Master Planning for Smaller Pacific Island Ports

LESSONS LEARNED FROM THE PORT OF MAJURO, REPUBLIC OF THE MARSHALL ISLANDS, MASTER PLAN

Importance of Smaller Pacific Island Ports

- There are many smaller ports in the Pacific….ports like Hilo, Hawaii, Pago Pago, American Samoa, Guam, Saipan, Rota, and Tinian, CNMI, Pohnpei and Chuuk, FSM.
- Some smaller Pacific Island ports have regional significance.

  - Pago Pago, Suva, and Majuro support international fishing fleets who harvest and transport tuna to canneries in American Samoa, Fiji, Thailand, fish markets in Tokyo, and other market channels along the U.S. West Coast.

  -

Importance of Smaller Pacific Island Ports

- Port of Guam accommodates the transshipment of international cargo from Asia and USA to nearby Pacific Islands in CNMI, Federated States of Micronesia, Republic of the Marshall Islands, and Republic of Palau.

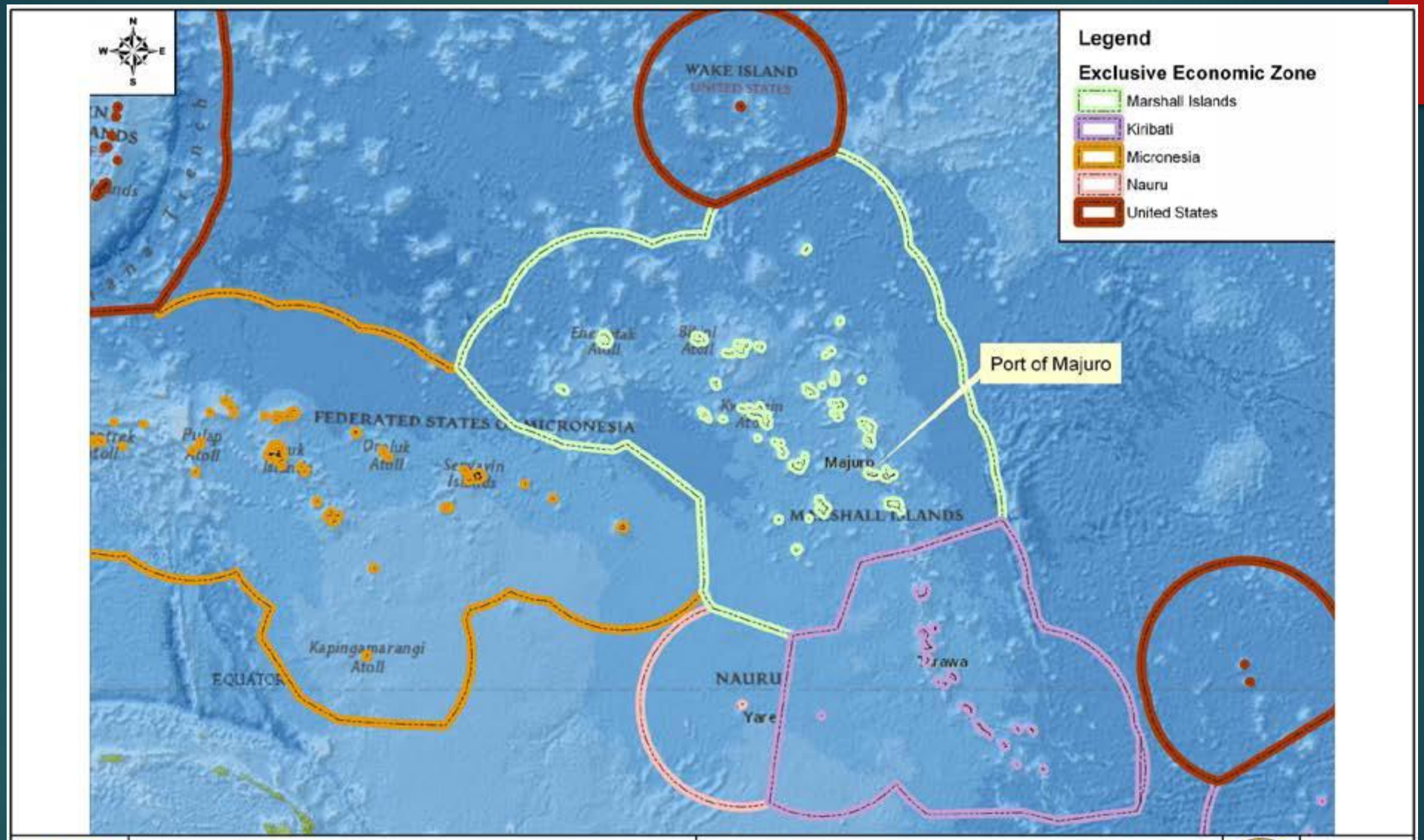
- Port of Suva has regional significance because of strategic location for cargo transshipment, faster cargo handling times, canneries, cruise vessel traffic, availability of dry docking and other marine services.

