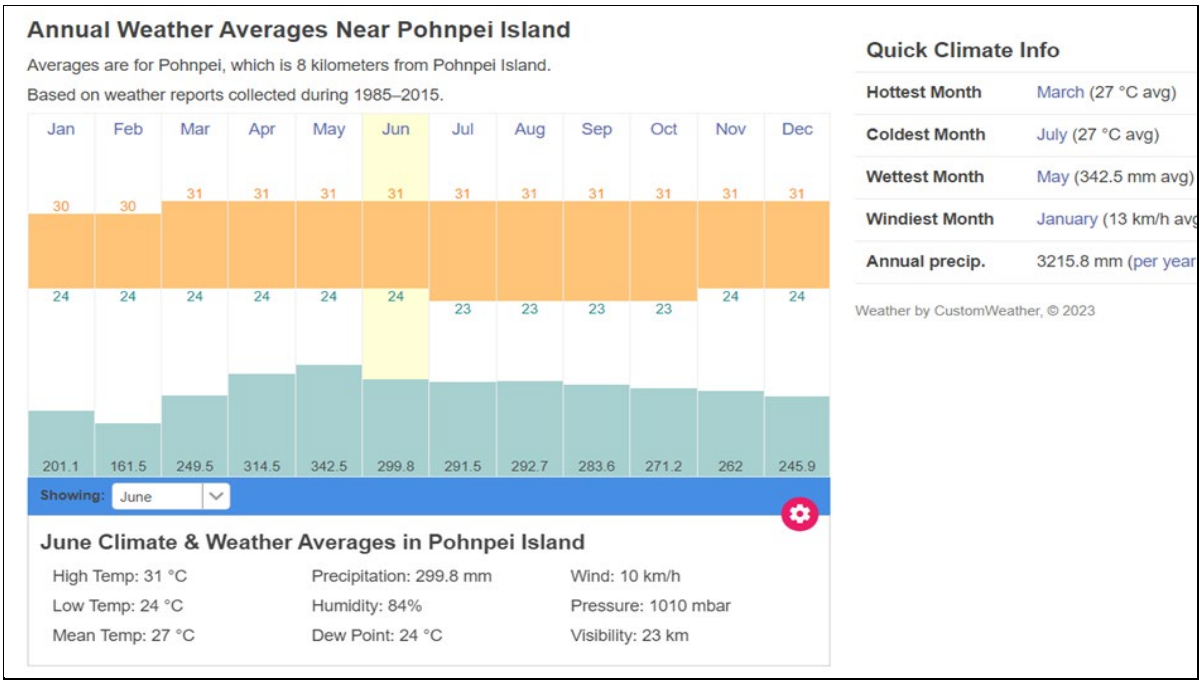
Most of the islands in FSM are situated in a relatively quiet seismic area (for example, Pohnpei is located in a seismic Zone 1 as classified by the Trust Territories of the Pacific Islands Design Criteria (1970). The exception is the island of Yap.

While significantly damaging earthquakes have not been observed in recent times, FSM is subject to large tsunamis, as evident by the large tsunami run-ups of 1837, 1849 and 1899, which caused death and destruction in the Caroline Islands. Pohnpei island has not been affected the serious damage by earthquake since 1971. In terms of expected annual economic-social wealth (EWS) loss risk due to earthquakes, FSM sit in the second lowest zone.

[Climate]

FSM lies near the Equator in an immense ocean; therefore, the climate is generally tropical (warm and humid). Temperatures vary little, with yearly temperatures averaging 27°C, with the difference between the warmest and coolest month being only a few degrees. The country has two seasons – a dry season from November to April and a wet season from May to October.

[1] Partial content of this Chapter is an extract from following material: Environmental and Social Management Framework and Environmental and Social Management Plan, Federated States of Micronesia Maritime Investment Project, Prepared for the FSM Department of Finance and Administration, With funding from: International Development Association, World Bank, Prepared by ESIA Consult Pty Ltd., Hong Kong, 22 March 2019



Source: CustomsWeather, as of June 2023 present

Figure 2. 1 Annual Weather Averages Near Pohnpei Island

The islands are subject to typhoons and get frequent heavy rains from May through November. Micronesia can be affected by tropical cyclones of the North Pacific Ocean, known in the area as typhoons. Typically, typhoons occur from April to December, although they are more frequent between August and November. However, since the sea is always warm, sometimes they can also occur from January to March, although usually during this period tropical depressions not intense are formed.

Rainfall in the FSM is affected by the movement of the Intertropical Convergence Zone. This band of heavy rainfall is caused by air rising over warm water where winds converge, resulting in thunderstorm activity. It extends across the Pacific just north close to the Federated States of Micronesia. The West Pacific Monsoon also impacts rainfall, bringing additional rain during the wet season. The Monsoon is driven by large differences in temperature between the land and the ocean, and its seasonal arrival usually brings a switch from very dry to very wet conditions.

The Federated States of Micronesia's climate varies considerably from year to year due to the El Niño-Southern Oscillation. This is a natural climate pattern that occurs across the tropical Pacific Ocean and affects weather around the world. In Pohnpei, El Niño tends to result in drier conditions during the dry season, but higher than average rainfall during the wet season. La Niña tends to bring above average rainfall in the dry season. The West Pacific Monsoon affects the western states of Chuuk and especially Yap more than the eastern states of Pohnpei and Kosrae. It tends to be further east during El Niño, bringing higher rainfall, and in a more western position during La Niña, resulting in less rainfall. The intertropical Convergence Zone results in less rainfall during El Niño events and more during La Niña.

[Air Quality]

No data for ambient air quality for FSM was found. The small size of the islands and prevalence of strong maritime winds ensure that any air emissions from vehicles, stationary sources or fires is quickly mixed with clean maritime air and no pockets of lower air quality are likely to exist[1]. The results of the survey, which is limited to the project site, will be described in the Environmental and Social Considerations Survey Results section below, based on the actual survey conducted by the re-commissioning of this study.

[Ambient Noise Intensity]

Ports are industrial sites and therefore are a source of noise, particularly ship engine and operating machinery noise. Loading and uploading of cargo also creates some noise. Environmental Health and Safety (EHS) guideline levels for ambient noise levels in urban areas are 55 dBA (day) and 45 dBA (night). Noise monitoring undertaken for the Pohnpei Port Development Project by ADB gives an indication of the typical

ambient noise in urban areas in FSM.

Table 2. 1 Ambient noise levels in Pohnpei (ADB 2013)

Sampling Location	Noise Level（dBA）	
	Day (07:00 – 22:00)	Night (22:00 – 07:00)
Kolonia Town area (Urban)	48.2	34.7
PPA Admin. Car park	54.7	45.8

The ports are existing facilities, therefore any impacts to surrounding sensitive receptors are already occurring.

[Sediment]
The international port of Pohnpei is situated on the island of Dekehtik on the eastern side of a north facing mangrove-lined inlet containing Sokehs Channel. Its benthic habitat is predominately macro-abiotic, consisting mostly of silt and mud with sparse visible epiflora or fauna. The area immediately to the west of the port dock recedes into deeper channel (Sokehs Channel) silt bottom habitat with sparse hard substrate and macroalgae present[1].

[Terrestrial Ecology]
Due to a lack of existing information, the following section contains information on relevant items, related to overall Micronesia. The current status of the project site is presented in the Environmental and Social Considerations Survey Results section below, based on the field survey conducted for the re-commissioning of this study.

The FSM has in general high levels of species diversity and endemism considering its small size. The oceanic islands of the FSM are critical storehouses of biodiversity. Major vegetation types in the FSM are: cloud forest, native upland forest, palm forest, agroforest, secondary vegetation, savanna grass and fern lands, freshwater marsh, swamp forest, mangroves, atoll forest, limestone forest of rocky coasts and beach strand. The country forms part of two Global 200 World Wildlife Fund (WWF) ecoregions, namely the Yap Tropical Dry Forest and the Caroline Tropical Moist Forest Ecoregion, and forms part of the Polynesia/Micronesia Hotspot[1].

Over 1,239 species of ferns and flowering plants have been described in the FSM. Approximately 782 species are native, including about 145 species of ferns, 267 species of monocots and 370 species of dicots. Approximately 175 of these plants are considered endemic to the FSM. Micronesia as a bioregion is considered to have amongst the highest density of endemic plants in the world with each State in the FSM characterized by its own suite of endemic plant species (Yap 9, Chuuk 16, Pohnpei 47 and Kosrae 18 endemic plant species)[1].

Terrestrial ecosystems are also home to many unique avian, mammalian, reptilian and other species, including owls, flying foxes, parrots, giant geckos, skinks, dragonflies, freshwater gobies and land snails: 27 species of reptiles and amphibians (four endemic); four species of fruit bats (flying foxes) of the genus Pteropus (*P. molosinnus, P. insularis, P. phaeocephalus*, and *P. ualnus*) and a single endemic sheath-tailed bat of the genus *Emballonura*; and, 234 species of birds including 19 endemics, 20 threatened, 2 extinct and 13 introduced12. Endemic species include 2 monarchs (*Truk Metabolus rugensis* and Yap *Monarcha godeffroyi*), 2 flycatchers (Pohnpei *Myiagra pluto* and Oceanic *Myiagra oceanica*), Pohnpei fantail (*Rhipidura kubaryi*), Pohnpei flycatcher (*Myiagra pluto*), long-billed white- eye (*Rukia longirostra*), Pohnpei lorry (*Trichoglossus rubiginosus*), Caroline Islands Ground-Dove (*Gallicolumba kubaryi*), Mariana Fruit-Dove (*Ptilinopus roseicapilla*), and the Critically Endangered Pohnpei mountain starling (*Aplonis pelzeni*). The current status of most of these species is unknown due to lack of ongoing or systemic monitoring, and lack of understanding of species habitat and ecological requirements13. There are also indications that the invertebrate fauna of the FSM is also rich and interesting, however data is still limited[1].

As the ports are mostly developed spaces of an industrial nature, often on reclaimed land, and comprise mostly hardened surfaces, buildings, roads, wharves and dredged basins, they do not provide significant habitat for terrestrial species, other than some introduced species[1].

[Marine Ecology]

The area immediately to the west of the port dock recedes into deeper channel (Sokehs Channel) silt bottom habitat with sparse hard substrate and macroalgae present. The benthic habitat immediately north of the port consists of shallow fringing reef habitat abutting the western shoreline of Dekehtik. It is dominated hard substrate with algal turf and relatively high hard-coral cover (≈35%), compared to the immediately surrounding areas of other FSM ports.

Across Sokehs Channel from the port (the western side of the inlet) there is a near vertical wall rising from the deep waters of Sokehs Channel with substantial hard coral cover, breaking into an extensive reef flat area abutting the mangrove-laden western inlet shoreline (the eastern coast of Sokehs Island). The port area appears to already be impacted by industrial activity, given the prevalence of industrial and domestic waste on the seafloor.

[Coral]
Regarding corals on Pohnpei, an extensive survey was conducted in 2005 on the status of coral reefs in the Pohnpei area. The survey reported that many species of corals were in good condition. (Reef-building corals and Coral Communities of Pohnpei, Federated States of Micronesia: Rapid ecological assessment of biodiversity and status). Figure 2.2 shows the 36 survey sites, with the top three coral-rich sites in pink and the next seven sites in blue.

The Pohnpei State Government has designated protected areas (see Figure-2.3) to protect marine life, and the Resource Development Department (R&D Department) conducts regular surveys of the protected areas to monitor growth. The survey results are shared with researchers at the University of Guam to provide data for the conservation of coral reefs. There are no protected areas within the Pohnpei Port Area.

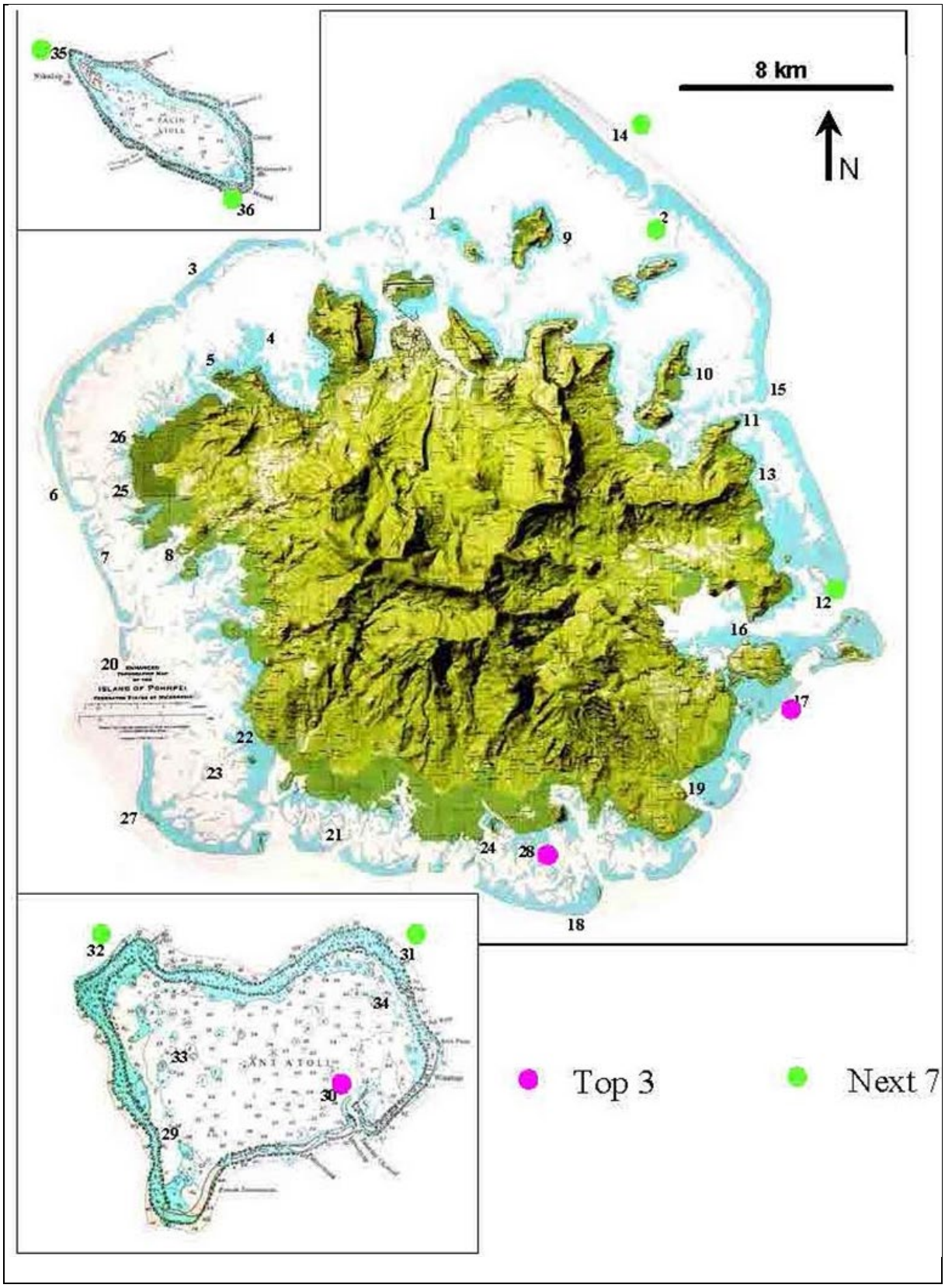


Figure 2. 2 Survey site where Conservation Society of Pohnpei conducted coral survey (2005)

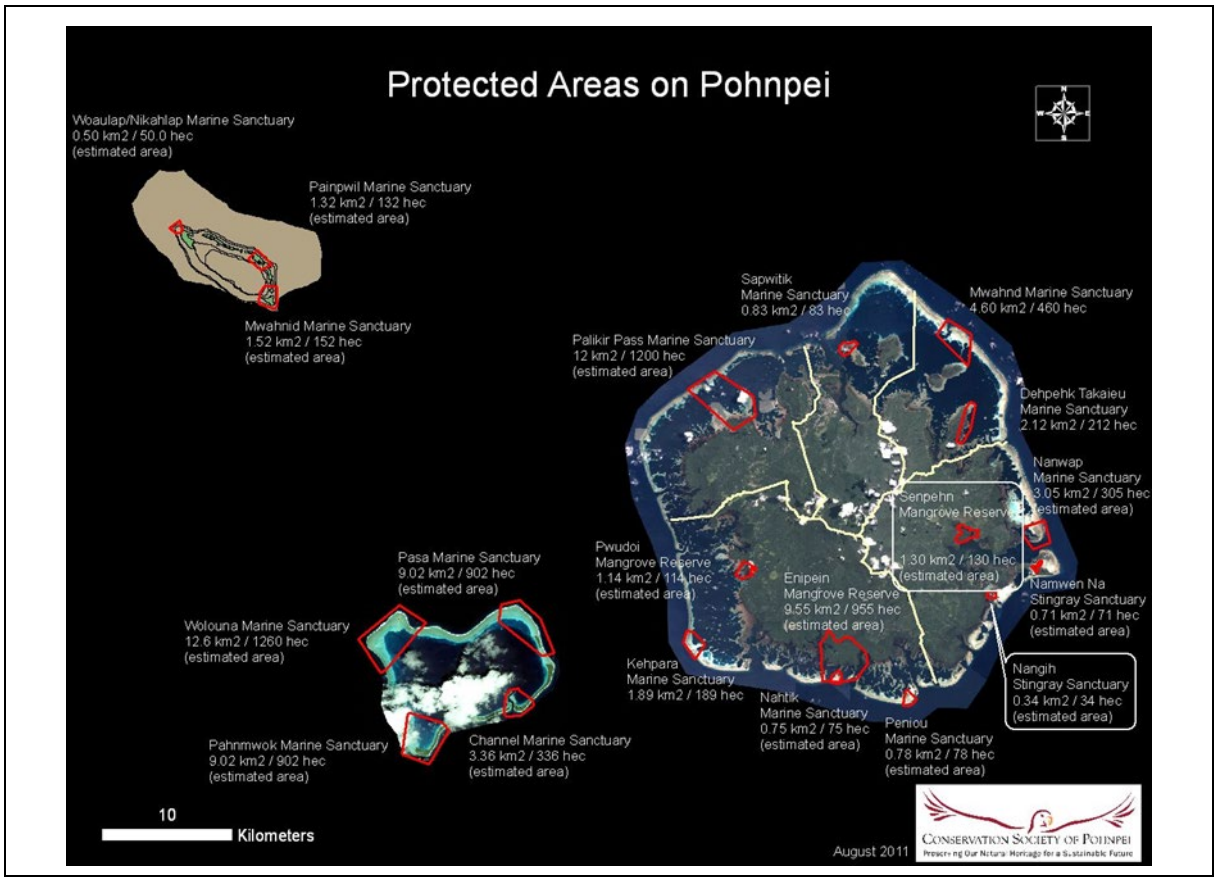


Figure 2. 3 Marine Protected Area in Pohnpei（Conservation Society of Pohnpei）2011

(2) Baseline Social Situation of Pohnpei State, FSM

[Population]

Prior to European contact, till the present day, FSM were part of a group of islands whose pan-Micronesian subsistence and seafaring populations were in sporadic contact through circular migration to trade, participate in ceremonies, intermarry, and give/receive support in times of natural and other disasters.

The indigenous people of the FSM, who constitute the vast majority of the population, are ethnic Micronesian, and speak district dialects of Austronesian languages that are part of the Malayo-Polynesian family. Though there is a broad cultural similarity amongst the States, in the relative historical isolation of the islands, different customs, local practices and strategic interests have developed according to island, village, class, kinship and religious affiliations. These, rather than ethnicity or indigenous status per se, are generally the basis of differences within and between States.

[Social Organization]

Urban population in 2010 accounted for only 22% of the total in the FSM. Community and especially family are critical to social organization. Especially on the high islands, community is stratified by descent group affiliation, title, age and land relationships, which are the traditional basis of wealth and the conspicuous generosity that is the mark of a leader. However, disease and depopulation in the colonial period eroded the power base of traditional leaders, which depended on a large labor-force to work lands. The community at coral atolls are generally more egalitarian, and place more emphasis on specialized knowledge and achievement, though age and gender are still important social markers. Churches are now focal points of community interaction.

[Households and Housing Characteristics] (FMS Average)

Most households comprise nuclear or extended families, with around one quarter providing a home for a parent or other relative. In 2000, average household size was 6.7. Female headed households accounted overall for 18% of the total. Most homes in 2000 were single detached dwelling units. A further 9% of dwellings had an attached unit; only 2% were located in apartment blocks. Half had piped water and electricity, but only a quarter had any form of sanitary waste disposal. By 2010, four out of five had an

improved drinking water supply, and three out of five an improved toilet facility, and household size had dropped to 6.1, and indication of the trend to depopulation.

[Religion]
Most of the population in FSM is now Christian, with only 4.6% either professing another or no religion. Religion is predominantly Christian, divided between Roman Catholic and Protestant and other churches include Latter-Day Saints, Seventh-Day Adventist, Assembly of God, Jehovah's Witnesses, and the Baha'i Faith. Churches of many denominations can be found throughout the islands.

In Pohnpei, the population of 35,000 is evenly divided between Protestants and Catholics (50% Catholic & 50% Protestant). Religious groups with small followings include Baptists, Assemblies of God, Salvation Army, Seventh-day Adventists, Jehovah's Witnesses, Church of Jesus Christ of Latter-day Saints (Mormons), and the Baha'i Faith. There is a small group of Buddhists in Pohnpei, (0.7% Buddhist (population as of 2010). Attendance at religious services is generally higher; churches are well supported by their congregations and plays a significant role in civil society.

Most immigrants are Filipino Catholics who have joined local Catholic churches. The Filipino Iglesia Ni Cristo also has a church in Pohnpei. In the 1890s, on the island of Pohnpei, intermissionary conflicts and the conversion of clan leaders resulted in religious divisions along clan lines which persist today. Protestants are the majority on the western side of the island, while Catholics are the majority of on the eastern side. Missionaries of many religious traditions are present and operate freely. The Constitution provides for freedom of religion, and the Government generally respected this right in practice. The US government received no reports of societal abuses or discrimination based on religious belief or practice in 2007.

[Land Use, Land Ownership and Customary Tenure]
FSM Level
In pre-colonial times, land was generally plentiful. Since the dramatic decline in population due to post-contact epidemics, and the continuing overall trend to decline due to later marriage, lower birth rates and migration, population pressure has not been a large issue in the country, though ownership, use, control and inheritance of particular plots may still be locally sensitive. Ownership of land and aquatic areas varies between States. In Pohnpei, land is both private and State owned, while aquatic through inheritance, gift or, recently by purchase. In all States, land cannot be sold to non-citizens of the FSM, thus these land and aquatic ownership patterns greatly influence the strategies and actions required to sustainably manage the natural resources of the nation.

Some States have made a concerted effort to have land titles registered, and to declare unregistered land as Government land. Custom mechanisms for ascertaining land rights have played an important part in this process. In some States, Government land may be designated as Homestead land for eligible clans and individuals and could be legally allocated as replacement land if eminent domain powers were exercised in downstream projects.

Pohnpei
Pohnpei is overseen through a Council of Chiefs that sits as required.

[Gender]
Micronesian societies are matrilineal, and inheritance of land and other assets is traditionally through women. However, the senior male of the lineage, often a woman's older brother, is generally the management of landed estate, and males exercise more political and economic power. The senior male decides on inheritance, which may be exercised in favor of multilateral or patrilateral kin, within or outside the village. This ambilateral allocation of inheritance by family heads is a potential source of disagreement about land. Partly for this reason, the traditions of village exogamy and cross-cousin marriage, which trend to consolidate alliances and interests in clan land, are still a cultural preference in many areas. Women traditionally defer to men, and the sexes do not generally mix freely in social situations.

In the subsistence sector, traditional division of labor assigns domestic chores, and the care of infants and the elderly of women and children. Women plant, weed and harvest subsistence produce, weave mats and trend livestock while men perform the heavy agricultural labor tasks such as construction, groundbreaking,

ditching and fencing. Generally, women fish and gather in the lagoon, while men fish outside reefs.

In the non-subsistence economy, both sexes have new opportunities to which education and language skills are important enablers of access. The Constitution of the nation and of each individual State specifically excludes discrimination or exclusion on grounds of sex, Language, national origin, ancestry, race, in most cases social status, religion and in one case dialect. FSM's accession to the Convention for the Elimination of all forms Discrimination Against Women (CEDAW) in September 2004 is a reaffirmation of its commitment to the principle of gender equality.

Recent social assessments found approximately 20% of households in FSM are led by females and female-led households have a lower annual average income than male-led households in Pohnpei. The latest available data (2013) found female-led households to have a 9% lower income than male led households. In Pohnpei, the income gap is 7%. This may reflect a high portion of households with male members working outside FSM.

"Culture" is often stated as a reason why gender and sexual exploitation issues are not talked about, however, when the potential benefits are well explained to traditional leaders and they support them, that support is very important as traditional leaders are highly influential in the communities. This is an important consideration for any project proposing to commence work in this space.

In terms of labor participation, 66% of male and 48% of female population of working age are reported as employed; with relatively good women's share in non-agricultural employment at 38% (compared to for example 47% in Australia). Total labor participation rates are however somewhat low, mainly due to high unemployment of youth. It is therefore youth unemployment (of both sexes) and not women's lack of employment opportunities that is an issue in FSM – a very common occurrence in the Pacific, indeed. With 58% of the population aged under 24 at the 2010 Census, the youth unemployment trend is unfortunately likely to persist.

Stakeholders were also of opinion that employment is typically merit based, with women potentially facing obstacles when progressing into positions of power and decision-making. Further, maritime sector is traditionally a male dominant sector and improvement of image and 'visibility' of women working in the sector might be beneficial.

Most overwhelmingly, however, stakeholders insisted on project providing strong preference for local companies and local labor to be engaged during the implantation and in construction activities. Preferential employment of State residents and nationals is institutionalized in both state and FSM legislation; however, foreigners can be employed if the skill is lacking.

Stakeholders argued against the perception that 'local people have no trades'; rather, even when local skilled people are available, construction companies still prefer to bring cheaper labor in from China and Philippines. Although local labor force is prioritized in hiring, foreigners are still being brought as 'specialists'; in reality their main 'advantage' is that they are cheaper than local workforce as they are paid below FSM minimum wage. During their stay in FSM, they are kept in worker camps and then shipped back home if they complain about working conditions. Their salaries are paid directly at home so there is no financial benefit (multipliers) from any of these activities to FSM.

[Employment, Labor and Working Conditions]
Overall, 78% of the population is rural, and subsistence farming and fishing are still the main means of livelihood. Almost half of the women and two thirds of the men of economically active age participate in the labor force. One third of working men, and more than half working women (56%) are in unpaid occupations. The 2010 unemployment rate for men is 15.5%, and 17% for women.

While most households engage in agricultural production and fishing (94.6% and 70.7% respectively in 2010), only around 1 produces exclusively for sale. Around 10% sells some of their production. Of those aged 15 or more with cash income in 2000, 43% received wages or salaries, 21% had income from their own business, 41% received remittance income and 7% received social security or other income from Government.

Public administration, education, health, social work and utilities supply accounted for just over half of paid jobs. The only other significant sector was wholesale and retail repair and supply of vehicles and household goods, which employed 13% of the work force.

Average household income in 2005 was USD 13,421. Female headed households earned over USD 2,000 less than the average, while foreigners (non-FSM residents) earned almost USD 7,000 more than the average. These figures include cash and non-cash income, so are not necessarily a good indication of purchasing power for cash products.

[Fisheries]
The main commercial fisheries in the FSM Exclusive Economic Zone (EEZ) focus on targeting tunas. Three main sectors exist, defined by the type of gear they use: purse seine, longline and pole and line. Catches are dominated by the purse seine sector, which primarily harvests skipjack tuna (*Katsoworus pelamis*) and yellowfin tuna (*Thunnus albacares*) for canning. The longline sector harvests the next highest volume, targeting bigeye tuna (*Thunnus obesus*) and yellowfin tuna for higher value sashimi markets. The pole and line sector targets skipjack tuna almost exclusively for canning, although has been largely inactive in recent years.

1.3 Environmental and Social Consideration System and Institution in Federal States of Micronesia

(1) Environmental and Social Consideration System and Institution in Micronesia

DECEM：Department of Environment, Climate Change & Emergency Management

Climate change laws are becoming more common in the Pacific region, and the Federated States of Micronesia (FSM) was one of the first relevant countries to enact such laws. The FSM's Climate Change Act 2013 outlines the legal obligations to implement the provisions of national climate change plans. The former Department of Environment and Emergency Management (or OEEM), now the Department of Environment, Climate Change and Emergency Management (DECEM), is a government agency entrusted with the role of coordinating a wide range of integrated policies related to the National Climate Change Plan.

Under the FSM EPA EIA Regulations established in 1989, DECEM is the EIA competent agency at the Federated States of Micronesia government level that is involved in EIA of development projects within FSM's EEZ that are more than 12 miles offshore from FSM territory (not applicable to this project).

Pohnpei Environmental Protection Agency (EPA)

The Pohnpei Environmental Protection Authority (EPA) was formerly known as the Public Health Division of the Department of Health during the Trust Territory, established in 1992 by the enactment of Act S.L. No. 3L-26-92. The main functions of the Pohnpei EPA are carried out by the following related departments: overall management, pollution control (permit system), maintenance of laboratories, securing safe drinking water, establishment of a quarantine system, climate change countermeasures and regional improvement, and environmental education. The results of all divisions are aimed for the wise use and conservation of Pohnpei's natural resources.

The Pohnpei EPA currently consists of a 7-member board appointed by the Governor and guaranteed by state statute, 21 staff members and 1 legal counsel (see Figure 3. 1). The EPA Board's primary function is to evaluate and monitor proposed development projects through the agency's development project approval process. The Board also has the power to terminate development projects that do not comply with the conditions of permits issued in accordance with law.

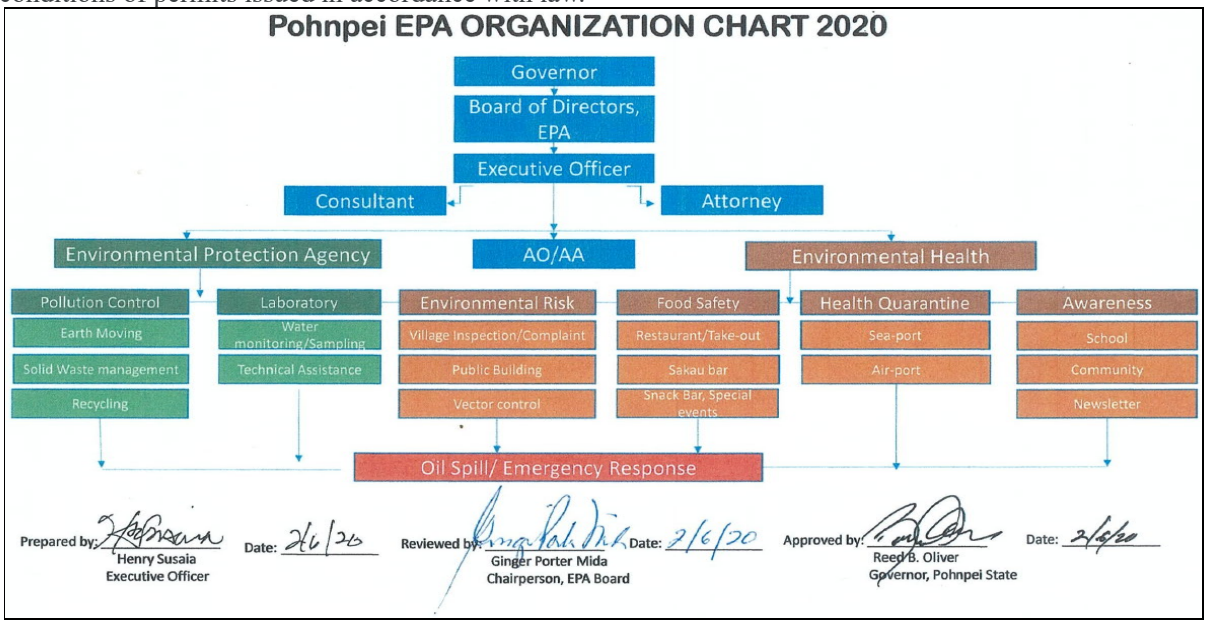


Figure 3. 1 Pohnpei EPA Organizational Chart 2020

(2) Federal States Government Level Environmental Law and Regulations, and EIA System

The Federal States Government level EIA procedure is conducted under the jurisdiction of the Environment & Disaster Management Office of the FSM Government. However, the projects that are subject to apply the Federal States Government level EIA system, are projects of which their development activities are executed more than 12 miles away from the FSM territorial border, but within FSM's Exclusive Economic Zone (EEZ). And therefore, this FSM level EIA is inapplicable to the Pohnpei Port Expansion Development Project.

