



Australian Government

Australian Maritime Safety Authority



SPREP

Secretariat of the Pacific Regional
Environment Programme

PORT WASTE RECEPTION FACILITIES GAP ANALYSIS

Port of Moresby PAPUA NEW GUINEA

FINAL REPORT

August 2014

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Objectives

As Papua New Guinea (PNG) is a Party to the International Convention for the Prevention of Pollution from Ships (MARPOL), it has an obligation under this Convention to provide adequate waste reception facilities for ships calling at PNG ports.

The objective of this project is to carry out a gap analysis on the adequacy of waste reception facilities provided specifically at the Port of Moresby (PoM), for ships normally calling at this port.

This analysis is designed to provide an overview of the waste reception services currently provided at the port and identify any gaps in this service, including recommendations on how these gaps can be addressed.

In addition, this analysis can assist in the assessment of PoM as a Regional Ships Waste Reception Centre for the purposes of a Regional Reception Facilities Plan for Regional Arrangements in the Pacific.

Scope

The International Maritime Organization (IMO) Resolution MEPC.83(44) – “Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities” forms a basis for reviewing services currently provided in marine ports. This resolution includes an assessment procedure, which provides a systematic checklist of questions designed to obtain information about current port facilities, demand, and the type and level of waste service provided.

The gap analysis undertaken in PNG specifically focused on PoM and followed the structure as provided in MEPC.83(44). Within the port, the focus was targeted at the cargo wharves and anchorage in the commercial port. The marina was not considered in detail although it should be noted that, particularly for garbage and oily waste from yachts, many of the situations are similar.

As MARPOL does not apply to waste generated by land-based operations at the terminal or wharf areas, this gap analysis only considers **waste generated by ships** resulting from ships' compliance with MARPOL standards.

The recommendations resulting from this analysis will be directed to PNG Ports Corporation Ltd (PNGPCL) in the first instance; however, there will be other agencies with important roles in implementing these recommendations. As such, it is recommended that PNGPCL forward these recommendations to those agencies and/or request their assistance and/or support as necessary. It is ultimately up to the Government of PNG to determine the appropriate agencies to carry forward the recommendations, although the recommendations make suggestions in this regard.

Background

The International Convention for the Prevention of Pollution from Ships (MARPOL)

MARPOL includes obligations with regard to the provision of waste reception facilities. These obligations are on government authorities, rather than on ships or private companies. The purpose of these obligations is to ensure that ships are able to legally dispose of their waste as an alternative to illegal discharge to the marine environment and/or inappropriate land disposal. Specific regulations are summarised below.

It should be noted that PNG is a Party to all Annexes of MARPOL, except for Annex VI, prevention of air pollution from ships.

Annex I Regulations for the Prevention of Pollution by Oil

Regulation 38.1 – The Government of each Party to the present Convention undertakes to ensure the provision at oil loading terminals, repair ports, and in other ports in which ships have **oily residues** to discharge, of facilities for the reception of such **residues and oil mixtures** as remain from oil tankers and other ships adequate to meet the needs of the ships using them without causing undue delay to ships.

Regulation 38.2 and 38.3 expand on this basic requirement. The following points are of particular relevance:

- Reception facilities for oily waste are **required in ports and terminals which handle ships provided with the sludge tank(s)** required by regulation 12 *[this means ports that handle ships of 400gt and above]* (38.2.4).
- Such facilities must be sufficient to receive **all residues and oily mixtures** retained in the sludge tanks **of all ships that may be reasonably expected to call at such ports or terminals** (38.3.4).
- Reception facilities for oily waste are required in **all ports** in respect of oily bilge waters and other residues which cannot be discharged in accordance with regulation 15 *[which requires that effluent is filtered to 15ppm oil, discharged while on route etc., and not containing concentrations of chemicals hazardous to the marine environment]* (38.2.5)
- Such facilities must be sufficient to receive **oily bilge waters and other residues** that cannot be discharged in accordance with regulation 15 from **all ships that may be reasonably expected to call at such ports or terminals** (38.3.5)

Annex II Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk

Regulation 18.1 – The Government of each Party to the Convention undertakes to ensure the provision of reception facilities according to the needs of ships using its ports, terminals or repair ports as follows:

- **ports and terminals involved in ships' [Bulk NLS] cargo handling** shall have adequate facilities for the reception of residues and mixtures containing such residues of **noxious liquid substances resulting from compliance with this Annex**, without undue delay for the ships involved.
- **ship repair ports undertaking repairs to NLS tankers** shall provide facilities adequate for the reception of residues and mixtures containing noxious liquid substances for ships calling at that port.

Regulation 13 sets out requirements for the control of discharges of residues of noxious liquid substances i.e. any residues remaining after the cargo has been unloaded. MARPOL and the related International Bulk Chemical Code (IBC Code) separates bulk liquid chemicals into three categories – X, Y and Z, based on their marine pollution hazard. A tank that has held a Category X (highest marine pollution hazard) substance must be 'prewashed', and the residues must be discharged to shore before the ship departs. In some circumstances where Category Y or Z cargo has not been unloaded in accordance with appropriate procedures or for high-viscosity or solidifying Category Y substances, prewashes and discharge of residues to shore may also be required. In these cases, discharge to shore may be at the unloading port or another port provided that it is confirmed in writing that an adequate reception facility is available.

Annex IV Regulations for the Prevention of Pollution by Sewage from Ships

Regulation 12.1 – The Government of each party to the Convention, which requires ships operating in waters under its jurisdiction and visiting ships while in its waters to comply with the requirements of regulation 11.1 undertakes to ensure the provision of facilities at **ports and terminals** for the reception of **sewage**, without causing undue delay to ships, adequate to meet the needs of the ships using them.

Annex V Regulations for the Prevention of Pollution by Garbage from Ships

Regulation 8.1 – The Government of each Party to the Convention undertakes to ensure the provision of facilities at **ports and terminals** for the reception of **garbage, without causing undue delay** to ships, and **according to the needs of the ships** using them.

Annex VI Regulations for the Prevention of Air Pollution from Ships

Regulation 17.1 – The Government of each Party to the Protocol of 1997 undertakes to ensure the provision of facilities adequate to meet the:

- needs of ships using its **repair ports** for the reception of **ozone depleting substances** and equipment containing such substances when removed from ships.
- needs of ships using its **ports, terminals or repair ports** for the reception of **exhaust gas cleaning residues** from an approved exhaust gas cleaning system when discharge into the marine environment is not permitted under regulation 14 [*i.e. in enclosed ports, harbours and estuaries unless documented that there is no adverse impact*]

Regulation 17.2 recognises that reception facilities for exhaust gas cleaning system residues and ozone depleting substances may be impossible in some ports. If a particular port or terminal of a Party is remotely located from, or lacking in, the industrial infrastructure necessary to manage and process those substances referred to in Regulation 17.1 and therefore cannot accept such substances, then the Party shall inform the Organization of any such port or terminal so that this information may be circulated to all Parties and Member States of the Organization for their information and any appropriate action. Each Party that has provided the Organization with such information shall also notify the Organization of its ports and terminals where reception facilities are available to manage and process such substances.

Refer to resolution MEPC.199(62), 2011 Guidelines for reception facilities under MARPOL Annex VI.