Importance of Smaller Pacific Island Ports

- But, for most, these ports are the hub of smaller regional island economies.
  - 95-98% or more of imports to more remote Pacific Islands arrive via international cargo vessels.
  - Ports at political, economic centers serve as transshipment point for inter-island cargo and passenger transport.
  - Enable the delivery of fish to local fish processing operations.

Importance of Smaller Pacific Island Ports

- Enable the transshipment of fish harvested from EEZs to international fish markets, e.g., Thailand and Asian fish markets.
- Enable the export of commodities or processed goods.
- Generate retail expenditures via the crews aboard incoming vessels.



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PORT OF MAJURO MASTER PLAN

REPUBLIC OF THE MARSHALL ISLANDS

EXCLUSIVE ECONOMIC ZONES LOCATION

FIGURE 2-4

The Need for Port Master Plans

- Establish a vision for future port improvements.
- Provide guidance for decision-making bodies of port authorities and public agencies responsible for port management.
- Allow stakeholders to be on the same page.
- Facilitate more viable and sustainable port operations.
- Opens doors to new economic development opportunities.
- Provide background info needed by local government agencies, lending institutions, donor agencies to evaluate grant and loan applications.

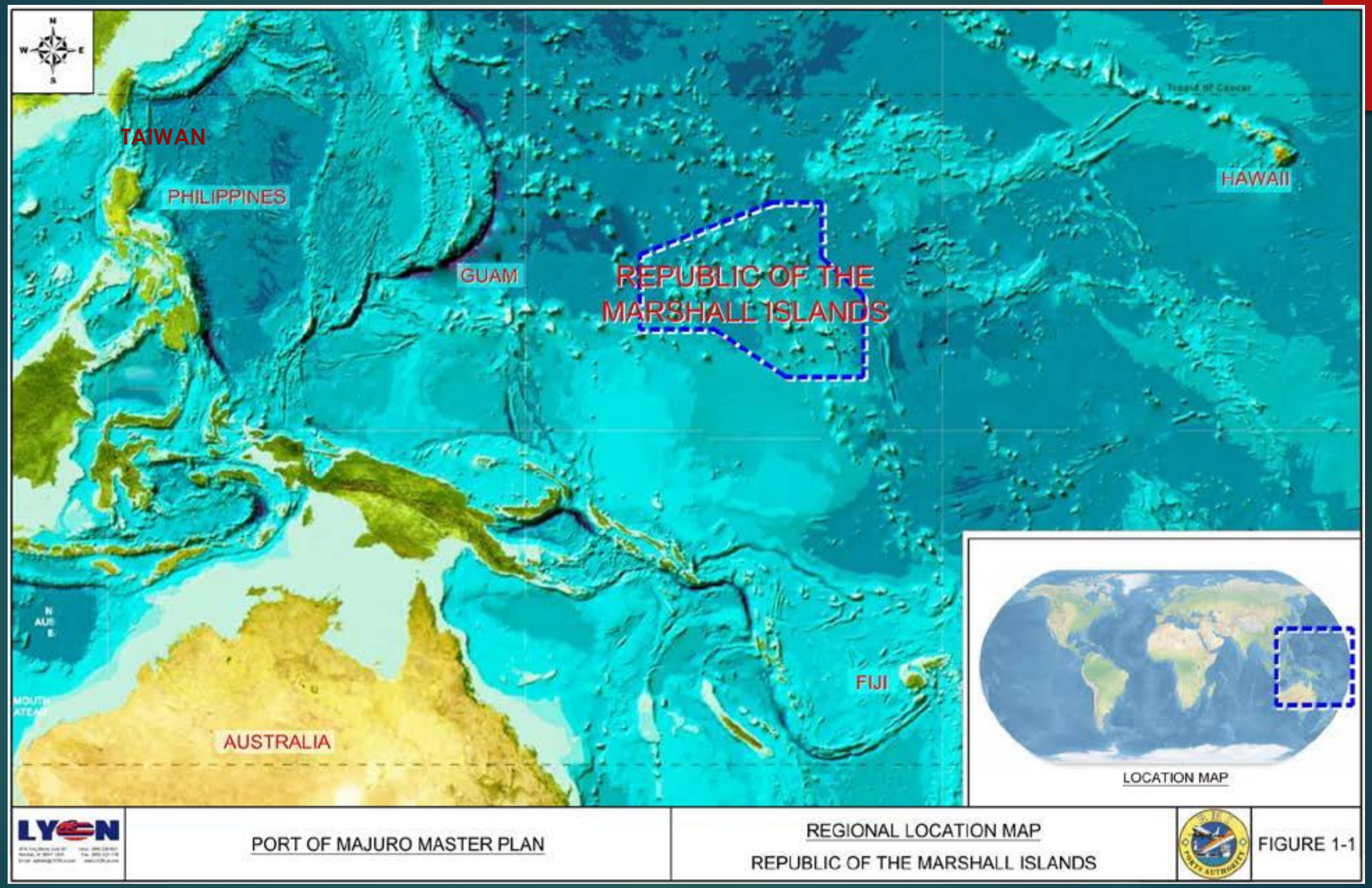
What Should the Master Plan Encompass?