Governing Law and Regulation:

- Sec. 610, Sec.702 of Title 25 of Code of Federated States of Micronesia
- Section 13, Federated States of Micronesian Environmental Protection Act
- Public Law No. 17-57 (Amendment to Title 25 of Code of FMS, and revisions to FSM Environmental Protection Act), 2012
- Environmental Impact Assessment Regulation 1989

Table 3. 1 List of Other Environmental Law and Regulation of FSM Govt. Level

No.	Name of Legislation	Enacted Year	Remarks
1	FSM Environmental Protection Act (FSM EPA) Section 302	1984	Basic Environmental Law at FSM Govt. level
2	The Environment Protection Act	Revised Code 2014	The Revised Environment Protection Law
3	The 1969 Act	1969	The Act on establishment of FSM Environmental Protection Board within the President's Office
4	Trust Territory Air Pollution Control Standards and Regulations	1980	Air pollutants control standard of air pollution sources. The standard was established in line with the USEPA's National Emission Standards form Hazardous Air Pollutants.
5	Trust Territory Pesticides Regulation	1980	Import, distribution, sales, usage regulation of Pesticides
6	Public Water Supply Systems Regulations	1983	It is the drinking water regulation established by the Federal Government, and specifies the water quality standards for safe drinking water and the standards for water contaminants that may cause health hazards. Standards under the jurisdiction of the Ministry of Human Resources and Home Affairs.
7	Marine and Freshwater Quality Standards Regulation	1986	This rule specifies which water source areas within the FSM require maintenance and conservation, and indicates the water quality standards for specific water source areas, thereby indicating the water quality conservation standards that users must comply with. Any person who commits discharges into specific water bodies that may threaten these standards is considered a violator of this regulation unless he obtains a discharge permit from USEPA under the National Pollutant Wastewater Determination System (NPDES).
8	Trust Territory Solid Waste Regulations	1979	This regulation establishes minimum standards for the design, construction, installation, operation and maintenance of solid waste storage, recovery and disposal systems. "Solid Waste" is defined as "garbage, refuse and debris, and other putrid waste materials," excluding materials contained in water sources, but including waste oil, pesticides, solvents and hazardous waste. "Disposal system" means the management, collection, transportation, treatment and disposal of solid waste by any person or authority.
9	Toilet Facilities and Sewerage Disposal Regulations	1977	The minimum necessary standards for toilet facilities and sewage treatment are stipulated, and the rules help prevent environmental pollution and health hazards and reduce public inconvenience caused by using the facilities. This standard provides that i) flush toilets connected to a sewage system for public or public use, ii) flush toilets connected to a septic tank, iii) pit or outdoor toilets, all public and private buildings must be toilet treatment facilities licensed by the Secretary of Human Resources. The regulation makes it illegal to discharge treated or semi-treated sewage into any body of water within the Federated States of Micronesia unless:
10	FSM EPA Earthmoving Regulations	1988	The Regulations stipulate that fund, equipment, materials, and building permits shall not be issued to persons engaged in permit-required earthmoving activities until a permit has

No.	Name of Legislation	Enacted Year	Remarks
			been issued. Earthmoving works refer to activities of a continuing nature, such as dredging and quarrying, and is defined to include activities of a continuing nature, such as dredging and quarrying, that disturb or alter the surface of the land, including reefs and lagoons. It also applies to the subdivision of land, the movement, deposition or storage of soil, rocks, corals or sand.
11	FSM EPA Environmental Impact Assessment Regulations	1989	Federal-level EIA regulation covering only development activities within the EEZ beyond 12 miles from FSM territory. *Rules not applicable to this project
12	FSMC Title 23 – Resource Conservation, Chapter 1, Marine Species Preservation		Resource Conservation: Chapter 1, Protecting Marine Species based on Section 23 of the Trust Territory Code. This chapter provides for the regulation of destructive fishing. Prohibits the capture, possession or sale of fish or other marine life with explosives, poisons, chemicals or other harmful substances. This Code does not apply to the use of local plants used in fishing activities as anesthetics. It does not apply to the use of local plants used for fishing activities. This chapter limits the capture of turtles, sponges, and pearl oysters.
13	FSM Title 3 – Resource Conservation (Chapter 2) of the Trust Territory Endangered Species Act	1975	This Code provides for the protection of endangered fish and game animals. The Act declares flora and fauna indigenous species to the Federated States of Micronesia to be of aesthetic, ecological, historical, recreational, scientific and economic value. Furthermore, the Act establishes the policy of the Federated States of Micronesia, including the prevention of species extinction. The Act allows FMS to ratify the Convention on International Trade of Endangered Species of Wild Fauna and Flora (CITES) and prohibits the importation of any species by CITES.
14	Title 45, Fish, Shellfish and Game: Chapter 5; Endangered Species		List of endangered species throughout Micronesia
15	Title 24 creates the Micronesian Maritime Authority, amended as the National Oceanic Resource Management Authority (NORMA)		Chapter 24 of the Constitution amends the Micronesian Ocean Authority and creates the National Oceanic Resource Management Authority (NORMA) to regulate, manage, develop, and fisheries access to marine resources within its 200-mile exclusive economic zone. It authorizes the negotiation and administration of agreements, regarding settings of fisheries access conditions, and the establishment and administration of foreign fishing permits for commercial and non-commercial fisheries.
16	The FSM Code Title 26 – Historical Sites and Antiquities		Article 26 of the Constitution, "Historic Sites and Antiquities," establishes federal policy to protect and preserve the diverse cultural heritage of the people of Micronesia and to identify and maintain areas, sites, and properties that constitute such historical heritages.
17	FSM Code Title 41 Public Health, Safety and Welfare		Public Health, Safety and Welfare Constitution at the Federated States of Micronesia level. The US Occupational Safety and Health (OSH) Act 1970 is essentially applicable to Micronesia in terms of detailed HSE rules. Even at the Pohnpei state level, only ordinances conforming to the federal constitution that regulate just general policy can be confirmed. OSCH Act download QR code:

No.	Name of Legislation	Enacted Year	Remarks
			

Table 3. 2 Environmental Law and Regulations at Pohnpei State level

No.	Name of Legislation	Enacted Year	Remarks
1	The Constitution of Pohnpei	1985	The Constitution of Pohnpei State
2	Public Trust Lands Distribution Act	1980	Act on the distribution of land owned by the Trust Territory Government. This law stipulates the criteria and procedures for land ownership transfer. A person who is an eligible beneficiary of the Pohnpei Public Land Trust (defined as an "entry man") shall be able to submit to the Public Land Trust Board an application for transfer of ownership of his property to another eligible person whom he designates.
3	Public Lands Act	1987	This law regulates the management and operation of public land. The plan is to establish a Department in the Ministry of Land and Natural Resources to manage and operate public lands, and to transfer the Pohnpei state public land trust to this Department. The Board of Trustees of the Pohnpei Public Land Trust shall consist of and be authorized by Trustees to govern all rights, powers and public interests in the public land of Pohnpei subject to the Pohnpei Constitution and the Pohnpei Laws and Regulations.
4	Deed of Trust Act	1987	This law provides for land trust deeds. Its purpose is to ensure and provide improved access to real estate financing in the United States through various agencies. A trust deed entrusts a freehold or leasehold interest to secure an obligation or claim on transferred real estate, whether or not there is a right to sell giving the trustee the power to sell subject to the terms set forth in the deed, regardless of transference state. A trust deed pursuant to the terms of this chapter shall be deemed alien or mortgage on real property. The law provides specifically for enforcement and (judicial) seizure of trust deeds.
5	Trust Territory Environmental Protection Act		(At the federal level) Trust Territory Environmental Act that states legislation pursuant to sub-rules relating to: i) air pollution, ii) pesticides, iii) public water supply systems, iv) seawater and freshwater quality, v) solid waste, vi) toilet facilities and sewage treatment, vii) earthwork.
6	Transportation Zone Act	1987	The Act designates the “transportation zone”. In 1994, the land stipulated as the “transportation zone” encompassing Pohnpei International Airport and Pohnpei Port became the state public property of the same “transportation zone” in accordance with the enactment of the Pohnpei Port Authority Act of 1991, which is the basis for the establishment of the PPA. Land and properties were transferred from the state government to the PPA.
7	Conservation and Resource Enforcement Act	1982	This law regulates the conservation of a wide range of resources, including endangered species, water and soil conservation, forest conservation, marine reserves, marine and fisheries resources, and land resources.
8	Pohnpei’s Environmental	1992, 1993	Pohnpei's Environmental Basic Law was enacted in 1992,

No.	Name of Legislation	Enacted Year	Remarks
	Protection Act		and was further amended in 1993.
9	Pohnpei EPA EIA Regulation	1996	This project is subject to this EIA regulation at the Pohnpei state level. For the details of this system, please refer to item 3-(2) EIA procedures of Pohnpei explained later in this section.
10	Pohnpei EPA Earthmoving Regulation	1996, Amendment Regulation 2008	Regulations stipulate the required application for an earthwork permit to the Pohnpei State EPA and the items for that permit when conducting earthwork activities (amended regulations 2008). Article 2.2: Erosion and Sedimentation Control Plan, and Article 2.3 Erosion and Sedimentation Control Plan, establishment of control measures and facilities, etc., are positioned as essential items in the application.
11	Foreign Fishing in State Waters Act	1979	Pohnpei State imposes catch limits on fishery resources for commercial fisheries, regardless of whether they are domestic or foreign companies, for the purpose of sustainable resource use. For fishery resources that can be caught, a permit system is adopted, while illegal fishing is subject to fines.
12	Prohibiting Harvesting and Use of Bait Fish Act	1971	A law prohibiting the use of forage fish harvested or collected in waters within the State of Pohnpei by foreigners for commercial fishing purposes without the prior written consent of the Pohnpei Economic Development Board. "Forage fish" refers to any type of marine organism that can be used as bait in commercial fisheries.
13	Forest Management Ac	1979	This law stipulates matters related to forest protection for the purpose of protecting forest resources and protecting water resources. The purpose of this Act is to establish and maintain an effective and comprehensive forest land development regulation and support system.
14	Pohnpei Watershed Forest Reserve and Mangrove Protection Act and subordinate regulations (draft) to both the Forest Management Act and Pohnpei Watershed Forest Reserve and Mangrove Protection Act	1987	The purpose of this law is to create effective watershed forest reserves and provide for their protection and maintenance, to designate and protect key watershed areas, and to provide for the protection and management of mangrove forests. The Watershed Forest Reserve is managed by the Pohnpei Common Land Trust Commission. The law stipulates permitted and prohibited uses of protected areas. The law also stipulates prohibited activities in the basin and provides for the future designation and protection of mangrove forests.
15	Marine Resources Conservation Act	1981	This Act establishes regulations governing the harvesting, extraction, processing, and sale of specific marine living resources, authorizes the Secretary of the Department of Homeland and Natural Resources to enact rules and regulations relating to the implementation and enforcement of this Act, and provides relevant defines unlawful conduct. As part of the environmental ancillary procedures, there is a Marine Resource Assessment administered by the Pohnpei State Resources Development (R&D) Department. In this evaluation procedure, it is positioned as a state law that should be noted.
16	Air Pollution Control Standards and Regulations	1995	Enacted April 1995
17	Drinking Water Regulations	1995	Enacted April 1995
18	Regulations on Public Access to EPA Records	1996	Enacted April 1996

No.	Name of Legislation	Enacted Year	Remarks
19	Public Buildings and Places of Public Assembly Environmental Standards Regulation	N.A.	N.A.
20	Hearing Regulations	1995	Effective April 1995 Similar to the preceding item 19, this regulation regulates the public hearing rules.
21	Ship Environmental Health Inspection Regulations	1995	Enacted April 1995
22	Solid Waste Regulations	1995	Enacted April 1995
23	Toilet Facilities & Sewage Disposal Regulations	1995	Enacted April 1995
24	Marine and Fresh Water Quality Standard Regulations	1995	Enacted April 1995

i) **EIA Supplementary Permits Acquisition Procedure in Pohnpei State**

As can be confirmed in above Table 3. 2 , regarding EIA, the Pohnpei State EIA Regulations will apply to this project, not the Federal EIA Regulations. On the other hand, apart from that, there are other supplementary procedures such as earthmoving permit under the jurisdiction of Pohnpei EPA in accordance with earthmoving regulation, and the Land Use Permit under the Pohnpei Land Department, and the forestry permits as well as the marine resources assessment under the Pohnpei Resources Development (R&D) Department, and finally the Historic Conservation Permit under the Office of Historic Conservation.

Such environmental incidental procedures are required. As a custom, the environmental ancillary procedures including EIA are approved in the order from ① to ⑨ shown in the following flow chart. Ultimately, land use permits are obtained through the Trustee Land Board.

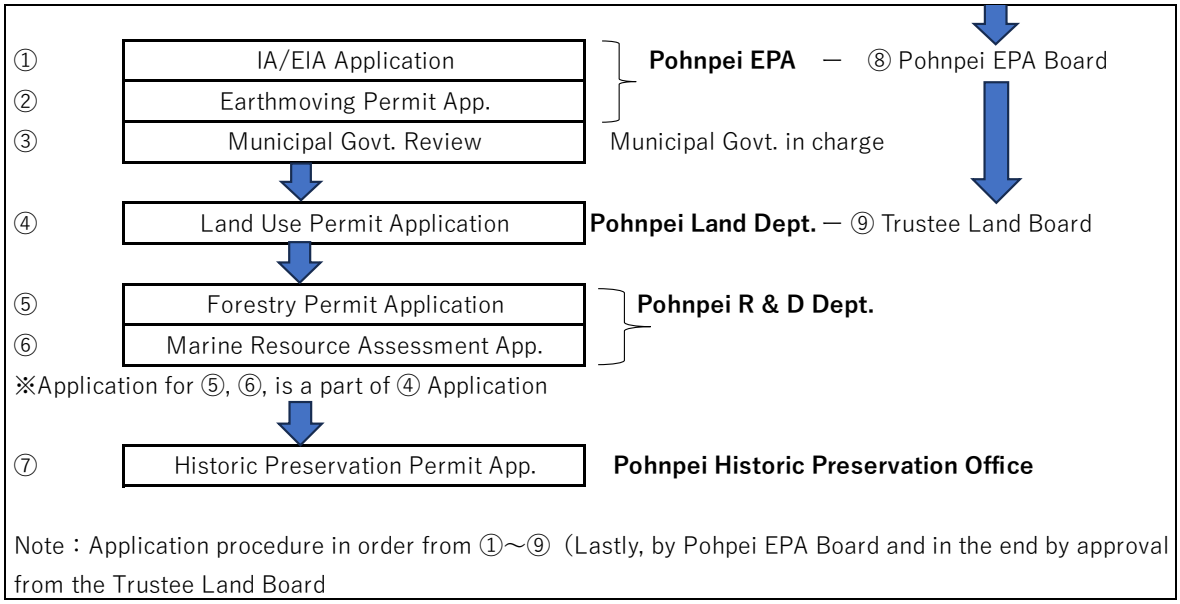


Figure 3. 2 Permit Application Procedural Flowchart of IA/EIA and other supplementary Environmental Procedures in Pohnpei State

In May 2023, the JICA Survey team acquired all application forms for IA/EIA, as well as earthmoving permit, local government review, land use permit (forestry permit and marine resource assessment are applied together by this permit application), and historic preservation permit. This JICA Environmental and Social Considerations Study Report has been prepared also to basically be able to comprehensively cover and describe all of the items required for these application forms to be drafted under the responsibility of PPA.

ii) EIA Procedure in Pohnpei State

Basic law:

- Pohnpei Environmental Protection Act of 1992 (S.L. No. 3L-26-92)
- S.L.No.3L-45-93 (S.L.No.3L-26-92 Amendment Act)
- Pohnpei EPA Environmental Impact Assessment Regulation 1995

The EIA procedure in Pohnpei State is based on two-step process. Following the Initial Assessment (IA) implemented by the project proponent, if the subject project's development activities are expected to cause significant impact by decision of the Board of the Pohnpei Environmental Protection Agency (EPA), then an Environmental Impact Statement (EIS) procedure is adopted and implemented by an EPA-approved independent external EIA consultant (see the Pohnpei State EIA procedural flow chart below) hired by the project proponent. Depending on the decision of the Pohnpei State EPA Board of Directors, public hearings may be held twice during the IA review and draft EIS stages.

This project is informed to likely be completed at the IA level, where approval can be obtained in a short period of time.

However, if, after the review by the EPA Board of Directors, the need for EIA procedures is recognized, the project proponent shall employ an EPA-approved EIA company, formulate a scoping plan for study items and study methods, that requires pre-approval from Pohnpei EPA and relevant agencies. The EIS draft must cover the structure described in Part V of the Pohnpei EIA Regulations. Based on the approved scope, the EIA contractor prepares a draft Environmental Impact Statement (EIS) and submits the draft to the Pohnpei State EPA. In response, the EPA Board has the authority to hold a public hearing at the draft EIS stage, if deemed necessary. Opinions from stakeholders at the public hearing will be reflected in revisions from the draft EIS to the final EIS. After the final review by the EPA Board, there will be a decision on whether to approve the project or not without any condition, or to approve with additional conditions. The the project proponent will then be notified whether the project is approved or not based on this decision.

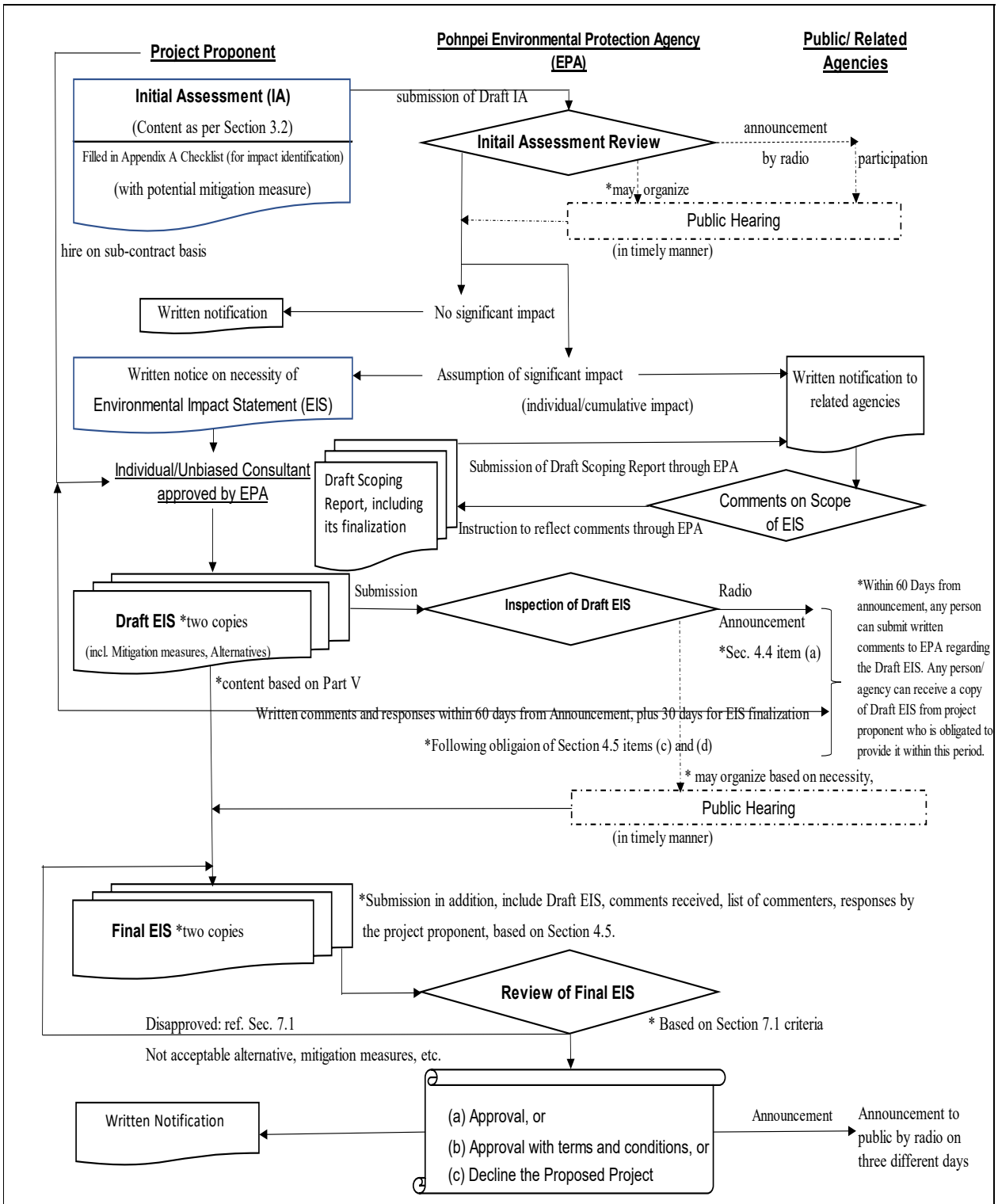


Fig. 7.3.1-1 Environmental Impact Assessment (EIA) Procedural Flow Chart, in compliance with Pohnpei EIA Regulation 1995

Source: JICA Study Team, in reference to Pohnpei EIA Regulation, 1995

Note: Even if after Review of Final EIS, the EPA Board decides to (c) Deline the Proposed Project, the overall process could still be resumed, if the Project Proponent decides to follow suite to EPA's comments, and revise the Final EIS accordingly.

Figure 3. 3 EIA Procedural Flow Chart in accordance with Pohnpei EIA Regulation 1995

[Gap analysis of EIA]

Table 3. 3 Comparison of EIA Systems, etc. between JICAGL and FSM

Target matters	JICA GL	FSM	Presence of gaps and countermeasures
Basic matters	When implementing a project, at the planning stage, we investigate and consider the impact the project will have on the environment and society as early as possible, avoid this as much as possible, and minimize it if this is not possible. Alternatives and mitigation measures must be considered to reduce or mitigate the impact, and the results must be reflected in the project plan.	It is necessary to identify the environmental impact of the project and consider mitigation measures.	None
Considering countermeasures	Multiple alternatives must be considered in order to avoid or minimize undesirable project impacts and to select the option that is better in terms of environmental and social considerations.	Consideration of multiple measures is required to mitigate negative impacts.	None
Impact scope to consider	The range of impacts that should be investigated and considered regarding environmental and social considerations includes human health and safety and the natural environment through the natural environment such as air and water, population movements such as voluntary relocation of residents, local economy such as employment and livelihoods, etc. including social considerations.	The checklist for initial impact assessment covers the natural environment, social environment, etc.	None
Consistency with laws, standards, plans, etc.	Projects must comply with laws and standards regarding environmental and social considerations set by the recipient country's government (including local governments). Furthermore, it must be in line with the environmental and social consideration policies and plans established by the partner country's government.	Rules regarding environmental and social considerations are in place.	None
Social agreement	Projects must be sufficiently coordinated to achieve consensus in a socially appropriate manner in the country or region in which they are planned. In particular, for projects that are considered to have a large impact on the environment or society, information should be made public from an early stage when alternative plans are considered, and sufficient consultation should be held with stakeholders such as local residents. It is necessary that the results are reflected in the project contents.	It stipulates that public hearings will be held regarding the project details, initial evaluation, and impact assessment.	None

Climate change	For projects that are expected to generate greenhouse gases exceeding a certain amount, the total amount of greenhouse gas emissions will be estimated and made public before the project is implemented.	No regulations.	Total GHG emissions are not estimated because GHG emissions are expected to decrease for the following reasons. 1. The increase in mooring facilities due to the project will not lead to an increase in the number of vessels calling at the port. 2. The increase in moorings will reduce the number of fishing vessels and the number of times these vessels have to be evacuated each time a container ship arrives in port.
Biodiversity	The project must not involve significant conversion or significant degradation of critical habitat or critical forest.	Ecosystem impacts are also considered.	None Vulnerable coral species were found at the project site. However, since a certain size of the same species were confirmed in marine life protected areas outside the project site, the project site does not qualify as a critical habitat. However, in line with global standards, some transplantation of blue corals with vegetation of a certain size will be carried out. As a measure to alleviate the impact on the marine ecosystem where corals live, rubble mats will be installed to create fishing reefs.For details, see 6. [Marine Ecosystem].
Involuntary resettlement and loss of livelihoods	Efforts must be made to avoid involuntary resettlement and loss of means of livelihood by considering all possible methods. If avoidance is not possible even after such consideration, effective measures must be taken in agreement with the affected parties to minimize the impact and compensate for losses.	Regulations regarding land acquisition are in place.	None.
Indigenous people	Every effort must be made to avoid the impact of projects on indigenous peoples. If avoidance is not possible even after such consideration, effective measures for indigenous peoples must be taken to minimize impacts and compensate for losses.	The rights of the Micronesian people are protected by customary law.	None. Consent for the implementation of the project has been obtained from local chiefs in accordance with customary law.

Monitoring	During the project implementation period, it is necessary to ascertain whether there are any situations that are difficult to predict, the implementation status and effects of pre-planned mitigation measures, and take appropriate measures based on the results.	Monitoring is not stipulated.	Share monitoring plans in accordance with JICA GL.
Grievance mechanism	A mechanism for redressing complaints from environmentally and socially affected people and communities must be in place.	There are no regulations regarding grievance handling mechanism.	We propose the establishment of a complaint handling mechanism in accordance with JICA GL.
Information disclosure	In principle, partner countries, etc. take the initiative in disclosing information regarding environmental and social considerations of projects, and JICA supports partner countries, etc. through cooperation projects, as necessary.	Public hearings and public announcement of the environmental assessment report via radio are stipulated.	None

1.4 Consideration of Alternatives (including no project option)

(1) Consideration of Option not to implement the Project

This project aims to alleviate congestion and improve safety within Pohnpei Port by constructing a new quay with ship mooring facilities, thereby contributing to the improvement of maritime logistics. Therefore, as explained below, if we follow the option of not implementing this project, ship congestion in Pohnpei Port will not be alleviated, navigation safety will be threatened, and the environment for maritime logistics will deteriorate in response to increasing demand. Fear is more than expected. Furthermore, as Pohnpei Port becomes unable to meet the demand for fishing ports, there is a risk that Pohnpei State may lose opportunities for economic development in the area of seafood distribution.

The JICA Survey Team has confirmed the following problems at Pohnpei Port through basic information collection surveys and through other related activities.

[Operational issues]

- There are only three berths for mooring purse seine fishing boats (berths 2 and 4 on each end of the west side of the main wharf, 60 m each, and 55 m on the south side <berth 1>) and therefore, purse seiners and cargo ships share the same wharf, and there is a lack of mooring facilities.
- As a result, a large number of purse seiners call at the port during the fishing season, forcing to be double or triple moored, which threatens the safety of cargo ship maneuvering when approaching and leaving the berth. In addition, when cargo ships enter and leave ports, they are forced to take measures such as moving purse seiners to anchorages.
- As a result, services for users (fishing boats) have declined, and in other words, competitiveness with ports in other countries has declined.
- Therefore, the transshipment work of the catch has to be carried out at this anchorage, making it difficult to improve efficiency (it cannot be developed as a fishing base equipped with refrigeration facilities).

[Issues regarding quay facilities]

Approximately 50 years have passed since the existing wharf was constructed. In addition to concerns about its aging, the structural strength of the wharf and apron cannot be confirmed despite the fact that container ships of a size not anticipated at the time of construction call at the port on a regular basis. This makes it difficult to improve the efficiency of cargo handling through the introduction of large cargo handling machinery.

Additionally, the mooring pillars and fenders have been modified to have higher load capacity to accommodate container ships. In addition, plans are underway by the World Bank to pave existing container yards and improve security facilities in bonded areas.

Among the above-mentioned problems identified above, the daily operational problem of Pohnpei Port is that due to the lack of mooring facilities for purse seiners, vessels are forced to double moor or moor at cargo ship berths. As a result, the purse seiner has to be moved every time a cargo ship enters or leaves the port, and adding mooring facilities for the purse seine fishing boat is essential for maritime safety and smooth operations at Pohnpei Port. This had been recognized as an urgent issue. If the facility expansion plan is not implemented, not only will all the above-mentioned problems remain unresolved, but the Pohnpei state's economy in the area of seafood distribution will suffer due to the inability to meet the demands of Pohnpei Port as a fishing base. And they will lose the opportunity for promotion.

(2) Consideration of Alternatives in terms of Location of Quay Construction

In the Basic Information Collection and Confirmation Survey for Micronesia Regional Port Development in the State of Micronesia, the planned construction site was selected from the viewpoint of construction and cost, as the ground gets softer as you move into the inner bay, and the amount of soil required for channel dredging is large. Judging from an operational perspective, we concluded that it was difficult to choose anything other than Misco Beach. Furthermore, as the land dispute that was pending at the time of the investigation is now being resolved through the efforts of the Port Authority of Pohnpei, the location of the quay for the construction of a new quay at Misko Beach is actually now being considered.

The Pohnpei Port Expansion, part of the preparatory study for this project, will include the construction of mooring facilities for purse seiners to ease congestion caused by the large number of purse seiners that call

at the port during the fishing season and to ensure safe navigation within the port. However, taking into consideration that the World Bank's Long Term Master Plan for the Port of Pohnpei is still under development, as well as the characteristics of the Port of Pohnpei as listed below, the new quay wall will be 160m long and -10m deep to allow for the mooring of container vessels.

- The length of a purse seine fishing boat is 70m to 80m and 1,100 to 1,500 gross tons, but due to its structure, it has a large draft and requires mooring facilities with a water depth of about 8m.
- Misko Beach has a sufficient area as a port development site for Pohnpei Port, and the urgently needed facility is a mooring facility for purse seine fishing boats, but the planar facilitation plan and structural design of the facility should allow future development.
- Fifty years have passed since the existing wharf was constructed, and it is expected that it will continue to deteriorate in the future. Therefore, it is desirable that the newly to-be-constructed quay should have a plan layout and structural design that can be used as cargo ship quay, in case the existing quay becomes obsolete.
- The access route to Pohnpei Port has a curved shape and limited water depth, and the ocean-going cargo ships that call at the port operate via routes that pass through neighboring island countries. It is thought that the ship will continue to be the largest type of ship calling at the port.
- From the above points of view, it was initially decided that a quay road with a length of 160 m and a water depth of -10 m will be targeted for facility planning as a quay where the largest container ships that regularly call at the port can moor and handle cargo.

