



Australian Government

Australian Maritime Safety Authority



SPREP

Secretariat of the Pacific Regional
Environment Programme

PORT WASTE RECEPTION FACILITIES GAP ANALYSIS

APIA, SAMOA

FINAL REPORT

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Contents

Objectives	4
Scope	4
Background	4
The International Convention for the Prevention of Pollution From Ships (MARPOL)	4
Meaning of 'Adequate'	7
Samoan implementation of MARPOL waste reception facilities requirements	8
Gap Analysis Procedure	10
Preparation	10
Port Visit	10
Reporting	11
Gap Analysis Outcomes	12
A. Contact Details	12
B. Summary of Waste Reception Facilities Provided	16
C. Demand for Waste Reception facilities	17
D. Assessment of Waste Reception Facilities	21
D1. Oily Wastes	21
D2. Noxious Liquid Substances	21
D3. Sewage	22
D4. Garbage Disposal – On Shore	24
D4 continued. Garbage Disposal – Ship to Shore	26
D4A Annex VI wastes	27
D5. Waste Management System	27
E. Assessment of adequacy of service	34
Conclusion - Gaps and Opportunities	35
Recommendations	36
Appendix 1 – Agents survey questions	37
Appendix 2 – Quarantine Data	38

Objectives

1. To carry out a gap analysis on the adequacy of waste reception facilities in Apia port for vessels normally calling at the port.
2. To carry out a gap analysis on the adequacy of waste reception facilities in Apia port in preparation for the P&O cruise vessel Pacific Jewel which will be in port during the United Nations Conference on Small Island Developing States during September 2014 (SIDS Conference 2014).

Scope

The gap analysis covered the port of Apia. The focus was 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 issues are similar.

MARPOL does not apply to waste generated by land-based operations at the terminal or wharf. This gap analysis considered only **waste generated by vessels** resulting from their compliance with MARPOL.

The criteria for assessing the adequacy of reception facilities are the IMO Guidelines on Ensuring the Adequacy of Port Waste Reception Facilities (MEPC.88(43)).

The recommendations will be directed to Samoa Ports Authority (SPA) in the first instance; however, there will be other agencies with important roles in implementing the recommendations. SPA will forward the recommendations to those agencies and/or request their assistance as necessary. It is ultimately up to the Samoan Government 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.

Annex I Regulations for the Prevention of Pollution from 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 from 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 Liquids 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 [*i.e. certain discharge restrictions with which Samoa does require compliance – s7-8 of MPP Act*], 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 7.1 – 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 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.

The Guidelines also provide a sample assessment template that can be used to assess adequacy. The gap analysis undertaken in Apia 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.469/Rev.2) containing details of the allegation to the flag State and port State. AMSA investigates reports relating to Australian ports, and provides information on the outcome of the investigation to IMO and the flag State.

1 Nawadra et al. (2002) Improving ships waste management in Pacific Islands ports. SPREP, Apia.

2 SPREP Circular 13/79

Samoaan implementation of MARPOL waste reception facilities requirements

The following is a brief review of Samoan legislation relevant to ships' waste in Apia.

MARPOL is implemented by the *Marine Pollution Prevention Act 2008*. Vessels must be constructed, equipped and operated in accordance with MARPOL.

The *Marine Pollution Prevention Act 2008* section 15, contains the following provisions regarding waste reception facilities.

15. Waste reception facilities in ports-

- (1) Regulations may be made under this Act in relation to the provision of waste reception facilities at Samoan ports to enable vessels to discharge waste oil or oily residues, hazardous and noxious substances and sewage from those vessels, or to deposit their garbage.
- (2) Waste reception facilities shall not be provided where a vessel's wastes may cause unacceptable environmental impacts in Samoa.
- (3) The full or partial cost of providing and operating these waste reception facilities may be recovered by user fees which may be set –
 - (a) by Regulations made under this Act; or
 - (b) by the Chief Executive Officer [*of the maritime transport ministry*] if no such Regulations apply; or
 - (c) by any agency which is given responsibility for providing or managing the waste reception facilities.
- (4) No water containing pollutants that have not been first processed by the ship's oily water separator, or other effective process for separating the pollutant from the water, may be discharged into any waste reception facilities.
- (5) The owner and master of a vessel which discharges at a waste reception facility in breach of subsection (4) commit an offence and shall be liable upon conviction -
 - (a) to a fine not exceeding 2,500 penalty units or to imprisonment for a term not exceeding 6 months, or both; and
 - (b) to pay any compensation for any damage done to the facility or the cost of any remedial action that is necessary as a result of the breach.

In addition, section 13 requires ship repair yards to put in place systems for appropriate recovery and disposal or recycling of wastes from ships maintenance.

Ports Authority Act 1998 – Establishes the Samoa Ports Authority and creates powers for the General Manager, Harbour Master and others to manage the port. The Act also includes powers to levy dues on vessels using the port. The Authority can also levy dues on goods passing through the port, and rates for the use of port land, services, equipment and storage.

Waste Management Act 2010 – Sets out the responsibility of the relevant ministry, currently the Ministry of Natural Resources and Environment (MNRE), in regard to waste management. MNRE is designated as the approved waste management operator for all areas of Samoa. MNRE may

designate other operators, and may engage such operators on contract. All landfill sites and waste dumps must be registered and licensed by MNRE. However, at this point in time, the landfill where waste from the port of Apia would be disposed is operated by MNRE itself, so it does not license itself.