Planning Process
Port of Majuro Master Plan

One Approach for Master Planning Smaller Pacific Island Ports

Background

- RMI Ports Authority retained LYON Associates, a diversified engineering firm based in Honolulu, to prepare a master plan for the Port of Majuro.
- LYON included Pedersen Planning Consultants as part of an inter-disciplinary project team that prepared the plan between 2013-2014.
- Overall project team comprised civil, mechanical and electrical engineers, planner, cost estimators, and architect, and GIS specialist.


TAIWAN
PHILIPPINES
GUAM
REPUBLIC OF THE MARSHALL ISLANDS
HAWAII
FIJI
AUSTRALIA
LOCATION MAP
LYON
PORT OF MAJURO MASTER PLAN
REGIONAL LOCATION MAP
REPUBLIC OF THE MARSHALL ISLANDS
FIGURE 1-1

PORT OF MAJURO MASTER PLAN

REPUBLIC OF THE MARSHALL ISLANDS

FIGURE 1-2

Port of Majuro
Master Plan

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Majuro Atoll

Figure 3-1

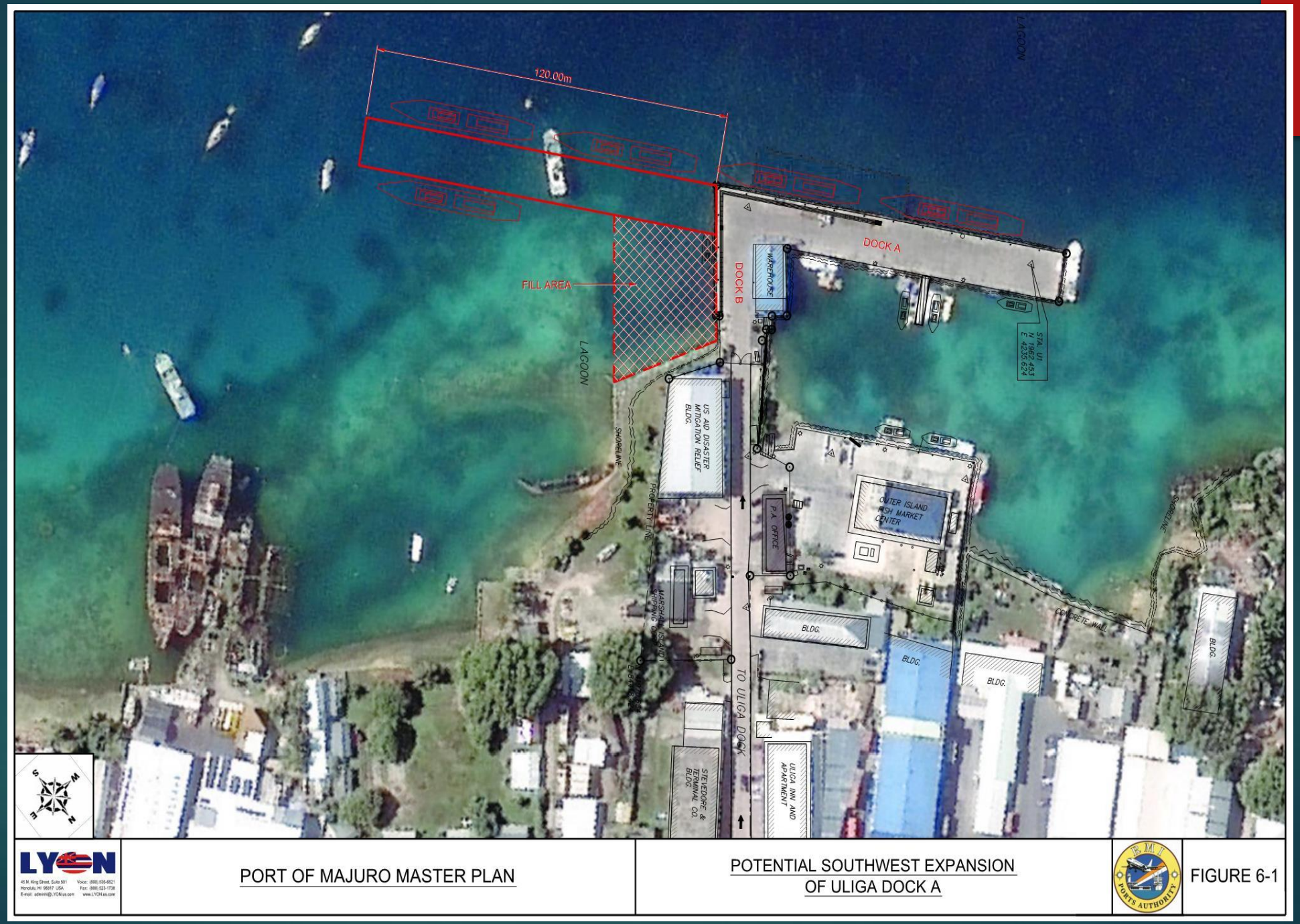
Port Characteristics

- Port of Majuro is situated within the Majuro Lagoon. Lagoon roughly 40 km (east to west) and 12 km (north to south).
- Vessels enter the Lagoon via Calalin Channel. Channel depths: 34-45 meters.
- Large port fairway inside Majuro Lagoon. Navigable port fairway includes roughly 36 square kilometers of water area. Depths within port fairway: 36-64 meters.
- Extensive vessel moorage area used almost exclusively by international fishing fleet.

Port Characteristics

- There are two docks or wharves about 21 km from the Lagoon side of the entrance channel.
  - Delap Dock supports international cargo vessel traffic, delivery of copra to coconut processing facility, and inbound delivery of petrochemicals.
  - Uliga Dock supports an interisland passenger/cargo fleet, and the delivery of various fuels.

DELAP DOCK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PROPERTY LINE
P.A. OFFICE
OUTER ISLAND FISH MARKET CENTER
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CONCRETE WALL
MARSHALL ISLANDS SHIPPING CORP.