The ground at the project site is coral reef and is known to have a lot of soft ground from the Takatic fishing port and Pohnpei airport runway extension construction. Therefore, for information collection surveys that do not involve soil surveys, ground conditions are assumed to be soft ground that requires replacement of the seabed. Construction costs and operational differences due to differences in quay structure style, dredged and reclaimed soil volume, and construction methods by quay location were examined. The three alternative locations for the quay wall construction location are onshore, along the shoreline, and offshore at Misco Beach, as shown in Figure 4. 1.

Construction cost estimates based on the schematic design indicated that Option B, which would be constructed along the shoreline, would have the lowest construction cost. In addition, Option B has the smallest amount of dredged material at the anchorage and is the best option from an environmental perspective.

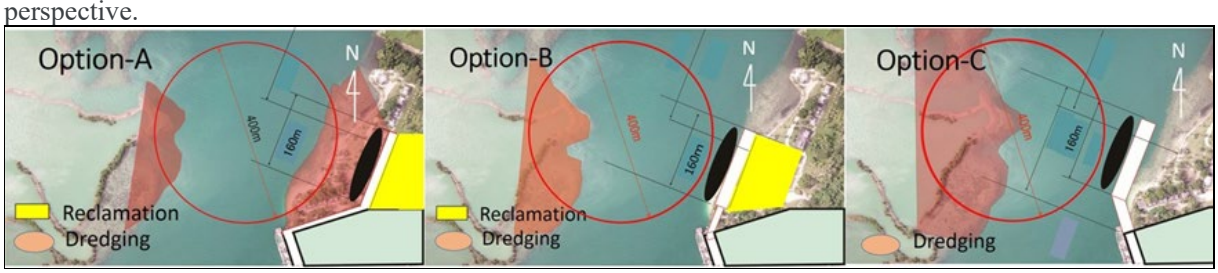


Figure 4. 1 Consideration of construction costs for information collection survey (JICA, 2019)

In this preparatory survey, boring survey was carried out at total nine locations, including three locations in the sea, near the shoreline, and on land that was assumed by the three options above, and three locations normal to the quay, and the following findings were made.

(1) Ground composition: Generally, the ground is coral sand or coral gravel, although some layers of silt are present in the deeper layers below the coral reefs.
(2) Ground Strength: Ground strength tends to increase from seaward to landward.
(3) Ground Elevation: Based on the measured results (N-values of 10 to 20) results, stability can be ensured without replacing the foundation ground with sand at any of the quay locations.

The comparison table used in selecting the above alternatives is shown below.

Table 4. 1 Alternative comparison table

Evaluation criteria	Option A	Option B	Option C	Without project option
Construction cost (/1,000 yen)	5,199,920	2,780,800	3,613,280	N/A

Evaluation criteria	Option A	Option B	Option C	Without project option
2019 price, 1$=108 yen				
Impact on biological diversity	The coral reef at the project site will be dredged.	The coral reef at the project site will be dredged.	The coral reef at the project site will be dredged.	No notable impact
Impact on mangrove forests	Some of it will be felled. (To secure yard land)	No notable impact	No notable impact	No notable impact
Dredged volume	300,800 m^3	115,200 m^3	56,000 m^3	
Impact on ship navigation during construction	No notable impact (Due to dredging of land area only)	Partial restriction of vessel navigation (due to the need for partial marine dredging)	Restrictions on vessel navigation (Due to offshore construction)	No notable impact
Impact of noise and vibration caused by driving sheet piles on residents on the opposite shore	The pile driving location is farthest from the houses on the opposite bank, and the impact of vibration and noise on residents on the opposite bank is smaller than other options.	The noise and vibration caused to residents on the opposite bank is between the other options A and C.	The pile driving location is closer to the opposite shore, and the vibration and noise to private houses is greater than other options.	N/A
Mooring capacity for purse seine fishing boats after completion	Double and triple mooring possible	Possible with double mooring	Although mooring is possible, double mooring poses an obstacle to ships navigating the route.	
Evaluation and reason	Construction costs and amount of dredged earth are large. In order to secure the yard, it is necessary to cut down the mangrove forest.	**Recommendation** Construction costs are minimal. Plan C takes into consideration the environmental impact, such as avoiding impact on mangrove forests and reducing the amount of dredging compared to Plan A, while minimizing construction costs and having a lower impact on passing vessels during construction and after completion than Plan A. smaller.	Construction costs are high. During construction, there is a possibility that it will become an obstacle to navigating ships after completion.	

Based on the above analysis, it was determined that Option B, which establishes a shoreline normal along the shoreline, is the most recommended alternative considering the construction cost and environmental impacts, and therefore, this proposal is selected for adoption. Option B would require slightly more dredging than Option C, but would keep the dredged area smaller than Option A.

1,5 Scoping

As per 3-1. (2) Pohnpei State EIA legislative system above, the Initial Assessment (IA) must comply with Part III and Appendix A of the Pohnpei State EIA Regulations. After the IA review, if the project proponent is notified that an EIA is required, the configuration described in Part V of the Pohnpei EIA Regulations based on the scoping proposal by the EIA contractor employed by the project proponent, the Environmental Impact Statement (EIS) shall be prepared.

Therefore, this environmental and social considerations study, which should satisfy with the report requirements of IA and EIS, must therefore be in compliance with the requirements of the above Pohnpei State EIA regulations, and its scope and TOR must also be in line with the JICA guidelines for environmental and social considerations (April 2020 version) (JICA GL). In addition, the content must cover all the items required in the EIA application form and the application form for the environment-related incidental procedures.

Below, we enlist the key items that constitute each requirement. The scoping proposal that follow are organized to cover the main points listed here (i.e., the Pohnpei state EIA regulation required parts quoted above and the survey item requirements under JICA GL). The scoping proposal and TOR example items are also reflecting the questions inquired by the JICA Environmental Checklist utilized for JICA's internal environmental review.

Table 5. 1Survey Scope that requires to be taken into consideration based on Pohnpei State EIA Regulation and JICA Guideline for Environment and Social Consideration

Regulated source	Tentative items that require EIA Study consideration scope
Initial Assessment (IA) requirement: Pohnpei EIA Regulation 1995, Part II – Appendix A	Project overview, environmental setting, technical, economic, social and environmental impacts of the project. Supplementary provisions of environmental impacts relating to responses based on the checklist of Appendix A, regarding soil quality, air quality, water quality, flora and fauna, noise, land use, natural resources, social unrest risk, population, housing and resettlement, transportation, public services, utilities, health hazards, landscape, recreation, cultural resources, etc. Possibility of considering alternatives as mitigation measures. Necessity to implement the proposed project (e.g. public interest, environmental interest). Name of person in charge of IA.
Environmental Statement (EIS) requirement: * Pohnpei EIA Regulations 1995, Part V	Project name, project location, project owner name, address and phone number. The name, company, institution, address, and telephone number of the person in charge of formulating the EIS. Draft EIS, specification of final EIS, publication date and summary, table of contents. Overview and purpose of the development activity (statement of implementation purpose, mid- and long-term project objectives of the project owner, exact location and boundaries of the project site with detailed maps, technical, economic, social and environmental aspects of the target project) characteristics overview, public funding and land use for project implementation, project implementation phase/timing). Alternatives in accordance with Article 5.5 (selected sites, zero option, including significantly different development activities that are expected to have similar effects and different environmental impacts), Article 5.6: Affected environment (surrounding environment before project implementation: environmental resources, historic sites, watershed environment, public and private reference materials on the site, for analysis of cumulative impact assessments, local or state level land use plans, marine use plans, state development plans, and other policies related to the management of the site); Article 5.7: Environmental impacts (direct and indirect impacts and degrees, relationship between short-term environmental use and long-term productive environmental use and conservation, consideration of environmental impacts of alternatives including proposals, energy public utility conditions and related alternatives/mitigation measures, natural/depleted resources and alternatives/mitigation measures related to their conservation, urban environment/landscape, historic sites/cultural sites, environmental design of buildings, reuse/conservation of resources alternatives and mitigation measures involved, impacts on human use

	of population and land, alternatives on ecosystems, existence of environmental pollutants, mitigation measures for environmental impacts, impacts inevitable of environmental impacts and permanent changes, degree of environmental impacts should be assessed, or physical, biological, social and cultural characteristics associated with future use of the environment; cost-benefit analysis resulting in development proposals; identification of resources, potential impact on human health), list of draft EIS creators (names, qualification evidence documents, related organizations/organizations, consultants, etc.)
JICA Guidelines for Environmental and Social Considerations (January 2022 version)	Article 2.3 (Environmental and Social Considerations) Section 1: Human health and safety and the natural environment through air, water, soil, waste, accidents, water use, climate change, biodiversity, ecosystem services, etc. (including transboundary or global environmental impacts) as well as environmental and social impacts on items such as those listed below. Involuntary resettlement, population movement, local economy such as employment and livelihood, land use and utilization of local resources, social capital and local decision-making institutions, etc. Social organizations, existing social infrastructure and social services, the poor and indigenous people. Equity in the distribution of benefits and damages and the development process, gender, children's rights, cultural heritage, local conflicts of interest, infectious diseases such as HIV/AIDS, and the working environment (including work safety). Section 2 of the same article: The impacts to be investigated and examined shall include not only the direct and immediate impacts of the project, but also the secondary impacts, cumulative impacts, including the impact of inseparable projects. Also consider impacts over the life cycle of the project. Section 3 of the same article: Various related information is necessary to understand the impact on the environment and society in advance, but the mechanism of the impact is not sufficiently clarified and the available information is limited. For these reasons, impact projections may involve a certain degree of uncertainty. If the uncertainty is judged to be large, consider environmental and social considerations that incorporate preventive measures as much as possible.

Table 5. 2 Scoping proposal based on the characteristics of the implementation environment of the project and study items that require examination based on Table 5. 1

Category	No.	Impact Items	Selection Phase		Selected reason
			Prior Const. During	After Operation	
Pollution Control	1	Air Pollution	-/✓	-	During construction: During the dredging and reclamation construction period, heavy machinery may have an impact on the atmosphere.
	2	Water Pollution	-/✓	✓	During construction: During the dredging and reclamation construction period, water quality such as turbidity may be affected.
	3	Soil Pollution	-/✓	✓	If the dredged soil contains hazardous substances, there is a risk of leakage or seepage into the ground.
	4	Waste	-/-	-	No waste is expected to be generated that would affect the surrounding environment.
	5	Groundwater	-/-	-	There are no plans for construction requiring large-scale water withdrawal. Therefore, there is no impact on groundwater.
	6	Noise	-/✓	-	During construction: Noise will be generated for a long time due to the operation of construction machinery. This

Category	No.	Impact Items	Selection Phase		Selected reason
			Prior Const. During	After Operation	
					may cause discomfort and potential health risks for airport users and residents on the opposite shore.
	7	Land Subsidence	-/-	✓	After operation: Long-term land subsidence may occur.
	8	Offensive Odor	-/✓	-	Dredged soil may emit offensive odors.
	9	Bottom sediment	-/✓	✓	Dredged soil may contain hazardous materials.
Natural Environment	10	Protected Area	-	-	There are no national parks or marine protected areas in or around the project area.
	11	Ecosystem	-/✓	✓	There is a possibility of vulnerable coral and fish habitat in part of the proposed dredging area.
	12	Natural resource	✓/✓	-	There is a possibility that construction and reclamation materials were taken from mining and earth removal sites that did not have environmental permits.
	13	Hydrological situation	-/✓	✓	Flow conditions may change due to bank protection construction.
	14	Topography/ Geology	-/-	✓	The surrounding coastline may change due to the completion of the new quay.
	15	Land Use & Land Ownership	-	-	No land acquisition will occur since the project site is located within the premises of the implementing agency.
	16	Remained Land Management	-/-	-	The entire site of the construction yard will be used for the facility.
Social Environment	17	Resettlement	-/-	-	Resettlement will not occur.
	18	Population	-/-	-	No impact is anticipated.
	19	Social unrest	-/✓	✓	During Const: Dredging & reclamation activity may cause anxiety for people navigating in small boats on the sea, such as pleasure boats.
	20	Living & Livelihood	-/-	-	No fishing is taking place in the vicinity and no impact is expected.
	21	Local economy, Local culture	-/-	-	Positive impact towards local economy will be expected.
	22	Public service, transportation	-/-	-	Positive impact toward public service & transportation will be expected.
	23	Health damage	-/-	-	There are no residential areas in the vicinity, and health hazards due to noise and air pollution are not considered.
	24	Cultural Heritage	-/-	-	No cultural heritage exists at the project site.
	25	Landscape & Recreation	-/-	-	The project site is vacant land formerly used as a resort, so no impact on landscape is expected.
	26	Ethnic minority, Indigenous people	-/-	-	There are no ethnic minorities or indigenous peoples.
	27	Gender	-/✓	-	During Const: Necessity to provide employment opportunity of construction workers based on balanced gender awareness.
	28	Employment environment	-/✓	-	During Const: Requirement to monitor and manage the environment, health and safety (EHS) standards may not be followed.

Category	No.	Impact Items	Selection Phase		Selected reason
			Prior Const. During	After Operation	
Others	29	Impact at construction phase	-/✓	-	During Const: Safety of vessel navigation and construction restrictions during aircraft takeoff and landing may not be followed.
	30	Accidents	-/✓	-	Safety measures such as traffic guidance and security during the loading and unloading of heavy equipment during the construction phase may not be followed.
	31	Global issues	-/-	-	Due to the small size of the construction of this project, there will be no impact on the global environment.
	32	Monitoring	✓	✓	Under the Pohnpei State EIA regulations, monitoring is required as determined by the Pohnpei State EPA.

1.6 TOR for Environmental and Social Consideration

The TOR Example below for the subsequent environmental and social considerations study is compiled to cover the key points enlisted above (i.e., the Pohnpei State EIA system and the survey item requirements on the JICA GL), as in the previous section. It also reflects items that address the questions in the JICA environmental checklist.

Table 5. 3 TOR Example for Environmental and Social Consideration Study

Environmental item	Studying item	Studying method
Ambient Air Quality	(1) Water samples were taken at 0.5 and 2 m below sea level at high and low tides.	(1) A digital dust meter manufactured by Dust Truck Co., Ltd. was used to measure particulate matter. (2) For NO_2 and SO_2, a sampler was attached to the outside wall of a building and exposed to the air for 24 hours, then collected and analyzed in Japan after returning to Japan to determine the concentration of NO_2 and SO_2. (3) Due to availability of measurable instruments, parameters to be analyzed are limited.
Seawater Quality	Test items: PH, COD, DO, SS, coliform count, n-hexane extracted substances (oil, etc.), total nitrogen, total phosphorus, total zinc	Water was sampled at three locations: in front of the existing quay and two locations in front of the project site. Water sampling by sampler or diver Samples analyzed by New Zealand consultants
Soil contamination	Arsenic, cadmium, chromium	Same as "Sediment"
Noise Intensity	Actual measurement using a sound level meter	Continuous observation for one week at two locations
Land subsidence	Possibility of land subsidence	Qualitative survey in the project area
Odor	Possibility of odor	Qualitative survey in the project area
Sediment	A total of 4 locations: 2 locations where new wharf construction is planned, 1 location on the opposite shore, and 1 location at the end of the turning area in front of the existing pier. Soil properties: grain size, water content ratio, specific gravity, median grain size, unit pile weight) Heavy metal analysis 10 items: total sulfur arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc, DDT	Sediment was collected using samplers or divers. The samples were analyzed by consultants in New Zealand.
Ecosystem	Coral, mangrove, aquatic/benthic biological survey Land: Mangrove vegetation survey Undersea: Coral, aquatic/benthic life survey	Manta method: Whole coral vegetation survey Belt transect method: Transect line 5 side track (total 800m) Quadrat method: 3 quadrats (1m x 1m) per transect line (reef flat, reef slope, and seafloor)
Natural Resource	Material investigation Confirmation of quarries for stone and concrete aggregate used in construction Particle size, specific gravity, water content ratio, and compressive strength tests on two samples each of sand, crushed stone, and waste stone.	The interview committee will confirm the quarry and whether it has received environmental permission.

Environmental item	Studying item	Studying method
Hydrological situation	Flow survey Current direction and velocity at a total of three points (two points in the channel in front of the planned new wharf construction site, one point in the turning area on the entire surface of the existing wharf)	Equipment measures the flow direction and velocity in the upper, middle, and lower layers during rising and falling tides during spring tides and neap tides.
Topography/ geology	(1) Land topographic survey Ground elevation of the planned new quay construction site and its hinterland, plan layout of existing structures, and coastline shape (2) Bathymetric surveying Planned new quay construction site, new quay full channel, existing turning area (approximately 45 ha) (3) Soil survey Standard penetration test, indoor soil test, soil strength test, soil consolidation test	(1) Surveying using surveying equipment such as GPS, total station, level, staff, etc. (2) Marine surveying using surveying equipment such as GPS, echo sounder, level, staff, etc. (3) 5 land boring locations, offshore Bowling at 4 bowling locations
Others	Social unrest, gender, working environment, impact during construction, accident prevention measures, monitoring, etc.	Qualitative evaluation based on interviews with the study team, counterparts, and other stakeholders.

1.7 Result of Environmental and Social Consideration Study

Table 6. 1 Result of Environmental and Social Consideration Study (including projection result)

Cat.	No.	Impact Item	Study Result
Pollution Control	1	Air Pollution	The baseline survey was below the standard value. During construction, dust from the movement of heavy equipment and construction vehicles is possible, but given the scale of construction, the impact is expected to be limited, but monitoring will be conducted.
	2	Water Contamination	In the baseline survey, some areas exceeded the Pohnpei State standard, but the majority was below the standard. During construction, measures will be taken to prevent possible generation of turbidity due to dredging, etc.
	3	Soil Contamination	The results of soil analysis in the terrestrial area showed that a layer containing three heavy metals (arsenic, chromium, and nickel) was found beneath a sand layer 1 m thick from the ground surface. These are considered to be mangrove-derived accumulations, and the concentrations of chromium and nickel are below the standard values, while the concentrations of arsenic are above the standard values. Therefore, during construction, measures will be taken to prevent heavy metals from leaking from these layers.
	6	Noise intensity	The noise level was below the noise level standard in the baseline survey. Noise from heavy machinery is expected to be generated during construction, but the impact is expected to be limited since the project is located approximately 800 m away from neighboring residential areas; however, confirmation will be made during construction.
	7	Land Subsidence	There will be no large withdrawals of groundwater, and land subsidence is not expected. Ground measures will be taken in the construction plan.
	8	Offensive Odor	Odors may be generated from temporary storage of dredged soil, wastewater from the workers' camp, and temporary storage of general waste, so confirmation will be made.
	9	Bottom Sediment	Field investigation confirmed that the bottom sediment offshore of the proposed dredging site contained items (arsenic, chromium, and nickel) that exceeded the standard values. The survey was expanded and re-surveyed, and areas with high values of heavy metals were found in the corroded layer of mangroves onshore. Measures will be taken to prevent runoff from this layer.
Natural Environment	11	Ecosystem	The project site does not fall within the Marine Life Protection Area of the Pohnpei Province (see page 12, Figure 2.3). A certain size (70m x 5m) of vegetation of blue coral, a threatened species (VU), was observed in a part of the proposed dredging area. The distribution of blue corals in the protected area around Pohnpei Port, which is even larger, was confirmed in the resurvey. The project site has already been confirmed as not an ecologically important habitat. In addition to blue corals, two VU species (*Pachyseris rugosa* and *Pectinia alcicornis*) and eight Near Threatened (NT) species (*Acropora divaricata*, *Diploastrea heliopora*, etc.) were identified. Both species are commonly distributed in Pohnpei Province, and it is determined that the project site is not an ecologically important habitat. Two juvenile Humphead Wrasse (*Cheilinus undulatus*), an endangered (EN) species, were observed in the waters near the sidewall at the north end of the existing wharf. However, these two fish were determined to be migrating rather than spawning at the project site. Therefore, the site is not considered to be an ecologically important habitat.
	12	Natural Resource	When procuring building materials and landfill materials, it is necessary to check whether the mining site or borrowing site has obtained environmental permits.
	13	Hydrological Situation	The quay wall is planned to be designed close to parallel to the shore, and hydraulic impacts are not expected, but long-term changes will be checked.
	14	Topography & Geography	Prior Const: The situation of the coastline needs to be confirmed as a baseline After operation: Monitoring for changes to the coastline
Social Environment	19	Social Unrest	According to on-site interviews, local traditional fishermen do not operate in the development area, and the impact by the construction is not expected. However, confirmation interview will be periodically carried out during construction.
	27	Gender	During Const: During construction phase, there is a necessity to provide employment opportunities for employing construction workers, taking respect and

Cat.	No.	Impact Item	Study Result
			awareness of gender equality.
	28	Occupational Environment	During Const: The Environment, Health & Safety (EHS) aspects of construction workers at construction phase, must be properly managed and monitored.
Others	29	Impact during construction phase	Relevant management (including mitigation measures, if required) and/or monitoring measures shall be taken to those items mentioned above and below that require such measures.
	30	Accident prevention measures	During Const: During construction, based on consultation with the local police, there is a requirement of accident prevention measures, such as allocation of traffic control and security guard personnel. Requirement on monitoring of land and marine transport related accidents.
	32	Monitoring	The monitoring plan should be reviewed according to the Pohnpei State EPA's decision.

The current situation around the port is described below based on the field survey.

[Air Quality]

i) Result of Air Quality (PM_{10}) Investigation

Continuous observations were made for one week on the second-floor balcony of the PPA building behind the wharf and on the second-floor balcony of the JOY Hotel in the city, respectively. An example of the observation results is shown below. The daily average value was less than 10 μg, which is below the WHO guideline (50 μg). At the project site, where there is little vehicular traffic, PM10 concentration is small and the air quality can be rated as very clean. Occasionally when PM_{10} serge up to 10μg times unit level, it can be assumed as temporary surge of exhaust fumes from vehicles or generations by power outages to be the most possible cause.

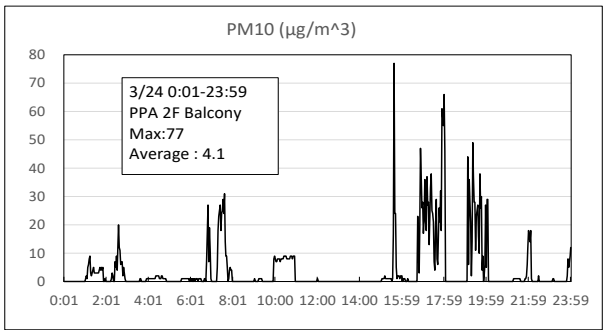


Figure 6. 1 Particle observation results (Point A)

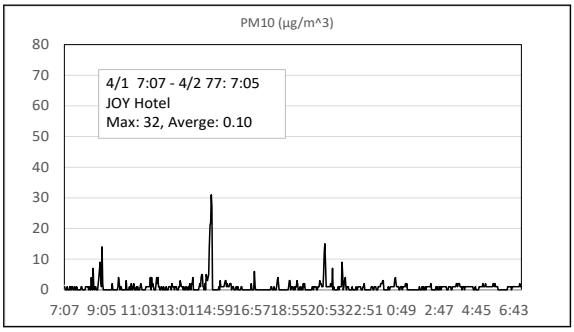


Figure 6. 2 Particle observation results (Point C)

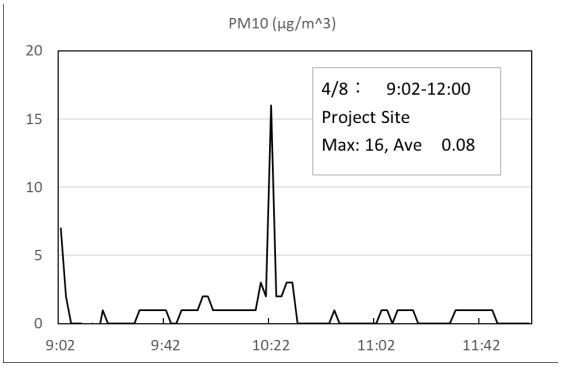


Figure 6. 3 Project site (Misko Beach)

Table 6. 2 Particle observation result

2023/3/23	0.75	PPA	2023/4/1	0.10	Joy Hotel
2023/3/24	4.1		2023/4/2	2.14	
2023/3/25	1.47		2023/4/3	1.13	
2023/3/26	1.04		2023/4/4	11.38	
2023/3/27	1.85		2023/4/5	3.97	
2023/3/28	12.19		2023/4/6	12.60	
2023/3/29	9.43		**Average**	**5.22**	
2023/3/30	0.10		2023/4/8	**0.88**	Project Site
Average	**3.87**				

Table 6. 3 PM10 Limit values by WHO and Others

	Japan	US NAAQS	EU AQS	China	WHO AQG

				(2008)	AAQS (2012)	(2005/ 2000)
$PM_{2.5}$	Daily Avg.	35μg/m³	35μg/m³		70μg/m³	25μg/m³
	Annual Avg.	15μg/m³	12μg/m³	20μg/m³	35μg/m³	10μg/m³
SPM (PM_7)	Hourly Avg.	200μg/m³				
	Daily Avg.	100μg/m³				
PM_{10}	Daily Avg.		150μg/m³	50μg/m³	150μg/m³	50μg/m³
	Annual Avg.			40μg/m³	70μg/m³	20μg/m³

ii) NO_2, SO_2 Observation Result

The values of NO_2 and SO_2 were more than one digit lower than the WHO standard values at the PPA office building near the existing wharf (point A shown in the photo), also at the guardhouse of waste disposal site behind the port (point B), and on the second-floor veranda of Fanny Hotel in the city center (point C), all of which were extremely normal. The air quality was therefore confirmed to be in a quite normal state.

Table 6. 4 Observation result of NO_2, SO_2

Observation Points	NO_2 Concentration value (ppb)			SO_2 Concentration value (ppb)		
	A	B	C	A	B	C
	PPA 2nd Floor balcony	Guard House	Fanny Hotel 2F verandah	PPA 2nd Floor balcony	Guard House	Fanny Hotel 2F verandah
Mar. 18 (Sat)			3.2			< 0.5
Mar. 19 (Sun)			1.6			< 0.5
Mar. 20 (Mon)			5.8			< 0.5
Mar. 21 (Tue)	1.2		3.3	< 0.5		< 0.5
Mar. 22 (Wed)	3.1		2.3	< 0.5		< 0.5
Mar. 23 (Thu)	4.0		4.3	< 0.5		< 0.5
Mar. 24 (Fri)	2.7		1.4	< 0.5		< 0.5
Mar. 25 (Sat)	1.6		5.2	< 0.5		< 0.5
Mar. 26 (Sun)	1.0		1.7	< 0.5		< 0.5
Mar. 27 (Mon)	1.5	1.1	6.5	< 0.5	< 0.5	< 0.5
Mar. 28 (Tue)	1.6	1.2	1.6	< 0.5	< 0.5	< 0.5
Mar. 29 (Wed)	1.8	1.7	1.9	< 0.5	< 0.5	< 0.5
Mar. 30 (Thu)	2.2	2.3	2.7		< 0.5	< 0.5
Mar. 31 (Fri)		2.2	1.5		< 0.5	< 0.5

NO_2 Standard: Hourly Value per Daily Avg., to be from 0.04 ppm (40 ppb) to 0.06 ppm (60 ppb) or below
SO_2 Standard: Hourly Value per Daily Avg., to be less than 0.04 ppm (40 ppb) as well as 0.1 ppm per one hour

Figure 6. 4 Location of Observation Points

[Water Quality (seawater)]

Water quality survey at the project site waters were conducted in April 2023 by the JICA Survey Team. The monitoring station's locations set forth are shown in below map and table on their coordinates, near Misko Beach (project site), that were W-1, W-2 and W-3, among which W-3. 4 samples were taken from each monitoring point at both high tide (7:30 a.m.) and low tide (12:30 p.m.) conditions with each two samples one at 50 cm above sea floor (sea floor sample) and one 50cm under sea surface sample (surface water sample), as subject for lab analysis (total 12 samples).

(i) Monitoring stations:

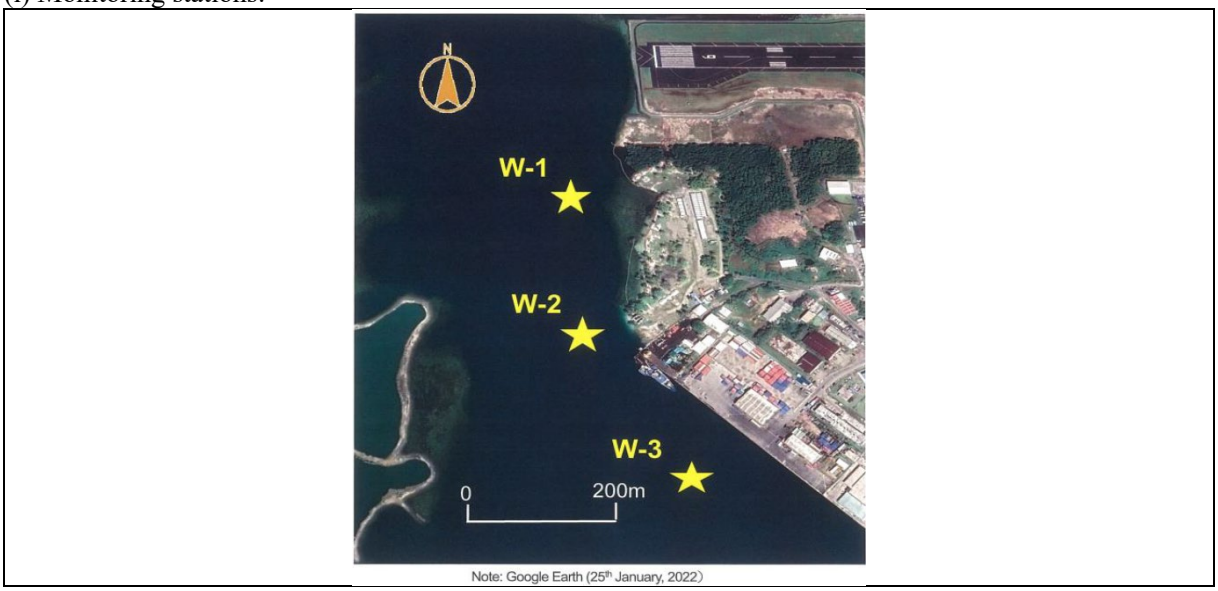


Figure 6. 5 Water Quality survey sampling locations

Table 6. 5 Sample location coordinates

Point	Latitude	Longitude	Sea floor depth (m)
W-1	6°58'58.853068125'' N	158°11'58.696811850'' E	16.5
W-2	6°58'51.971032254'' N	158°11'58.805236990'' E	16.5
W-3	6°58'45.001224569'' N	158°12'02.298343520'' E	13

Notes:
Coordinates are presented in degrees, minutes, seconds (DMS), World Geodetic System 1984 (WGS84).

(ii) Field parameters:

- Water Temperature
- Dissolved Oxygen (DO)
- pH (field)

(iii) Laboratory Analysis subject parameters:

- Salinity
- pH (laboratory)
- Suspended Solids (SS)
- Coliforms (E. Coli and Total Coliforms)
  Note: Given the transportation timeframes involved (to get the samples from Pohnpei to Guam by air) the samples retrieved during high tide were outside the recommended 24-hour holding window. However, the laboratory retrieved the samples within the 24-hour holding window.
- Total Nitrogen (T-N)
- Total Phosphorus (T-P)
- Turbidity
- Zinc

and were analyzed by the University of Guam Water and Energy Research Institute.

(iv) Domestic and international environmental standards adopted: See Table 6. 6 for each environmental standard (threshold value) for each parameter.