The Waste Management Act 2010 also allows for MNRE to charge fees for the collection and disposal at landfill sites of waste; and for the Head of State to make regulations to impose fees for special kinds of waste, particularly those that may have an adverse impact on the environment. Offences are created for the inappropriate disposal of waste. There is provision to require waste operators to promote and make rules for recycling.

Quarantine (Biosecurity) Act 2005 – Prohibits the discharge of garbage from a ship into the territorial sea, or the landing of such material without the permission of a quarantine officer. This Act provides for written compliance agreements to be made containing conditions on the handling and treatment of particular goods. There is also provision for the charging of fees in respect of issuing permits, giving approvals and the like, and for a quarantine officer's services. The owner or operator of a port (or airport) is required to provide space and equipment for quarantine operations.

Ozone Layer Protection Regulations 2006 – Implements the Montreal Protocol to the Vienna Convention for the Protection of the Ozone Layer 1987 (the Montreal Protocol). Requirements for the handling of ozone depleting substances, including licencing, storage, disposal and fees are provided for. The Chief Executive Officer of the MNRE has a range of relevant approval powers.

Gap Analysis Procedure

Preparation

The following preparatory work was carried out during November 2013.

- SPREP liaised with SPA and arranged initial meeting with SPA MNRE, MWTI and the NZ High Commission.
- An email survey on waste reception facilities from a user's perspective was drafted by AMSA and SPREP and sent by SPA to the shipping agents who are active in Apia (Appendix 1). Three responses were received prior to the team's visit.
- A summary and provisional agenda for the gap analysis was created by AMSA and SPREP.
- AMSA contacted Carnival Australia for a briefing on the status of their preparations for the *Pacific Jewel's* visit.
- AMSA reviewed information on SPA's website for familiarisation with the port's normal operations. The cruise ship schedule was also obtained from the SPA website.

Port Visit

The audit team conducted on-site work in Apia from 25-27 November 2013. The audit team held the following meetings:

- Initial meeting 25/11: SPA, MNRE, MWTI, NZ High Commission. At this meeting, SPA and SPREP explained the background to initiating the gap analysis, and AMSA gave an overview of the MARPOL requirements and guidelines, and explained the process of the analysis.
- The gap analysis team met with SPA and MNRE on 25/11 to discuss the waste management system aspects of the assessment (section D5).
- The gap analysis team met with MNRE on 26/11 to discuss details of the way waste is regulated in Samoa. The team also met with the Quarantine Division of the Ministry of Agriculture and Fisheries (MAF) to discuss details of how international ships' waste is handled by the service.
- During these meetings, both the normal port operations and the particular circumstance of the *Pacific Jewel* visit during the SIDS Conference 2014.
- Several agents were visited by team member Tapaga Collins on 27/11 to follow up on the email survey. Two additional responses are expected to result from this face-to-face contact.
- The gap analysis team participated in a brainstorming session convened by SPA on 26/11 on the *Pacific Jewel*, in particular the issues of waste management and fresh water supply. This meeting generated a number of questions which the gap analysis team and SPA then put to Carnival Australia (the parent company of P&O Cruises) in a teleconference. This teleconference with Carnival's Port Operations Director and the Marine Operations Director enabled a narrowing of viable options for SPA and other Samoan government agencies to investigate and cost.

- A wrap-up meeting was convened in the afternoon of 27/11 to allow the gap analysis team to present draft findings and recommendations. SPA, MNRE attended. The NZ High Commission was unable to attend but will be provided with a copy of the presentation.
- On 26/11, the gap analysis team met with the Australian High Commissioner and representatives of the Australian diplomatic mission as a courtesy to inform them of the gap analysis work being undertaken.

In addition to the meetings, the port area was visited to assess issues such as access, signage and waste receptacles. This visit included the wharves, cargo storage sheds and quarantine sorting and incineration area. SPA escorted the audit team, and representatives from MNRE and Quarantine also accompanied the team.

The solid waste landfill site and sewage treatment plants were visited to assess the capacity and features of the ultimate disposal sites for any waste landed by ships. MNRE escorted the audit team, and SPA and Quarantine representatives accompanied the team.

Reporting

Gap analysis on adequacy of reception facilities for ships normally calling at the port

First draft was completed by AMSA and forwarded to audit team 14 January 2014 and a second draft was completed on 5 February 2014. SPA provided comments on the second draft and the report was finalised by 14 February 2014.

Adequacy of Reception facilities for Pacific Jewel visit

The first draft was completed by AMSA and forwarded to audit team on 2 December 2013, and the report was finalised and forwarded to SPA on 4 December 2013. The Pacific Jewel report is published separately.

Gap Analysis Outcomes

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

A. Contact Details

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Port and surrounds

Samoa comprises two main islands, seven smaller islands, and a number of islets and rocks. Its total land area is about 2,936km². There are two main islands, Upolu and Savai'i, which are 1,115km² and 1,700km² respectively. The declared EEZ covers 120,000 km². The population is about 180,000. The capital Apia is located approximately midway along the north coast of Upolu (Fig. 1).