BLDG.
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BLDG.
TO ULIGA DOCK
STEVEDORE & TERMINAL CO. BLDG.
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PORT OF MAJURO MASTER PLAN
POTENTIAL SOUTHWEST EXPANSION OF ULIGA DOCK A
PORTS AUTHORITY
FIGURE 6-1

ULIGA DOCK

Port Characteristics

- International fishing fleet, which includes purse seiners, long line, pole & line vessels, and fish carrier vessels, is the dominant user of the port.

<u>2012 statistics</u>:

Number of port calls: 487

Average Time in port: 9.8 days

Primary port use: transshipment of tuna from purse seiners to larger fish carrier vessels

Port Characteristics

- Local coastal tankers make scheduled deliveries of diesel, jet, and gasoline fuels.

2012 Statistics:

Number of monthly fuel deliveries: 12

Gallons of diesel fuel transported: 13.9 million (52,607 kiloliters)

Gallons of jet fuel transported: 4.3 million (16,277 kiloliters)

Gallons of gasoline transported: 1.3 million (4,921 kiloliters)

Port Characteristics

- 2012 international cargo vessel traffic:

Number of vessel calls: 56
Inbound cargo: 3,561 TEU
Outbound cargo: 3,402 TEU
Total: 6,963 TEU
Average Time in port: 22 hours

- 2013 international cargo vessel traffic with advent of new transshipment operations by Marianas Express Line (MELL) in late 2012:

Number of vessel calls: 112
Inbound cargo: 5,107 TEU
Outbound cargo: 5,503 TEU
Total: 10,610 TEU

Master Plan Process

- **UNDERSTAND THE CONTEXT OF THE PORT**
  - How did it get there? Who built it? When? Whom does it serve?
  - What economic activities does it support? Adjacent land use.
  - What is the condition of the marine environment?
  - What do local, regional, and national demographic and economic trends suggest about future port use?
    * In the coming decade, do we expect the resident population to decline or grow? Will there be increased reliance on imports?
    * What economic activities might increase inbound and outbound cargo volumes?