- Pohnpei Environmental Protection Agency Marine and Fresh Water Quality Standard Regulations. Class B waters. Effective 1995 (Pohnpei MQS)
- Japan Environmental Quality Standards for water pollution. 3 Coastal Waters. Conservation of the Natural Environment.

Table 6. 6 Water Quality (seawater) Survey Result

Analyte	Location	Pohnpei MQS[1]	Japan EQS[2]	W-1				W-2				W-3			
	Sample ID			W1 (HT) - SS	W1 (HT) - SF	W1 (LT) - SS	W1 (LT) - SF	W2 (HT) - SS	W2 (HT) - SF	W2 (LT) - SS	W2 (LT) - SF	W3 (HT) - SS	W3 (HT) - SF	W3 (LT) - SS	W3 (LT) - SF
	Lab ID			W2023-0721-01	W2023-0721-02	W2023-0721-03	W2023-0721-04	W2023-0721-05	W2023-0721-06	W2023-0721-07	W2023-0721-08	W2023-0721-09	W2023-0721-10	W2023-0721-11	W2023-0721-12
	Date sampled			11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023	11/04/2023
Temperature (field)	°C	<0.9°C variation from natural conditions		28.1	27.6	28.5	28.1	28.5	27.9	30.7	31.1	30.2	30.6	29.8	30.4
Dissolved oxygen (field)	%	60*	25**	1.5	1.6	1.5	1.5	1.5	1.5	1.5	1.4	1.5	1.5	1.5	1.4
pH (field)	pH units	7.7-8.5	7.0-8.3	7.17	7.81	8.04	8.07	8.03	8.07	8.13	8.08	8.12	8.09	8.12	8.07
pH (laboratory)	pH units	7.7-8.5	7.0-8.3	8.1	8.2	8.3	8.3	8.1	8.2	8.1	8.3	8.1	8.2	8.1	8.3
Total coliform	MPN/100 mL		1,000	980.4	195.6	>2419.6	>2419.6	2419.6	1986.3	>2419.6	2419.6	>2419.6	>2419.6	>2419.6	2419.6
E. coli	MPN/100 mL	400		1986.3	186.0	549.3	>2419.6	517.2	770.1	1986.3	280.9	579.4	148.3	866.4	98.4
Total nitrogen (as N)	mg/L	N:P ratio 6-18%	0.2	0.113	0.098	0.103	0.114	0.117	0.109	0.091	0.083	0.116	0.086	0.102	0.085
Total phosphorus (as P)	mg/L		0.02	0.012	<0.010	<0.010	<0.010	0.012	0.012	<0.010	<0.010	0.012	<0.010	<0.010	<0.010
Salinity	‰ (pp thousand)	29-35		26	30	33	34	28	34	30	35	26	35	33	35
Suspended solids	mg/L			13.2	9	7.2	10.0	5.8	2.4	4.2	3.8	3.6	6.0	3.2	4.8
Turbidity	NTU	2		1.48	1.48	3.67	1.38	1.19	0.856	1.22	0.645	1.16	1.22	1.02	1.17
Zinc	mg/L	0.058	0.02	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

Notes:
HT - High tide, LT - Low tide SS - Surface sample , SF - Sea floor sample
Exceeds Pohnpei Marine Quality Standards (MQS)
Exceeds Japan Environmental Quality Standards (EQS)
[1] Pohnpei Environmental Protection Agency Marine and Fresh Water Quality Standard Regulations. Class B waters
[2] Japan Environmental quality standards for water pollution. 3 Coastal Waters. Conservation of the natural environment
* MQS is 4.5 mg/L, converted to DO % saturation for a temperature of 28°C at an elevation of 0 m.
** EQS is 2 mg/L, converted to DO % saturation for a temperature of 28°C at an elevation of 0 m.

Table 6. 7 Summary of exceedances

Analyte	Concentration range	No. of Exceedances	
		Pohnpei MQS	Japan EQS
DO*	1.4-1.6%	12	12
pH (field)	7.17-8.13 pH units	2	0
Salinity	26-35‰	3	NC
Total coliforms	195.6 - >2419.6 MPN/100 mL	NC	10
E. coli	98.4 - >2419.6 MPN/100 mL	9	NC
Turbidity	0.654-3.67 NTU	1	NC

Notes:
NC – no criteria
*DO results are considered indicative of measurement or instrument error.

(v) Lab Analysis Result

Table 6. 8 Lab Analysis Result

Parameter	Lab Analysis Result
Water temperature	Sea floor: 27.6 – 31.1°C, surface water: 28.1 – 30.7°C (*) (*) Regarded not considered to represent Pohnpei MQS, which is a 0.9°C variation from natural conditions.
Dissolved oxygen (DO)	DO saturation readings of 1.4% to 1.6% were recorded in the field, was considered indicative of field measurement or instrument error. These readings would correspond to DO concentrations of around 0.1 mg/L, which are well below what would typically be expected for sea water and are lower than the Pohnpei MQS of 4.5 mg/L and Japan EQS of 2mg/L.
Salinity	Salinity ranged from 30 - 35 parts per thousand (%) for sea floor samples and from 26 -33% for surface water samples. The high tide surface water results of all three locations were slightly below the Pohnpei MQS range of 29 – 35%. However, the laboratory flagged that the samples were outside of holding time for this analysis.
pH	pH measured in the field ranged from 7.17 to 8.13 pH units. pH measurements in the laboratory were slightly more basic and ranged from 8.1 – 8.3 pH units. Field-measured pH in the high tide samples from location W-1 were below the Pohnpei MQS range of 7.7 – 8.5 pH units, and all results were within the Japan EQS range of 7.0 -8.3 pH units.
Suspended Solids (SS)	SS concentrations ranged from 2.4 – 13.2 milligram per litre (mg/L). SS concentrations were higher for all of the samples from W-1 compared to W-2 and W-3. There are no relevant Pohnpei MQS nor Japan EQS for SS, however, there is a MQS for turbidity.
Coliforms	Total coliform counts ranged from 195.6 to greater than 2419.6 most probable number per 100 milliliter (MPN/100 mL). *E. Coli* counts ranged from 98.4 to greater than 2419.6 MPN/100 mL. Total coliforms concentrations were reported above the Japan EQS of 1,000 MPN/10 mL in 10 out of 12 samples, the exceptions being the high tide samples from W-1. *E. coli* concentrations above the Pohnpei MQS of 400 MPN/100mL were reported for 9 out of 12 samples. Detection of high *E. coli* concentrations indicates recent fecal contamination.. For the high tide surface water sample from W-1, the laboratory reported the total coliforms result to be less than the *E. Coli* result (by about half). As total coliforms included *E. coli* and should therefore be a higher concentration than *E. coli* alone, T+TI queried this result with the laboratory. The laboratory advised that the discrepancy was due to the methodology of the Colilert™ test and that the maximum results were reported. The laboratory also flagged that the samples were outside of holding time for this analysis as the samples required transport to Guam for testing in the absence of appropriate facilities in Pohnpei. While this was denoted by the laboratory for all samples, we note that the low tide samples were all received at the laboratory within 24 hours of collection.

(vi) Overall analysis result

As per Table 6. 8, the exceedances of the quality standards for coliforms at all locations in two or more of the samples collected from all three locations indicate anthropogenic contamination throughout the investigation area. Sewage, illegal dumping, and piggeries are known sources of bacterial contamination to surface water in Kolonia[2][3]. There are likely to be multiple point sources within the catchment and that concentrations in the survey area will vary with precipitation and currents/mixing. Minor exceedances of environmental standards for salinity, turbidity, and pH do not necessarily indicate

[2] Pohnpei State EPA, 2021. Water quality and project report. https://fsm-data.sprep.org/system/files/Water%20quality%20and%20project%20status%20report.pdf

[3] Fukumoto, Glen K., 2013. Piggery Management Assessment and Water Quality Impacts, Pohnpei FSM. Presentation from the Food and Environment Summit, Pohnpei, Federated States of Micronesia, July 22, 2013. Available online: https://www.ctahr.hawaii.edu/deenikj/Downloads/Extension2014/G%20Fukumoto%20Pig%20Impacts%20Water%20Quality%20Pohnpei%20Summit.pdf

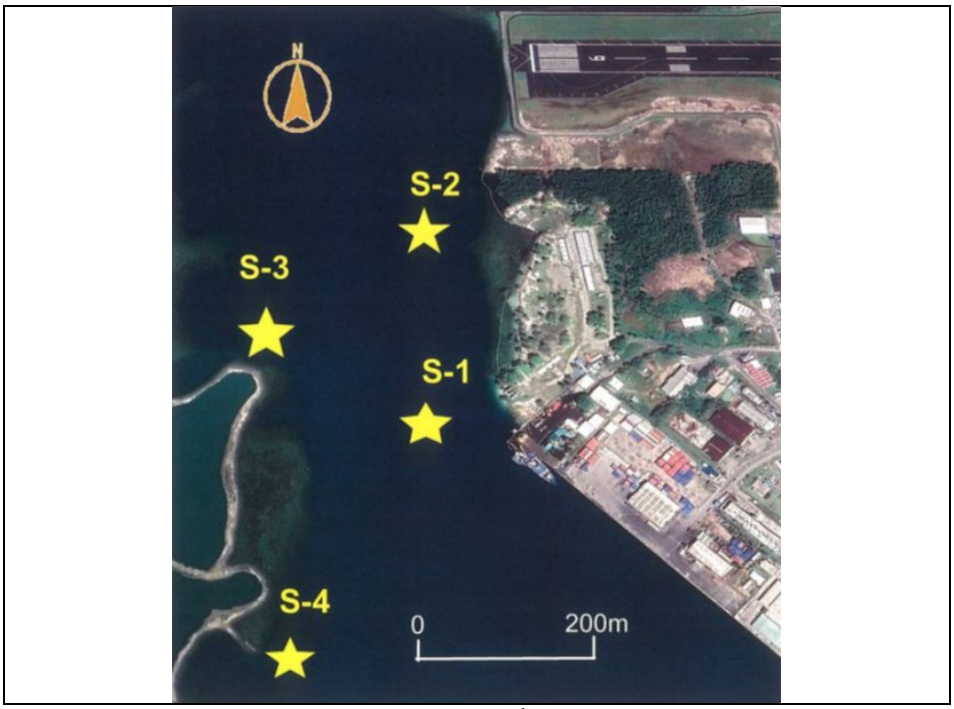
The planning of any future investigations should consider the following:

- Analysis for coliforms for the 'high tide' samples were not undertaken within the holding time (normally 24 hours) despite best efforts at timely transportation to Guam for testing. The results for the 'high tide' surface water sample where *E. coli* was reported higher than total coliforms suggest a potential issue in the reliability of the results. Should further indicative testing be required in the future, portable testing kit is likely to be the most feasible method on island. Pohnpei EPA may have access to these kits, although this requires to be confirmed.
- A laboratory with lower limits of reporting will be required to allow comparisons of zinc levels to the values stipulated in the Pohnpei MQS and Japan EQS standards.
- Above comments should be delivered as reference advisories for prior baseline survey stage by contractor, as well as for further monitoring during construction and operation phases.

[Bottom Sediment Quality]

(1) First sediment survey

Firstly, in March 2023, the JICA Survey Team conducted a first sampling analysis survey of bottom sediment at four locations in the "surrounding waters" of the area scheduled for dredging (as shown in the sample collection points S-1 to S-4 by latitude and longitude in Figure 6. 6 and Table 6. 9). At the beginning, the JICA Survey Team decided not to conduct a direct sediment quality analysis survey in the area scheduled for dredging because it was covered with coral reef vegetation, to avoid collecting samples that would directly damage the coral reef.



Note: Google Earth (25th January, 2022)

Figure 6. 6 First Bottom Sediment Quality Survey, Sample Collection Points (S1 – S4, March 20, 2023)

Table 6. 8 First Bottom Sediment Quality Survey, Sample Collection Points (Longitude, Latitude)

Point	Latitude	Longitude	Depth to seabed (m)	Sample Description
S-1	6°58'51.731828962''N	158°11'58.681539890''E	16	Mud
S-2	6°58'56.671313045''N	158°11'57.257093400''E	19	Mud
S-3	6°58'53.188785017''N	158°11'51.845305860''E	12	Mud, Broken Coral
S-4	6°58'45.062789006''N	158°11'53.628626900''E	10	Mud

Notes:

Coordinates are presented in degrees, minutes, seconds (DMS), World Geodetic System 1984 (WGS84).

The subject parameters for chemical analysis of the collected samples are as shown in Table 6. 10.

Table 6. 9 Bottom Sediment Quality Survey, subject Parameters for Laboratory Analysis

No.	Subject Parameters for Laboratory Analysis
1	T-N: Total-Nitrogen
2	T-P: Total-Phosphors
3	T-S: Total Sulphur
4	Heavy metal：Arsenic (As), Cadmium (Cd), Chromium (Cr), Cupper (Cu), Lead (Pb), Nikkel (Ni), Zinc (Zn), Mercury (Hg)
5	Poly Chlorinated Biphenyl (PCBs)
6	Total Organic Compound (TOC)
7	Dichlorodiphenyltrichloroethane (DDT)
8	Polycyclic Aromatic Hydrocarbons (PAHs)
9	Dioxins
Note: Tributyltin and triphenyltin were not analyzed because the New Zealand laboratory where the chemical analysis was performed was unable to analyze organotins.	

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comparative analysis of the chemical analysis results obtained by the testing laboratories was conducted in light of the following international environmental standards. There are very few countries in the world that have established environmental standards for bottom sediment quality, and likewise, the Federated States of Micronesia and Pohnpei State have not established any relevant environmental standards applicable for reference.

Table 6. 10 Comparison of Environmental Standards for Sediment

No.	Applied Environmental Standard for Comparative Analysis	
	Country	Name of Environmental Standard
1	Japan	Sediment Quality Standard based on Law concerning Special Measures against Dioxins
2	USA	US Ministry of Commerce, National Oceanic and Atmospheric Administration (NOAA) Sediment Quality Guideline, ERL：Effects Range Level
3	Australia	NADG: National Assessment of Guidelines for Dredging) - Screening level
4	Canada	Canada Minister of Environment Council (CCME) SQG：Sediment Quality Guideline- ISQG：Interim Marine Sediment Quality Guideline PEL：Probable Effect Level

Below, summarizes the results of the chemical analysis by the laboratories of the first bottom sediment survey.

Table 6. 12 summarizes the results of chemical analyses conducted by the laboratories, in which values exceeding the above standards were detected. However, the Canadian PEL standard, indicated in red, is a standard that determines that there is a possibility of health hazards and that bottom sediments exceeding this standard should be removed.

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Table 6. 11 First Bottom Sediment Quality Survey Result

	Sample Name	Japan ES[1]	Japan Sediment Provisional Removal Criteria[2]	NOAA ERL[3]	Australian National Assessment Guidelines for Dredging ERL[4]	Canadian SQG[5]		S1	S2	S3	S4
	Lab Number					ISQG	PEL	3230835	3230835	3230835	3230835
Analyte	**Units**										
Material properties											
Description								SAND with some silt	Clayey SILT	Sandy SILT	Sandy SILT
Water content	%							55.3	123	73.2	119
Specific gravity (solid density)	t/m3							2.86	2.82	2.85	2.82
Sieve analysis											
0.063 mm	%							23	92	52	57
0.3 mm	%							74	99	90	93
2 mm	%							99	100	99	100
Unit weight*	kN/m3							18.07	12.41	16.14	12.63
Diameter 50%	mm							0.17	0.015	0.058	0.035
General											
Total Recoverable Phosphorus	mg/kg							1140	1180	620	1090
Total Recoverable Sulphur	mg/kg							< 20,000	< 20,000	< 20,000	< 20,000
Total Nitrogen	g/100g							0.13	0.16	0.06	0.14
Total Organic Carbon	g/100g							2.2	2.2	3.7	1.96
Heavy metals, trace As,Cd,Cr,Cu,Ni,Pb,Zn,Hg											
Total Recoverable Arsenic	mg/kg			8.2	20	**7.24**	41.6	**28**	**28**	**23**	**28**
Total Recoverable Cadmium	mg/kg			1.2	1.5	**0.7**	4.2	0.04	0.04	< 0.019	0.04
Total Recoverable Chromium	mg/kg			81	80	**52.3**	160	**93**	**110**	35	**99**
Total Recoverable Copper	mg/kg			34	65	**18.7**	108	16.1	17	5.4	14.9
Total Recoverable Lead	mg/kg			46.7	50	**30.2**	112	6.6	6.7	1.83	5
Total Recoverable Mercury	mg/kg		25	0.15	0.15	**0.13**	0.7	< 0.04	< 0.04	< 0.04	< 0.05
Total Recoverable Nickel	mg/kg			20.9	21			46	54	19.6	47
Total Recoverable Zinc	mg/kg			200	200	**124**	271	63	71	23	60

1 Japan Environmental Standard for bottom sediment

2 Japan Sediment Provisional Removal Criteria

3 National Oceanic Atmospheric Administration (NOAA), U.S. Department of Commerce, ERL (Effects Range-Low, screening level)

4 Australian Government, 2009. National Assessment Guidelines for Dredging. Screening Level (ERL).

5 Canadian Council of Minister of the Environment (CCME) Sediment Quality Guidelines (SQG) for the Protection of Aquatic Life. ISQG: Interim marine sediment quality guideline. PEL: probable effect level.

As a result of the first sediment survey, all four sampled locations, arsenic contamination found to be exceeding 8.2 mg/kg, which is the screening level ERL (Effects Range Low) value of the US NOAA guidelines, and likewise exceeding the screening level 20 mg/kg of the Australian National Assessment Guidelines (NADG) was confirmed (all 28 mg/kg for S-1, S-2, and S-4, and 23 mg/kg for S-3). Micronesia is an island nation formed entirely by volcanic activity, and the detection of arsenic contamination in all four locations is thought to be primarily influenced by this characteristic of naturally formed sediment caused by the volcanic activity. As background supporting information, similar arsenic contamination of the bottom sediment was confirmed as part of preparatory survey for revetment construction for the runway at the adjacent Pohnpei International Airport (on the opposite shore of the land adjacent to this project site), according to the Pohnpei State EPA. It is needless to say that this fact is evidence that strongly supports the proposition on possibility regarding sediment of natural origin due to volcanic activity.

In addition, contamination of nickel and chromium that relatively exceeded the applicable environmental standards was detected in three of the four locations where samples were collected, that is at S-1, S-2, and S-4 (see Table 6. 12) (refer to the orange marked boxes within the table). As projection, the following human-induced contamination can be assumed. Sources of pollution may include port activities, including boat maintenance, land-based sources (particularly waste disposal/landfills), and urban stormwater and river runoff. Naturally occurred concentrations of chromium and nickel in sediments from the wider region are unknown, but chromium and nickel concentrations are significantly higher (more than twice) than those reported for S-3. Low levels of PAHs were detected in S-1 and S-2, and high concentrations of dioxins were found in S-1, S-2, and S-4, although they were below environmental standards. This is considered to further suggest the possibility of anthropogenic contamination. PAHs and dioxins were thought to be generated from fuel combustion (automobiles, combustion fuels (wood, coal, oil)) and waste incineration.

(2) Second sediment survey

1) Content test

The method of use of dredged material from the study area (i.e., reuse of the dredged material being considered for reclamation material) must apply a method that will allow the applicant to obtain an earthwork permit from the Pohnpei State EPA in compliance with the Pohnpei State Civil Regulations. In order to meet this requirement, with respect to the bottom sediment survey, it was recommended that detailed sampling and chemical analysis be conducted as part of the pre-construction initiation phase, rather than based on the findings of a sample of bottom sediment around the dredging area that was analyzed at the test site during the first round of bottom sediment survey. In response, the JICA survey team conducted a second bottom sediment survey.

The target area of the above bottom sediment survey was the sea area in front of the proposed quay wall construction site, not the area to be dredged. In addition, the sample collected was mud accumulated on the seabed. Therefore, samples were taken from the ground of the proposed quay wall construction area to be dredged to investigate the arsenic, chromium and nickel content. Samples were collected from 10 sites as shown in Figure 6. 7: BH1 to BH6 onshore and SE1 to E4 offshore BH1 to BH6 were sampled from 0.5 m to 0.8 m and 1.0 m to 1.5 m below the ground surface by digging holes with a backhoe. SE3 and SE4 were sampled at the shoreline by a backhoe was placed and the arm was extended to collect samples. On the other hand, SE1 and SE2 were sampled by divers.

i) Analytical Results

The analytical results are shown in Table 6. 13. Those exceeding the Australian standard are shown in orange, and those exceeding the NOAA standard are shown in green.

Figure 6. 7 Sample collection location

Table 6. 12 Arsenic, chromium, and nickel content analysis results

			Total recoverable heavy metals- As, Cr, Ni		
		Material type	Arsenic	Chromium	Nickel
Sample Name	Lab Number	Units	mg/kg	mg/kg	mg/kg
NOAA ERL[1]			8.2	81	20.9
Australian National Assessment Guidelines for Dredging ERL[2]			20	80	21
Canadian SQG[3]	ISQG		7.24	52.3	-
	PEL		41.6	160	-
BH01 0.5	3489489.1	Coral SAND	9.9	27	11.3
BH01 0.9	3489489.2	SAND	1.5	8.2	2.8
BH02 0.7	3489489.3	Coral SAND	1.1	4.6	< 0.7
BH02 1.0	3489489.4	SILT	39	177	103
BH03 0.8	3489489.5	Coral SAND	< 0.7	4.5	0.9
BH03 1.0	3489489.6	SILT	27	61	37
BH04 1.2	3489489.7	Coral SAND	2.1	4.5	0.8
BH04 1.4	3489489.8	SILT	62	42	25
BH05 0.6	3489489.9	Coral SAND	3.2	5.9	1.6
BH05 1.2	3489489.1	SAND	27	59	33
BH06 0.6	3489489.12	Coral SAND	< 0.8	3.9	< 0.8
BH06 1.0	3489489.13	SILT	31	92	51
SE-3 Beach sand	3489489.2	SAND	0.9	4.8	< 0.8
SE-3 Coral sand	3489489.21	Coral SAND	13.8	11.1	5.2
SE-3 Finger coral	3489489.22	Crushed coral	31	14.2	12.1
SE-3 Coral rock	3489489.23	Crushed coral	9.4	9.6	6
SE-4 Beach sand	3489489.24	SAND	1.6	5.6	6.7
SE-4 Coral sand	3489489.25	Coral SAND	19.8	13.2	7.5
SE-4 Finger coral	3489489.26	Crushed coral	23	15.4	8
SE-4 Coral rock	3489489.27	Crushed coral	2.3	5	2.4
SE-1 Coral sand	3489489.28	Coral SAND	5.2	5.6	1.4
SE-1 Finger Coral	3489489.29	Crushed coral	1.9	2.3	2.2
SE-1 Coral rock	3489489.3	Crushed coral	3.6	6.6	3
SE-2 Coral sand	3489489.31	Coral SAND	5.1	5.9	2.1
SE-2 Finger coral	3489489.32	Crushed coral	0.8	0.8	0.6
SE-2 Coral rock	3489489.33	Crushed coral	1.2	1.2	1.5

ii) Analysis results of BH1 to BH6 in the land area

The numbers attached to the sampling location names (BH1 to BH6) indicate the depth from the ground surface of the sampling location. At all sampling locations, samples taken deeper than 1.0m below the ground surface are silt, with arsenic and nickel contents exceeding Australian standards, and chromium levels also high. On the other hand, the sample collected at a shallower depth than 1.0m is coral sand, and it is found that arsenic, chromium, and nickel are all below the standard values (BH10.5 is coral sand, but arsenic is below the NOAA standard value). However, the value is lower than that of silt at other locations.

In this way, it can be seen that on land, there is a layer containing three types of heavy metals beneath the 1m-thick sand layer from the ground surface. According to people who know this place, before the resort facility called Misco Beach was built, it was a mangrove forest, and when the resort was developed, the mangroves were cut down and covered with sand to become a resort area. Therefore, it is thought that the heavy metals contained in this silt layer were contained in the mangroves that grew at this location, and that this is considered to be humus.

Figure 6. 8 Photo of silt layer (BH2 1.0)

iii) Shoreline section (SE3 and SE4)
Four types of samples are being analyzed from the coral reef in front of the shoreline: sand, coral sand, branched coral, and coral gravel. The analysis results show that the chromium and nickel contents in all samples are below the standard values. On the other hand, the arsenic content exceeds NOAA standards, except in sand (which is thought to be covered sand brought in from outside), and in rod corals it exceeds Australian standards.

iv) Coral reefs in the ocean (SE1, SE2)
The contents of the three heavy metals in all samples of coral sand, coral rods, and coral gravel at both SE1 and SE2 sites are below NOAA standard values.

v) Summary of analysis results
Since it was confirmed that the chromium and nickel contents at all other sampling points, except for the sample 1.0m from the ground surface on land, were below the standard values, we will now discuss the analysis results regarding arsenic. For consideration, Figure 6.9 summarizes the results of sediment surveys to date to show the relationship between arsenic content and sample collection locations.

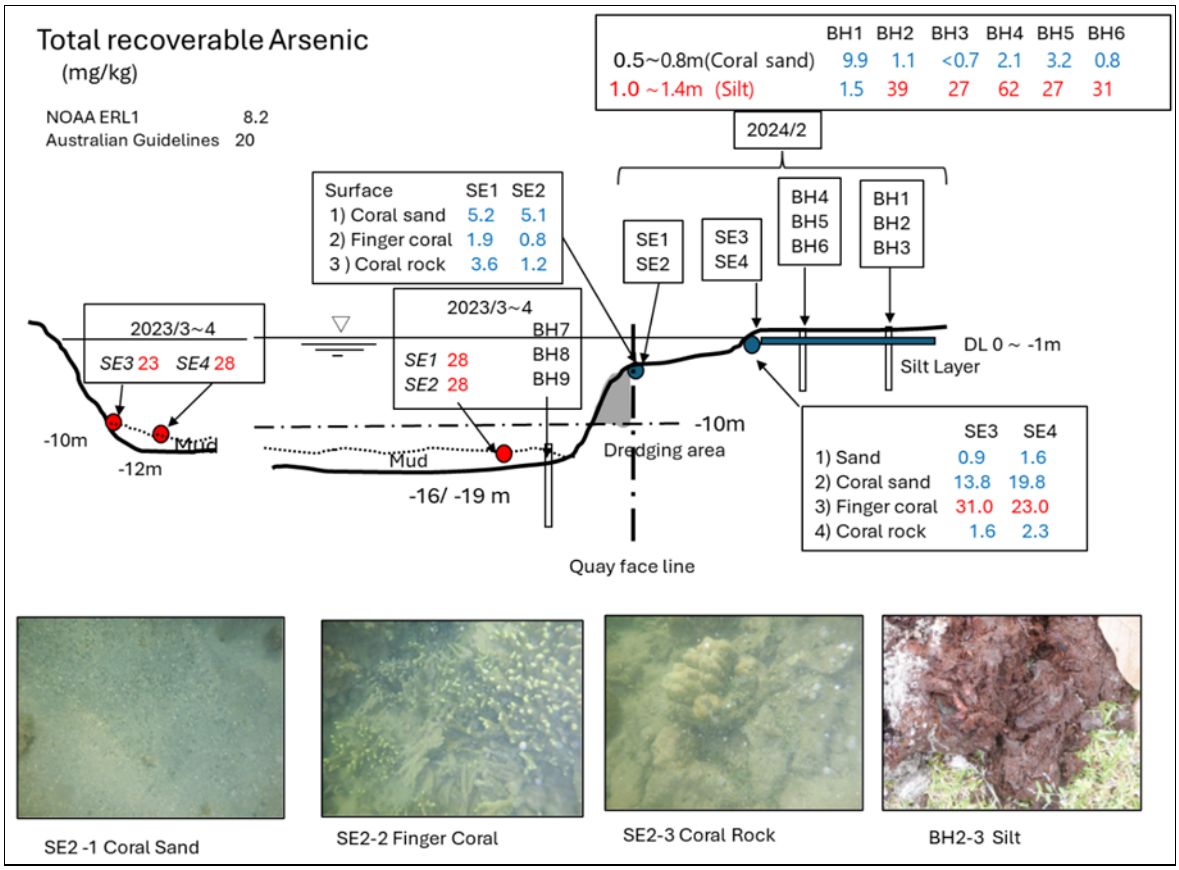

Figure 6. 9 Summary of sediment sample collection locations and arsenic content analysis results

The following can be grasped from the analysis results.

- The 1.0m surface layer of the land area of the project site is sand brought in from outside, and the arsenic content is extremely small. There is a silt layer cut down to less than 1.0 m below the ground surface, and this layer has high contents of arsenic, chromium, and nickel. According to the results of the boring of BH4 conducted in the first field survey, it is described as 2.45 to 5.5 m, WOOD, and Brown, and the thickness of the silt layer shown in Figure 6.9 is estimated to be at least 1.0 m. The difference in the depth of the silt layer between this survey and the boring results is due to the different depth reference points.
- The sample collection depth near the shoreline (SE3, SE4) is the same depth as the silt layer found on land, and the coral reef samples collected with a backhoe have arsenic-containing silt attached to the surface. It is thought that it was the reason why the arsenic content of coral rock is lower than that of finger coral is thought to be due to the smaller surface area relative to the sample weight.
- The arsenic content of all samples (SE1, SE2) collected at the tip of the coral reef at a depth of -3m to -5m is well below the standard value. At these two locations, divers collect samples of the coral reef itself, so there is less chance of silt being mixed in compared to other locations. Therefore, the analysis results are thought to indicate the amount of arsenic contained in the coral reef itself.

vi) Inferences from analysis results

From the above analysis results, it is estimated that the source of heavy metals contained in the bottom sediment at the project site is the silt layer located 1 to 3 meters below the ground surface on land. If the silt layer, or mangrove humus, is a source of heavy metals, it is reasonable that the bottom sediment survey during the first field survey found that the seafloor mud contained heavy metals that exceeded the standard values (Pohnpei). As the name suggests, the area around Mangrove Bay, where the port is located, is covered with mangroves. These mangroves grow in volcanic soil and accumulate heavy metals, and it is thought that the humus is accumulated on the sea floor.

vii) Consideration regarding heavy metal content of dredged soil

It was found that the surface sediments of coral reefs (sand, branch corals, and coral blocks) at two locations within the planned dredging area did not contain heavy metals exceeding standard values, and mangrove humus was found to be the source of heavy metals. It has become clear that there is a high possibility. The additional survey did not take samples from inside the reef, and it is essential to ensure that there are no deep silt layers in the areas targeted for dredging.

According to the results of the boring survey at 9 points in the first field survey, apart from the silt layer confirmed on the surface layer of the land area, there is coral sand and coral gravel up to DL-30m, and no silt layer was confirmed in the middle. In addition, volcanic sediment that is likely to contain heavy metals is located at a depth of DL-30m or deeper, and the bottom sediment in the dredging area is coral sand and coral gravel that do not contain silt, and the arsenic, chromium, and nickel content is at standard values. It is judged to be sufficiently below.

2) Elution amount test
In the content analysis, elution tests were conducted on samples whose secondary submission arsenic, chromium, and nickel contents exceeded the standard values. The analysis results are shown in the table below. BH01 to BH06 are mangrove humus soils located 0.5m to 1.4m above the surface of the land area of the project site, and these samples had concentrations of three metals, arsenic, chromium, and nickel, that exceeded the standard values. For chromium and nickel, the elution rate is below the respective measurement limits of 0.002 mg/L and 0.007 mg/L, which are below the standard value (0.01 mg/L, Japanese standard for the risk of groundwater ingestion). Regarding arsenic, only the BH06 sample had an elution amount of 0.012 mg/L, which was slightly higher than the elution standard value of 0.01 mg/L.