Special provisions in MARPOL for Small Island Developing States (SIDS)

IMO has recognised the unique challenges that SIDS experience in providing adequate reception facilities for ships waste. This was first recognised in 2000 in IMO Resolution MEPC.83(44) *Guidelines for ensuring the adequacy of port waste reception facilities*, then given a firm legal basis through MARPOL amendments in 2011.

SIDS may satisfy waste reception facilities regulations through regional arrangements when, because of those States' unique circumstances, such arrangements are the only practical means to satisfy these requirements. Parties participating in a regional arrangement shall develop a Regional Reception Facilities Plan, taking into account the guidelines developed by the Organization. The relevant guidelines are found in IMO Resolution MEPC.221(63). SPREP is currently in the process of reviewing the Pacific regional arrangements plan that has existed since 2002¹ to update the data and ensure the new IMO guidelines are met.²

Meaning of 'Adequate'

The International Maritime Organization provides guidance on what constitutes 'adequate' waste reception facilities in Resolution MEPC.83(44) *Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities*. Adequate facilities are defined as those which:

- mariners use;
- fully meet the needs of the ships regularly using them;
- do not provide mariners with a disincentive to use them; and
- contribute to the improvement of the marine environment.

The facilities provided by the port must:

- meet the needs of the ships normally using the port; and
- allow for the ultimate disposal of ships' wastes to take place in an environmentally appropriate way.

Where facilities are provided, it is important to remember that adequacy can be compromised by poor location, complicated procedures, restricted availability and unreasonably high costs for the service provided. These are all factors which may provide a disincentive for the use of reception facilities.

1 Nawadra et al. (2002) *Improving ships waste management in Pacific Islands ports*. SPREP, Apia.
2 SPREP Circular 13/79

The Guidelines also provide a sample assessment template that can be used to assess adequacy. The gap analysis undertaken in PNGPCL's PoM port uses this template as a basis.

Adequacy according to "the needs of ships normally using the port" is an important concept to recall when using the Guidelines and assessment template. It will not be necessary in all ports to fully meet every item in the assessment template for all types of waste. The Guidelines are intended to be applied as is practical for a particular port, and there is no need to cater for wastes that are unlikely to be produced by ships arriving in that port.

IMO has implemented an international reporting mechanism for allegations of inadequate waste reception facilities whereby ships' Masters submit a standard form (MEPC.1/Circ.834 15 April 2014) containing details of the allegation to the flag State and port State.

Good Practice

IMO has developed a *Guide to Good Practice on Port Reception Facilities* intended to be a practical users' guide for ships' crews who seek to deliver MARPOL residues and wastes ashore, and for port reception facility providers who seek to provide timely and efficient port reception services to ships (MEPC.1/Circ.834 15 April 2014).

Although this Guide has no legal force, it provides a useful starting point outlining how those on both ends of the gang-plank can work together to facilitate the transfer of ships waste to shore.

The Guide contains advice on good practice to ship masters, owners and operators including the incorporation of logistical and commercial arrangements to allow for waste delivery to shore, the minimization and management of waste on board, and the provision of advance notification of the need to discharge waste prior to arrival in port.

Advice provided to port reception facility operators is that good practice includes communication of relevant information about available services and costs, and implementing procedures that facilitate integration with shipboard and landside waste management practices. It is also recommended that arrangements are in place to receive segregated garbage (consistent with ISO 21070) and to comply with relevant quarantine and hazardous substances requirements.

The Guide also advises that waste reception should be provided at a reasonable cost. In addition, the *Comprehensive Manual on Port Reception Facilities* (1999) provides useful information on developing a waste management strategy, operation of reception facilities (including funding mechanisms), coordination of port and ship requirement, and options for enforcement and control.

National implementation of MARPOL waste reception facilities requirements

Legislation that assists current operators to remove waste from ships arriving at PoM includes:

- *PNG Environment Act 2000* – includes ultimate disposal of waste on land;
- *National Agriculture Quarantine and Inspection Act 1997* – powers and associated requirements for removing quarantine waste;
- *Harbours Act 2002* – powers and associated regulations for boarding ships, removing waste from ships and ship movements within port limits;
- *Marine Pollution (Ships & Installations) Act 2013*; and
- *Merchant Shipping Act 1976*.

Gap Analysis Procedure

Preparation

Prior to the visit to PoM, initial contact was made with PNGPCL. This was facilitated through NMSA and the Secretariat for the Pacific Regional Environment Programme (SPREP). Questionnaires were sent to relevant shipping agents and waste service providers under a cover letter from the CEO of PNGPCL, requesting information about the demand for waste reception facilities and the waste service providers in PoM.

The following documents and websites were reviewed:

- PNG Ports Corporation website
- InterOil Corporation website
- Pacific Ocean Pollution Prevention Program: Improving Ships' Waste Management in Pacific Island Ports
- Resolution MEPC.221(63) *2012 Guidelines for the Development of a Regional Reception Facilities Plan*
- Resolution MEPC.83(44) *Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities*
- *NMSA Marine Pollution (Ships & Installations) Act 2013*
- PoM maps
- The International Convention on the Prevention of Pollution from Ships (MARPOL)
- 2012 Guidelines for the Implementation of MARPOL Annex V (resolution MEPC.219(63))

Port Visit

The gap analysis team was comprised of a representative from SPREP, Mr. Anthony Talouli, two representatives from the Australian Maritime Safety Authority (AMSA), Ms Annalisse Sly and Ms Alice Fenwick as well as a representative from NMSA, Mr. Pawa Limu. The gap analysis team conducted on-site work in PoM from 26-28 February, 2014. The team held the following meetings:

- Start-up meeting with PNGPCL, NMSA, PNG Defence Forces and Department of Environment and Conservation (DEC), 26 February;
- Meeting with the National Agriculture Quarantine and Inspection Authority (NAQIA), with Mr. Warea Orapa, Assistant General Manager of Operations, 27 February;
- Waste Management System meeting with PNGPCL, 28 February;
- Meeting with Ms. Susana Germino and Mr. Nigel Drummond of Steamships Trading Company Ltd, 28 February; and
- Meeting with Joshua Sam of National Capital District Commission (NCDC) regarding waste permits and landfill management, 28 February.

In addition to the above meetings, the port area was visited to assess issues such as access, signage, waste receptacles on site, layout of berths, anchorages, on site treatment facilities and on site collection facilities.

The gap analysis team also had the opportunity to view a number of supporting waste reception sites including:

- The Baruni Landfill, where waste received at the port is disposed of;
- The Port of Moresby sewage treatment plant (8 mile/Morata Swamp); and
- The Port of Moresby quarantine waste treatment facility located at the PoM Jackson's airport (7 mile).

Reporting

Report provided to SPREP for review as part of the gap analysis team 14th July 2014.

Report provided to PNGPCL for review 14th July 2014.

Report finalised 27 August 2014

Gap Analysis Outcomes

Numbering and wording of questions throughout this section reflects that used in IMO Resolution MEPC.83(44).

A. Contact Details and Port Description

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PNGPCL representatives that were involved in the Gap Analysis

- Joe Kubul, Fleet Coordinator, POM Port
- Sakias Poning, Assistant Business Manager, Operations, POM Port
- Robert Hondi, Team Leader Inspections and Enforcement
- Judith Raka, Environmental Coordinator OHSE
- Stanley Semery, OHSE Manager

Port and surrounds

PNG comprises 600 islands with a total area of 463,000 square kilometres. The population is approximately 6.7 million. The capital city, Port of Moresby, is located on the south eastern coast of the mainland. The declared EEZ covers 3,120,000 square kilometres.