Apia Port is a sole commercial port in Samoa, handling about 97% of all foreign trade cargoes for the country, mostly import and passenger trade (Fig. 2a). The Main Wharf (Fig. 2b) of Apia Port was constructed in 1966 with the New Wharf Extension (Fig. 2c) added in 2003. Cargo handling areas and storage sheds are located directly landward of the wharves (Fig. 2d). Several smaller ports on Upolu and Savai'i support mixed passenger and cargo ferry activities, including ro-ro services. There is a marina adjacent to the port providing berths for port service vessels and international yachts (Fig. 2e). Gas and oil tankers do not generally use the wharves in Apia, instead mooring mid-harbour and discharging directly to subsea pipelines (Fig. 2f) which carry diesel to the storage tanks in the port (Fig. 2g) or liquefied petroleum gas to the Origin terminal (Fig. 2h) on the far side of the harbour from the port.



Figure 1 - Island of Upolu, showing location of Apia



Figure 2a - Aerial view of port and tanker mooring buoys



Figure 2b Main wharf area



Figure 2c Main wharf and new wharf extension



Figure 2d Cargo handling and storage areas Figure 2e Marina adjacent to port



Figure 2f Tanker discharging cargo to subsea pipeline



Figure 2g Diesel storage tanks in port



Figure 2h Origin LP Gas Terminal

B. Summary of Waste Reception Facilities Provided

Table 1 – Summary of waste reception facilities in Apia

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	No			
All ships: oily bilge water, sludges, used lube oils	No			
Chemical tankers: NLS	No			
Sewage	Domestic ships only	Road tanker to landfill	7000L trucks	MNRE
Garbage -				
Domestic vessels	Yes	Truck to landfill		MNRE
Garbage -recyclables	Yes, subject to quarantine	Truck to landfill (sorted at landfill)		
Garbage - Fishing gear	Yes, subject to quarantine			
Quarantine Waste – all garbage from international vessels	Yes	Smaller quantities -Bins taken from ship directly to incinerator on site at port Larger quantities – loaded directly onto truck for transport to deep burial.	Approx 30kg Depends on size of truck available	Quarantine Division, MAF; then MNRE
Ozone Depleting Substances	No			
Exhaust gas cleaning system residues	No			

C. Demand for Waste Reception facilities

This section examines various aspects of demand for waste reception facilities. In order to understand demand, shipping data was obtained from SPA for January 2012 to November 2013. Quarantine data was obtained for November 2011 to November 2013. Some calculations were made using published estimates of the rate of waste generation on board ships. In addition, the results of the agents survey were used to inform this section on demand. Some general factors affecting waste generation for different types of waste are also discussed.

Figure 3 and Table 2 provide a profile of total ship visits broken down by month and ship type during 2012 and 2013.