On the other hand, since the chromium and nickel contents of the samples collected at locations SE3 and SE4 near the shoreline were below the standard values, only arsenic elution tests were conducted. The analysis results showed that only Ciral Rock of SE3, which had the third highest content in the content test, was 0.013 mg/L, slightly exceeding the elution standard value of 0.01.

Thus, it is judged that there is no concern about chromium and nickel being leached. On the other hand, for arsenic, even if the content exceeded the standard value, in many samples the elution amount was below the standard value, and even when it exceeded the standard value, the value was only slightly above the standard value.

The criteria used for this judgment are those for using groundwater, and considering that groundwater is not used within Pohnpei Port, the mangrove humus existing 1m to 2m from the surface layer of the ground at the project site It is judged that there is no need to take measures to block water seeping through the layer.

Table 6. 13 Elution amount test results

			Heavy metals- As, Cr, Ni [1]		
		Material type	Arsenic	Chromium	Nickel
Sample Name	Lab Number	Units	mg/L	mg/L	mg/L
Pohnpei seawater (background)	3489489	Seawater	<0.004	<0.002	<0.007
BH01 0.5	3489489.1	Coral SAND	<0.004	-	-
BH02 1.0	3489489.4	SILT	<0.004	<0.002	<0.007
BH03 1.0	3489489.6	SILT	0.004	<0.002	*In Progress**
BH04 1.4	3489489.8	SILT	0.006	<0.002	<0.007
BH05 1.2	3489489.1	SAND	<0.004	<0.002	<0.007
BH06 1.0	3489489.13	SILT	0.012	<0.002	<0.007
SE-3 Coral sand	3489489.21	Coral SAND	<0.004	-	-
SE-3 Finger coral	3489489.22	Crushed coral	<0.004	-	-
SE-3 Coral rock	3489489.23	Crushed coral	0.013	-	-
SE-4 Coral sand	3489489.25	Coral SAND	0.004	-	-
SE-4 Finger coral	3489489.26	Crushed coral	<0.004	-	-

[Marine Ecology]
From April 14th to 18th, 2023, the JICA study team conducted a marine ecosystem survey around the project site, Misko Beach (study area, as shown in the figure below).

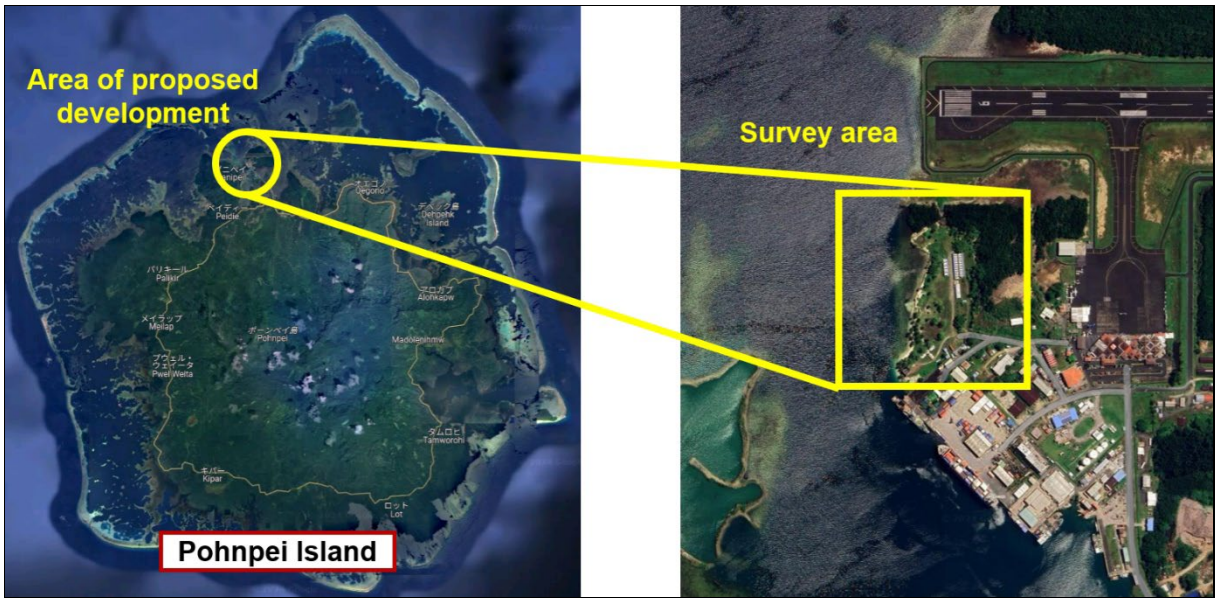

Figure 6. 10 Location of Project site in Pohnpei Island = Location area of Marine Ecology Survey

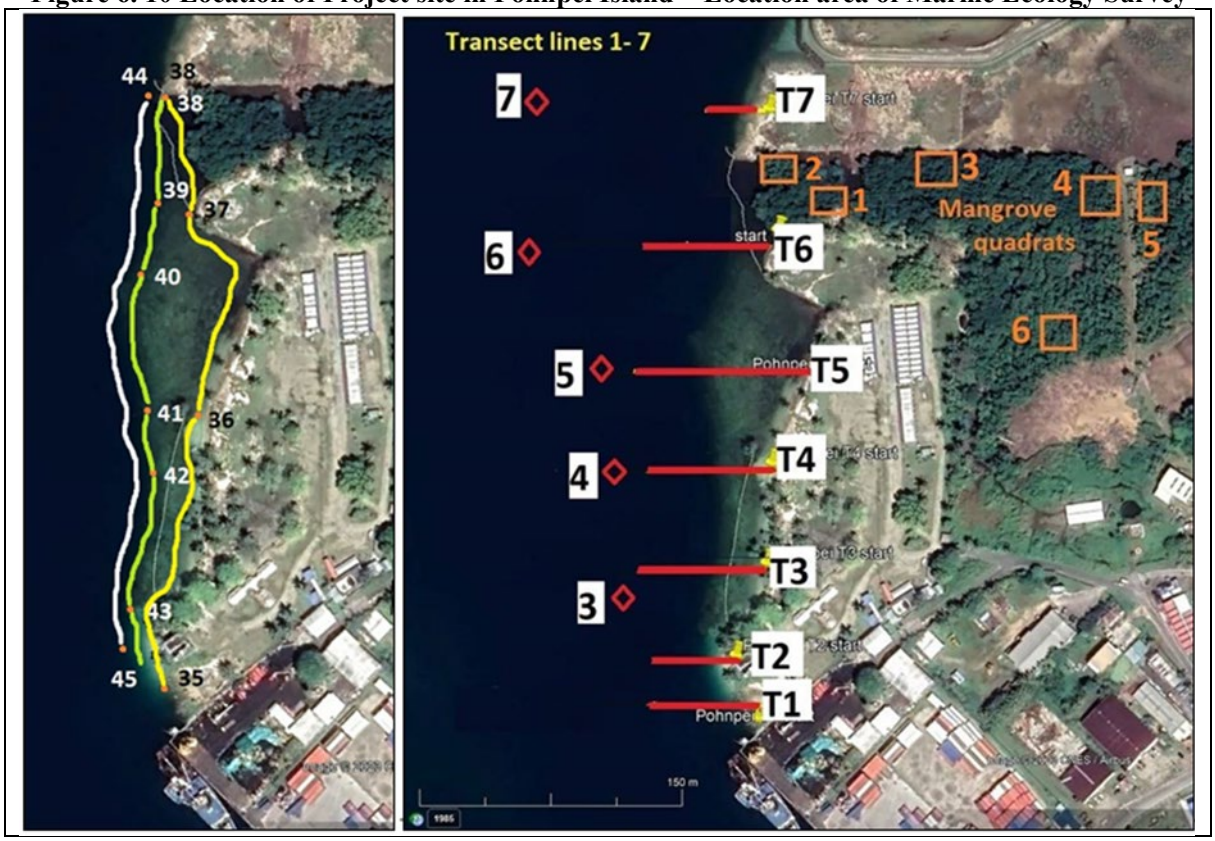

Figure 6. 11 Recorded route of conducted Manta Tow Survey (above left) and Transect lines of conducted Belt Transect Method Survey (above right)

This survey was conducted using the following three survey methods.
(1) Manta Tow Method
In manta tow method, a researcher towed by a boat identified and illustrated the distribution of mangroves, coral reefs, and seagrasses in the study area.

(2) Belt Transect Method
In belt transect method, survey divers observed and surveyed the status of benthic organisms on the seafloor and aquatic organisms in the sea, along with vegetation such as mangroves, coral reefs, and seaweeds, along a set belt (T1-T7) extending offshore from the coast.

(3) Quadrat Method
In the quadrat method, square frames (quadrat) of 1 square meter were randomly placed around areas with a large amount of vegetation. Each square frame was assigned a number, and the proportion of ecology within the frame was analyzed and recorded in detail according to the photographic record, etc., to determine the state and characteristics of the ecosystem at each survey point.

The results of the above surveys show the distribution of the ecosystem from coastal to offshore areas as shown in Figure 6.12 below.

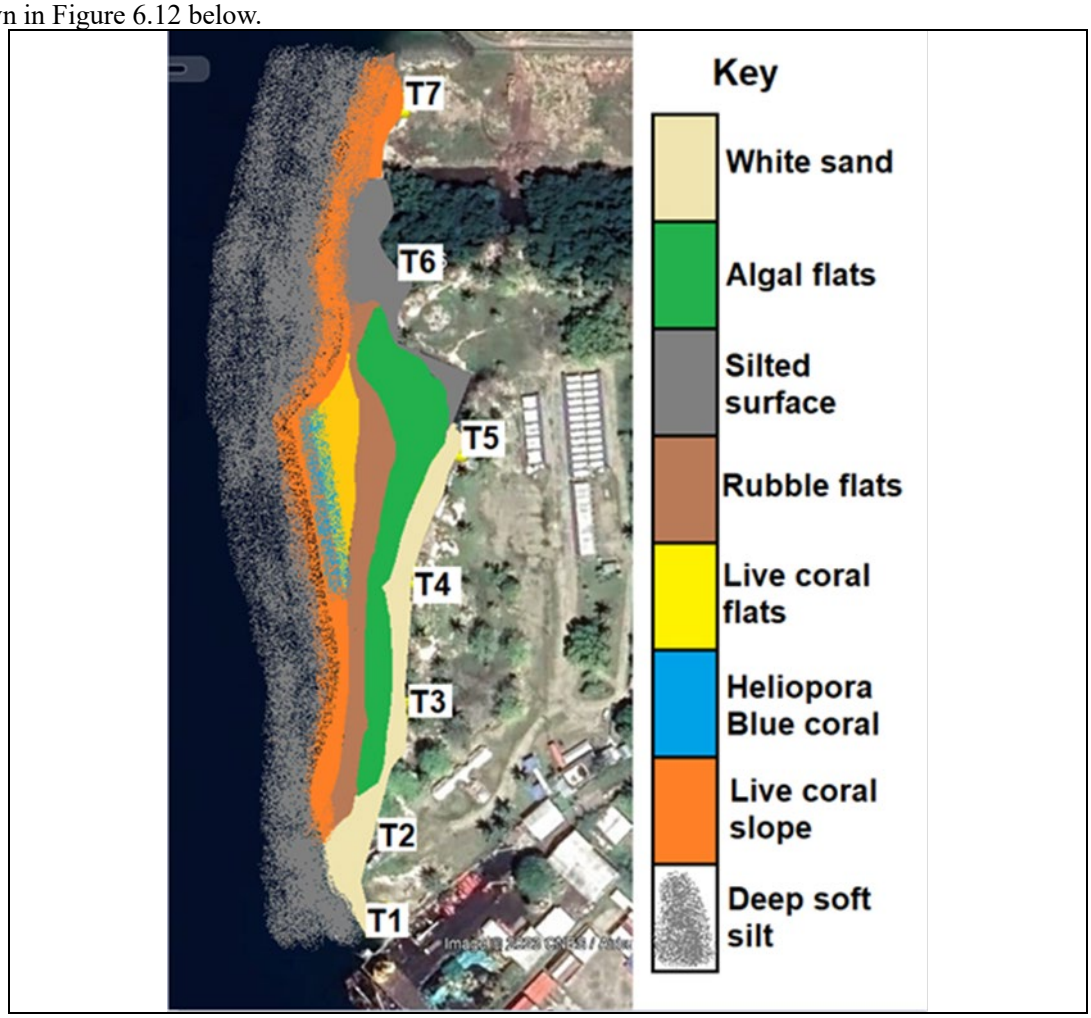

Figure 6. 12 Ecological situation around seashore and off-shore area of Misko Beach

The offshore area consists of sand and dead coral debris (Fig. 6.12 Deep soft slit), the inshore area consists of white sand (brought in from outside to create Misco Beach) (Fig. 6.12 Middle White sand), and the middle area (with some exceptions) is dominated by debris.
In the area where microalgae are distributed (green), *Padina pavonica* and *Halimaeda* were mainly observed.
In the area where living corals were distributed (yellow), about 30-50 m offshore from the coast, reefs of mainly Poritid corals and Montipora corals were observed. In addition, a 5m wide, approximately 70m long reef edge area of blue coral (*Helipora coerulea*), a Vulnerable (VU) species on the IUCN Red List, was observed (accounting for approximately 30% of the confirmed living coral reef area). In addition to blue corals, two VU species (*Pachyseris rugosa* and *Pectinia alcicornis*) and eight Near Threatened (NT) species were identified.

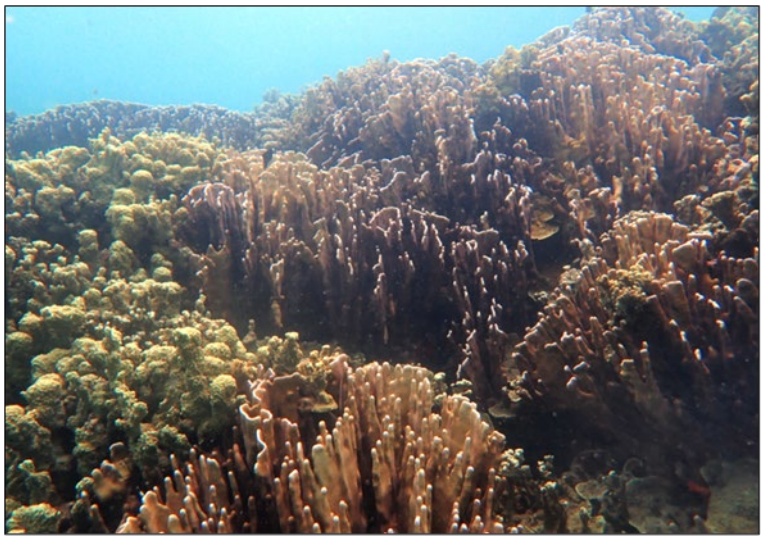

Figure 6. 13 Bule coral observed around 30-55m offshore at belt transects T4 – T5

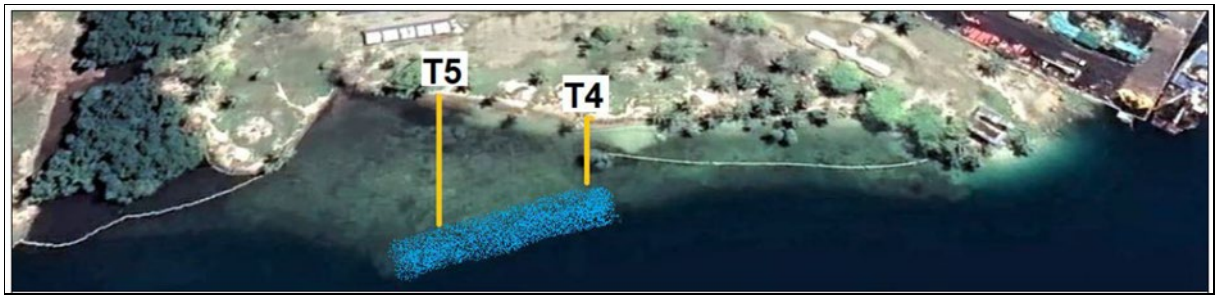

Figure 6. 14 Google Earth image showing the approximate position of blue coral belt*

*Approx.170 – 250m from existing port facilities, 35 – 70m from shore, between 1-3m deep, 5m wide 70m long

The results of the above coral survey were presented to the Pohnpei State Resource Development Department (R&D Department), which has jurisdiction over marine resource assessment, an EIA incidental environmental procedure. With regard to the blue corals, it was decided to resurvey the area to determine whether or not the coral community in the area qualifies as an ecologically important habitat. Thereafter, a resurvey was conducted by the R & D Department. As a result, it was concluded that blue corals are a common species in Pohnpei Province and no transplantation is required for dredging.

On the other hand, the above-mentioned R&D Department's re-survey was based on the survey results of 2005, and did not take into account the recent distribution status of blue corals in Pohnpei State. Therefore, in this preparatory survey, another survey of blue coral distribution in Pohnpei State, particularly in three protected areas (Mwahnd MPA, Parem, and Palkir Pass) (Figure 6.15), was conducted.

As a result, relatively large blue-green coral vegetation was identified in Mwahnd MPA, medium-sized vegetation in Paerem, and small-scale vegetation in Palikir Pass (Fig. 6. 16). Coral communities in Palkir Pass were also larger than those identified at the project site (○m x m).

Based on these results, it can be concluded that the project site is not an ecologically important habitat for blue corals.

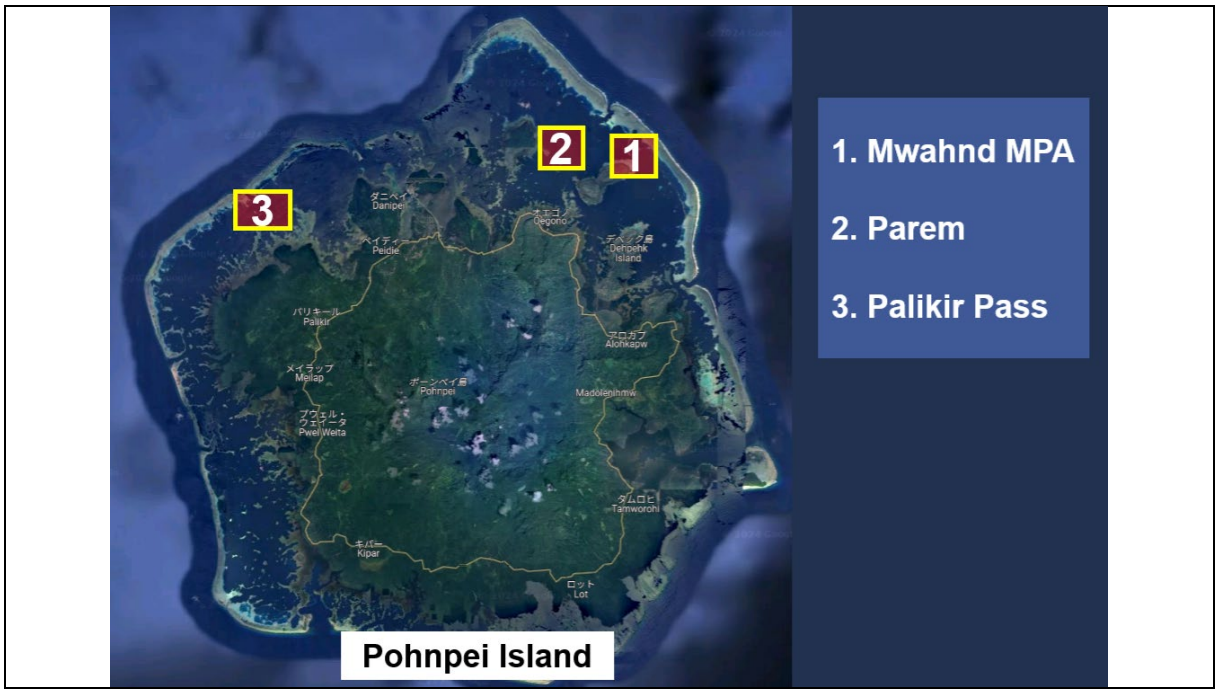

Figure 6. 15 Blue coral vegetation survey point in a protected area near Pohnpei Port

1. Relatively large-scale vegetation at water depths of 10m to 20m in the Mwahnd MPA.

2. Small-scale blue coral vegetation found in Parem

3. Medium-sized blue coral vegetation found in Palikir MPA

Figure 6. 16 Blue coral vegetation status in each protected area

In addition, interviews were conducted with coral experts in Japan and the U.S. to discuss environmental impact mitigation measures for corals, and the following opinions were obtained.

＜Shuichi Fujiwara, Technical Advisor, IDEA Consultants, Inc.

- There is no guideline for which category of corals on the IUCN Red List should be transplanted. Each country decides independently which coral species should be transplanted or not.
- If coral colonies of a certain size are lost due to development, transplanting is not often practiced in many foreign countries. On the other hand, transplantation is customary in Japan.

- Blue corals are relatively strong species and may survive transplantation.
- Blue corals have a short larval dispersal distance and may colonize close to the parent colony to form a colony for the following reasons.
  - Larvae settle within a short period of time after being released from the parent.
  - The larvae have poor swimming ability and low lipid content, so they have low buoyancy and tend to accumulate below.
- Blue corals are hermaphroditic larval nursery forms (i.e., both sexes live in the same individual). Therefore, random sampling and transplanting from as different groups as possible will allow various pairs to survive and increase the likelihood of survival as a whole.

＜Dr. Peter Houk, Marine Research Institute, University of Guam
(This institute conducts research on the biology of Pohnpei in cooperation with the Conservation Society of Pohnpei (CSP), an environmental conservation organization in Pohnpei.)

- Misko Beach is already designated as an industrial area, and the size of the blue coral colony is smaller than that of the protected area. Furthermore, there is a large blue-green coral colony that is several times larger than that of Misko Beach nearby. Therefore, there is no objection to the removal of the blue coral at Misko Beach.
- As for coral transplantation, Micronesia does not have sufficient technology. Therefore, the likelihood of successful transplantation is low.

The opinions of the above two experts can be summarized as follows.

- Coral transplantation is not necessary, and Micronesia does not have sufficient technology for coral transplantation, so the success rate of transplantation is low.
- On the other hand, in terms of global standards, Japan has been transplanting coral in similar cases.

Based on the above, partial transplantation of blue coral will be implemented as an environmental impact mitigation measure against blue coral removal at the project site.

As for fish, 92 species were identified in the seven transect belts surveyed in the dredged area. The highest number of fish species was identified in T4, with 43 species. The number of species identified in each transect belt is shown in Figure 6.20.

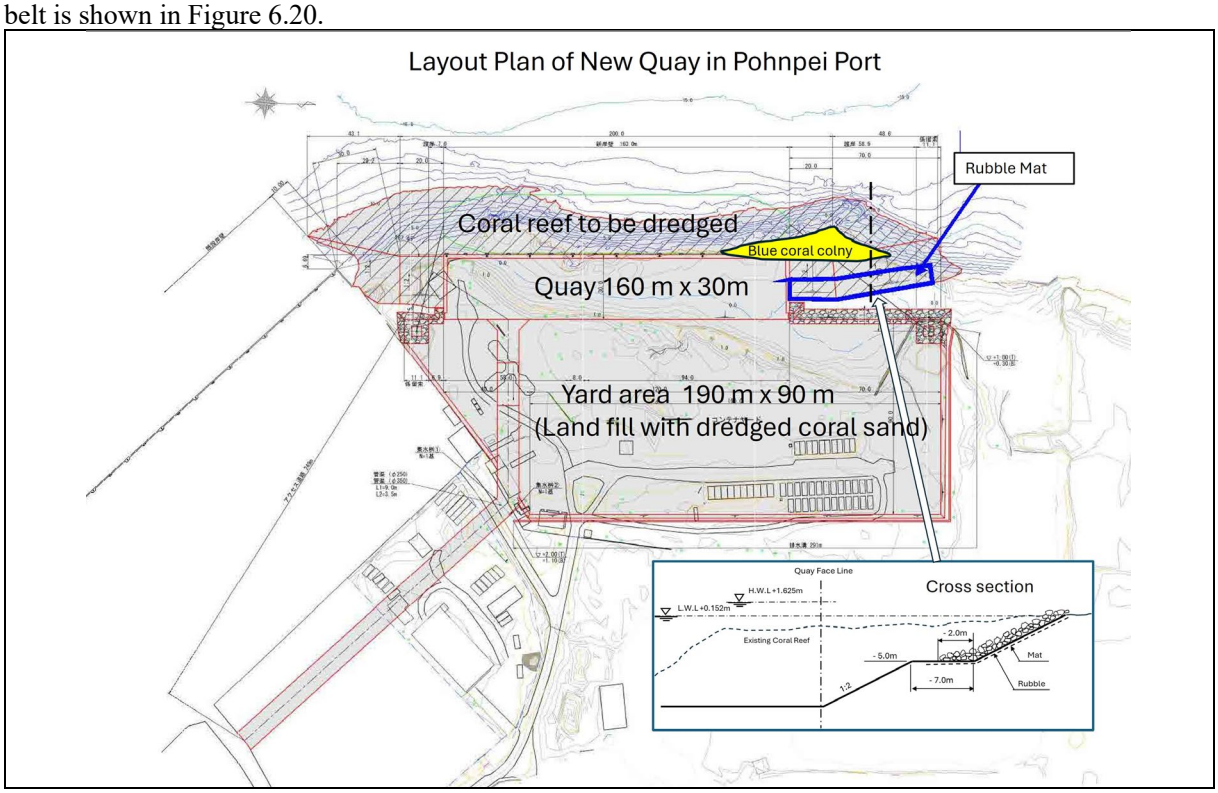

Figure 6. 17 Potential migration sites for blue coral

[Mangroves]

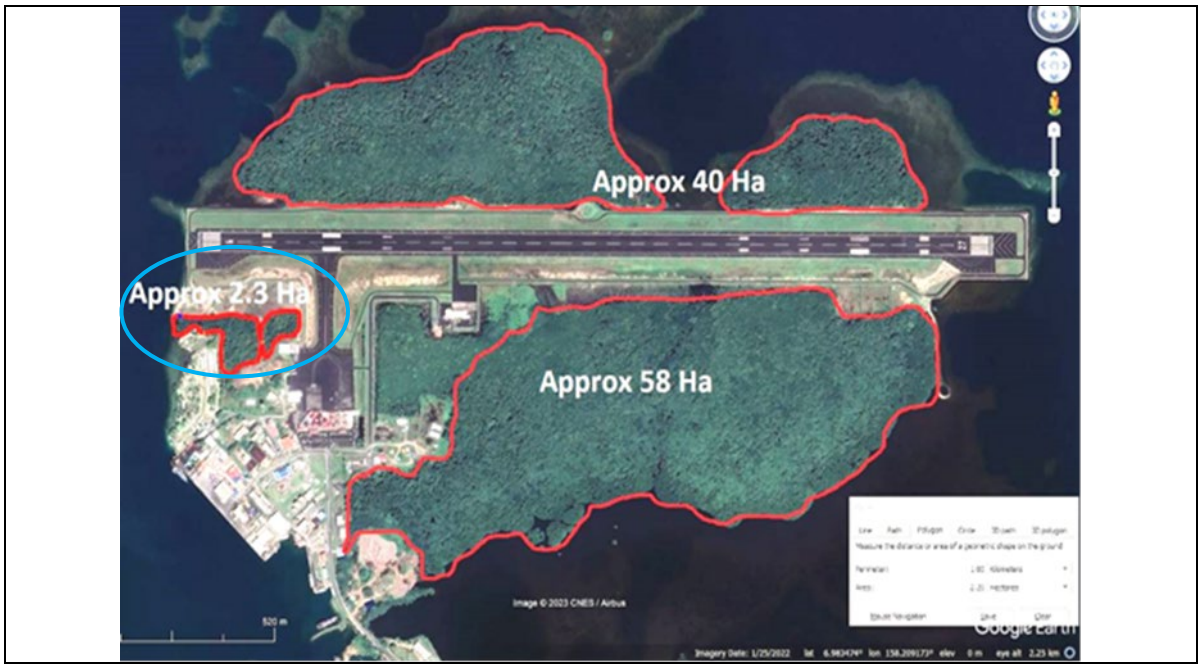

Figure 6. 18 Mangrove trees at Dekehtiki Island (The area circled in blue is the hinterland observed behind the project site)

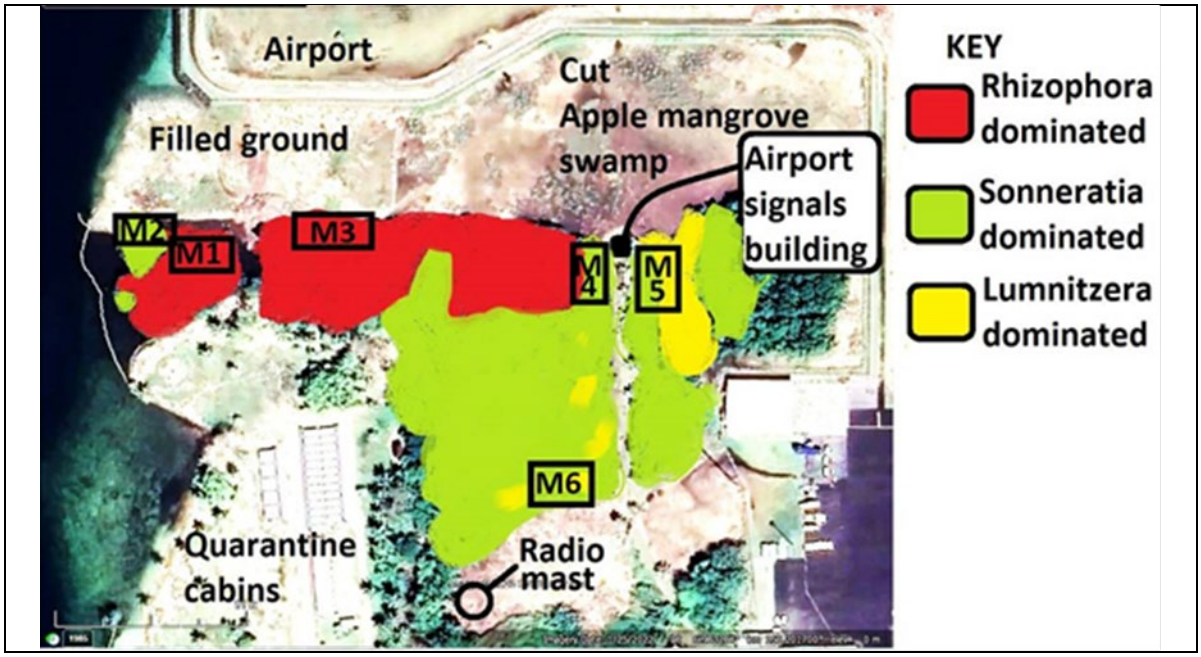

Figure 6. 19 The Mangrove trees observed at the hinterland of the project site and its species type (Assumed not to become a subject of impact)

Approximately 2.3 ha of land in the north and northeast of the project site is the hinterland of the project site covered with mangroves. Although it was subject to a subcontracted survey as a surrounding environment, it is regarded as an adjacent land that should not have any particular impact caused by the construction work of this project. The mangroves that could be observed were, as mentioned above, are species except that of rare species, such as Rhizophora that is vegetated along the stream (which is heavily affected by the ebb and flow of the tide) flowing from the coast to the airport signal building, and Sonneratia and Lumnitzera species that dominates the dry forest behind the site.

Regarding fish, 92 species of coral reef fish were identified in the seven transect belts surveyed in the dredged area, with the highest diversity in a single location, transect belt T4, at 43. The number of species identified in each transect belt is shown in Figure 6.20.