Master Plan Process

- **LET PORT STAKEHOLDERS AND RESIDENTS KNOW WHAT YOU'RE UP TO**

  - Get the word out that you're coming. Invite stakeholders to public information meeting.
  - Hold public information meeting
    * Port manager provides purpose of the master plan
    * Port manger introduces key members of project team
    * Project team identifies the scope of work and facilitates discussion of key issues that STAKEHOLDERS THINK need to be addressed
    * Identify how stakeholders can become involved
    * Request availability of stakeholders for individual interviews

Master Plan Process

- **IDENTIFY PORT ISSUES FROM THOSE WHO KNOW IT BEST. INTERVIEW REPRESENTATIVES OF….**
  - shipping agents
  - stevedoring company that carries out cargo handling operations
  - fish processing facilities and other economic interests
  - local commercial or joint venture fishing fleets
  - international cargo and fishing vessels, oil tankers, etc.
  - port personnel supervising and monitoring vessel traffic
  - port personnel who manage port security, finances, facility O/M
  - public agencies responsible for management of marine resources, e.g. water quality, coral communities, etc.
  - utilities providing water, fuel, wastewater, power, fire protection

Master Plan Process

- **FORECAST FUTURE CARGO AND PASSENGER VOLUMES FOR THE COMING DECADE**
  - resident population
  - international & regional cargo/ passenger volumes
  - vessel calls by type of vessels calling on port

MASTER PLAN PROCESS

- **INVENTORY PORT FACILITIES**

  Document facility conditions, deficiencies, needed improvements for all facilities.

  - port fairway, navigation channels, navigation aids
  - AIS systems or procedures used to monitor and track vessel traffic
  - vessel anchorage areas
  - vessel berths, e.g., dimensions, depths, turning radius
  - quay, wharf and dock faces

Master Plan Process

- **INVENTORY PORT FACILITIES**
  - dock apron
  - primary container yard area
  - cargo handling systems and related equipment
  - container freight station
  - secondary container yard areas, e.g., ingress/egress gates, offices, equipment storage facilities, container & equipment repair areas

Master Plan Process

- **EVALUATE PORT MANAGEMENT, OPERATION/MAINTENANCE**
  - How is Port Authority, Seaport Division, or other port mgt. entity organized?
    * Do reporting relationships make sense?
    * Does organizational structure facilitate coordination or contributes to personnel conflicts or overlapping responsibilities?
  - What system is in place to manage and carry out operation & maintenance?
    * Available personnel and their skills
    * Equipment, supplies, spare parts inventory
    * Adequacy of recent O/M budgets
    * How are O/M tasks planned, scheduled, and monitored, e.g., CMMS?

Master Plan Process

- **EVALUATE PORT MANAGEMENT, OPERATION/MAINTENANCE**

- What security policies and procedures are in place?
  * Are requirements and guidelines of International Maritime Organization's International Ship and Port Facility Security Code (ISPS Code) being followed and addressed?
  * Do any security measures conflict with port operations?
- What agency or company is responsible for stevedoring?
  * What resources are available?
  * Reputation among other port stakeholders
  * Asset or liability to future port development?

Master Plan Process

- **STEP BACK FROM DETAILS AND ANSWER BROADER QUESTIONS**

  -What assets can be used to promote greater traffic and revenues?

  - What conditions impede potential port expansion or reduce cargo handling efficiency?

  - How do port operations and vessel traffic impact adjacent land uses? Are adjoining lands available for port expansion?

  - Can the port be expanded without significantly impacting surface water quality, coral communities, and the marine environment?

  - Are there port management actions that can help mitigate potential impacts of port operations and future port expansion?