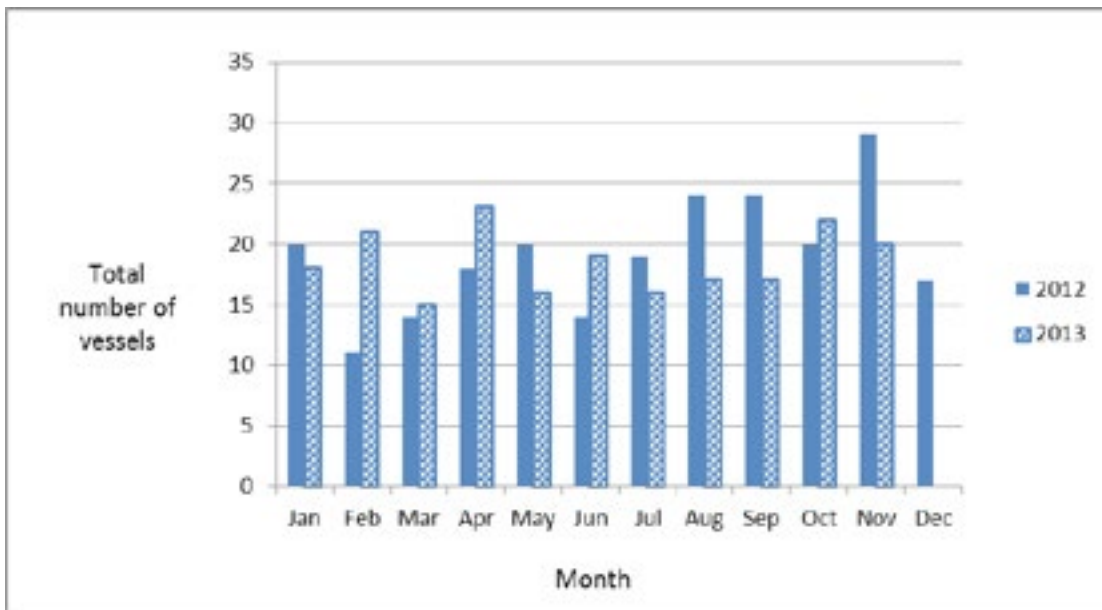


Figure 3 – Total vessels by month

Table 2 - Vessels by type

2012	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Container	6	6	7	6	6	7	8	8	9	8	7	6	84
Cruise	3	1	2	4	0	0	0	0	0	3	2	0	15
General Cargo	3	1	1	0	2	0	2	2	4	4	6	5	30
Fishing	7	1	3	5	1	0	6	11	7	2	8	3	54
Oil	0	1	1	1	1	1	0	1	2	0	1	1	10
Gas	1	1	0	1	2	1	1	0	1	2	1	1	12
Research	0	0	0	1	1	1	1	1	1	0	0	0	6
Naval	0	0	0	0	3	2	1	1	0	1	3	0	11
Super Yacht	0	0	0	0	4	2	0	0	0	0	1	1	8
Totals	20	11	14	18	20	14	19	24	24	20	29	17	230
2013	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Container	9	8	5	11	7	8	9	9	9	9	9		93
Cruise	0	4	2	3	1	0	0	0	2	1	2		15
General Cargo	3	6	3	3	4	4	3	3	3	6	4		42
Fishing	4	1	3	4	1	4	3	2	1	5	2		30
Oil	2	1	1	1	1	0	1	2	1	0	2		12
Gas	0	1	1	0	1	1	0	1	1	1	1		8
Research	0	0	0	0	0	0	0	0	0	0	0		0
Naval	0	0	0	0	1	2	0	0	0	0	0		3
Super Yacht	0	0	0	1	0	0	0	0	0	0	0		1
Totals	18	21	15	23	16	19	16	17	17	22	20		204

Oily waste:

All ships potentially have oily waste on board e.g. used lubricants, oily sludge resulting from bilge water filtering, oily rags, oily bilge water – Apia received 230 ships in 2012 and 204 ships to November 2013.

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.

Oil tankers generate particular types of oily waste, particularly cargo slops and oily ballast water. Apia receives 1-2 oil tankers per month. These ships are unloading, and generally only unloading a partial cargo, so there would currently be limited need for reception facilities for cargo slops and oily ballast water.

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

Information from agents:

Betham Bros and PFL – none of their ships request oily waste reception.

3 Le Calvez, P. (2006) Oily waste management onboard of vessels. Lecture available at http://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:

Chemical tankers do not visit Samoa, so there is currently no demand for reception of NLS cargo residues.

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. In 2012 and 2013, Apia was visited by 30 cruise ships and 18 naval vessels.

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 in port, 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 vessel's stay in port.

Information from agents:

SSS – All of their ships (cruise, naval, cargo and yachts) request sewage reception.

Betham Bros – No vessels request sewage reception.

Transam, no data as they always decline these requests.

PFL – about 10% of their vessels request sewage reception, naval vessels only.

Garbage:

All ships will have some garbage on board. The amount and type of garbage will vary depending on the number of persons on boards, 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.
- 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 vessels – Damaged nets, lines and other fishing gear in addition to domestic garbage.

Information from agents:

SSS – all cruise and navy ships request garbage reception.

Betham Bros – about 80% of cruise ships request garbage reception.

Transam – Research ships always request garbage reception. Transam noted they would arrange for reception of up to 20m³ of garbage once in every 2-3 months.

PFL – about 10% of their ships request garbage reception.

Quarantine officers advised that requests to dispose of fishing gear were occasional but quite rare.

Theoretical estimates of garbage quantities

Estimates were made of the theoretical amount of garbage arriving in Samoa (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 3 days at sea prior to calling at Apia⁷, and the number of ship visits was calculated from the data supplied by SPA (Table 3).

Table 3 Calculation of estimated garbage quantities

	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	3	215	2	150	32250
Cruise Liners	2000	3	15	3	18000	270000
					Total:	302250

In comparison, Quarantine data for 2012 and 2013 shows that around 144,000kg is received in port (Appendix 2) each year, which indicates that around half the total garbage generated by ships on their voyages before calling at Apia is actually being landed.

Annex VI wastes:

No information was available on the demand for Annex VI reception facilities. No agents reported receiving requests for ODS or EGCS residues. Information was not available on the frequency of maintenance of refrigeration, fire or air-conditioning systems on ships in Apia, and no information was available on the number of ships equipped with EGCS visiting Apia.

⁶ Delfosse, S., McGarry, J. & Morin, T. (2010) Ship Generated Waste Disposal in the Wider Caribbean Region. http://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.

D. Assessment of Waste Reception Facilities

D1. Oily Wastes

D1-1

How are oily wastes disposed of?

Reception of oily waste from ships is not available in Apia.

D1-2

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

There is currently no means of treatment or disposal in Samoa, so any oily waste received from ships would need to be stored. Landing oily waste in Samoa could be considered to come within the meaning of 'unacceptable environmental impacts' in the *Marine Pollution Prevention Act 2008* section 15(2).

Additional information:

SPREP is currently undertaking a project to develop a Used Oil Recycling System for Samoa.

One agent advised that on one occasion they did arrange for oily waste reception – the waste was discharged into 'tanktainers' and sent to New Zealand for proper disposal. The cost was a major issue but it was necessary as the oil on board was affecting the ship's ballasting.

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

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

Comments:

Since every ship visiting Apia could be expected to have some oily waste on board, reception facilities for oily waste are inadequate to the needs of ships using the port. While the Used Oil Recycling System project's current scope includes only oily waste streams generated within Samoa, it is suggested that this project could also cover ships' waste.

D2. Noxious Liquid Substances

D2-1

How are noxious liquid wastes disposed of?