The Port of Moresby is the second largest container and general cargo port in PNG. There are 15 ports in PNG with Lae, in the northeast, being the largest. The PoM receives ship arrivals from both domestic (coastal traders) and international ships. Cargo handling areas and storage sheds are located directly landward of the wharves. The port has a Vigan Machine that handles bulk wheat and grain at the container terminal, and mobile cranes are available.

The PoM port limits cover an area of more than 100 square kilometres. A description of the different wharves and terminals is in Table 1 below.

Name	Description
Main Wharf	Multi-purpose berth designed for shallow draft ships. There is tug service provided by Steamships also located at Main Wharf. Main Wharf handles arable goods and fresh/raw marine products, as well as break-bulk, bunker and containerised operations.
Laurabada wharf	No longer operational and is currently being developed for commercial use.
Terminal 4	Multi-purpose berth with a fuel line that allows loading and unloading of fuel. Berth 4b is a grain berth predominately loading and unloading wheat. Containerised operations, vehicle loading and break bulk operations also occur at this terminal.
Australian Petroleum Company (APC)	Multi-purpose berth that also acts as an overflow berth for berth 4a and 4b. Specifically this berth handles arable goods, fresh/raw marine products and drum bunkers.
Terminal 5	Purely storage terminal only and does not have a berth.

Table 1 : Terminals and wharves at PoM

There are also tenants within PoM. InterOil has a license with PNGPCL to operate the Napanapa refinery within the port limits on the opposite side of the bay from the main terminals. Exxon Mobil also has a license to operate an LNG plant within the PNGPCL limits outside of the bay. These two facilities are privately owned although as within the Port Moresby Port limits, abide by the regulations set out under the Harbours Act. Within the port limits there is also a yacht club with a marina for recreational craft and a naval base.

There are also three anchorage points within the PNGPCL limits, one in the inner harbour and two in the outer harbour. These anchorage points assist in facilitating berthing at all berths within the port limits. In addition, these anchorage points are used by ships loading copper ore. This ore is collected by smaller ships from the Fly River and transported and loaded onto the ships waiting at anchorage. During this process these ships will never berth at PoM unless in an emergency.



Figure 1 Ships at anchorage in PoM

Ships calling at PoM generally consist of:

- Oil tankers;
- LNG carriers;
- Bulk carriers (Copper Ore, grain, forestry goods);
- Chemical tankers;
- Containerships (chemicals, manufactured goods, food, machinery, forestry goods);
- Ro-Ros (cars);
- Military;
- Cruise Ships; and
- Yachts.

The CIA World Fact Book for 2013 stated that PNGs primary exports are:

- Crude oil;
- Forestry products;
- Gold;
- Copper ore;
- Palm oil;
- Coffee;
- Cocoa; and
- Marine products (crayfish and prawns).

With the primary imports being:

- Machinery & transport equipment;
- Manufactured goods;
- Food;
- Fuels; and
- Chemicals.

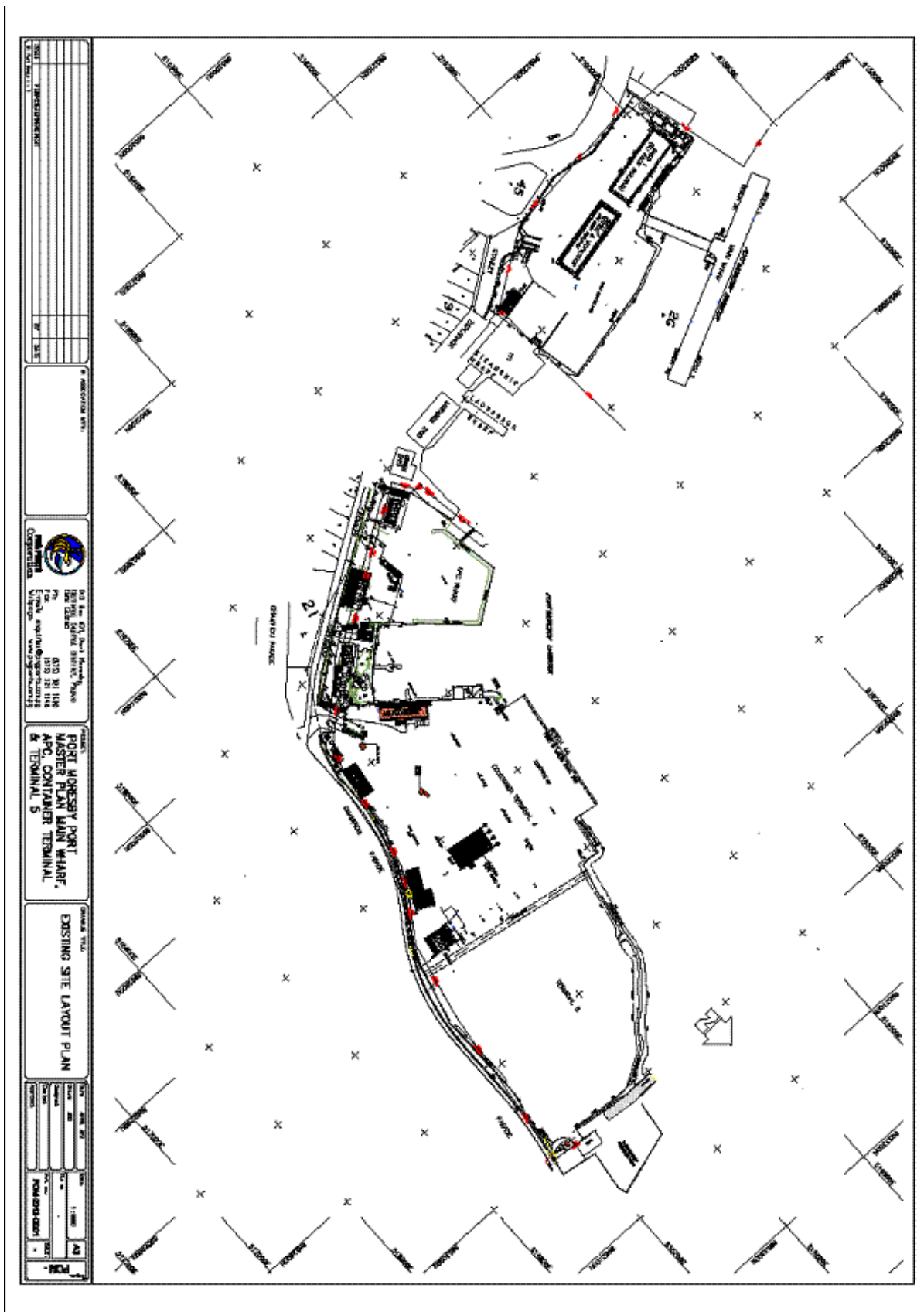


Figure 2: Master plan for Port of Moresby



Figure 3: Northern view of PNGPCL staff in the foreground with a ship receiving bulk products at Berth 4A, PoM Container Terminal in the background



Figure 4: Southern view of Berth 4A, Container Terminal, PoM



Figure 5: Eastern view of Laurabada Wharf, Container Terminal, PoM



Figure 6: SE view of Domestic Waste Segregation Unit, Garbage bins at Main Wharf, Port Moresby Port