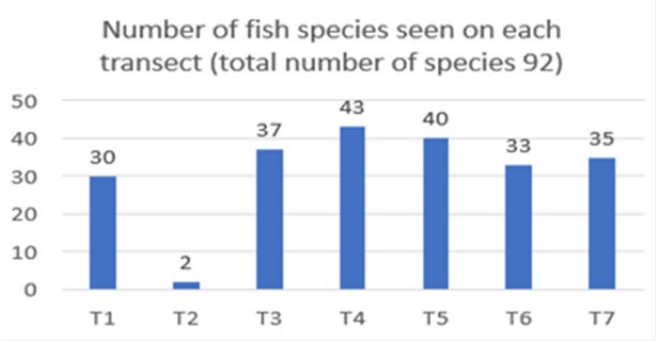

Figure 6. 20 Observed number of aquatic species according to surveyed Transect lines

The majority of fish species were small and of little value for fishing and were found on the reefs along the slopes from the reef edge to the shoreline.
The most frequently observed fish species were the Damselfish (*Chromis notata*, Pomacentridae family) and the Two-tone wrasse, (*Thalassoma amblycephalum*, Labridae family) followed by the Harlequin sweetlips (*Plectorhinchus chaetodonoides*, Haemulidae family), Pennant coralfish (*Heniochus acuminatus Linnaeus*, Chaetodontidae family), Semicircle angelfish (*Pomacanthus semicirculatus Cuvier*, Pomacanthidae family) .
The only fisheries-valued fish were a very small school of capelin, found only near the silty seafloor at depths of 10-14 m in front of the coral reefs at T56-T7, and not found on the slope where the coral reefs are distributed or on the seafloor in front of the existing quay wall.
Of these 92 species, 87 are classified as Least Concern (LC) on the IUCN Red List. One species, Humphead Wrasse (*Cheilinus latus*), is listed as Endangered (EN) (see Figure 6.21). Most of these identified fish species are not resident in any particular location, but rather migrate among the coral reefs in this area.
For Humphead Wrasse (*Cheilinus latus*), two juveniles (<20 cm in length) were observed in the lower part of the side wall north of the existing wharf near the shore of T1. However, the spawning site of this species is not a coral reef but a mangrove forest. Therefore, it is concluded that the project site is not a spawning site and that the species migrated from outside.

Figure 6. 21 Humphead Wrasse/ *Cheilinus latus*[4]

Based on the above results, the loss of coral reefs at the project site is expected to have a small impact on fish species in the waters surrounding Pohnpei Port.
On the other hand, the coral reefs at the project site provide a temporary home, feeding ground, and shelter for migrating fish. Based on this, it is desirable to install artificial reefs that resemble the shape of coral reefs as an environmental impact mitigation measure. Figure 6.17 shows the location and cross-sectional shape of the artificial reef construction. The artificial reef shall have the following structure
Approximately 70 m in length, with a flat section at approximately -5 m.
Rubble mats (a layer of broken stones about 1 m thick) will be installed from the flat area to the shoreline.

[4] The indicated picture of the Figure is not the actual picture taken when observed, but a sample picture due to poor visibility experienced at the site. The surveyor diver, nonetheless had definitely confirmed the subject species.

Dr. Houk of the University of Guam commented that the use of such Rubble Mat to create a fish habitat is highly recommended as an environmental impact mitigation measure.

No other aquatic species classified as semi-threatened or endangered were found. Tables 6.15-6.19 list the species of flora and fauna identified at the project site during the field survey (including IUCN category classifications).
In addition, including benthic organisms for which the existence of rare species such as Critically Endangered (CN) or Endangered (EN) species could not be identified, the list of flora and fauna species confirmed on this project site through the subcontracted survey shall be posted herewith, as shown in Table 6. 15 to Table 6. 19 (including IUCN category classification), but further details will be omitted.

Species Census from Transect lines

Table 6. 14 List of Coral Species identified

Life form	Genus/ species	Degree Certainty	T1	T2	T3	T4	T5	T6	T7	Red List status
ACB	*Acropora divaricata*	6	X							NT
OT	*Cirrhipathes sp (Wire)*	6					X			Not evaluated
CE	*Coeloseris mayeri*	10	X							LC
CMM	*Diploastrea heliopora*	10				X	X			NT
CMM	*Favia speciosa*	6						X		LC
CMR	*Fungia fungites*	10	X			X	X			NT
CB	*Galaxea horrescens*	10					X			LC
CS	*Heliopora coerulea*	10				X	X			VU
CS	*Pachyseris rugosa*	7						X	X	VU
CF	*Pachyseris speciosa*	10				X		X		LC
CS	*Pectinia alcicornis*	9			X	X		X		VU
CB	*Pectinia teres*	9						X		NT
OT	*Plerogyra sinuosa*	10			X		X			NT
OT	*Plerogyra sp (Bubble)*	7					X			Not evaluated
CS	*Pocillopora damicornis*	10	X				X	X		LC
CB	*Porites cylindrica*	10			X	X	X			NT
CMM	*Porites lutea*	7	X		X			X		LC
CMM	*Porites lobata*	7	X		X		X	X		NT
CS	*Porites rus*	10	X				X	X	X	LC
CE	*Porites rus*	10	X		X	X	X	X	X	LC
CE	*Porites vaughani*	7					X			LC
CS	*Montipora digitata*	7					X			LC
CF	*Mycedium elephantotus*	10				X				LC
CF	*Psammocora contigua*	10	X					X		NT
CF	*Turbinaria frondens*	7			X					LC

Table 6. 15 List of Macro-Algae and Sea Grass Species identified

Common name	Genus/ species	Degree cert.	T1	T2	T3	T4	T5	T6	T7	Red List Status
Sea-grapes	*Caulerpa racemosa*	1					X			Not evld
Red filamentous algae	*Cyanobacteria*	3					X			Not evld
Isolated seagrass	*Enhalus acoroides*	2	X							LC
Halimeda crumpled	*Halimeda cuneata f. undulata*	1	X		X	X	X	X		Not evld
Halimeda small	*Halimeda opunta*	1	X		X	X	X			Not evld
Halimeda large	*Halimedes macroloba*	2			X	X	X			Not evld
Orange layers	*Lobophora variegata*	3			X				X	Not evld
Caterpillar weed	*Neomeris annulata*	2			X		X			Not evld
Scroll algae	*Padina sanctae crucis*	1			X	X	X			Not evld
Y branching algae	*Algal assemblage*	4					X			Not evld

Table 6. 16 List of Macro-Invertebrate Species identified

Common name	Genus/ species	Degree Cert.	T1	T2	T3	T4	T5	T6	T7	Red List status
Crown of Thorns starfish	*Acanthaster planci*	1					X			Not evld
Sand anemone	*Actiniaria sp*	4					X			Not evld
Sand sifting starfish	*Astropecten polyacanthus*	1		X						Not evld
Pincushion starfish	*Culcita novaeguineae*	1		X						Not evld
Lollyfish Sea Cucumber	*Holothuria atra*	1					X			LC
Snakefish Sea Cucumber	*Holothuria coluber*	2						X		LC
Pinkfish Sea Cucumber	*Holothuria edulis*	1	X							LC
Flower-foot Sea Cucumber	*Pearsonothuria graeffei*	1				X				LC
Sponge: red encrusting	*Porifera sp*	4	X	X						Not evld
Sponge: grey encrusting	*Porifera sp*	4		X						Not evld
Sponge: pink rope	*Porifera sp*	4	X							Not evld
Sponge: grey prickly rope	*Porifera sp*	4	X							Not evld
Sponge: orange rope	*Porifera sp*	4		X	X	X	X			Not evld
Sponge: purple nodules	*Porifera sp*	4		X						Not evld
Sponge: brown finger	*Porifera sp*	4					X	X		Not evld
Sponge: grey overgrowth	*Porifera sp*	4					X	X		Not evld
Sponge: red prickly	*Porifera sp*	4						X		Not evld
Sponge: silted fat rope	*Porifera sp*	4							X	Not evld
Tunicate / ascidian	*Rhopalaea sp*	4		X						Not evld
Feather duster worm	*Sabellastarte sp*	4	X				X			Not evld

Table 6. 17 List of Fish Species identified

Common name	Scientific name	T1	T2	T3	T4	T5	T6	T7	Redlist status
SURGEON/UNICORNFISH	*Acanthuridae*								
Blackstreak surgeon	*Acanthurus nigricauda*	X				X			LC
Convict surgeon	*Acanthurus triostegus*							X	LC
Dusky surgeon	*Acanthurus nigrofuscus*	X		X	X	X	X	X	LC
Ringtail surgeon	*Acanthurus blochii*	X		X	X		X	X	LC
Striped surgeon	*Acanthurus lineatus*						X		LC
Brushtail tang	*Zebrasoma scopas*			X	X	X	X	X	LC
Sailfin tang	*Zebrasoma veliferum*	X				X	X	X	LC
Spotted unicorn	*Naso brevirostris*	X							LC
Moorish idol	*Zanclus cornutus*	X		X			X	X	LC
CARDINALFISH	*Apogonidae*								
Lined / Wolf cardinal	*Cheilodipterus artus*			X	X				LC
Orangelined cardinal	*Taeniamia fucata*			X					LC
Slender cardinal	*Rhabdamia gracilis*			X					Not evld
Spurfin cardinal	*Pristiapogon fraenatus*			X					LC
Threadfin cardinal	*Zoramia leptacantha*				X	X			LC
Toothy cardinal	*Cheiliodipterus isostigmus*	X		X	X	X	X		Not evld
FILE / TRIGGERFISH	*Balistidae*								

Common name	Scientific name	T1	T2	T3	T4	T5	T6	T7	Redlist status
Broom filefish	*Amanses scopas*			X					LC
Orangestriped trigger	*Balistapus undulatus*				X			X	LC
Picasso trigger	*Rhinecanthus aculeatus*					X			LC
BLENNIES	*Blenniidae*								
Bicolor fanglblenny	*Plagiotremus laudandus*					X			LC
FUSILIERS	*Caesionidae sp*	X		X					Not evld
TREVALLY / JACKS[5]	*Carangidae*								
Blue jack	*Carangoides ferdau*						X		LC
Barcheek trevally	*Carangoides plagiotaenia*						X		LC
Brassy trevally	*Caranx papuensis*					X		X	LC
BUTTER/ BANNERFISH	*Chaetodontidae*								
Pennant banner	*Heniochus chrysostomus*					X		X	LC
Bennetts butterfly	*Chaetodon bennetti*							X	DD
Blackbacked butterfly	*Chaetodon melannotus*					X			LC
Klein's butterfly	*Chaetodon kleinii*	X				X			LC
Merten's butterfly	*Chaetodon mertensii*						X		LC
Pac. 2-saddled butterfly	*Chaetodon ulietensis*			X	X	X	X		LC
Racoon butterfly	*Chaetodon lunula*	X					X	X	LC
Redfin butterfly	*Chaetodon lunulatus*	X		X	X	X	X	X	LC
Saddled butterfly	*Chaetodon ephippium*			X	X	X		X	LC
HAWKFISH	*Cirrhitidae*								
GOBIES	*Gobiidae*								
Brownbarred goby	*Amblygobius phalaena*					X			LC
Rainford's Goby	*Amblygobius rainfordi*			X	X		X		LC
Pearly dartfish	*Pteroeleotris microlepis*		X						LC
SWEETLIPS	*Haemullidae*								
SOLDIER /SQUIRRELFISH	*Holocentridae*								
Brick Soldier	*Myripristis amaena*			X		X			LC
Bronze soldier	*Myripristis adusta*							X	LC
Epaulet soldier	*Myripristis kuntee*			X	X		X	X	LC
Whitetipped soldier	*Myripristis vittata*								LC
Blackspot squirrel	*Sargocentron melanospilos*				X				LC
Bloodspot squirrel	*Neoniphon sammara*				X	X		X	LC
Longjaw squirrel	*Sargocentron spiniferum*						X	X	LC
Samurai squirrel	*Sargocentron ittodai*	X					X		LC
WRASSE	*Labridae*								
Bicolor cleaner	*Labroides bicolor*				X	X			LC
Bluestreak cleaner	*Labroides dimidiatus*	X		X	X	X	X	X	LC
Bird wrasse	*Gomphosus varius*				X				LC
Blackedge thicklip	*Hemigymnus melapterus*					X			LC
Celebes wrasse	*Oxycheilinus celebicus*				X	X			LC
Crescent wrasse	*Thalassoma lunare*			X	X				LC
Geographic wrasse	*Anampses geographicus*						X		LC
Humphead wrasse	*Cheilinus undulatus*	X							EN
Pinstriped wrasse	*Halichoeres melanurus*	X		X	X	X	X	X	LC

[5] All Trevallies seen on the mud floor, not the reef flats or slopes

Common name	Scientific name	T1	T2	T3	T4	T5	T6	T7	Redlist status
Redbanded wrasse	*Cheilinus fasciatus*				X	X	X	X	LC
Sixbar wrasse	*Thalassoma hardwicke*			X	X	X		X	LC
Slingjaw wrasse	*Epibulus insidiator*				X				LC
Tubelip wrasse	*Labrichthys unilineatus*				X				LC
EMPORERS /BREAMS	*Lethrinidae*								
Thumbprint emperor	*Lethrinus harak*				X				LC
Orangestripe emperor	*Lethrinus obsoletus*				X				LC
Redfin bream	*Monotaxis heterodon*	X		X			X		LC
Striped monocle bream	*Scolopsis lineata*				X				LC
Yellowspot emperor	*Gnathodentex aureolineatus*	X		X					LC
SNAPPERS	*Lutjanidae*								
Bluelined snapper	*Lutjanus kasmira*	X						X	LC
Flametail snapper	*Lutjanus fulvus*	X					X	X	LC
Halfbarred snapper	*Lutjanus semicinctus*				X				LC
Twinspot snapper	*Lutjanus bohar*			X					LC
GOATFISH	*Mullidae*								
Dash & dot goat	*Parupeneus barberinus*	X						X	LC
Multibarred goat	*Parupeneus multifasciatus*	X		X		X	X		LC
Twobarred goat	*Parupeneus bifasciatus*	X							LC
Yellowfin goat	*Muloidichthys vanicolensis*					X			LC
Yellowstripe goat	*Mulloidichthys flavolineatus*						X		LC
TRUNKFISH	*Ostraciidae*								
SANDPERCHES	*Pinguipedidae*								
DAMSELS	*Pomacentridae*								
Bicolor chromis	*Chromis margaritifer*			X		X			LC
Bluegreen chromis	*Chromis viridis*			X	X	X	X		LC
Darkfin chromis	*Chromis atripes*							X	LC
Grey chromis	*Pomacentrus geminospilus*						X		Not evld
Ternate chromis	*Chromis ternatensis*			X		X			LC
Ambon damsel	*Pomacentrus amboinensis*			X	X				
Blue damsel	*Pomacentrus pavo*	X	X	X	X	X	X	X	LC
Blueback damsel	*Pomacentrus simsiang*				X				LC
Dusky gregory	*Stegastes nigricans*	X			X	X	X	X	LC
Johnston damsel	*Plectroglyphidodon johnstonianus*					X			LC
Lemon damsel[6]	*Pomacentrus moluccensis*			X		X			LC
Staghorn damsel	*Amblyglyphidodon curacao*	X		X	X	X	X	X	LC
Traceys damsel[7]	*Chrysiptera traceyi*			X	X		X	X	LC
White Band damsel	*Plectroglyphidodon leucozonus*	X		X		X			LC
Yellowtail demoiselle[8]	*Neopomacentrus azysron*							X	LC
Black-tailed dascyllus	*Dascyllus melanurus*				X	X			LC
Humbug dascyllus	*Dascyllus aruanus*	X			X		X	X	LC

[6] Colouring much more like Fiji/Tonga recently described endemic *Pomacentrus maafu* (Not Evaluated)
[7] Regional endemic
[8] Tail and rear fins white instead of yellow

Common name	Scientific name	T1	T2	T3	T4	T5	T6	T7	Redlist status
ANGELFISH	*Pomacanthidae*								
Bicolor angel	*Centropyge bicolor*								LC
Pearl-scaled angel	*Centropyge vrolki*			X	X			X	LC
Regal angel	*Pygoplites diacanthus*			X	X	X			LC
BIGEYES	*Priacanthidae*								
PARROTFISH	*Scaridae*								
Bleeker's parrot	*Scarus bleekeri*				X			X	LC
Bullethead parrot	*Scarus sordidus*			X	X	X	X	X	LC
Pacific longnose parrot	*Hipposcarus longiceps*				X				LC
MACKEREL & TUNA	*Scombridae*								
SCORPION & LIONFISH	Scorpaenidae								
GROUPERS & ANTHIAS	Serranidae								
Flagtail grouper	Cephalopholis urodeta					X			LC
RABBITFISH	Sigonids								
Masked rabbitfish	Siganus puellus	X			X				LC
Pencilstreaked rabbit	Siganus doliatus	X						X	LC
BARRACUDA	Sphyraenidae								
PIPEFISH	Syngnathidae								
PUFFERFISH	Tetradonitidae								
RUDDERFISH	Kyphosidae								
Highfin rudderfish	Kyphosus cinerascens	X							LC
SHARKS, RAYS, EELS	Elasmidae								

Data from Mangrove Quadrats

Table 6. 18 List of Mangrove and Associate Species identified

Common name	Genus/ species	M1	M2	M3	M4	M5	M6	Red List
Loop-root mangrove	*Rhizophora mucronata / stylosa*		X	X				LC / LC
Stilt mangrove	*Rhizophora apiculata*	X		X	X			LC
Apple mangrove	*Sonneratia alba*		X		X	X	X	LC
Flowered mangrove	*Lumnitzera littorea*					X	X	LC
Puzzlenut tree	*Xylocarpus granatum*	Along shore near start T2						LC
Poison-fish tree	*Barringtonia asiatica*	In between start T1 and T2						LC
Beach Hibiscus	*Hibiscus tiliaceus*	Outer edges of main forest						LC

Girth at Breast Height (GBH) / Diameter at Breast Height (DBH) / Basal Area in plot (BA)

1-8 Impact Assessment Result

Table 7. 1 Impact Assessment results

Category	No.	Impact item	Impact Assessment				Reason on Assessment
			at Scoping stage		based on study result		
			Prior/ During Constructi	During Operation	Prior/ During Constructi	During Operation	
Pollution Control	1	Air quality	-/ ✓	-	-/B-	D	During const: Exhaust gas from construction equipment, vehicles, and transport vehicles, and dust from removal of excavated soil from the construction site are expected to be generated. During operation: No heavy machinery or other equipment that could affect air quality will be used, so no impact is expected.
	2	Water Quality	-/ ✓	✓	-/B-	D	During Const: Turbidity may be caused by dredging, etc. During operation: Impacts are not expected.
	3	Soil contamination	-/ ✓	✓	-/B-	D	During Const: Measures are required to prevent leakage from the source to outside the system. During operation: No impact is expected as countermeasures will be taken to prevent leakage.
	6	Noise	-/ ✓	-	-/B-	D	During Const: Noise generation from heavy machinery is expected, but the impact is thought to be limited as the neighboring residential area is approximately 800m away. During operation: Impacts are not expected as heavy machinery is not used.
	7	Land Subsidence	-/-	✓	-/ B-	B-	During Const: There is no expectation that the construction will cause ground subsidence. During operation: It is necessary to check for long-term land subsidence.
	8	Odor	-/ ✓	-	-/ B-	D	During Const: Odors may be generated from temporary storage of dredged material, wastewater, and general waste. During operation: No impact is expected as there is no temporary storage or drainage and no general waste is generated.
	9	Bottom Sediment	-/ ✓	✓	-/B-	D	During Const: Possible runoff from onshore mangrove corrosion layer containing heavy metals above standard values. During operation: No impact is expected as measures above is taken.
Natural Environment	11	Ecosystem	-/ ✓	✓	-/ B-	D	During Const: Dredging may cause turbidity and diffusion effects. All vegetation of VU species of blue coral and two other coral species will disappear as a result of the dredging project. However, the project site does not qualify as ecologically important habitat for blue corals. In addition, two juvenile Humphead Wrasse (*Cheilinus latus*) of EN species were observed. However, the project site is not a spawning ground, and

Category	No.	Impact item	Impact Assessment				Reason on Assessment
			at Scoping stage		based on study result		
			Prior/ During Constructi	During Operation	Prior/ During Constructi	During Operation	
							these were considered to have migrated from outside. Therefore, the project site is not considered to be an ecologically important habitat, and impacts from the loss of coral reefs at the site are not expected. During operation: No impact is expected as construction which generates turbidity is not implemented.
	12	Natural Resource	-/ ✓	-	-/ B-	D	Prior Const: The environmental permitting status of construction material suppliers is required. During operation: No impact is expected as material supply is not necessary.
	13	Hydrological Situation	-/ ✓	✓	-/ B-	D	During Const: Water quality changes need to be confirmed. During operation: No impact is expected, as construction which change the hydrological situation is not implemented.
	14	Topography & Geography	-/-	✓	-/ B-	D	Prior Const: As baseline information, there is necessity to confirm on the current shoreline situation. During operation: No impact is expected as construction which change the coast line is not implemented.
Social Environment	19	Social Unrest	-/ ✓	✓	-/ B-	D	During Const: The impact on local traditional fishermen needs to be confirmed. During operation: No impact is expected as construction which causes the impact to fishery is not implemented.
	27	Gender	-/ ✓	-	-/ B-	D	During Const: Gender sensitive consideration of equal employment opportunities for construction workers needs to be confirmed. During operation: No impact is expected, as construction with employment is not implemented.
	28	Working Environment	-/ ✓	-	-/ B-	D	During Const: The EHS must be confirmed. During operation: No impact is expected, as construction which needs confirmation of working environment is not implemented.
Others	29	Impact during construction phase	-/ ✓	-	-/ B-	D	During Const: It is necessary to confirm that appropriate environmental management and mitigation measures and monitoring are in place. During operation: No impact is expected, as construction which needs confirmation of above condition is not implemented.

Category	No.	Impact item	Impact Assessment				Reason on Assessment
			at Scoping stage		based on study result		
			Prior/ During Constructi	During Operation	Prior/ During Constructi	During Operation	
	30	Accident prevention measures	-/ ✓	-	-/ B-	D	During Const: It is necessary to confirm that measures are in place to direct traffic and provide security on land and at sea. During operation: No impact is expected as construction which needs above measures is not implemented.
	32	Monitoring	-/ ✓	-/ ✓	-/ B-	D	During Const: Compliance with ancillary conditions of the environmental permit needs to be verified. During operation: No impact is expected, as additional conditions for environmental permit is cleared.

1-9 Mitigation Measures and Estimated Cost:

Table 8. 1 Mitigation Measures and Estimated Cost

No.	Items (Impacts)	Proposed Mitigation Measures	Implementing Organization	Responsible Organization	Cost
Before Construction :					
12	Natural resource	When procuring materials that require the mining of original natural resources, we will confirm in advance whether the mining site has obtained environmental permits such as EIAs and earthwork permits, and whether the validity period of these permits is appropriate for this project.	Contractors	PPA	Included in construction cost
During Construction:					
1	Ambient air quality	Sprinkle water at the construction site.	Contractors	PPA	Included in construction cost
2	Water Quality	Visually check for turbidity and if turbidity is expected to occur due to construction, reduce its spread by silt protectors. Periodically check the strength of turbidity by instrumental measurement.	Contractors	PPA	Included in construction cost
3	Soil	Install an earth retaining revetment with broken stones to prevent reclaimed soil from flowing out to the sea.	Contractors	PPA	Included in construction cost
6	Noise	Reduce noise by using a vibrohammer when driving steel pipes.	Contractor	PPA	Included in construction cost
7	Ground subsidence	Periodically check for visual settlement.	Contractor	PPA	Included in construction cost
8	Odor	Designate and publicize temporary storage sites for waste (general and special), and periodically check for proper disposal of waste when it is taken out of the system. When temporarily storing dredged soil, take measures to prevent the diffusion of odors outside the site.	Contractor	PPA	Included in construction cost
9	Sediment	Proper treatment and disposal of dredged soil, including diversion of dredged soil to landfill material and consideration of construction methods to prevent soil from being discharged into the ocean.	Contractor	PPA	Included in construction cost
11	Ecosystem	Given the significant loss of blue coral, a portion will be transplanted to nearby protected areas prior to the dredging work. The growth conditions of the transplanted coral will be regularly monitored. The dredging will result in the loss of coral reefs that serve as habitats for fish species moving between reefs	Contractor	PPA	Included in construction cost

No.	Items (Impacts)	Proposed Mitigation Measures	Implementing Organization	Responsible Organization	Cost
		within the bay. As a substitute, the 70-meter-long coastal area adjacent to the new quay will be shaped similarly to the existing terrain. The slope will feature a flat section at a depth of approximately 5 meters, with a Rubble Mat (a mat-like layer of broken stones laid to a thickness of 1 meter) installed from the flat section to the shoreline.			
12	Natural Resource	Construction materials will be procured from locations that have obtained environmental permits.	Contractor	PPA	Included in construction cost
13	Hydrological Situation	Periodically check for changes in current conditions in the surrounding waters due to the construction.	Contractor	PPA	Included in construction cost
14	Topography & Geography	Periodic checks will be made to ensure that there are no changes in the shoreline of the surrounding sea area as a result of the construction.	Contractor	PPA	Included in construction cost
19	Social Unrest	Periodic checks will be made to determine if the construction has affected the fishing industry in the surrounding waters.	Contractor	PPA	Included in construction cost
27	Gender	When hiring construction workers, be aware of equal employment opportunities for men and women.	Contractor	PPA	Included in construction cost
28	Working Environment	Periodic audits of construction workers' compliance with environmental, health, and safety standards.	Contractor	PPA	Included in construction cost
29	Impact during construction phase	Regularly check that appropriate mitigation and monitoring measures are in place.	Contractor	PPA	Included in construction cost
30	Accident prevention measures	In cooperation with the local police, provide traffic control personnel on access roads and other roads to the project site.	Contractor	PPA	Included in construction cost
32	Monitoring	Periodic checks to ensure that the conditions attached to the environmental permit are being complied with.	Contractor	PPA	Included in construction cost
During operation					
7	Ground subsidence	Check to see if settlement has occurred over the long term.	PPA	PPA	Included in operating expenses

1-10 Environmental Management and Monitoring Plan

Table 9. 1 Monitoring Plan

Env. Item	Analyzing item: parameter, etc.	Monitoring Stations	Frequency	Responsible Agencies	Supervising Institutions	Cost
Air Quality	SPM (PM_{10}, SO_2, NO_2), Equipment measurement	Construction area boundary, residential area boundary	During const. once a week	Contractor	PPA, Pohnpei EPA	Included in construction cost
Water Quality	Turbidity Visual observation, Equipment measurement	Two locations around the area scheduled for dredging (one location is a blue coral distribution area and the other location is an offshore area that will not be affected by dredging and reclamation work)	Once before construction During construction: Once a week during construction where muddy conditions occur.	Contractor	PPA, Pohnpei EPA	
Soil	Outflow from outside the system, Visual observation	Sea area around the construction area	Under construction: every rainy day	Contractor	PPA	
Noise	Noise (dB), equipment measurement	Construction area boundary, Residential area boundary	During Const: Once a week and once a day during construction that produces loud noises	Contractor	PPA, Pohnpei EPA	
Land Subsidence	Land subsidence situation, Visual confirmation	Inside the construction area	During Const: Once a month	Contractor	PPA	
Odor	Visual check	Inside the construction area	During Const: Once a week	Contractor	PPA	
Sediment	Appropriate management of dredged soil Measures to prevent ocean spills Visual	Inside the construction area	During Const: Once a week	Contractor	PPA	

Env. Item	Analyzing item: parameter, etc.	Monitoring Stations	Frequency	Responsible Agencies	Supervising Institutions	Cost
	confirmation					
Ecology	Coral and Humphead Wrasse status Diving visual observation	Around the construction area	Under construction: every six months	Contractor	PPA, Pohnpei EPA	
Waste	Status of securing temporary storage space, management, proper disposal, etc. Visual confirmation	Inside the construction area	During Const: Once a week	Contractor	PPA, Pohnpei State Department of Health and Public Services	
Natural resources	License status of material suppliers, Visual confirmation	Pohnpei State	Dring construction: every six months	Contractor	PPA	
Hydrology	Changes in flow conditions in surrounding waters Visual confirmation	Around the construction area	During construction: every six months	Contractor	PPA	
Topography and Geography	Coastline changes Visual confirmation	Around the construction area	During construction: every six months	Contractor	PPA	
Social Unrest	Impact of traditional fishermen on fishing grounds Confirmation through hearing etc.	Around the construction area	During construction: every six months	Contractor	PPA	
Gender	Employment status Confirmation through hearing etc.	Around the construction area	During construction: every six months	Contractor	PPA	
Working Environment	1. Compliance with EHS activities 2. Implementation of HIV/AIDS control programs Visual confirmation	Inside the construction area	During construction: everyday & every six months	Contractor	PPA	
Impact during construction phase	Compliance with mitigation measures and implementation of monitoring Confirmation with report	Inside the construction area	During construction: once a month	Contractor	PPA	
Accident prevention measures	Traffic director placement status Visual	Around the construction area	During construction: once a week	Contractor	PPA	

Env. Item	Analyzing item: parameter, etc.	Monitoring Stations	Frequency	Responsible Agencies	Supervising Institutions	Cost
	confirmation					
Monitoring	Compliance status with additional conditions Confirmation with report	Inside the construction area	During construction: once a month	Contractor	PPA	

1-10 Implementation Structure

The environmental monitoring system during the construction phase is as follows. Note that only subsidence items are applicable to the environmental monitoring items during operation. Therefore, the implementation policy is briefly added below.

a) During the construction stage, the contractor will carry out environmental monitoring and environmental management as necessary for all monitoring items in accordance with the IA/EIA-based environmental management plan (including environmental monitoring plan) (EMP/EMoP). The results will be reported as an environmental monitoring report to the implementing agency (PPA) through the construction supervisor every quarter.
b) The implementing agency (PPA) will confirm the results of the monitoring report. If it is determined that there is a need to improve environmental monitoring and management in light of the requirements of the official EMP/EMoP, PPA, as a supervisory body, will issue instructions to the construction contractor through the construction supervisor to improve environmental monitoring and management.
c) Environmental monitoring reports on air quality, water quality, noise, and ecosystems will be reported by the PPA to the Pohnpei State Environmental Protection Agency (EPA), the supervisory authority. The Pohnpei State EPA will review the report and request the PPA to take necessary measures if there are any issues that require attention. In response to this, PPA will deal with any matters that should be dealt with by itself. If the matter is related to construction, the PPA will issue instructions through the construction manager to ensure that the construction supervisor takes appropriate action.
d) Regarding waste among environmental items, PPA will report on the environmental monitoring of the area to the Pohnpei State Health and Public Service Department, which is the supervisory authority. The Pohnpei State Health and Public Service Department will review the contents of the report and, if there are any matters that require action, will issue instructions to the PPA to take the necessary actions. In response to this, the PPA will issue instructions to the construction company through the construction supervisor to request appropriate measures.
e) PPA will submit an environmental monitoring report to the Micronesia Office based on the JICA monitoring report writing guidelines. JICA will review the contents of the report and, if any problems are found in light of the official EMP/EMoP and JICA guidelines, request the PPA to take necessary measures.