Apia does not handle NLS in bulk, so the requirements of MARPOL Annex II are not relevant.

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

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

Comments:

SPA and MNRE should keep in mind for any future changes in local industries that may bring chemical tankers into the port. When planning for these new industries, the needs of chemical tankers to dispose of cargo tank washings will need to be fully considered; and catered for in Apia or through regional arrangements.

D3. Sewage

D3-1

Where is sewage disposed of?

- **Directly from the ship to a mobile facility** – domestic vessels only
- ~~Ships to a holding tank prior to being pumped out~~
- ~~other~~

While the Samoa Water Authority operates a modern sewage treatment plant in Apia, this only accepts sewage from the urban sewer mains. The urban sewer only extends to Aggy Greys resort, which is approximately 1.5km from the port. It is not possible to use trucks to transport sewage to the urban sewage treatment plant – the system cannot tolerate the sudden load. Also, treated or disinfected effluent cannot be accepted to the urban sewage treatment plant because it is a biological system which relies on being fed raw blackwater.

Domestic greywater, as well as blackwater that is off the mains system (e.g. septic tanks), is transported by trucks to the MNRE landfill site where there are settling and evaporation pits.

D3-2

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

The capacity of road tankers used for sewage transport is generally 7000L.

It is only possible to accept sewage from domestic vessels at this point. Sewage from international ships is considered a quarantine risk, and because of the limited treatment available in Samoa for sewage delivered by truck (settling and evaporation pits, with subsequent use of sludge for fertiliser), it is not desirable for international ships to discharge sewage. The sewage treatment pond at the MNRE landfill is shown in Figure 4.



Figure 4 – A 7000L vacuum truck delivering liquid waste (greywater or septic tank water) to the sewage treatment ponds at the MNRE landfill, 26 November 2013.

D3-3

Are sewage reception facilities available:

- ~~24/7~~
- ~~24/5~~
- ~~9-5/7~~
- 9-5/5
- Other – access to landfill can be arranged in an emergency.

D3-4

Is prior notice for receipt of sewage required:

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

SPA requires all information from ships including waste disposal requests along with provisioning, pilotage, arrival and departure details etc. 48 hours in advance.

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 – domestic vessels only.
- ~~at most berths~~
- ~~at only one berth~~
- ~~to vessels anchored within the port~~
- ~~to vessels anchored outside the port~~
- other

Additional Information:

The Samoa Water Authority has plans to extend the pressurised sewer main to the port with a view to accepting ships' sewage for treatment at the urban sewage treatment plant. Note that it would not be possible to discharge treated effluent from onboard treatment systems, or sewage containing chemicals (e.g. disinfectants) because these would be incompatible with the sewage treatment plant. Only raw sewage would be acceptable.

There are early plans for a new commercial port in Vaiusu Bay which would see the existing port reserved mainly for cruise vessels.

Assessment of the provision of waste reception facilities for sewage:

1 – Less than Satisfactory 2—Satisfactory 3—Excellent

Comments:

Since every ship visiting Apia could be expected to have some sewage onboard, the lack of reception facilities for sewage from international arrivals leads to an assessment of Less than Satisfactory for this section. Apia is a port of call for cruise ships and naval vessels which have significant needs for sewage reception, particularly for longer stays in port.

It is suggested that the Samoa Water Authority ensures that ships' sewage is considered thoroughly in further plans for extending the sewer line to the port. In particular it will be important to ensure that arrangements for accessing raw sewage from ships, rather than treated or disinfected effluent.

Plans for the new port at Vaiusu Bay should include a consideration of sewage reception facilities, for example direct discharge to the sewer.

D4. Garbage Disposal – On Shore

D4-1

Where is garbage disposed of?

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

Ship's garbage that has been cleared by quarantine is sent directly to recyclers or, for non-recyclable material to the MNRE landfill (Figure 5). MNRE informed us that the landfill site meets Japanese standards but does not meet US-EPA standards. Leachate is collected in evaporation pools near the base of the landfill.



Figure 5 - MNRE Landfill site

D4-2

Where are quarantine wastes disposed of?

- incinerator
- ~~sterilisation~~
- deep burial
- ~~normal landfill~~

There is a small incinerator within the port managed and operated by Quarantine officers (Figure 6).

There is a medical waste incinerator located at the MNRE landfill site (Figure 7), but this is used for domestic waste from local hospitals. In theory it could be used for medical waste from ships' clinics.

For garbage that does not receive quarantine clearance and exceeds the Quarantine service's incinerator capacity, there is a deep burial area at the MNRE landfill.



Figure 6 - Quarantine incinerator in port



Figure 7 - Medical waste incinerator at MNRE landfill

Are all quarantine waste receptacles

- secure from interference – bins and incineration shed are not locked, but certain amount of protection is afforded by normal port security arrangements.
- permanently labelled – yes, with Quarantine service stickers.
- securely covered – wheelie bins have lids; however, the lid on the bin we saw was damaged leaving small gaps.
- banded – no
- stored in a refrigerated facility – no
- protected from birds or other animals – no

D4 continued. Garbage Disposal – Ship to Shore

D4-3

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

The *Quarantine (Biosecurity Act) 2005* (section 29) prohibits the landing of waste without permission from an Authorised Officer.