Master Plan Process

- **DETERMINE OVERALL PORT NEEDS.**
  IDENTIFY AND EVALUATE POTENTIAL OPTIONS IN CONTEXT OF:
  - existing and anticipated vessel traffic and cargo volumes
  - marine transportation trends, e.g., changes in vessel dimensions
  - cargo handling system and equipment options
  - land area available for future port expansion
  - relevant design and operational criteria
  - costs and long-term sustainability of port
  - urgent, important or desirable?
  - short (1-3 years), medium (4-6 years), or long Term (7-10 years)?

Master Plan Process

- **PREPARE CONCEPTUAL SITE & FACILITY PLANS FOR OVERALL PORT COMPLEX**
  - port fairway or navigation channel and navigation aids
  - vessel berths, turning basins, and docking facilities
  - dock apron
  - cargo handling system and equipment, and container stacking configurations for dry, reefer and empty containers
  - container and cargo handling equipment maintenance and storage

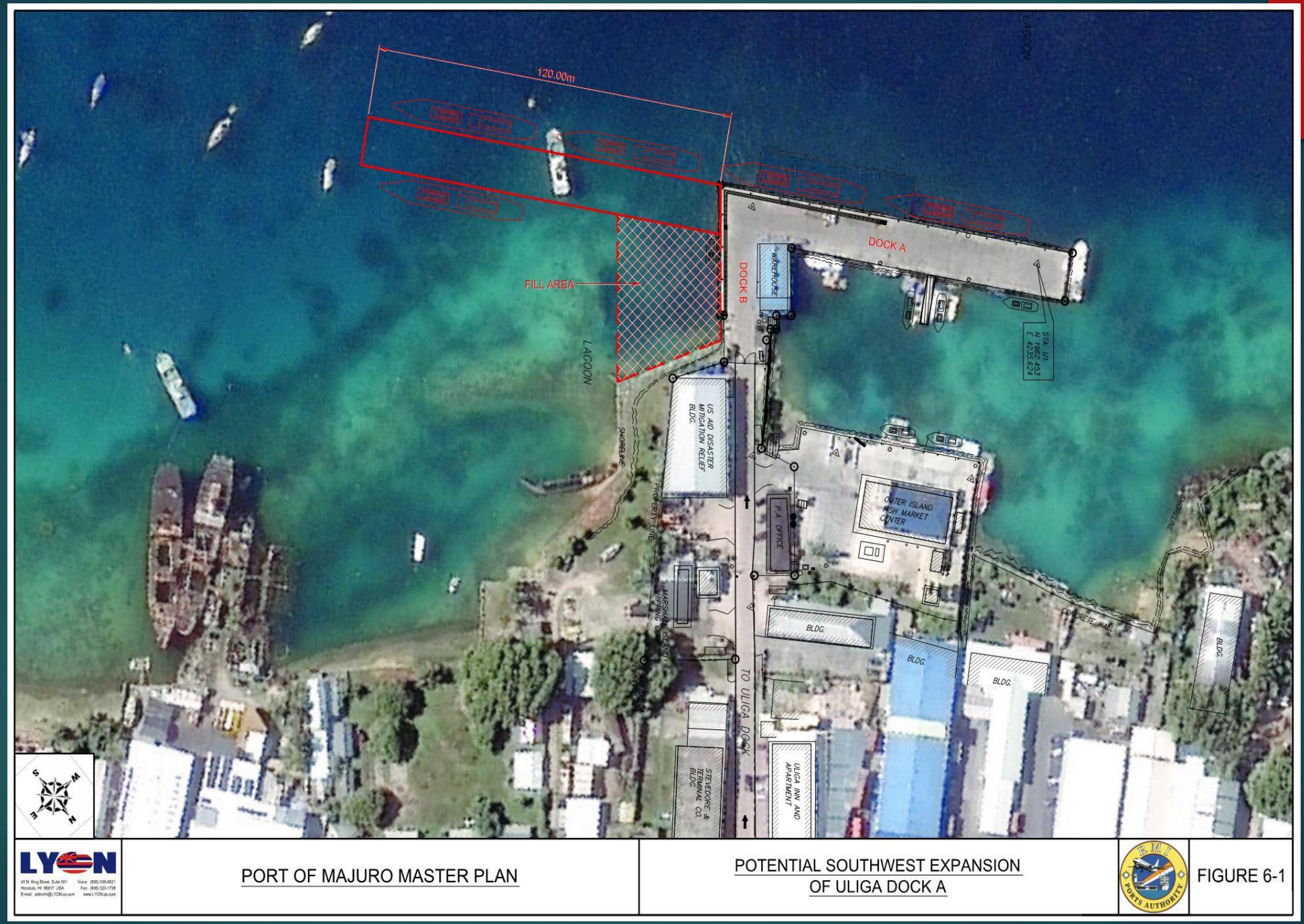
Master Plan Process

- **PREPARE CONCEPTUAL SITE & FACILITY PLANS FOR OVERALL PORT COMPLEX**

  - container freight station, administrative facilities, and other stevedoring facilities