Figure 10. 1 illustrates the flow of environmental monitoring among related organizations related to the environmental monitoring and management system during the construction stage. In addition, in this project, which is a grant aid project, there is no official environmental monitoring supervision work (environmental monitoring report review) by the construction supervisor, so the construction company is essentially responsible for all environmental management and monitoring work. (The construction supervisor only confirms the contents of the report, reports to the PPA, and notifies the construction company of environmental monitoring and management improvement requests by the PPA as necessary).

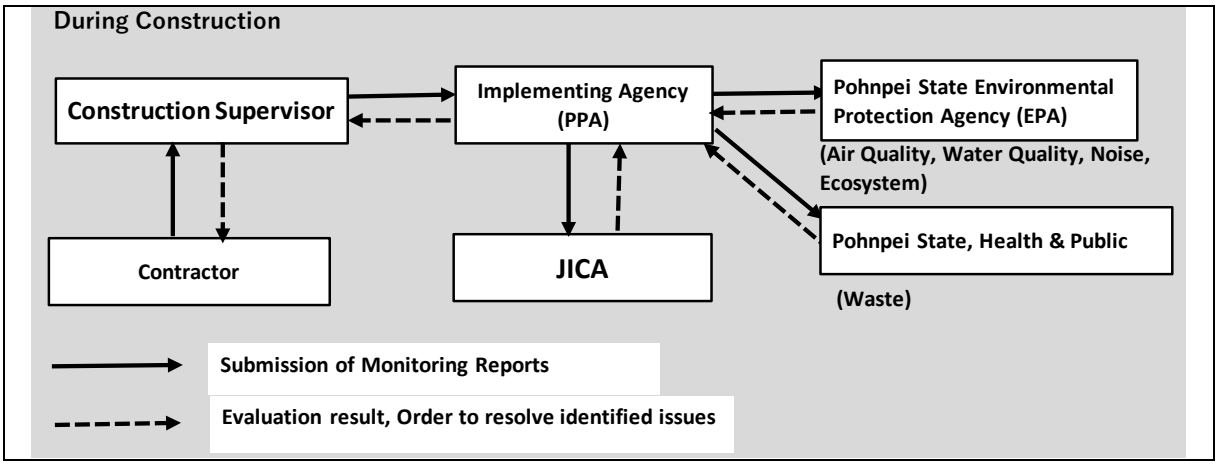

Figure 10. 1 Environmental monitoring/management planning system/organizational chart (construction stage)

Please note that environmental monitoring during the post-operation stage will only be conducted regarding ground subsidence, and will be carried out as part of PPA's facility management operations. Additionally, if

an abnormality is discovered as a result of the monitoring, PPA will take the initiative to take necessary measures. Environmental monitoring and management results related to the presence or absence of ground subsidence caused by the PPA, countermeasures, etc. will be reported directly from the PPA to the JICA Micronesia Office for two years after the project is put into service.

On the other hand, the grievance handling mechanism will be implemented based on the flowchart below.

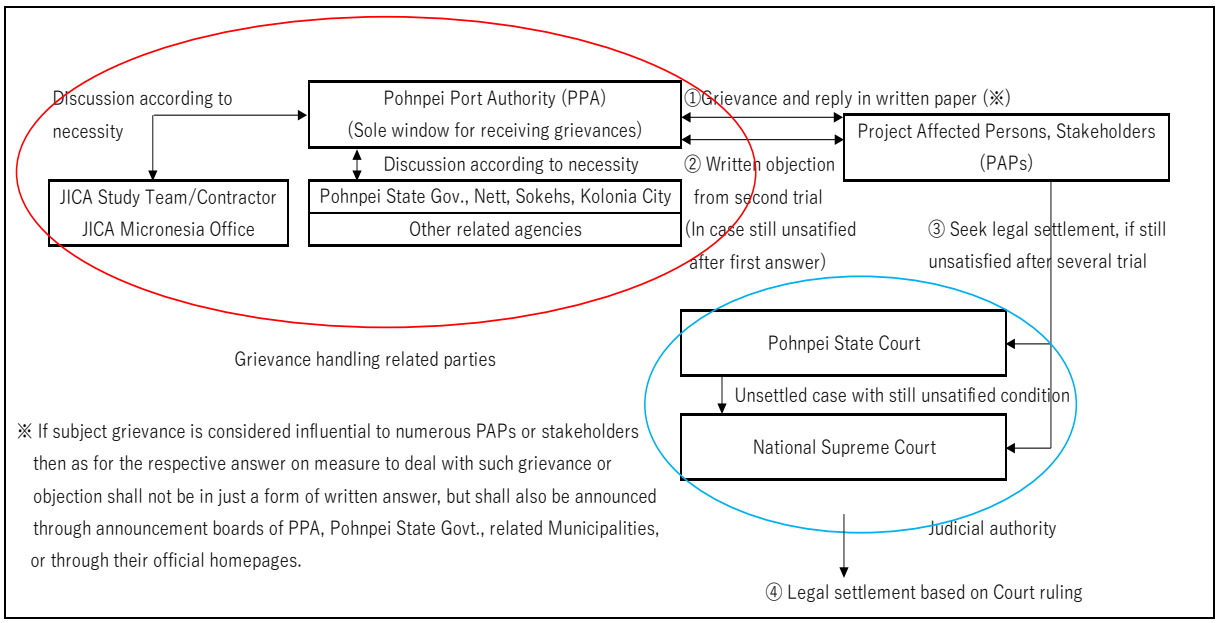

Figure 10. 2 Grievance mechanism flowchart

Points to note regarding the grievance handling mechanism are as follows:

a) The PPA, which is the business owner, will serve as the central point of contact for receiving complaints.
b) Complaints made by parties filing complaints or objections to PPA, as well as responses from PPA, will be accepted and processed in writing.
c) PPA will consult with local governments, related organizations, and JICA to discuss countermeasures, as necessary.
d) Responses to countermeasures for complaints that are expected to have a wide-ranging impact on affected residents and stakeholders will be disseminated through posting on the PPA, the bulletin board of the relevant local government, or on the homepage of the relevant organization.
e) If the party making the complaint/objection is not satisfied even after the second and subsequent objections are answered, the complaint/objection party may file a lawsuit through judicial procedures to the Pohnpei State District Court, then to the National Supreme Court, or be adjudicated by one of the courts. It is assumed that the problem will be resolved through
f) Furthermore, the JICA Study Team/JICA Micronesia Office will not commit to consultations with PPAs regarding complaint handling for the period after 2 years from the date of operation when JICA environmental monitoring reports are required.

1-11. Consultation with Stakeholders

(1) Stakeholder analysis

Table 11. 1 Stakeholder analysis

Categorization	No.	Name of Stakeholder	Assumed impact	Mitigation measure, other remarks
Project Owner	1	PPA：Pohnpei Port Authority	Project implementing main actor	1. EIA implementation body (through outsourcing to EIA consultant), has the obligation to apply for other environmental supplementary procedures and obtain various related permits and licenses. 2. Public hearings as part of EIA must be held at the pleasure of the Pohnpei State EPA and must be co-hosted with the same authority.
Related Municipal Governments	2	Pohnpei State Government	Likewise, to PPA, the State Government shall also become the main project promoting actor	The Governor of Pohnpei State has confirmed his intention to fully support this project. One of the Statutory stakeholders required to be invited to the public hearing.
	3	Nett Municipal Government	Jurisdictional municipality where the project site is located	One of Statutory stakeholders to be invited to the public hearing
	4	Sokehs Municipal Government	Apart from positive impact to local economy, there are needs to pay attention to the possibility of negative impact by noise intensity and possible negative impact on fishing for the residents of Sokehs village and traditional fishermen.	1. Since the project site is located in Sokehs village, the target municipality is required to convene a public hearing as a legal stakeholder. 2. Requires environmental and social monitoring both during construction and after operation
	5	Kolonia Municipal Government	Positive impact on local economy by implementation of the Pohnpei Port Expansion Plan Project.	Shall not be required to invite to the Public Hearing
Related Authority	6	Office of Transportation and Infrastructure <T & I Office>, Pohnpei State	1. Domestic Shipping Authority of Pohnpei State 2. Japanese Grant Assistance EN Agreement co-signee	One of the Statutory stakeholders required to be invited to the public hearing.
	7	Department of Land, Pohnpei State	Land authority of Pohnpei State	Same as above
	8	Pohnpei State EPA：Environmental Protection Authority	Environmental protection and EIA authority of Pohnpei State	1. Pohnpei state EIA authority. The EIA procedure ultimately requires environmental approval from the Pohnpei State EPA Board. 2. The Pohnpei State EPA will decide whether or not it is necessary to hold a public hearing

				as part of the Pohnpei State EIA process, and if so, it will co-sponsor the public hearing with PPA. 3. There is a legal obligation to comply with EPA's wishes regarding handling and disposal of contaminated sediment and dredged material.
	9	Pohnpei State Department of Research & Development <R & D>	The competent authorities for (1) Marine Resource Assessment and (2) Forestry Approval, which are part of the environmental supplementary procedures.	1. Mandatory obligation to invite to public hearing as one of statutory stakeholders 2. Regarding the impact on blue coral above all, there is a need to comply with the will of the authorities.
	10	Pohnpei State Historical Conservation Office）	Pohnpei State authority of Historical Conservation Approval	No cultural heritage remains that may violate historic preservation permits have been identified at the project site. However, for implementation of this project, there is an obligation to obtain the subject approval.
	11	Pohnpei State Office of Health and Public Services	The project site has a temporary isolation facility (container) for coronavirus patients, which must be removed by the Office before construction begins.	Since the Office is not directly related to this project, they are not eligible for a public hearing. Official request to the Office for removal of these temporary isolations facilities for coronavirus patients must be issued.
The beneficiaries	12	Caroline Fishing Co （CFC）	A fishing company that exclusively uses part of the cargo ship wharf	Official request to relocate fishing boat mooring location must be issued
	13	Federated Shipping Company （FSCO）	Cargo handling company at existing wharf	It will be necessary to change the cargo handling method. There is a need to invite the company to the EIA stakeholder consultation.
	14	FSM Petro Corp. (FPC)	Oil import and sales company	Construction of a fuel oil supply pipeline will be required. There is a need to invite the company to the EIA stakeholder consultation.
Environmental NGO	14	CSP: Conservation Society of Pohnpei	It is one of the major environmental NGOs that is extremely knowledgeable about the local ecological situation, so it requires attention. However, the NGO frequently receives orders from the Pohnpei State R&D Bureau for regular and irregular ecosystem surveys, and has a cooperative relationship with the authorities.	1. Requires consideration as subject to invite to the public hearings related to EIA 2. Depending on the situation, the NGO may also become a candidate for ecosystem surveys related to this project and/or as EIA consultant based on decision by PPA.
Project Affected	15	Sokehs village	The potential impact on noise	1. For the public hearing on the

Persons (PAPs)		residents	intensity associated with the construction work should be taken into consideration.	EIA, representatives of the Sokehs Autonomous Government and the affected population will be invited to attend. 2. Noise intensity monitoring will be required during construction stage as well as operation phase
	16	Sokehs village traditional fishermen	1. It is necessary to pay attention to the possibility of direct and indirect impacts on fishing grounds, depending on the regulation of fishing grounds during construction, the dispersion of earth and sand due to dredging and reclamation work, and the possibility of affecting the turbidity of surrounding waters. 2. There is a possibility that the fish catch and income of traditional fishermen may be affected during the construction and after operation phases.	1. For the public hearing on the EIA, representatives of the Sokehs Autonomous Government and the traditional fishermen of Sokehs village will be invited. 2. Water quality monitoring is necessary during the construction stage 3.. Monitoring of statistics on the fish catch and income of traditional fishermen (=possible impact on traditional fishermen's livelihoods) is necessary during the construction and after operation phases.
	17	Former hotel owner at Misko Beach	Land dispute over the project site have been resolved through resolution by the court, including compensation payment.	Land dispute over the project site have already been resolved through resolution by the court, and therefore, there is no need to invite the former hotel owner to the EIA public hearing.
	18	Former hotel rental residents in Misco Beach	Resettled after their payment according to rental agreement with former hotel owner	Residents who are obligated to make payments under rental contracts with hotel owners remain ineligible for compensation. No invitation to EIA public hearing required

(2) Stakeholder meeting

<Results of Preliminary Stakeholder Consultation Prior to IA/EIA>.

The Federated States of Micronesia explained that a local stakeholder meeting on the Project was held on April 16, 2024 in the conference room of the PPA General Office Building with stakeholders and local residents with special attention to those directly affected by the Project. The prior public notice was published in the Official Gazette and publicized through the respective bulletin boards at the entrances of the PPA Government Building, Pohnpei Provincial Government Building, and Sokehs City Hall, and the Sokehs City Government, at the request of the PPA, notified local fishermen by telephone.

During this stakeholder consultation, questions were raised as to whether there is a development plan for fishing activities at the Port, why there are no support facilities at the new wharf, and whether the IA/EIA process will proceed appropriately as scheduled, taking into account the local fishermen who will be affected. The consultant provided the following description of the project

- The project will provide the necessary quay for mooring of purse seiners and catch carriers. Other support facilities for fishing activities will be developed in the PPA in the future.
- As for the IA/EIA process and other ancillary environmental procedures, all applications are already in the preparation stage, in close communication with the various authorities concerned, and will be properly processed according to schedule.
- A separate formal IA/EIA-related public hearing will be held in the short term.

No objections to the implementation of the project were voiced during this consultation. See Attachment for details of the discussions during this stakeholder consultation.

<Schedule of official IA/EIA related public hearings>

- EIA and environmental ancillary procedural authorities need to be invited: Pohnpei State EPA, Bureau of Land, Bureau of R&D, Office of Historic Preservation
- The City of Nett is a statutory stakeholder that must be invited because it is the city with jurisdiction over the project site.
- On the other hand, Sokehs City is not a legal stakeholder, but is the home of traditional fishermen who may be directly or indirectly affected by the project due to noise from construction and potential impacts on fishing grounds, and therefore, Sokehs City representatives and representatives of Sokehs fishermen and residents are required to be invited and participated.
- Stakeholder consultations (public hearings) are expected to be held before this final report is completed, in anticipation of the time when the official IA/EIA procedures and ancillary environmental procedures have been filed and the draft JICA Environmental and Social Consideration Study Report, which corresponds to the EIA draft, is completed.

II. Land Acquisition & Involuntary Resettlement

1. Land Acquisition & Involuntary Resettlement related Legal Framework

Land Acquisition related legislation system in FSM

Basis Law:

(US Government Level)

- U.S. Secretarial Order No. 2969

(Federated States Level)

- Constitution of the Federated States of Micronesia
- Code of the Federated States of Micronesia
- Title 56: Government Property Acquisition, Federated States of Micronesia Annotated Code edition 2014
- Trust Territory Code (Already repealed code)
- Foreign Investment Act 1997 (inapplicable)

(Pohnpei State Level)

- Pohnpei Code
- Pohnpei State Law (D.L.) No. 4L-153-78 as amended Leases and Land Use Agreement on Public Trust Lands
- S.L. No. 1L-155-87 on Public Lands Act of 1987
- S.L. No. 5L-82-02 as amended designating certain public lands trust for lease of the Commission
- S.L. No. 21-224-91: Pohnpei Port Authority Act of 1991
- S.L. No. 1L-198-87: Transportation Zone Act of 1987
- S.L. No. 4L-130-99: Industrial Development Zone (Act of 1999?)
- S.L. No. 4 L-66-98: Planned Development Zone (Act of 1998?)

Common Law:

- Pohnpei Constitution for Civil Damages and Compensation related to Theft, Personal Injuries, Separation of Family Properties, Inheritance, and Inter-Clan Disputes

Under FSM, for some public lands, regardless of the state, the state government or public agency that owns the public land may enter into a long- to medium-term lease agreement (in Pohnpei State) with an individual, corporation, or public agency. Its use is permitted based on either a 25-year or 55-year contract (renewable up to 99 years).
Regarding public land issues in Pohnpei State, the Pohnpei Public Land Trust Board holds public hearings and enters into arbitration. If the issue is still not resolved, the issue will be resolved through legal means, including compulsory expropriation.

Land issues involving public land held by public agencies such as PPA, have been resolved and settled through state court arbitration (settlement) or civil litigation. Although land disputes brought by individuals of FSM nationality are decided only by state courts, in legal disputes involving corporations or foreigners, the authority is granted to appeal to the National Court.

2. Land Acquisition & Resettlement

Background of land acquisition

Dekehtik Island, where Pohnpei Airport and Port are located, was owned by the Etscheit family before the war. However, after World War II, it was unconditionally requisitioned by the U.S. military, and subsequently, under U.S. Secretarial Order No. 2969 and the Trust Territory Code enacted at the time, Micronesia (Pohnpei) was designated as U.S. trust territory. was returned to the state).

Later, the Transportation Zone Act of 1987 defined Pohnpei International Airport and Pohnpei Port as a "transportation zone." Furthermore, in 1994, under the Pohnpei Port Authority Act of 1991, which is the basis for establishing the PPA, all state public land and property in the "Transportation Zone" was transferred from the state government to the PPA. This is the legal basis for the PPA to manage this land.

On the other hand, even before the investigation into this project was conducted, a local woman who was a business associate of the Etscheit family had filed a lawsuit against the PPA, Pohnpei State, and the Public Land Trust Board. In response to the woman's complaint, the case was appealed to the state Supreme Court after a settlement was considered by the state court. As a result, on October 8, 2019, the Pohnpei State

Supreme Court (as a ruling in Appeal Case No. 11-19, PCA No. 349-06) decided that, subject to the payment of USD 300,000 by PPA, A ruling was made ordering the parties to relinquish their rights to land in the disputed area.

Furthermore, until 2018, six illegal residents from four households lived in the property (former hotel facility). However, because the residents were living under a rental agreement with the woman, the rental agreement was canceled at the same time as the woman surrendered the land to the PPA, and each of them voluntarily left the residence.

2-2. Grievance Redress Mechanism

As mentioned in the previous section, in terms of this project alone, the land acquisition and involuntary resettlement (which can be concluded shall no longer occur related to this project and therefore are inapplicable) have already been resolved, and related complaints should therefore not expect to occur.

Therefore, we propose the establishment of a tentative grievance mechanism (subject to prior approval from the PPA) as follows.

First, the PPA, as the project entity, will be responsible for receiving complaints from residents in the vicinity and other external parties during the construction phase, and complaints will be received in written form with the name, address, and signature of the complainant. The PPA will, if necessary, contact and consult with the state government and other state governments and related agencies regarding the nature and seriousness of the complaint, and will coordinate and decide on a solution to the complaint.

The decided solution will be widely publicized through bulletin boards at state government offices, PPA's website, etc., depending on the public nature and potential impact on all residents in the vicinity through consultations with the state government and other relevant agencies. Residents who receive an answer on the solution should be satisfied with the answer, but if no compromise is acceptable, the issue will be resolved through the judicial process, such as the State Court or the Supreme Court .

For the detailed flow of the grievance handling mechanism procedure, please refer to 10. Implementation Structure above.

The grievance redressal mechanism decided above will be disseminated through the state government's and PPA's websites.

1. 6 Implementation system

There shall no longer be any requirement of land acquisition nor involuntary resettlement, and therefore, this item is inapplicable.

1. 7 . Implementing schedule

Same as previous item (inapplicable)

1. 8 . Cost and financial resource

Same as previous item (inapplicable)

Attachment to Social and Environmental Consideration Report

[Environmental Checklist]
JICA Environmental Checklist 11: Ports and Harbors
Points to Note:

1. Answers should not be limited to only Yes/No, but the rationale of the answer and mitigation measures should also be described in the "Confirmation of Environmental Considerations" column.
2. If you have any questions about terminology, etc., please refer to "Japan International Cooperation Agency Guidelines For Environmental and Social Considerations (January 2022)" (the JICA Guidelines) and "Answers to Frequently Asked Questions about the Japan International Cooperation Agency Guidelines For Environmental and Social Considerations (January 2022)" (FAQ).

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1. Permits and Consultations	(1) Environmental Assessment and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Are the EIA reports written in the official or widely used language of the host country? (c) Have EIA reports been approved by authorities of the host country government? (If not yet approved, write the expected date of the approval in the "Confirmation of Environmental Considerations" column.) (d) Have EIA reports been approved with any conditions? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (e) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government? (f) Do the EIA reports cover the items described in Appendix 2 of the JICA Guidelines? (The scope and detail of the impact assessment may be adjusted according to the impact of the project.) (g) Do the environmental and social consideration confirmation cover the project's whole scope, cumulative impacts, derivative and secondary impacts, as well as impacts of indivisible projects?	(a) N (b) Y (c) N (d) Y (e) N (f) Y (g) Y	(a) IA (Initial Assessment) Application form, including IA result, is currently under preparation. (b) In correspondence with Pohnpei EIA Regulation, the IA/EIA documents shall also be published by Micronesian language. (c) Currently preparing IA application. (d) Land use permit, Earthmoving permit, Forestry clearance, Marine resource assessment, and Historical Preservation Review Permits are required to be approved or acquired. The applications are currently under preparation. (e) Following permits or approvals are required to be acquired from each respective departments or office of Pohnpei State. Land Use permit： Land Dept., EIA, Earthmoving Permit : Pohnpei EPA, Forestry Clearance, Marine Resource Assessment: Pohnpei Resource & Development (R & D) Dept., Historic Preservation Permit: Historic Preservation Office. (f) Yes they are covered. (g) There is a plan to have a certain one company facilities to be moved to an adjacent land of the project site, but apart from that, there are no other projects that are indivisible to the subject project.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Explanation and Consultation with Local Stakeholders	(a) Are local stakeholders properly analyzed and identified? (b) Does the project provide appropriate explanations to local stakeholders about the content and impact of the project, and gain their understanding, through the process of ensuring meaningful consultation including information disclosure? (c) For local stakeholder consultations, are records of consultations prepared, including the gender and other attributes of the participants? (d) Have comments from local stakeholders (such as local residents) been reflected to the project design, etc.?	(a) Y (b) N (c) N (d) N.A.	(a) Conducted stakeholder analysis, including project proponent, related agencies, municipal governments, beneficiaries, NGOs and project affected persons, etc., and identified on relative stakeholders that should be invited to the stakeholder meeting. (b) To be held during IA Draft stage. (c) Participants list, including gender information shall be taken as part of the minutes record. (d) If any comments are raised from the stakeholders, they will be incorporated into the IA/EIA document, including project designing if necessary.
	(3) Examination of Alternatives	(a) Is the project/plan's scope of multiple alternatives adequately considered? (b) Are alternatives that are feasible in terms of technical, financial, and environmental and social aspects considered from the view point of environmental and social items and, if necessary, reducing total greenhouse gas emissions? (c) Are comparisons made with the “without project” scenario?	(a) Y (b) Y (c) Y	(a) Consideration of Alternatives was conducted, including confirmation on project site selection, alternative of not implementing the project, and alternatives regarding the new wharf designing. (b) Proposed on alternative of facilities that emit less or no GHG emission. (c) Alternative including alternative of not implementing the project was considered.
2. Pollution Control	(1) Air Quality	(a) Do air pollutants, such as sulfur oxides (SOx), nitrogen oxides (NOx), and soot and dust emitted from ships, vehicles and project equipment comply with the emission standards of the host county, etc. ? (b) Do air pollutants emitted from the project cause areas that do not comply with the ambient air quality standards of the host country, etc. ? (c) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a) Y (b) N (c) N	(a) As for all measured parameters, had all met the environmental standard. (b) No result on ambient air pollution was detected through the baseline survey, and throughout all construction phase and after operation phases, it is assumed that the level of ambient air quality will remain clean meeting with the environmental standard. (c) Mitigation measures, such as regular maintenance of construction vehicle and/or equipment, etc., regular sprinkling of water, mitigation measures, and posting traffic control personnel, etc. will be considered.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
2. Pollution Control	(2) Water Quality	(a) Do effluents from the project facilities comply with the effluent standards of the host county, etc. ? (b) Do effluents from ships and ancillary equipment such as dock comply with the effluent standards of the host country, etc. ? (c) Are adequate measures taken to prevent leakages of oil and hazardous materials into surrounding waters? (d) Do oceanographic changes, such as alteration of ocean currents and reduction in seawater exchange rates (deterioration of seawater circulation) due to modification of water areas such as shoreline modifications, reduction in water areas, and creation of new water areas, cause changes in water temperature and water quality? (e) In the case of the projects including land reclamation, are adequate measures taken to prevent contamination of surface water, seawater, and groundwater by leachates from the reclamation areas? (f) Does the quality of sanitary wastewater and stormwater comply with the effluent standards of the host country? (g) Do effluents from the project cause areas that do not comply with the ambient water quality standards of the host country? (h) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y. (b)Y. (c)Y (d)N (e)N (f)Y (g)N (h)Y	(a) Based on water treatment facility, general wastewater will be treated, therefore, treated wastewater shall meet with the environmental standard. (b) Treated wastewater to be discharged from vessels shall meet with the environmental standard, since the Pohnpei Port Rehabilitation Masterplan incorporates compliance with the IMO Conventions in terms of docking vessels to Pohnpei Port. (c) Waste oil and other pollutants will be properly managed on daily basis at a designated area. (d) The new quay is designed parallel to the shoreline, therefore, water current change should not be anticipated (e) Measures will be taken to prevent leachates from leaking into the ecosystem. (f) Same as above item (a). (g) There will be no section that will not comply with the environmental standard. (h) Monitoring and prevention measure to avoid spread of turbid water shall be taken place, at dredging works period, due to expectation of impact on seawater turbidity that will be anticipated during its period.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(3) Wastes	(a) Are wastes generated from ships and the related facilities properly treated and disposed of in accordance with the regulations of the host country? (b) Is offshore dumping of dredged materials and soils properly treated and disposed of in accordance with the regulations of the host country to prevent impacts on the surrounding water areas (or land areas)? (c) Are adequate measures taken to prevent discharge or dumping of hazardous materials to the surrounding water areas? (d) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)Y (c)Y (d)N	(a) Wastes to be generated from vessels shall be properly managed and disposed, since the Pohnpei Port Rehabilitation Masterplan incorporates compliance with the IMO Conventions in terms of docking vessels to Pohnpei Port. (b) Dredged soil will be reused as reclamation material (c) Adequate measures will be adopted. (d) Negative impact will not be anticipated, but wasted will be daily managed at a designated area.
	(4) Soil Contamination	(a) Has the soil at the project site been contaminated in the past? (b) Are adequate measures taken to prevent soil contamination? (c) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)Y (c)N	(a)Several heavy metal concentration rate are high, most probably by natural phenomenon reason. (b) Measures will be taken to prevent leachates from leaking into the ecosystem. (c)No negative impact is anticipated.
	(5) Noise and Vibration	(a) Does the noise generated by operation comply with standards of the host country, etc.? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)N	(a)Baseline noise intensity measurement reveals that at present the noise is meeting with the environmental standard. (b)There is a certain amount of distance between the construction area and residential area, and so no specific impact should be anticipated, however, monitoring will be required during construction periods when large noise intensity is expected.
	(6) Subsidence	(a) Is there a possibility that the extraction of a large volume of groundwater causes subsidence? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a)No plan to pump up large volume of groundwater, therefore, inapplicable (b)No negative impact anticipated.
2. Pollution Control	(7) Odor	(a) Are there any odor sources? Are adequate odor control measures taken? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)N	(a)Dredged soil may become a source of offensive odor, however, since they will be reused as reclamation material, and so impact should be limited. (b)Impact is limited, but monitoring will be required by observation/

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(8) Sediment	(a) Are adequate measures taken to prevent contamination of sediments by discharges or dumping of hazardous materials from ships and related facilities? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)Y (b)N	(a) Hazardous waste will be stored and managed properly at a designated area, and will also be transported and disposed properly. (b) No negative impact is anticipated, since bottom sediment quality at dredging area basically meets with the environmental standard.
3. Natural Environment	(1) Protected Areas	(a) Is the project site located in protected areas designated by the country's laws or international treaties/ conventions? (b) Does the project affect the protected areas? (c) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N	(a) Not applicable (b) Adequate measures will be taken not to cause impact. (c) Impact will not be anticipated to occur.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Biodiversity	(a) Does the project site encompass primary forests, natural forests in tropical areas, habitats with important ecological value (coral reefs, mangrove wetlands, tidal flats, etc.)? (b) Does the project site encompass habitats of rare species that require protection under domestic legislation, international treaties, etc.? (c) Are there any concerns about the significant impact on biodiversity by the project, with significant conversion or significant degradation of critical habitats or critical forests? If yes, are appropriate measures taken to address the impact on biodiversity? (d) Does the project have negative impacts on aquatic organisms? (e) Does the project have negative impacts on vegetation or wildlife of coastal zones? (f) If there are any other concerns about significant impacts on biodiversity, are measures taken to reduce the impacts on biodiversity? (g) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)Y (c)N (d)N (e)Y (f)N (g)N	(a)Although there is a mangrove forest at hinterland of the project site, the construction activity will not cause any negative impact to it. (b) The blue coral is a vulnerable species under IUCN category, and will be a subject of impact. (c) Confirmed the distribution of blue coral in other waters off the coast of Pohnpei State and, in the opinion of the Pohnpei State Resource Development (R&D) Department, that there is no legal obligation to take compensatory measures such as transplantation associated with dredging work based on such existence also in other areas of the State. However, we will continue to listen to the opinions of multiple coral reef experts and reconsider on appropriate countermeasures. (d) During the recommissioning survey, two juvenile Humphead Wrasse (*Cheilinus latus*), an EN species, were observed at the project site. However, the project site is not a spawning ground, and these were considered to have migrated from outside. Therefore, the R&D Department concluded that there was no impact. (e) Same as (c) above (f) Following confirmation of (c) above, no special measures will be taken. (g) Monitoring the same species distributed around the construction area to confirm whether there is any impact from the construction.
	(3) Hydrology	(a) Does the installation of the port and harbor facilities cause oceanographic changes? (b) Are there any impacts on groundwater system (drawdown, salification, etc.) due to landfill construction and harbor excavation, etc.? (c) Does the project have negative impacts on current conditions, waves and tides, etc.? (d) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N (d)N)	(a)The new wharf is designed parallel to the shoreline, therefore, no Impact to the hydrologic situation to the current. (b)No such impact anticipated. (c)Same as above item (a), therefore, no impact is anticipated. (d)Ditto