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?

Ships are charged by volume.

D4-6

Is a waste collection service available

- at all berths
- ~~at most berths~~
- ~~at only one berth~~
- ~~to vessels anchored within the port - unsure~~
- ~~to vessels 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:

Garbage can generally be accepted from all international vessels berthing in port, including yachts and fishing vessels, and such garbage is subject to appropriate quarantine and disposal procedures. It has been noted by agents that cost may be a reason for deciding not to land garbage in Apia. Tankers moored at the offshore discharge point do not currently land garbage.

D4A. Annex VI wastes

Ozone depleting substances

Samoa is party to the Montreal Protocol, as such ODS must be handled and disposed of according to strict procedures set out in the *Ozone Layer Protection Regulations 2006*. A licensed technician would need to be engaged to remove the ODS from the ship. MNRE advised that there are 31 refrigeration and air conditioning technicians licensed under the Regulations to handle ozone depleting substances and there are 10 companies licensed to import controlled substances.

If a shipping agent needed to arrange for maintenance on refrigeration, air conditioning or fire extinguishers on a ship in Apia can contact the MNRE (Ozone Project in the Meteorology Office) for a list of licensed handlers, however most of the big and well-known companies carrying out these Services are licensed under the Regulations.

ODS removed from equipment that are controlled and currently being phased out are recovered and reused e.g. HCFC 22 to avoid importation of more new substance. ODS removed that are banned in Samoa e.g CFC 12 are recovered in Cylinders and stored by MNRE in the Ozone Unit's storage facility at Vaitele to await funding to ship them to the nearest destruction facility (currently located in Australia).

Exhaust gas cleaning system residues

It is likely that such residues may be handled in the same manner as oil sludge. As such it is not currently appropriate to accept these wastes in Samoa, given that there are no disposal or recycling options. Consideration could be given to temporary storage for re-export in an emergency situation. These residues should also be considered in any future plans for developing an oil treatment facility or recycling service in Samoa.

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

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

Comments:

At this stage, it is not considered that Samoa can handle Annex VI wastes, and should report this fact to IMO. Annex VI wastes should also be considered in the review of regional arrangements.

D5. Waste Management System

D5-1

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

Not specifically for ships waste.

There is a short Pollution section in the Port Operations Procedures.

There is a National Waste Management Strategy that addresses relevant types of waste.

D5-2

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

No; however, environmental aspects are included in the Port Operations Procedures (e.g. Pollution section).

D5-3

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

Larger international fishing vessels use the commercial port. SPA manages the marina adjacent to the commercial port which services ferries (to other Samoan islands and to American Samoa) and yachts including international arrivals. With the exception of providing security, SPA does not manage the domestic fishing fleet harbour on the other side of Apia harbour.

D5-4

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

National Waste Strategy covers disposal; however it does not cover collection of commercial waste. Commercial operators are required to arrange for transport of their waste to disposal sites.

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. Of relevance is the quarantine incinerator shed. A manual was not able to be located for the incinerator.

Signage – No

Infrastructure – No. Of relevance is the quarantine incinerator shed.

Contractual arrangements – No. Agents would need to manage any contractual arrangements with waste service providers.

Emergency Response – There is a national Disaster Management Plan and a national oil spill contingency plan and a Port Emergency Plan.

Seasonal variations – The Port Emergency Plan sets out arrangements for cyclones

Training and education - No.

Delegation of Responsibilities and Accountability – The Emergency Plan has relevant contacts listed.

Compliance with regulatory conditions, including auditing - No

D5-7

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

Technical standards were considered in the context of the Quarantine waste incinerator on site at the port, and the landfill site. No documentation was available for the quarantine waste incinerator. As noted above, the landfill site meets Japanese standards, having been funded by Japanese aid.

The National Environment Sector Plan 2013-2016 includes a strategy for waste which includes a number of relevant actions to improve waste management technology and systems in Samoa. While this is currently aimed at domestic waste, it is suggested that ship's waste may be able to be included in the scope.

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; National Waste Management Strategy and National oil spill contingency plan provide relevant guidance.

Noise emissions, visual impacts and odour emissions – MNRE has a noise and odour policy. Planning legislation takes into account visual amenity for new developments.

Special considerations due to surrounding environment (e.g. proximity to wetland or mangrove areas); - no. Main issue of relevance would be proximity to coral reef and populated urban area.

Coastal processes (e.g. extreme tides) – Emergency management plan and National Disaster Management Plan consider hurricanes, tsunami and earthquakes. The draft in the port is 10.2m at low water, so tides are not a problem for existing shipping.

D5-9

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

No.

There are early plans for future port development to build a new port for general shipping and preserve the existing port for cruise ships only.

D5-10

Are contact details held for all waste service providers?

No. The main contact is the Quarantine service.

D5-11

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

Licensing is not required by MNRE because Samoan government is the waste service provider.

An exception is ozone depleting substances, for which a licensing regime is in force under the Ozone Layer Protection Regulations 2006.

D5-12

Are a copy of the licenses held on file?

MNRE maintains a list of handling and import licenses for ODS.

D5-13

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

See D5-11 and D5-12 above.

D5-14

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

They are held on file by MNRE and agents are provided with a copy.