  - vehicular access circulation within port and adjoining port entry/exits

  - supporting utilities for port lighting, water, sewer, power, fire protection, and fuel distribution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FILL AREA
LAGOON
DOCK A
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WAREHOUSE
STA. U1
N 1862 453
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US AID DISASTER MITIGATION RELIEF BLDG.
SHORELINE
PROPERTY LINE
P.A. OFFICE
OUTER ISLAND FISH MARKET CENTER
MARSHALL SHIPPING AGENCY
BLDG.
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PORT OF MAJURO MASTER PLAN
POTENTIAL SOUTHWEST EXPANSION OF ULIGA DOCK A
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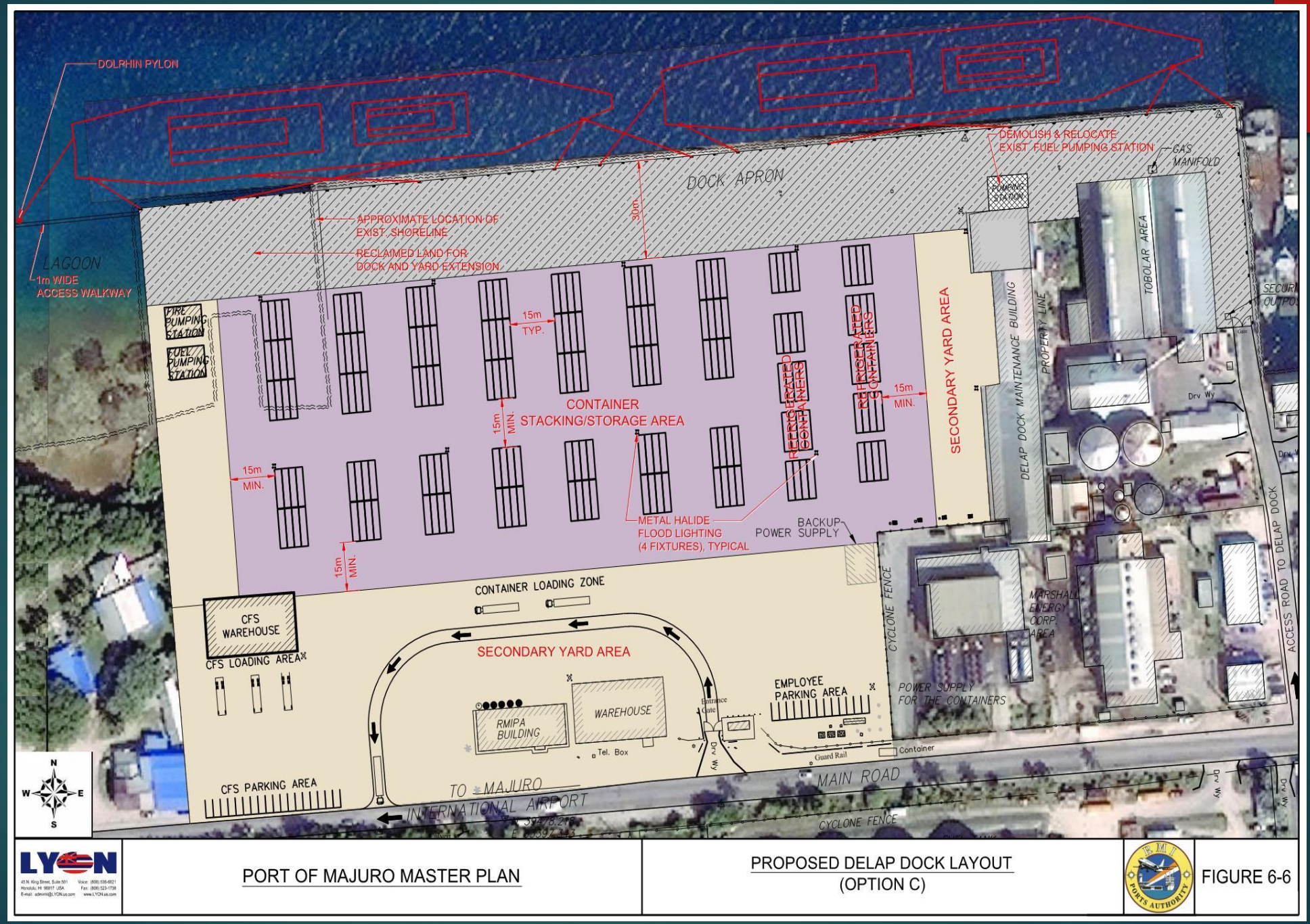
FIGURE 6-1