B. Summary of Waste Reception Facilities Provided

Type of Waste	Can Waste be Received? Yes or No	Type of Reception Facility (Fixed, Road Tanker or Barge)	Any Limitations in Capacity?	Service Provider
Oil Tankers: Oily tank washings or oily ballast water	Yes	Waste Service Provider	No	Deugro, Agility, Pacific Towing, China Nav
All ships: oily bilge water, sludges, used lube oils	Yes	Waste Service Provider	No	Deugro, Agility, Pacific Towing, China Nav
Chemical tankers: NLS	No	N/A	N/A	N/A
Sewage	Yes	Waste Service Provider	No	Deugro, Agility, Pacific Towing, China Nav
Garbage – Domestic ships	Yes	Waste Service Provider	No	Deugro, Agility, Pacific Towing, China Nav
Garbage – recyclables	No	N/A	N/A	N/A
Garbage – Fishing gear	Yes	Waste Service Provider		Deugro, Agility, Pacific Towing, China Nav
Quarantine Waste – all garbage from international ships	Yes	Waste Service Provider	No	Deugro, Agility, Pacific Towing, China Nav
Ozone Depleting Substances	No	N/A	N/A	N/A
Exhaust gas cleaning system residues	No	N/A	N/A	N/A

Table 2: Summary of waste reception facilities in Port of Moresby

C. Demand for Waste Reception facilities

Various estimates were received from shipping agents regarding the number of ships requesting waste removal, from ten ships per month to one per week.

Data provided by PNGPCL showed that 769 international ships and 981 coastal ships were received at Port of Moresby for the 2013 calendar year, totaling 1750 ships. It is not known what percentage of these ships requested waste reception.

Oily waste:

All ships potentially have oily waste on board e.g. used lubricants, oily sludge resulting from bilge water filtering, oily rags and oily bilge water.

Oil sludge generation depends on the quality of fuel. It has been estimated that sludge is generated at approximately 1-2% of daily Heavy Fuel Oil consumption^{3,4} and 0.5% of Marine Diesel Oil consumption⁵.

Ships larger than 400GT are required by MARPOL Annex I to have a sludge tank, so most large ships will be able to store a certain quantity of sludge on board prior to incineration or disposal.

Oil tankers generate particular types of oily waste, particularly cargo slops and oily ballast water. According to PNG PCL, Port of Moresby received 178 tankers in 2013. It is not known what proportion of these were specifically oil tankers.

Information from agents:

Of the responses received, one agent said there was only a need to discharge oily waste if a ship had some problems with their onboard equipment such as purifiers. Other agents did not report a demand for receipt of oily wastes. All oily wastes can be removed by a contractor, however, the ultimate disposal method is not known.



Figure 7: NE view of unsecured waste oil drums at Container Terminal Port of Moresby port

3 Le Calvez, P. (2006) Oily waste management onboard of ships. Lecture available at www.afcan.org/dossiers_techniques/gestion_dech_huileux2_gb.html

4 Palabiyik, H. (2003) "Waste Management Planning for Ship Generated Waste", *Journal of Naval Science and Engineering*, Volume 1, Number 2, July, 151-159.

5 Palabiyik H (above, n2).

Noxious Liquid wastes:

According to PNGPCL, 178 tankers were received at Port of Moresby in 2013, however, details on the cargoes of these tankers were not able to be provided to the gap analysis team. As it is reported that chemical tankers are received at PoM, it assumed a percentage of these ships would be carrying chemicals as cargo.

Agents did not report any demand for discharge of noxious liquid substances prewash nor solid bulk cargo residues when ships called at Port of Moresby.

Ships at anchorage receive copper ore from smaller ships and then continue on their journey, meaning they never come alongside at the Port. PNGPCL anecdotally reported that cargo residues from this operation are being directly discharge into port waters, which is against PNGPCL environmental requirements and MARPOL regulations. PNGPCL are looking to investigate this further to eliminate this practice.

Sewage:

All ships potentially have sewage on board. The amount varies with the number of people on board, so cruise and larger naval ships will have large amounts of sewage, whereas cargo ships with a small crew will have much smaller amounts. PNGPCL does not monitor naval ships that arrive at the base adjacent to Port of Moresby. Data shows that three cruise ships came alongside at Port of Moresby in 2013.

The Port of Moresby sewage settlement ponds were visited during the gap analysis, however it was advised that sewage received from ships is collected and brought to the open sewage anaerobic and aerobic treatment facilities closer to the harbor.



Figure 8: SW view of Port Moresby City's sewage settlement pond's inlet

MARPOL provides for different options for onboard storage and treatment of sewage, which affect where the ship will be able to discharge sewage.

Ships with sewage treatment plants will be able to treat their sewage and discharge liquid effluent at sea. There may be a need for these ships to discharge sewage sludge at port facilities, depending on the system.

Ships without IMO-approved sewage treatment plants may discharge disinfected (e.g. chlorinated) sewage or raw sewage at sea beyond 12nm. The need to discharge sewage to shore will vary depending on the size of holding tanks and the length of a ship's stay in port.

Information from agents:

This service is delivered by contracted service providers and organised by the shipping agents. Of the responses received, no agents reported a demand for discharge of sewage.

Garbage:

All ships will have some garbage on board. The amount and type of garbage will vary depending on the number of persons on board, and depending on the type of ship. Some particular examples:

- Cruise ships – very large amounts of domestic garbage due to the large number of persons on board. Food wastes and food and beverage packaging will feature. Medical wastes and certain small hazardous items (e.g. batteries, aerosol cans, photo processing chemicals) etc. may be present in larger quantities than on a cargo ship or bulk carrier.
- General cargo– smaller amounts of domestic garbage, but garbage such as dunnage and other cargo-related waste might be more significant.
- Tankers – similar domestic garbage as for general cargo ships, but dunnage and other cargo packing materials probably not an issue.
- Fishing ships – Damaged nets, lines and other fishing gear in addition to domestic garbage.

Garbage received from ships at Port of Moresby is ultimately transferred to the Baruni landfill. Some scrap metal is recycled in Port of Moresby however it was unclear if any ship's waste is recycled.

Waste service providers are approved by NAQIA with NCDC providing tickets for access to the landfill. NCDC also requires all business operators in Port of Moresby to have a permit.

Information from agents:

All responses received from agents indicated that garbage was regularly landed by ships at Port of Moresby. Contractors are engaged directly by agents and there are no access issues were evident for these contractors.



Figure 9: Solid waste arriving at the Baruni Landfill, about 20km North of PoM

Theoretical estimates of garbage quantities

Estimates were made of the theoretical amount of garbage arriving in Port of Moresby (Table 3) based on an assumption of 2kg per person per day for non-cruise ships and 3kg per person per day for cruise ships⁶. It was also assumed that ships would spend an average of 1 day at sea prior to calling at Port of Moresby⁷, and the number of ship visits was calculated from the data supplied by PNGPCL (Table 3).

	Avg pax onboard	Avg days at sea prior to port call	Annual visits	kg.pax.day generated	kg generated per ship visit	Annual mass generated (kg)
Non-cruise	25	1	978	2	50	48900
Cruise Liners	2000	1	3	3	6000	18000
					Total:	66900

Table 3: Theoretical amount of garbage arriving in Port of Moresby

These sorts of calculations can be useful in estimating quantities of waste, which in turn can assist in planning reception facilities for this waste stream.