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(4) Topography and Geology	(a) Does the installation of port and harbor facilities cause a large-scale alteration of topographic features and geological structures in the surrounding areas or limination of natural beaches? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a)No impact to be anticipated (b)Ditto
4. Social Environment	(1) Resettlement and Land Acquisition	(a) Is land acquisition with involuntary resettlement caused by project implementation? If yes, please describe the scale of land acquisition and resettlement. (b) Are efforts made to minimize the impacts caused by the resettlement? Are there any other land acquisition or loss of livelihoods? (c) Is adequate explanation on compensation and livelihood restoration program given to affected people prior to resettlement? (d) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards, developed based on socioeconomic studies on resettlement? (e) Are the compensations paid prior to the resettlement? (f) Are the compensation policies prepared in document? (g) Does the resettlement plan pay particular attention to vulnerable social groups, such as women, children, elderly peoples, people in poverty, persons with disabilities, refugees, internally displaced persons, and minorities? (h) Are the compensation to be agreed are explained to the project affected persons in writing, and are agreements with the affected people obtained prior to resettlement? (i) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (j) Are any plans developed to monitor the impacts of resettlement? (k) Is the grievance redress mechanism established?	(a)Y (b)Y (c)N (d)N (e)Y (f) Y (g)N (h)N (i) N (j) N (k)N	(a) There was a land dispute related to the project site, but the issue was resolved after the rulings of the Pohnpei State District Court and the Supreme Court. (b) Compensation will be paid to the complainant who brought the land dispute in accordance with the outcome of the trial, and the residents of the former hotel at the business site that was illegally managed by the complainant will be subject to a rental contract with the same operator. After fulfilling the terms and conditions and paying the rental contract fee, the case has been resolved by voluntarily moving to another area. (c) As stated in (a) and (b) above, the land dispute issue has been resolved and the need for related measures before the project has been eliminated. (d) Resolved according to (b) above. (e) Compensation to the litigant who caused the land dispute has already been paid by the PPA in accordance with the court outcome. (f) The judgment materials of the court fall under the certification document. (g) There are no socially vulnerable people affected. (h) As per (b), (e), (f) above. (i) As shown in (a) to (c) above, this problem has been resolved and the measures and systems for resident relocation are not applicable. (j) The problem has been resolved and is not indicated. (k) Same as above.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Living and Livelihood	(a) Does the project adversely affect the living conditions of the inhabitants? Are adequate measures considered to reduce the impacts, if necessary? (b) Do the changes in water uses (including fisheries and recreational uses) in the surrounding areas due to the project adversely affect the livelihoods of inhabitants? (c) Do the port and harbor facilities adversely affect the existing water traffic and road traffic in the surrounding areas? (d) Does the project have a negative impact on ecosystem services (provisioning services and regulating services) and affect health and safety of the community (especially indigenous peoples who depend on the services)? (e) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N (d)N (e)N	(a) Rehabilitation of port facilities is expected to have a positive impact on the local economy. However, in order to avoid negative impacts on the residents and fishermen of the fishing village on the opposite shore of the project site, noise, water quality, and sediment monitoring will focus on the catch of traditional fisheries, the income and living standards of traditional fishermen (some of which will continue even after operation). (b) Rehabilitation of port facilities will have a positive impact on local fisheries. (c) Construction of the new quay and access road will make accelerators more convenient and no negative impact is expected. (d) No negative impact is expected. (e) No negative impact is expected. However, in view of the possibility that the construction will have a certain impact on the fishing villages and fishermen on the opposite bank of the project site, we will monitor noise, water quality, traditional fishing catches, etc. during the construction stage, and will Through interviews with local fishermen, we will confirm whether there will be any negative impact on the income and standard of living of traditional fishermen.
	(3) Vulnerable Social Groups	(a) Is appropriate consideration given to vulnerable social groups, such as women, children, elderly peoples, people in poverty, persons with disabilities, refugees, internally displaced persons, and minorities? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a) Target group has not been identified (b) Due to the above reasons, no negative impact is expected.
4. Social Environment	(4) Heritage	(a) Does the project damage any archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the laws of the host country? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a) There are no valuable cultural sites within or adjacent to the project site area. Scheduled to obtain historic site preservation approval (b) No negative impact is expected.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(5) Landscape	(a) Does the project adversely affect landscapes that require special considerations? (b) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N	(a) No negative impact is expected. (b) No negative impact is expected.
	(6) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources to be respected? (c) Is an indigenous peoples plan prepared and published, if necessary? (d) Do the project make efforts to obtain the Free, Prior, and Informed Consent (FPIC) of the affected indigenous peoples? (e) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N (d)N (e)N	(a) There are no indigenous people, but the understanding and consent for project implementation has been obtained in advance from the local chief. (b) Same as above. (c) Not applicable due to the same reason (d) Same as (a) above. (e) No impact is expected.
	(7) Working Conditions	(a) Does the project comply with laws related to occupational health and safety of the host country? (b) Are tangible safety considerations in place for individuals involved in the project, such as installation of safety equipment which prevents industrial accidents, and management of hazardous materials, etc.? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as development of health and safety plans, and conducting safety trainings (including traffic safety and public health) for workers etc.?	(a)Y (b)Y (c)Y	(a) HSE related laws and regulations will be complied with. (b) Safety measures will be taken. (c) Training on safety and health, safety education, emergency preparedness, HIV countermeasures, etc. will be provided.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(8) Health, Safety and Security of Local Communities	(a) Are there any negative impacts on health/hygiene of the local community, such as disease outbreaks (including HIV and other infectious diseases) due to the influx of workers, etc. associated with the project? Are there any mitigation measures in place for the impacts? (b) Are there any negative impacts on the safety of the local community, such as deterioration of public safety, due to the influx of workers, etc. associated with the project? Are there any mitigation measures in place for the impacts? (c) When security guards are hired for the project or other personnel are deployed to ensure and maintain the security of the project area as well as the persons related to the implementation of the project during the project preparation and implementation, are any appropriate measures taken for such personnel not to use any force to provide security except for preventive and defensive purposes? (d) Does the construction have negative impacts? Are there any mitigation measures in place for the impacts?	(a)N (b)N (c)N (d)N	(a) HIV/AIDS control programs shall be implemented. (b) Education and training for workers will be carried out. (c) Security in compliance with Micronesian-related laws will be applied and education and training will be provided. (d) No impact expected.
5. Others	(1) Monitoring	(a) Does the project proponent develop and implement monitoring program for the environmental and social items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the project proponent establish an adequate monitoring framework (organization, personnel, equipment, and budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reporting the monitoring results from the project proponent to the regulatory authorities? (e) Is the grievance redress mechanism regarding environmental and social considerations established?	(a)Y (b)Y (c)Y (d)Y (e)Y	(a) To be carried out; (b) Mitigation measures and monitoring plans are organized. (c) Shall be established (d) Prescribed (e) A Grievance Redress Mechanism will be established in which the business owner is the point of contact for receiving grievances.
6. Note	(1) Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Roads, Railways, and Bridges checklists should also be checked (e.g., projects including construction of access road to the port).	(a)N	(a) An access road of just under 120m is planned to be constructed, but it is a very small road and therefore negative impact is thought to be limited. Water sprinkling and noise monitoring tower measures will be taken during construction.

Category	Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Note on Using Environmental Checklist	(a) Where necessary, the impacts to transboundary or global issues should be confirmed (e.g. the project includes factors that may cause problems, such as transboundary waste treatment or global warming). (b) For projects that are expected to generate more than a certain amount of greenhouse gas emissions, is the total amount of the greenhouse gas emissions estimated before the project implementation?	(a)N (b)N.	(a) Type of facilities that may emit GHG gas will not be constructed and since this is a small-scale rehabilitation project, so therefore inapplicable. (b) Same as above.

6. Monitoring Form

-Monitoring is carried out by the project implementation body regularly submitting measured values, etc. to JICA for items that are determined to require monitoring by JICA through environmental reviews. The following monitoring form is required for submission. Please refer accordingly.

- When determining monitoring items, frequency, methods, etc., pay attention to the project phase or life cycle (construction phase and operation phase, etc.).

1. Permits/resident explanation

Monitoring items	Status during the reporting period
Securing a temporary storage site for hazardous waste and the status of necessary permits (if not obtained, as needed)	
Status of necessary permits such as drainage permits (if not obtained, as needed)	
Permit status of construction material procurement sources (IA/EIA acquisition for necessary resource excavation, such as quarry)	
Additional conditions for environmental permit by Pohnpei State EPA	

2. Pollution control
-Air quality

Item (unit)	measured value (Average value)	measured value (Maximum value)	local standards	Referenced international standards	remarks (Measurement location, frequency, method, etc.)
Suspended particulate matter (PM_{10})				WTO AQG (2005/ 2000): Daily average 50 $\mu g/m^3$, annual average 20 $\mu g/m3$	Measurement with digital dust meter

[Note] Due to the availability of measuring instruments, the parameters to be analyzed are limited.

-Water quality

Item (unit)	Measured value (A) (Average value of several measurements)	Standard value (B) (Average value of several measurements)	local standards	Referenced international standards	remarks (Measurement location, frequency, method, etc.)
	construction area boundary	Unaffected offshore waters	AB＜5NTU		
Turbidity (NTU)				-	Simple turbidity meter

Monitoring items	Status during the reporting period
Item: Turbidity Location: 2 locations around the construction area (1 location is on the border of the construction area, 1 location is in offshore waters not affected by dredging and reclamation work) Method: Visual observation and instrumental measurement Frequency: Once a week during dredging and reclamation work where turbidity is likely to occur	

-Soil contamination

Monitoring items	Status during the reporting period
Item: Outflow from construction area Location: Sea area around the construction area Method: Visual observation Frequency: Every time it rains during construction	

-Noise

Item (unit)	measured value (Average value)	measured value (Maximum value)	local standards	Referenced international standards	remarks (Measurement location, frequency, method, etc.)
Noise level (dBA)			-	IFC's Environmental Occupational Safety (EHS) Guidelines : -Residential areas, educational facilities, public institutions : 55dBA (daytime) , 45dBA (nighttime) Industrial/commercial areas : 70 dBA both daytime and nighttime	Measurement location: Construction area boundary, residential area boundary (Sokehs village)

[Note] Observation of vibration levels will be omitted due to instruments that can be measured on site.

-Ground subsidence

Monitoring items	Status during the reporting period
Item: Ground subsidence situation Location: Inside the construction area	

Method: Visual observation Frequency: Once a month during construction	

- Odor

Monitoring items	Status during the reporting period
Item: Presence or absence of bad odor Location: Inside the construction area Method: Visual observation Frequency: Once a week during construction	

-Sediment

Monitoring items	Status during the reporting period
Item: Appropriate management of dredged soil, status of measures to prevent spillage into the sea area Location: Inside the construction area Method: Visual confirmation Frequency: Once a week during construction	

-Waste

Monitoring items	Status during the reporting period
Item: Management status and sanitary status of general waste and hazardous waste storage locations Location: Inside the construction area Method: Visual confirmation Frequency: Every day during construction	
Item: Collection, transportation, treatment and disposal status of general waste and hazardous waste Location: Inside the construction area Method: Attend visual confirmation Frequency: Every collection during construction	

-Hydrology

Monitoring items	Status during the reporting period
Item: Changes in flow conditions in surrounding waters Location: Sea area around the construction area Method: Visual observation Frequency: Every six months during construction	

-Natural resources

Monitoring items	Status during the reporting period
Item: License status of material suppliers Location: Pohnpei Method: Visual observation Frequency: Every six months during construction	

-Topography/geology

Monitoring items	Status during the reporting period
Item: Coastline changes Location: Around the construction area Method: Visual observation: Frequency: Every six months during construction	

3. natural environment
-Ecosystem

Monitoring items	Status during the reporting period
Item: Status of coral reefs and Humphead wrasse Location: Rubble mat maintenance location Method: Diving visual observation Frequency: Every six months during construction	

4. social environment
-Social anxiety

Monitoring items	Status during the reporting period
Item: Impact on fishermen's livelihood, protests, etc. Location: Around the construction area Method: Confirmation by interview etc. Frequency: Every six months during construction	

-Gender:

Monitoring items	Status during the reporting period
Item: Employment status Location: Inside the lecture area Method: Confirmation by interview etc. Frequency: Every six months during construction	

-Working environment:

Monitoring items	Status during the reporting period
Items: 1) Status of compliance with EHS activities, 2) Status of implementation of HIV/AIDS control programs Location: Inside the construction area Method: Visual confirmation Frequency: 1) Every day during construction, 2) Every six months during construction (when the program is implemented)	

-Impact during construction

Monitoring items	Status during the reporting period
Item: Compliance with mitigation measures, implementation of monitoring Location: Inside the protest area Method: Confirmation by visual inspection, hearing, etc. Frequency: Once a week during construction	

- Preventive measures:

Monitoring items	Status during the reporting period
Item: Traffic director deployment status Location: Around the construction area Method: Visual confirmation Frequency: Once a week during construction	

-Monitoring:

Monitoring items	Status during the reporting period
Item: Compliance status of incidental conditions Location: Inside the construction area Method: Confirmation by report Frequency: Once a month during construction	

7. Minute\s of Meeting of Stakeholders Meeting

1) April 16, 2024

POHNPEI PORT AUTHORITY
P.O. Box 1150 Kolonia, Pohnpei
Federated States of Micronesia96941
Telephone +691 320 2793
Website: www.ppa.fm

Stakeholder Meeting-PPA Port Expansion Project
April 16, 2024
PPA Conference Room

General Manager, Grilly Jack called the meeting to order at 2:09 pm in the PPA Conference Room

The present members includes: PPA, OFA, MSP, Soulik en Ehir(Sokehs), EPA, FSCO, PNIsurf, Pohnpei Tourism, Liancheng, AMCRES, Sokehs Municpal, Pohnpei Fishing Club, Marine Surveillance, FSM TC&I, NORMA, Micronesian Conservation Society

General Manager welcome every one and introduce the purpose of the meeting and turn the floor to Koji Kobune.

Mr. Kobune introduce the agenda of the meeting as stated below
Project presentation
Project Objectives
Layout Plan
Construction schedule
Environmental and social considerations
Q&A and discussion

Mr. Kobune presented the PPA Port expansion project

- **Background survey**:
  - History surveys and plans – enhance the port to the north and south to ease the congestion and expand the capacity of mooring for purse seiners-surveys and plans started in 2010 and extended to August 2022 due to covid 19.
- **Development Concept-Objectives**
  - New quay needs to be developed to ease the capacity of mooring of purse seiners as well as in the long run in the case of increasing of fishing vessels
  - In the case of increase fishing purse seiners, the existing wharf don't have the capacity to accommodate.
  - Existing Wharf is old and exceeded the designated life of its capacity usage
  - Commercial and fishing zones should be separated
- **Layout plan of new quay**
  - Accommodate ship of 160LOA, 15,000 DWT
  - Quay should be in length of 160m, apron width of 30m, water dept-10m, with steel pipes, the apron should be reinforced concrete, the access road should be concrete paved and expanded to 249m x 10m, the yard should be landfill with dredged coral sand and the surface should be covered with gravel.
- **Construction Plan and Schedule is as provided below:**
  - Exchange of note-August 2024
  - Grant Agreement – October 2024
  - Detail Design – February 2025

- EIA – August 2024
- Bidding- July 2025
- Construction begins and ends – September 2025 to April 2028

- **Environmental and social considerations**

- Social environmental consideration reports which include the description of the project, present status of environment and society, legal & organization of social & environmental considerations, alternative plans, scoping, social and environmental survey result, environmental evaluation impact, mitigation plan and cost, monitoring plan, implementation structure, stakeholder meeting, complaint handling mechanism.
- Natural condition and environmental surveys-includes bathymetric, topographic, magnetic prospecting soil investigation, air quality, current water quality, bottom, sediment, and Mangrove, Coral vegetation
- Responsibilities of Micronesian side includes site clearance, procedure of IEE & EIA, waiving of taxes (sales & import tax) and other necessary activities needed before the construction of the project.

- **Questions & Answers**

Q: For this expansion project, is there any designated area for clearing of customs for Yacht?
A: Expansion project is only focusing on fishing vessels activities
Q: Are the two manholes for water bunkering part of the project?
A: No manhole is included in the project
Q: Is it possible to share the presentation to everyone
A: Yes
Q: Is the project expansion specifically for fishing activities or is it supporting other activities and is it in line with the fisheries investment policy
A: The port is specifically for fishing activities and they have done their surveys and understand the need to collect all sorts of permits before the start of the project. The believe that fishing activities should have a separate dock
Q: Is the expansion project not going to alter the Norma building that will be build next to the port expansion
A: It will not have any affect.
Q: As it's mention that the EIA will start in August 2024, are there any survey plan in place, and if there is any consideration of the neighboring community in the plan as in if there is any risk to the neighboring community?
A: Yes, they are keen about the social impact especially on the land dispute of Misko Beach and it has been settled based on a court ruling. Yes,
Q: Are there any social surveys of the area and the surrounding area
A: PPA will help collect other necessary items to help the project moving forward
Q: Is the project going to impose on the villagers due to dredging?
A: In monitoring the noise effect, they will be using a vibro-hammer as it comes with no noise effect.
Q: Is there any mitigation plan?
A: Yes
Q: Is there any plan to disclose to the public the plan for the port expansion?
A: Yes
Requesting any comments from fishermen, but there's none. Stakeholders are in support of the project as it will bring in more revenue due to its enhancement capabilities of fishing activities for the fishing vessels.

2) August 1, 2024

POHNPEI PORT AUTHORITY
P.O. Box 1150 Kolonia, Pohnpei
Federated States of Micronesia96941
Telephone +691 320 2793
Website: www.ppa.fm

Stakeholder Meeting-PPA Port Expansion Project
August 1, 2024
Sokehs Municipal Office

Acting General Manager, Baron called the meeting to order at 2:23 pm in the PPA Conference Room

The present members includes: PPA, OFA, MSP, Soulik en Ehir(Sokehs), EPA, FSCO, Pohnpei Tourism, Liancheng, AMCRES, Sokehs Municpal, Pohnpei State Fire Rescue, Marine Surveillance, FSM TC&I, NORMA, Micronesian Conservation Society

Acting General Manager welcome every one and introduce the purpose of the meeting and turn the floor to Koji Kobune.

Mr. Kobune introduce the agenda of the meeting as stated below

Background survey
Development Concept
Layout plan of the new quay
Construction Plan
New quay (short term development)
Social Environmental Consideration
Responsibility of Micronesian side

Mr. Miyake presented the PPA Port expansion project

- Background survey:
  - History surveys and plans – enhance the port to the north and south to ease the congestion and expand the capacity of mooring for purse seiners-surveys and plans started in 2010 and extended to August 2022 due to covid 19.
- Development Concept
  - New quay needs to be developed to ease the capacity of mooring of purse seiners as well as in the long run in the case of increasing of fishing vessels
  - In the case of increase fishing purse seiners, the existing wharf don't have the capacity to accommodate.
  - Existing Wharf is old and exceeded the designated life of its capacity usage
  - Commercial and fishing zones should be separated
- Layout plan of new quay
  - Accommodate ship of 160LOA, 15,000 DWT
  - Quay should be in length of 160m, apron width of 30m, water dept-10m, with steel pipes, the apron should be reinforced concrete, the access road should be concrete paved and expanded to 249m x 10m, the yard should be landfill with dredged coral sand and the surface should be covered with gravel.
- Construction Plan and Schedule is as provided below:
  - Exchange of note-August 2024
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- Bidding- July 2025
- Construction begins and ends – September 2025 to April 2028

Questions & Answers

Q: Are there enough materials (coral gravel) to fill up the site or needs to get from other places?
A: Yes, the existing materials on the site that will be used.
Q: What is the process of transplant the blue coral?
A: There is a survey team for transplanting the blue coral will assess the issue.
Q: How noisy are the machineries to the opposite site (Sokehs Island) of the project be?
A: It is not that really noisy, just like a normal working day.
Q: Is the project expansion specifically for fishing activities or is it supporting other activities and is it in line with the fisheries investment policy
A: The port is specifically for fishing activities and they have done their surveys and understand the need to collect all sorts of permits before the start of the project. The believe that fishing activities should have a separate dock
Q: Is the expansion project not going to alter the Norma building that will be build next to the port expansion
A: It will not have any affect.
Q: As it's mention that the EIA will start in August 2024, are there any survey plan in place, and if there is any consideration of the neighboring community in the plan as in if there is any risk to the neighboring community?
A: Yes, they are keen about the social impact especially on the land dispute of Misko Beach and it has been settled based on a court ruling. Yes,
Q: Are there any social surveys of the area and the surrounding area
A: PPA will help collect other necessary items to help the project moving forward
Q: Is the project going to impose on the villagers due to dredging?
A: In monitoring the noise effect, they will be using piping hammers as it comes with no noise effect.
Q: Is there any mitigation plan?
A: Yes
Q: Is there any plan to disclose to the public the plan for the port expansion?
A: Yes
Requesting any comments from audience, but there's none.

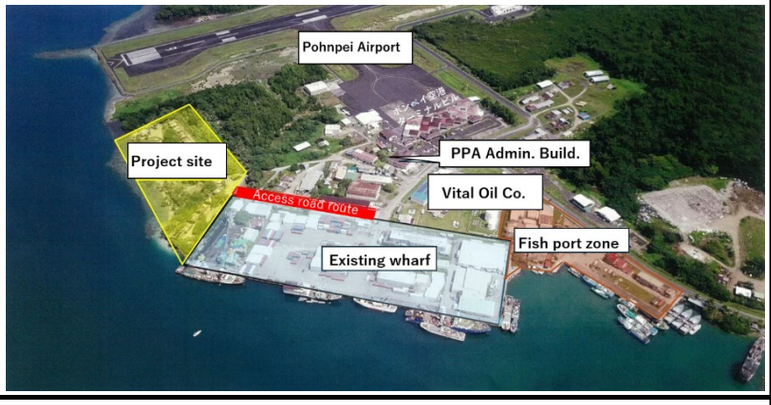
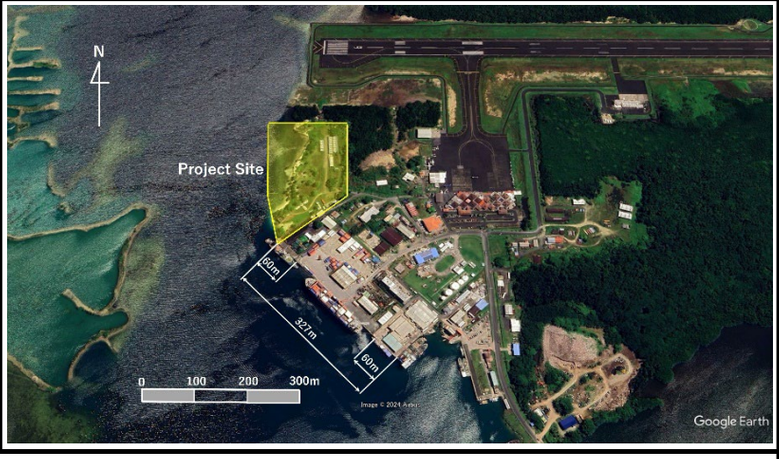
Meeting adjourned at 3:45pm

Appendix 17777

Preparatory Survey for the Project for Pohnpei Port Expansion

Pohotographs

1 General view of Pohnpei Port

a. Bird-eye view	
	Source: PPA 2019/2/26 Aerial photography using a drone
b. Zoning of Pohnpei Port	
	Land use of Pohnpei Port Edited by consultant
c. Project sute	
	Project site Google Earth Editied by consultant
d. Distant View of Pohnpei Port	Photographed in May 2023
	

Preparatory Survey for the Project for Pohnpei Port Expansion

Pohotographs

2 Activitieis in the main wharf

1)	Camera position for shooting container ships	2)	Cameraposition shootong the container yard
			
1. Container ship		5. Yard	
	Container ship entering the port		Container handling by a top loader
2. Container ship		6. Yard	
	Turning contaiuner ship in front of the main wharf		Storage yard of chassis
3.Container ship		7. Yaed	
	Unloading a contianer by a ship gear		Storage yard of imported cars
4.Container ship		8. Yard	
	Container ship with RoRo ramp		Main gate
		9.ヤYard	
			Container yard

Preparatory Survey for the Project for Pohnpei Port Expansion

Pohotographs

2 Activities on the main wharf (continuation)

3) Purse seiners

[10. Purse seiners]

Purse seiners moored at the main wharf

[11. Purse seiners]

Purse seiners moored at the main wharf

[12. Purse seiners]

Purse seiners moored at the main wharf

[13. Purse seiners at CFC berth]

CFC wharf and its maintenance yard

4) Carrier and tanker

[14. Carrier (Refligerated vessel)]

Carrier at the mainwharf for CIQ procedure

[15. Carrier]

Carrier at the mainwharf for CIQ procedure

[16. Tanker]

Tanker moored at Berth No.2 (Fifh port area of th emain wharf

Preparatory Survey for the Project for Pohnpei Port Expansion

Pohotographs

Buildings and trees in the project site to be relocated

3	**Camera position shooting in the project site**		
			
17. Building in the project site			
		Two-story building made of blocks Photographed in March, 2023	
18.Buildings in the project site			
		Tent house, Toilet units, electric(al) substation equipment (container warefouse) Photographed in April, 2024	
19. Trees in the project site			
		Trees along the shore Photographed March 2023	
20.Buildings in the project site			
		a two-story apartment building and a float office building Photographed April, 2024	
21.Buildings in the project site			
		Container hose for quarantine facility used for COVID 19 Infection Control（隔離施設） Photographed April 2024	
22.Trees in the project site			
		Trees at the shore Photographed in March, 2023	
23.Buildings in the project site			
		Landside view of the project site three consecutive phoytos	
24. Seaside view of the project site			
		Site clearance work is ongoing photographed in July, 2024	

Preparatory Survey for the Project for Pohnpei Port Expansion
Pohotographs

4	**Camera position at the planned route of access road**	
		
25. Access road route		
		Location of the entrance of access road from the existing port road The warehouse at the reight is under demolish. Photographed in April. 2024
26. Access road route		
		Concrete floor slab of warehouse and trees to be demorished Photographed in April. 2024
27. Access road route		
		The warehouse at the left is under demolish.

Preparatory Survey for the Project
for Pohnpei Port Expansion
Pohotographs

5 Fish port

	Camera position shooting in the fish poprt
	
28. Fish port zone	
	Purse seiners moored at Berth No. 1 and No.2 of the main wharf
29. Fish port zone	
	Service boat
30. Fish port zone	
	Service Boat
31. Fish port zone	
	Patrol boat donated by Austraria

Preparatory Survey for the Project for Pohnpei Port Expansion
Pohotographs

6. Formasl meeting with DTCI and PPA

32. Formal Meeting			33. Forkal Meeting		
		Photographed on April 25, 2024 at Conference Room of PPA			Photographed on April 25, 2024 at Conference Room of PPA
34.MD会議			35. Formal Meeting		
		Photos of signing on Minutes of Meeting			Lunchon afterr signing of MD at Sea Breeze Hotel

7. Stakeholders Meeting		
36. Stakeholders Meeting on Audgust 1		
		Sokehd Municipall Hall Congress Room held on August 1, 2024
37. Stakeholders meeting		
		Buffet after Meeting

Preparatory Survey for the Project for Pohnpei Port Expansion
Pohotographs

7. Field survey (Soil survey, Boring)

38. Soil survey		
		Soil survey March - May, 2023
39. Soil survey		
		Soil survey March - May, 2023
40. Soil survey		
		Soil survey March - May, 2023 Photo of a sample
41.Soil survey		
		Soil survey March - May, 2023 Boring on the sea

POHNPEI STATE
ENVIRONMENTAL PROTECTION AGENCY
POHNPEI, FSM 96941
FEDERATED STATES OF MICRONESIA

EARTHMOVING PERMIT

NUMBER **PP-13-24**

Pohnpei Port Authority (PPA) OF **Dekehtik, Nett** IS HEREBY GRANTED
NAME OF APPLICANT — PLACE

PERMISSION TO **Seaport Expansion**
TYPE OF PROJECT

AT **Dekehtik, Nett, Pohnpei**
VILLAGE, MUNICIPALITY, ISLAND

SUBJECT TO THE REQUIREMENT OF POHNPEI STATE EARTHMOVING REGULATIONS AND SPECIAL REQUIREMENTS UNDER THIS PERMIT, AS ATTACHED.
THIS PERMIT MAY BE REVOKED AT ANY TIME BY A DULY AUTHORIZED REPRESENATIVE OF EPA, FOR NON COMPLIANCE WITH THE POHNPEI STATE EARTHMOVING REGULATIONS.

THIS PERMIT DOES NOT GIVE ANY PROPERTY RIGHTS, EITHER IN LAND OR MATERIALS, OR ANY EXCLUSIVE PRIVILEGES, AND DOES NOT AUTHORIZE INJURY TO PRIVATE PROPERTY OR INVASION OF PRIVATE RIGHTS.

July 04, 2024.
DATE OF ISSUE

Dr. Josephine Saimon
Chairperson, Board of Directors
Pohnpei EPA

VALID FROM DATE OF ISSUE UNTIL **July 31, 2025**

THIS PERMIT SHALL BE POSTED FOR PUBLIC DISPLAY

PERMIT CONDITIONS

EARTHMOVING PERMIT PP-13-24

SEAPORT EXPANSION

PERMITTEE: Pohnpei Port Authority

THIS PERMIT EXPIRES ON July 31, 2025

General Conditions

I. Earthmoving operations will be conducted in accordance with Pohnpei State Environmental Protection Agency Regulations, and in a manner that siltation of surrounding reefs will not exceed that which would occur under natural conditions.

2. This permit is issued only to Pohnpei Port Authority as the permittee and is not transferable to another person or entity. If the activity is subcontracted by the permittee, both the permittee and the subcontractor shall be liable for compliance with all permit conditions, applicable state rules and regulations, and for the payment of any fines or other penalties for any violation of the permit conditions or state rules and regulations.

3. This permit does not give any property rights, either in land or materials, or any exclusive privileges, and does not authorize injury to private property or invasion of private rights.

4. The permittee shall obey and conform to all laws, regulations and rules of the State of Pohnpei, in the conduct of this earthmoving operation.

5. The permittee shall make every reasonable effort to conduct these earthmoving activities in a manner so as to minimize any adverse impact of the work on fish, wildlife and natural environmental values.

6. Extreme care shall be taken to insure that no debris, petroleum products, or other deleterious materials be allowed to fall, flow, leach, or otherwise enter any body of water.

Special Conditions

I. This permit is issued only for the purpose to dredge and fill an area to construct a new quay and container yard to expand the existing port. All activities shall be limited to the area requested for review and approval: 160 meters long 30 meters wide for the quay and 190 meters long by 90 meters wide, access road shall be 249 meters long by 10 meters wide, and dredging shall be maintained within area requested. No activity shall take place outside this approved location without a permit amendment being requested and approved before such expansion shall take place.

2. Spillage of dredged coral/sand during transport from the dredging site to the shore shall be minimized to the greatest extent practical, through the use of filters or other methods to retain the coral/sand from the discharged water.

3. As much excess water as possible shall be drained from the sand before the coral/sand is off-loaded from the dredge barge, to minimize spillage of the coral/sand onto the shoreline and/or roadways.

4. This plan as written here shall be implemented if changes are to be made before construction begins or during construction, the proposed changes are to be submitted to EPA and approved by EPA before the changes are made.

5. If any unanticipated impacts occur during construction. The cause of such impacts should be immediately identified, and the immediate and long term (depending on the impact if a onetime incident or a continuous situation) response action plan (including clean up, disposal, and prevention measures for the future), and schedule should be immediately developed and reported to EPA by the Permittee, and EPA approved the proposed actions before they are carried out.

6. Details on the specific test to be conducted, procedures to be followed, and types of equipment's to be used shall be submitted for review and approval. The results of the tests shall be routinely submitted to EPA within 1 week of the completion of the test. If the tests indicate that they are outside of the allowed limits, such test results along with a plan to immediately stop the cause of the incident, a plan to reduce the impact of the incident, and prevent it from occurring again, be submitted to EPA within 1 day after the tests are completed, and EPA approve the proposed actions before they are carried out.

7. Clearing of trees/vegetation's shall be limited those within area requested.

Modification, Change or Revocation of Permit

The Pohnpei Environmental Protection Agency may, after taking into account any significant detrimental environmental degradation resulting from this permitted activity, change or modify the conditions of the permit to minimize such degradation, or partially, or in whole revoke the permit should the Agency determine such action to be justified and appropriate for environmental protection.

In issuing this permit, the Agency has relied on the information and data which the permittee has provided in connection with his permit application. If, subsequent to the issuance of this permit, such information and data prove to be false, incomplete, or inaccurate, this permit may be modified, suspended or revoked, in whole or in part.

Dr. Josephine Saimon
Chairperson, Board of Directors
Pohnpei EPA

02/04/24
Date

I, the Permittee for this Earthmoving Permit, have read the above Permit Conditions, and hereby agree to comply with all these conditions.

Signature

7-16-24
Date

Issued by:

Name and Title