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PORT OF MAJURO MASTER PLAN

PROPOSED DELAP DOCK LAYOUT
(OPTION C)

FIGURE 6-6

Master Plan Process

- **DEFINE PORT IMPROVEMENT OBJECTIVES AND STRATEGIES**
  - Objectives must be achievable actions…not lofty goals
  - Specific strategies should be determined for each objective
    * Identify specific scope of work to be completed
    * Responsibility of Implementation
    * Order-of-magnitude cost
    * Schedule for Completion

Example of an Objective

Objective 12: Establish a preventative maintenance program for all port facilities.

Master Plan Rationale: Section 7.5.2 concerning the need to establish a preventative maintenance program, how it could be implemented, and the anticipated annual costs associated with program implementation.

Implementation Strategies:
Task 12A: Evaluate alternate computer maintenance management software, e.g., MEX CMMS, that can be used to organize a preventative maintenance program for all facilities in the Port of Majuro. Select and purchase one single-user license of the preferred software. Input existing facility assets and related data into the software. Input work orders, schedules, labor, equipment, supply, and material requirements for all maintenance tasks envisioned for the coming fiscal year. Coordinate scope of maintenance tasks with RMIPA Seaport Manager.

Responsibility for Implementation: RMIPA Director/Deputy Director, operations/ maintenance consultant

Anticipated Cost: Software: $3,525 (single user license) or $6,300 (two concurrent users) Operations/Maintenance Consultant: $19,000

Project Schedule: FY 2014

Master Plan Process

- **DEFINE PORT IMPROVEMENT OBJECTIVES AND STRATEGIES**

  - Refine objectives and strategies through group discussion with port stakeholders.

  - Review refined preliminary objectives and strategies with Port Authority Board of Directors or other port management agency. Refine them again.

  - Facilitate Board of Director's determination of priorities for each port improvement objective.

  - Use priorities to guide the determination of project schedules for each port improvement strategy.

Master Plan Process

- **DEVELOP SIMPLE PROCESS FOR CARRYING OUT MASTER PLAN**

  - Communicate the plan.

  - Periodically revise strategies as conditions change.

  - Modify budgets and responsibilities for implementation.

  - Identify options for financing of port improvements.
    * Loans and grant funds from donor countries
    * Potential public-private partnerships

  - Prepare financial analysis and/or cost-benefit analyses needed to support financing efforts.

  - Make the plan conveniently accessible via port website and Internet.

Master Plan Process

- **COMMUNICATE VISION TO THOSE WHO CAN PROVIDE FUTURE SUPPORT**
  - local residents
  - port stakeholders
  - local, regional and national leaders
  - local resource management and economic development agencies
  - local media
  - multi-national organizations, e.g., ADB, World Bank
  - donor agencies from countries that have interests within EEZ, e.g., Republic of China, United States, Japan, Australia

So what did we learn through this master plan process?

- Discussions with port stakeholders is essential to fully understand port issues, needs, and potential opportunities.
- Be prepared for change in factors influencing future port operations and development.

So what did we learn through this master plan process?

- Be more comprehensive. Don't limit your focus to potential design and construction projects. Consider issues and opportunities associated with;

  - organization of port management,
  - port operations and maintenance,
  - improving cargo handling efficiencies,
  - expanding vessel support services.

  These topics are critical to the **viability of port operations**, often **impact facility improvements**, and **keep the port attractive to future public and private investments**.

So what did we learn through this master plan process?

- Every port is different. Regardless of your experience, don't assume that solutions recommended for one port can be copied and pasted to another.
- Put yourselves in the shoes of those who manage the port authority. What information do they need to make the recommended port improvement program happen?

If you're interested in reviewing the Port of Majuro master plan …

- Visit the website of the Republic of the Marshall Islands Ports Authority. www.rmipa.com

Thanks for listening!

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