6 Delfosse, S., McGarry, J. & Morin, T. (2010) Ship Generated Waste Disposal in the Wider Caribbean Region. www.wpi.edu/Pubs/E-project/Available/E-project-121610-185147/unrestricted/Team5_USCG1_IQP_FINAL.pdf

7 An estimate of 3 days was used in the SPREP Regional Reception Facilities study in 2002.

Annex VI wastes:

No wastes related to Annex VI of MARPOL are known to be received or landed at Port of Moresby, noting that PNG is not presently a party to Annex VI.

D. Assessment of Waste Reception Facilities

D1. Oily Wastes

D1-1

Where is oily waste disposed of?

- ~~Separation of oil and water then recycling~~
- Land disposal
- ~~Recycled~~
- ~~Incineration~~
- ~~Ships to a holding tank prior to being pumped out~~
- Directly from the ship to a mobile facility
- ~~other~~

Current removal of oily waste from ships is rare.

D1-2

Are there any restrictions on receipt or collection of oily waste by service providers?

No restrictions were noted, with one service provider advising that all waste collections are covered in their safety management system.

D1-3

Are oily waste reception facilities available?

- 24/7
- ~~24/5~~
- ~~9-5/7~~
- ~~9-5/5~~
- ~~Other~~

D1-4

Is prior notice for receipt of oily waste required?

- ~~0 hours~~
- ~~12 hours~~
- 24 hours
- ~~48 hours~~

D1-5

Is the oily waste receipt service available?

- ~~• at no cost~~
- ~~• at a cost incorporated into standing port use charge~~
- at a cost charged in addition to other services

D1-6

Is a waste collection service available?

- at all berths –
- ~~• at most berths –~~
- ~~• at only one berth –~~
- ~~• to ships anchored within the port –~~
- ~~• to ships anchored outside the port –~~
- ~~• other~~

Additional information:

Steamships have the ability to collect oily waste from their coastal traders and dispose. At the moment they are able to recycle oily waste from their stevedoring operations, however they are investigating the option to extend this to their ships and if viable, offer this service to other ships as a commercial arrangement. There are still questions on the quantity of the by-product produced from this venture and the disposal options.

Assessment of the provision of waste reception facilities for oily waste:

~~1 – Less than Satisfactory~~ 2 – Satisfactory ~~3 Fully meets the requirements~~

Comments:

Although the requirement for removal of oily waste is rare, the port has the capacity to complete this task if required. D2. Noxious Liquid Substances

There are no known arrangements at Port of Moresby that provide for the discharge of noxious liquid substances at the port.

Assessment of the provision of waste reception facilities for noxious liquid wastes:

~~1 – Less than Satisfactory~~ 2 – Satisfactory ~~3 – Fully meets the requirements~~

Comments: This assessment has been classed as satisfactory due to the lack of demand for this service, noting that unless there is a demand there is no need to provide this service. If in the future there was demand for this service, it is expected that the port would assess how to receive this type of waste. This is of particular importance as it is noted that PoM receives chemical tankers.

D3. Sewage

D3-1

Where is sewage disposed of?

- Directly from the ship to a mobile facility
- ~~• Ships to a holding tank prior to being pumped out~~
- ~~• other~~

D3-2

Are there any restrictions on receipt or collection of sewage by service providers?

No.

D3-3

Are sewage reception facilities available?

- 24/7
- ~~• 24/5~~
- ~~• 9-5/7~~
- ~~• 9-5/5~~
- ~~• Other~~

D3-4

Is prior notice for receipt of sewage required?

- ~~• 0 hours~~
- 12 hours
- ~~• 24 hours~~
- ~~• 48 hours~~

D3-5

Is the sewage receipt service available?

- ~~• at no cost~~
- ~~• at a cost incorporated into standing port use charge~~
- at a cost charged in addition to other services

D3-6

Is a waste collection service available?

- at all berths –
- ~~• at most berths –~~
- ~~• at only one berth –~~
- ~~• to ships anchored within the port –~~
- ~~• to ships anchored outside the port –~~
- ~~• other~~

Assessment of the provision of waste reception facilities for sewage:

~~1 – Less than Satisfactory~~ 2 – Satisfactory ~~3 – Fully meets the requirements~~

Comments:

This service has been deemed as satisfactory as ships have access to this to this service without restrictions. While this service is provided at a charge in addition to other services, responses from shipping agents has not identified the current costs a deterrent for the use of this service. It is suggested that this service be monitored at the PoM to ensure that this service continues to meet the demands of the ships normally using the port.

D4. Garbage Disposal – On Shore

D4-1

Where is garbage disposed of?

- Local government dump/landfill
- ~~Transfer station~~
- ~~Materials recycling facility~~
- ~~other~~

D4-2

Where are quarantine wastes disposed of?

- ~~Incinerator (dry waste) – Note this method of treatment is no longer regularly being used.~~
- Sterilization (wet waste)
- ~~deep burial~~
- normal landfill

The Quarantine facility incinerator at the airport is reported as not functioning as well as designed. It was previously gas fired but that set up is no longer in operation as the facility now only uses firewood and other dried materials for incinerating. Due to this change, not a lot of materials are incinerated.

The other form of quarantine treatment available and working very well, is the steriliser. All wet food items and other materials from planes, ships and even arriving from postal services are sterilized and disposed of at the municipal landfill site in PoM.



Figure 10: NW view of NAQIA incinerator at the Jackson's International Airport, PoM



Figure 11: Bags of quarantine waste to be incinerated at the Jackson's International Airport, PoM



Figure 12: Incinerator at the Jackson's International Airport, PoM



Figure 13: NAQIA Sterilizer at the Jackson's International Airport, PoM



Figure 14: Inside view of the NAQIA sterilizer at the Jackson's International Airport, PoM

Are all quarantine waste receptacles

- ~~secure from interference~~
- ~~permanently labelled~~
- ~~securely covered~~
- ~~banded~~
- ~~stored in a refrigerated facility~~
- ~~protected from birds or other animals~~

There are no quarantine waste receptacles on the berths.

[D4 continued. Garbage Disposal – Ship to Shore](#)

D4-3

Are there any restrictions on receipt or collection of garbage wastes?

No.

D4-4

Are garbage reception facilities available:

- 24/7
- ~~24/5~~
- ~~9-5/7~~
- ~~9-5/5?~~
- ~~Other~~

D4-5

Is prior notice for receipt of garbage required

- ~~• 0 hours~~
- ~~• 12 hours~~
- 24 hours
- ~~• 48 hours~~

D4-5

Is the waste receipt service available

- ~~• at no cost~~
- ~~• at a cost incorporated into standing port use charge~~
- at a cost charged in addition to other services

D4-6

Is a waste collection service available

- at all berths
- ~~• at most berths~~
- ~~• at only one berth~~
- ~~• to ships anchored within the port~~
- ~~• to ships anchored outside the port~~
- ~~• other~~

Assessment of the provision of waste reception facilities for garbage:

~~1 – Less than Satisfactory~~ 2 – Satisfactory ~~3 – Fully meets the requirements~~

Comments:

This service has been deemed as satisfactory as ships are able to receive this service without limitations. Contractors are available to remove garbage from the ship, including quarantine waste, without restriction and when required. In addition, the costs associated with the discharge of this waste at PoM do not appear to be a deterrent to the use of these services.