D5-15

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

MNRE advises that extra drums and containers are available if necessary.

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.

D5-18

Does the WMP include an emergency response plan?

SPA has a separate emergency response plan.

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 (oil)

Spillage of solids – No

Leakage of gas – No

Fire or explosion – Yes (fire)

Emergency contacts – Yes

Other – Earthquakes, cyclones & tsunami and 'incidents in port' are covered in addition to oil spills and fire.

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?

No.

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

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?

MNRE does a national waste audit every 2 years, however this activity is not currently covering ships' waste.

D5-23

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

Not in any formal way.

D5-24

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

Yes:

- Moving quarantine incinerator to large storage shed.
- Using one or both decommissioned PPS tanks for temporary holding of sewage or greywater. SPA wants to have one tank ready for SIDS conference but this is dependent on construction of new tanks.
- Waste oil recycling project (SPREP) to investigate options for export or local use by EPC for power generation.
- Extending pressurised sewer mains to port to allow for direct discharge to sewer has been considered but currently too expensive. Requires over 1km of new piping and a pumping station.

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?

Not specifically for ships waste. National audit is currently for waste generated within Samoa.

D5-26

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

No.

D5-27

Is there provision for periodic review of the WMP?

SPA describes the Port Operations Plan as a living document, meaning that it can be updated at any time if there is a reason to do so.

D5-28

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

Yes. MWTI advises that deficiencies given by port State control tend to be safety-, rather than environment-related. Samoa's role as a flag State is limited to one ship.

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):

See section on legislation in Introduction.

D5-30

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

MNRE's activities include education on waste minimisation, but this is not currently aimed at ships. It should be noted that under MARPOL Annex V, implemented through the *Marine Pollution Prevention Act 2008*, every ship >100GT and every ship certified to carry 15 or more persons must have a garbage management plan. Garbage management plans are developed in accordance with IMO Resolution MEPC.220(63) *2012 Guidelines for the development of garbage management plans*. These guidelines strongly promote the waste minimisation hierarchy.

D5-31

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

Yes. It was clear that all stakeholders knew each agency's role and relevant contacts. SPREP and SPA were quickly able to assemble the relevant stakeholders to be present for the audit work.

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?

SPA holds regular (2-monthly) port user meetings. Agencies also meet regularly.

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?

No.

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?

No.

D5-35

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

- **advice at initial vessel 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

D5-36

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

No

D5-37

How is information on waste reception facilities conveyed to ships?

Quarantine officer meets ship on arrival. Agents would provide information on other types of waste.

Assessment of the waste management system:

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

Comments:

Recommend SPA being involved in MNRE's regular national waste audit to ensure that ships' waste is covered.

E. Assessment of adequacy of service

The results of the agents survey are summarised below. Table 4 lists the agents who responded to the survey.

Table 4 – List of agents surveyed by email

Organisation	Representative	Contact	Date
Betham Brothers Enterprises	Hugo Betham	bethbros@samoa.ws	23/11/2013
Transam Samoa	Tom Hogarth	tomh@transamsamoa.com	22/11/2013
Samoa Shipping Services	Tofilau	sss@lesamo.net	27/11/2013

Why ships might or might not chose to deliver waste to shore in Apia

SSS – safety reasons and local authorities policies and regulations.

Betham Bros – because of limited availability of facilities.

Transam – it is cheaper in other ports.

PFL – requirement for Quarantine approval.

Difficulties making arrangements

Betham Bros commented that arranging garbage reception through Quarantine was done quite efficiently the majority of the time.

SSS have sometimes experienced delays due to lengthy approval processes. There are limited resources such as trucks to receive the wastes.

Transam and PFL said they had no difficulties making arrangements.

Overall satisfaction

Betham Bros – There are many other facilities that can be made available in Apia and have no doubt that these would be utilised by vessels.

Transam – could do better but otherwise satisfied given limitations. If other services were available they would promote them to their vessels.

Conclusion - Gaps and Opportunities

Reception facilities for garbage, including quarantine waste, are satisfactory, and generally adequate to the needs of ships using the port. However, there are some desirable improvements, particularly related to the aspect of adequacy related to ensuring that the ultimate disposal of waste is undertaken in an environmentally appropriate way. Recyclable waste can be accepted, but whether it is ultimately recycled or deep buried will depend on it being able to be cleared by quarantine. Only certain hazardous garbage items, e.g. batteries, can be accepted as these are recycled, however, for most items e.g. paint, fluorescent tubes it is not currently appropriate to land these in Apia, as there is no suitable means of ultimate disposal. Currently hazardous wastes are simply stored. Work is underway by MNRE to address this issue.

It is noted that legislation implementing MARPOL Annex V needs to be updated to reflect the revised Annex V which entered into force on 1 January 2013. This is related to waste reception facilities because, under the *Marine Pollution Prevention Act 2008*, as it stands many items can be discharged overboard beyond certain distance limits. If the legislation were to be updated to reflect the Revised Annex V then most of these discharges would be prohibited, potentially leading to an increase in demand for shore-based reception facilities.

Reception facilities for sewage, oily waste and Annex VI wastes are less than satisfactory, and could not be considered to be adequate to the needs of ships using the port.

There are currently no reception facilities for oily waste in Apia.