How the waste is managed once it is collected from the ship has been identified by PNGPCL as something that requires additional consideration. As there is not a system in place to track waste and ensure that it is being discharged of legally, it is suggested that PNGPCL work closely with NCDC to track waste that is collected from ships to ensure that it is disposed of in accordance with the current regulations. It is also suggested that the management of quarantine waste collected from ships and the subsequent treatment by sterilisation be monitored to ensure that without the frequent use of the incinerator, the steriliser has the capacity to meet the demands of the ships calling at the port.

D4A – Annex VI wastes

Ozone depleting substances

Papua New Guinea is party to the Montreal Protocol, as such ODS must be handled and disposed of according to strict procedures set out in the PNG Environment Act 2000. A licensed technician would need to be engaged to remove the ODS from the ship.

There are no known local licensed disposal technicians or facilities for ODS. There is no demand for destruction of these wastes.

Exhaust gas cleaning system residues

It is likely that such residues may be handled in the same manner as oil sludge. There is currently no known demand for wastes of this type.

Assessment of the provision of waste reception facilities for Annex VI wastes:

~~1 – Less than Satisfactory~~ 2 – Satisfactory ~~3 – Fully meets the requirements~~

Comments:

Noting, again, that PNG is not presently a party to Annex VI, this assessment has been classed as satisfactory due to the lack of demand for this service, noting that unless there is a demand there is no need to provide this service. If in the future there was demand for this service, it is expected that the port would assess how to receive this type of waste.

D5. Waste Management System

Esso Highlands Limited, the company operating the LNG terminal (about 19.7km NW from the port), has developed a Waste Management Plan as part of its Environmental and Social Management Plan (ESMP).

The objective of this WMP is to contain, transport, handle and dispose of solid and liquid wastes arising from project construction activities. As such, it is considered that this plan is not the appropriate place to address the management of ships' waste arriving at the terminal. It is suggested that Esso Highlands Limited consider the development of a plan that outlines how waste from ships is managed at the terminal, noting its location and operation separate from the port.

The below information relates to the plans that have been developed by PNGPCL.

D5-1

Has a waste management plan been developed and implemented for ship wastes?

No.

D5-2

Is the Waste Management Plan part of an overall Environmental Management System for the port?

There is a PoM Safety and Environment Management Plan (SEMP) developed by PNGPCL that forms part of an overall Environmental Management System (EMS) endorsed to ISO 14001. Additionally, there is a PNGPCL Waste Management Plan (WMP) that covers all ports in PNG. The WMP is currently being reviewed and coverage of ship wastes is being considered.

D5-3

Are marinas and fishing harbours covered by the port EMS or required to develop their own EMS?

Yes as they are within Port Limits.

D5-4

Does the WMP provide a brief summary of the types of wastes received and the collection and disposal facilities/services?

No.

D5-5

Does the WMP address and provide management objectives for: [see D5-6 to 9 following]

D5-6

Does the WMP address and provide management objectives for Operations:

MEPC.83(44) lists several aspects to consider:

Facility management and maintenance – No

Signage – No

Infrastructure – No

Contractual arrangements – No

Emergency Response – Yes (SEMP)

Seasonal variations – No

Training and education – Yes (WMP)

Delegation of Responsibilities and Accountability – Responsibilities are included but not accountabilities (WMP, SEMF)

Compliance with regulatory conditions, including auditing – No

D5-7

Does the WMP address and provide management objectives for Technical Standards:

No

D5-8

Does the WMP address and provide management objectives for Environmental Considerations:

MEPC.83(44) lists several aspects to consider:

Prevention of pollution to surface waters – Yes (SEMP)

Noise emissions, visual impacts and odour emissions – No, however there is a section covering air emissions (SEMP)

Special considerations due to surrounding environment (e.g. proximity to wetland or mangrove areas); – No

Coastal processes (e.g. extreme tides) – No

D5-9

Does the WMP address and provide management objectives for plans for future expansion/upgrades:

Yes, all projects are required to develop an Environmental Impact Statement that details mitigation of environmental impact, for example the LNG Project was required to consider waste management and demonstrate how waste would be removed during construction and operational phases (as per above).

D5-10

Are contact details held for all waste service providers?

No, however PNGPCL staff are developing this list.

D5-11

Are the service providers licensed/approved as required by legislation?

NCDC require all businesses in Port of Moresby to have a license to trade, including waste service providers. PNGPCL are investigating have all waste service providers trained and inducted into PoM and would like to implement a waste tracking system to ensure waste collected from ships is being disposed of in an environmentally acceptable manner.

D5-12

Are a copy of the licenses held on file?

Yes by NCDC.

D5-13

Are copies of the licenses for the waste disposal facilities used by the service providers held on file?

No however there is only one landfill site in Port of Moresby and this is administered by NCDC, the municipal authority.

D5-14

Have receipts for waste disposal been sighted/copies held on file?

Waste service providers are required to purchase a ticket from NCDC prior to disposal at the Baruni landfill. These tickets must then be presented to on site staff at the landfill in order to discharge waste. It is possible to track these tickets as copies of the tickets are kept on file.

D5-15

Are alternative waste service providers or disposal facilities available (e.g. spare drums, waste oil recyclers)?

No.

D5-17

Are the details of back-up facilities on file?

No.

D5-16

Is there a procedure for choosing waste disposal service providers (e.g. list of preferred contractors)?

No, it is ultimately the decision of the shipping agent as to who they engage.

D5-18

Does the WMP include an emergency response plan?

Yes within the SEMP. There is also a draft emergency response plan which calls on relevant agencies within Port of Moresby to assist with response.

D5-19

Is the plan adequate in that it addresses at least the following [emergency response] issues?

MEPC.83(44) identifies the following aspects to consider:

Spillage of liquid – Yes

Spillage of solids – No however impacts from spilt copper ore are being investigated

Leakage of gas – No

Fire or explosion – Yes

Emergency contacts – Yes

Other – N/A

D5-20

Is information recorded on the quantities of each waste stream which are received, date of receipt, disposal contractor and method of disposal or treatment?

Not by PNGPCL.

D5-21

Are there variations in the quantities of each waste stream received?

- ~~in any one month (e.g. due to shipping variations)~~
- ~~in any one year (e.g. due to seasonal effects)~~
- ~~over a number of years (e.g. due to industry growth)~~
- don't know

PNGPCL is uncertain on the trends associated with waste collection, however, private port owners may know what waste is being collected as part of licensing plans.

D5-22

Is this information analysed on an on-going basis to detect changes in usage (both short term season variations and long term growth or reductions) and assist in formulating future plans?

Not currently.

D5-23

Is ongoing consideration given to changes in demand for waste reception facilities?

Not currently.

D5-24

Do plans exist for future upgrades [to waste reception facilities]?

The Occupational Health, Safety, Environment and Quality Department Business Plan 2014-2016 includes plans to install an on-site incinerator and other waste reception facilities however it has been identified there is not adequate space at the port to accommodate these proposed facilities. Investigations on relocating the port which would allow these facilities to be developed are underway.

D5-25

Is there an on-going process for reviewing existing facilities and determining changes that may be required to meet adequacy, timing or waste generation demands?

Yes, every two years. The need for the on-site incinerator was identified as the port became aware of illegal dumping of waste and were looking for ways to ensure this waste was managed appropriately.

D5-26

Are there provisions for audits against the WMP (at least within 2 years of implementation and thereafter every 3 years?)

Yes, once every two years.

D5-27

Is there provision for periodic review of the WMP?

The WMP is updated reactively if a need is identified (change in management, new development etc.), otherwise routinely every two years.

D5-28

Are the relevant requirements of the MARPOL 73/78, UNCLOS and IMO generally adhered to by the users of the port?

Yes, generally, however issues of non-compliance (illegal disposal of waste from anchorages, copper ore residue discharge etc.) are being identified and solutions incorporated into ongoing plans.

D5-29

Is there information on the state and local regulations regarding waste management, pollution of water, pollution of air, noise emissions, discharges to sewer, storage of dangerous goods etc. (please list legislation if known):

Yes (WMP and SEMP).

D5-30

Is there information on waste minimisation hierarchy (i.e. avoid/ reduce/ reuse/ recycle/ reprocess)?

Not for ships.

D5-31

Is an open and co-operative relationship maintained between the port authority and the relevant authorities and agents?

Yes but regular meetings are not being held. There is a plan to increase collaboration and some agencies already have memorandums of agreement for PNGPCL such as NMSA.

D5-32

Are there channels of communication and consultation with relevant organisations to ensure that particular changes in demand are considered in providing waste reception facilities?

Not currently.

D5-35

Do training programmes for port employees (both of the port authority and users) include a section on waste management and the facilities provided at the port?

Yes there are units on oil spills and waste segregation. This programme is currently up for review due to resourcing issues.

D5-34

Is there a section in the WMP or a separate document which is included in agreements with port users and specifies requirements for the usage of port waste reception facilities?

Yes there are information brochures available at the reception of the port offices and on the web site. There are plans to improve the overall content of the web site.

D5-35

Is clear and visible signage for waste reception facilities present and includes:

- **advice at initial ship contact point of waste reception facilities – no**
- **direction to receptacle or disposal point location – no**
- **labelling of all receptacles and disposal points – no**
- **contact numbers – no**
- **emergency procedures – no**
- **translation into other languages as required – no**

PNGPCL would like to erect signage however following conversations with NAQIA this issue needs further discussion between the two agencies.

D5-36

Are information sheets/leaflets available for each waste reception facility?

Not applicable as there are no waste reception facilities on site.

D5-37

How is information on waste reception facilities conveyed to ships?

Through shipping agents.

Assessment of the waste management system:

1 – Less than Satisfactory ~~2 – Satisfactory~~ 3 – Fully meets the requirements

Comments:

The foundations of a solid WMS are in place. PNGPCL has faced resource constraints, limiting the completion of the WMS, however it is the intention for this document to be completed in the near future. Regular meetings with relevant agencies and resourced training would be important components to include in the WMS.

E. Assessment of adequacy of service

The results of the agents survey are summarised below.

Why ships might or might not chose to deliver waste to shore in Port of Moresby

Agents provided differing responses for why ships might or might not choose to deliver waste ashore in Port of Moresby:

- they may choose to retain their waste on board due to urgency for a quick turnaround following loading/unloading;
- the ships may have too much waste on board thus forcing a discharge of waste to occur at Port of Moresby; and
- reception facilities in Port of Moresby are considered not sufficient.

Difficulties making arrangements

Agents did not report having any difficulties making arrangements to remove waste from ships; however one suggested the frequency of general garbage collections could be improved.

Overall satisfaction

Some agents responded they were not happy with the overall waste collection arrangements in Port of Moresby but did not elaborate why, and others were generally satisfied.

Conclusion – Gaps and Opportunities

Based on the demand for waste reception facilities at PoM and the services provided, it can be determined that PoM is, overall, providing a reasonably adequate service to ships seeking to discharge waste at PoM. It is interesting to receive the feedback from agents that these services are not sufficient, but no specific details on the elements that are not sufficient. As mentioned, there were not issues raised with the costs of the services or the availability, except for one suggestion for improvement. It is considered that there is an opportunity for PNGPCL to work with shipping agents to ensure that the ongoing demand of ships calling at PoM is met satisfactorily. This can also indicate trends and new services that may be required.

While the services required by ships calling at PoM are essentially being met, some concerns have been raised with the on land disposal of these wastes. Although NCDRC have processes and procedures in place to ensure that service providers pay for the use of the landfill before discharging waste there and the requirement that these service providers have a license to operate as a business at PoM, there is still a large amount of illegal discharging occurring on the sides of the roads and in vegetated areas.

Under the current arrangements PNGPCL are unaware of how much waste is being removed from ships; NCDRC is unaware of the amount of waste being disposed of at the landfill that comes from ships; and these agencies are unaware of the quarantine waste removed from ships at PoM. As there is no visibility of the waste being removed from ships, this can create a situation where the illegal disposal of waste can occur, without any consequences to the entity undertaking the disposal, and with potentially significant environmental and economic consequences, particularly in regard to quarantine waste.

In relation to quarantine waste, although PoM has in operation a steriliser to treat quarantine waste from ships, it is noted that until recently there was also the option to treat waste by incineration. As this option is no longer frequently used, it is suggested that the amount of waste being sterilised be monitored to ensure that the steriliser has the capacity to meet the demands of the ships calling at the port.

Recommendations

1. In order to facilitate improved waste management at the port, PNGPCL should instigate regular working groups between agencies that are involved in reception of ship's waste. This will allow the different agencies to understand all requirements, improve working relationships and identify any further improvements to the current system. Suggested participants include:
 - a. NMSA;
 - b. NAQIA;
 - c. Department of Environment and Conservation
 - d. NCDC; and
 - e. Port tenants.
2. PNGPCL should establish a procedure to work with shipping agents to ensure that the ongoing demand of ships calling at PoM is met satisfactorily.
3. PNGPCL advised that the WMP is subject to regular updates, or is updated when an operational need is identified. PNGPCL should consider including the management of waste from ships in the next update of the WMP. Consideration should also be given to the inclusion of the S&I Act 2013 in the WMP. Suggested headings to facilitate the inclusion of waste from ships are:
 - a. Type of waste stream received from ships (e.g. sewage, garbage etc.);
 - b. Facilities available for managing that waste stream;
 - c. Demand for reception for type of waste;
 - d. Identified opportunities for improvements.

An example is stepped out in the table below:

Type of waste	Facilities available	Demand	Improvements
Garbage	Removal trucks	10 ships per month	On-site incineration
Sewage	None available	1 ship per month	Collaborate with Eda-Ranu
Oily waste	Recycling?	5 ships per month	Collaborate with Steamships

Whilst the WMS that exists for PNGPCL has areas that are very good, there is room for some improvement. The following areas should be included:

- Types of wastes received from ships, quantities, and the disposal methods for each type (as outlined in example above);
- Analysis of waste trends i.e. are there any common themes in increases of waste;
- Management objectives for facility management and maintenance; signage; infrastructure; contractual arrangements; seasonal variations and audits;
- Contact details for waste service providers;
- Information on the waste minimization hierarchy for waste from ships; and
- Interaction between PNGPCL and other agencies involved in ship waste (i.e. proposed working group).

4. An opportunity exists to erect signage at Port of Moresby to better inform shippers of requirements surrounding quarantine waste. Currently, some waste on ships including that of plant or animal origin is considered to be quarantine waste by NAQIA. If visible signage is built detailing what wastes are considered quarantine and the correct disposal method for this waste, any confusion shippers may have over their responsibilities will be reduced. PNGPCL and NAQIA could discuss this need for visible signage related to quarantine waste at the berths cooperatively to identify a way forward.
5. The Global Integrated Shipping Information System (GISIS) is an online database managed by the IMO to provide relevant up to date information for Governments and shippers. As such, it is important to keep all of the information for PNG up to date. PNGPCL should work in consultation with NMSA to ensure the correct contact details of waste service providers are in GISIS. The system can be accessed here: <http://gisis.imo.org/Public/Default.aspx>.
6. PNGPCL should investigate, in conjunction with NAQIA and NCDC, the implementation of a waste tracking system at Port of Moresby. This could be discussed and progressed at the regular working groups to be held between agencies. The waste tracking system should:
 - a. Provide a paper trail of all waste collected from ships, from receipt by waste service contractor to ultimate disposal;
 - b. Take into consideration work already undertaken by NCDC and the 'tickets' they provide for access to the landfill (including specifying on the ticket if the waste for collection is quarantine); and
 - c. Aim to eliminate illegal dumping of waste.
7. Currently NCDC issues a business permit to waste service providers to allow them to operate in Port of Moresby. These businesses are then further issued with a required ticket that allows them to use the landfill. Controls should be put in place to ensure that only businesses that possess these two permits should be allowed to receive waste from ships. This should be managed by PNGPCL when providing access to the wharves.
8. NAQIA inspectors are based at Port of Moresby and supervise waste removal from ships. The correct way to bag quarantine waste should be communicated, potentially through signage or an information flyer. This issue could be discussed at the working group to be held between agencies.
9. NAQIA have expressed an interest in establishing a garbage containment and storage area at the wharf to improve the efficiency of quarantine inspections. This issue should be discussed between PNGPCL and NAQIA with the potential to include on a future PNGPCL Company Services Division Business Plan.
10. It is suggested that the management of quarantine waste collected from ships and the subsequent treatment by sterilisation be monitored to ensure that with the limited use of the incinerator, the steriliser has the capacity to meet the demands of the ships calling at the port.
11. Given that a number of ships at Port of Moresby remain at anchorage rather than coming into berth, PNGPCL should investigate options for a barge service to ships at anchorage in order to minimise the opportunity for illegal dumping.
12. PNGPCL should keep abreast of the Steamships oily waste recycling project. During a meeting with Susana Germino, General Manager, the gap analysis team found that Steamships were investigating the possibility of recycling oily waste. If this project is feasible, potential exists for PNGPCL to also use the recycling arrangements for ships calling at PoM.

13. PNGPCL should develop communication tools that explain to ships what waste services are available in PoM, for example, brochures. The PNGPCL web site should also be updated with any relevant information, and all of this information consistent with any training given on waste management at the port.
14. NCDC should include NMSA and PNGPCL as part of their consultation process when implementing any new local regulations, specifically the waste by-law that is currently being developed.
15. As oily waste is rarely discharged at PoM, PNGPCL and NMSA should undertake enquires as to which ports in PNG ships, particularly coastal traders use to dispose of oily waste. This information can be used to assist in the management of this waste stream at PoM for ships regularly using the port.
16. AMSA and SPREP to continue to keep PNGPCL and NMSA informed of any progress regarding the development of the Regional Reception Facilities Plan.
17. It is suggested that Esso Highlands Limited consider the development of a waste management plan that outlines how waste from ships is managed at the terminal, noting the terminal's location and operation separate from the PNGPCL.

Port of Moresby		
Action	Responsibility	Timeframe
Instigate regular working groups between agencies that are involved in reception of ship's waste to take a cohesive approach to waste reception		
Establish a procedure to work with shipping agents to ensure that the ongoing demand of ships calling at PoM is met satisfactorily		
Include the management of waste from ships in the next update of the PNGPCL WMP		
Erect signage at PoM to better inform shippers of requirements surrounding quarantine waste		
Utilise the Global Integrated Shipping Information System (GISIS) to record waste reception facilities available at PoM		
Investigate the implementation of a waste tracking system at PoM		
Investigate tighter controls implemented for service providers receiving waste from ships, including authorisation to collect waste from ships and access to the wharfs		
Develop information on quarantine processes for communication to ships calling at PoM		

Port of Moresby		
Action	Responsibility	Timeframe
Investigate the establishment of a garbage containment and storage area at the wharf to improve the efficiency of quarantine inspections		
Monitor the amount of quarantine waste being sterilised to ensure that with limited use of the incinerator, the steriliser has the capacity to meet the demand		
Investigate options for a barge service to ships at anchorage in order to minimise the opportunity for illegal dumping		
Keep abreast of the Steamships oily waste recycling project to determine whether it can be expanded to other vessels		
Develop communication tools that explain to ships what waste services are available in PoM		
Agencies to consult other relevant agencies when implementing any new local regulations		
Make enquiries on where ships normally calling at the port discharge oily waste		
PNGPCL to be kept informed of any progress regarding the development of the Regional Reception Facilities Plan		
Esso Highlands Limited consider the development of a waste management plan that outlines how waste from ships is managed at the terminal		

Appendix 1

Agents survey questions and contact details

Questions

1. What kinds of ships do you manage?
2. Approximately what number and/or proportion of your ships would request
 - a. Garbage
 - b. Oily waste
 - c. Sewage
 - d. Noxious liquid substances prewash
 - e. Solid bulk cargo residues (dry or contained in hold wash water)
 - f. Ozone depleting substances
 - g. Exhaust gas cleaning system residues
 - h. Antifouling systems waste
 - i. Ballast tank sediments
3. Do you have any views on why your ships might or might not choose to deliver waste to shore in Apia Port?
4. How/with whom do you make arrangements for waste reception?
5. Have you had any particular difficulties in making these arrangements?
6. Overall, are you satisfied with waste reception facilities in Apia Port?

Details of the agents that replied to the survey are in the table below.

Organisation	Representative	Contact	Date
Agility Logistics	Lawrence Israel (Freight forwarding manager) Geno Leka Sam Rendall Veni Gabigabi	Level 2, Credit House, Cuthbertson Street, P O Box 1702, PORT MORESBY, NCD Phone (+675) 320 2622 / Mobile: +675 720 21276) Fax: (675) 3202484 LIsrael@agilitylogistics.com GLeka@agilitylogistics.com VGabigabi@agilitylogistics.com SRendall@agilitylogistics.com	24/02/2014
Inchcape Shipping Services	David Hutson (General Manager) Lily Nouairi (PA to GM) Edward Buasin Jimmy Towasa	Phone: (675) 321 2599 Fax: (675) 321 2295 david.hutson@iss-shipping.com buasin.edward@gmail.com Jimmy.Towasa@iss-shipping.com	05/03/2014
Deugro (PNG) Ltd	Samson Pololi Guguna Kevau	Deugro (PNG) Ltd. Level 12, Deloitte Tower, Douglas St, Port Moresby P O Box 157, Port Moresby, NCD Phone (675) 3213122 Samson.pololi@deugro.com Guguna.kevau@deugro.com	04/03/2014
Pacific Towing	John Whitfield General Manager	P. Box 701, POM Mobile (675) 7200 1208 Phone (675) 3211206 Fax (675) 3211301 john.whitfield@pacifictowingpng.com	05/03/2014