Sewage cannot be accepted from international vessels, since it cannot be delivered by truck to the sewage treatment plant for several technical reasons and it is not acceptable from a quarantine point of view to use trucks to discharge into the dewatering pits at the landfill.

Exhaust gas cleaning system residues can't be accepted in Apia for the same reasons that oily waste and hazardous garbage cannot be accepted. Ozone depleting substances are ultimately re-exported for destruction or recycling, so at this point it is not desirable to accept additional ODS from ships into Samoa. In the short term, IMO should be informed that Annex VI facilities are not currently available in Samoa, however, regional arrangements should also be considered as a possible way of meeting this requirement.

Reception facilities under MARPOL Annex II for NLS are not required in Apia as chemical tankers are not handled. As such, they may be considered to fully meet the requirements in that they are adequate to the needs of ships using the port.

There are a range of improvements that could be made to the waste management system (Section D5). It may be helpful to produce a ships waste management plan to collect all the relevant information in one place, however, it is not necessarily warranted if sufficient information is readily available through existing sources and documents. For example, there is already a port emergency plan and port operations procedures so it may be preferable to make minor amendments to those documents to ensure ships waste is explicitly covered. Another example

is the existing efforts by MNRE to audit waste and to implement a national waste strategy. It may be most efficient to integrate ships waste into those efforts, rather than develop a separate ships waste management plan.

In terms of improving the facilities available, there are several opportunities to include ships' waste in work already underway on domestic waste planning. Such work includes the Used Oil Management System currently being developed by SPREP, the MNRE work on developing solutions for chemical waste including re-export or return to supplier, and the SWA plans for extending the pressurised sewer main from Aggie Greys to the port area.

There is also an excellent opportunity to be prepared to consider ships' waste reception in the planning for the new port at Vaiusu Bay. It is likely that this can be best achieved through the environmental impact assessment and planning approval process.

Recommendations

1. SPA and SPREP to review MNRE's draft national waste strategy to ensure ships' waste is covered.
2. Include ships oily waste in the Used Oil Management System currently being developed by SPREP.
3. Include the small quantities of chemical and hazardous waste that may be expected from general shipping in current MNRE work on developing solutions for chemical waste including re-export or return to supplier.
4. Include sewage from ships, particularly cruise ships, in planning for extended sewer line to port.
5. Include information in port operations manual, including contact details on who has responsibility for waste.
6. Include information in port emergency plan on responsibilities for handling spills of waste materials
7. Consider options for servicing gas carriers anchored in port e.g. bins or drums transported by tender etc. Alternatively consider utilising hubs in context of regional arrangements for these gas ships.
8. Consider regional arrangements for Annex VI wastes (EGCS residues and ODS)
9. Take steps under Annex VI regulation 17.2 to inform IMO that Annex VI reception facilities are not available in any Samoan ports.
10. Publish a schedule of fees for quarantine waste reception. In upcoming Quarantine legislation review, consider making regulations setting these fees.
11. Ensure that new port to be developed in Vaiusu Bay has an appropriate waste management system that includes ships waste. PUMA could use the environmental impact assessment and planning approval process in this regard.
12. Upload information on reception facilities into IMO-GISIS (SPREP to coordinate for all PICs).

Appendix 1 – Agents survey 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?

Appendix 2 – Quarantine Data

Date	Client/ Agent	Vessel	Volume- # of dry bags of trash (Approx. 20Kg/ bag)	Volume- # of wet bags of trash (Approx. 40Kg/ bag)
29/11/2011	Niu Polynesia C/o Samoa Maritime Services	Niu Polyesia	57	0
22/12/2011	Niu Polynesia C/o Samoa Maritime Services	Niu Polyesia	71	0
27/01/2012	Betham Brothers Ltd.	Europa Cruise Vessel	124	76
31/01/2012	Abatros II C/o Samoa Shipping Services	Abatros II	443	156
2/02/2012	Amethyst C/o Betham Brothers Enterprises Ltd.	Amethyst	0	1
23/02/2012	Polynesia C/o Samoa Maritime Services	M/V Polynesia	20	0
7/03/2012	Princess Danae C/o Betham Brothers Enterprises Ltd.	Princess Danae	408	55
26/03/2012	Polynesia C/o Samoa Maritime Services	M/V Polynesia	31	0
2/04/2012	Hanseatic Cruise ship c/o Transam Samoa Ltd	Hanseatic Cruise Ship	240	120
25/04/2012	US CCC WAECHÉ C/o Pacific Forum Line	US CCC WAECHÉ	42	19
4/05/2012	S/Y Georgia C/o Transam Ltd.	S/Y Georgia	19	7
25/04/2012	Niu Polynesia C/o Samoa Maritime Services Ltd.	Niu Polyesia	43	0

Date	Client/ Agent	Vessel	Volume- # of dry bags of trash (Approx. 20Kg/ bag)	Volume- # of wet bags of trash (Approx. 40Kg/ bag)
29/05/2012	Niu Polynesia C/o Samoa Maritime Services Ltd.	Niu Polyesia	21	0
1/06/2012	HMAS Darwin	HMAS Darwin	111	40
2/06/2012	HMAS Darwin	HMAS Darwin	20	13
3/06/2012	HMAS Darwin	HMAS Darwin	18	7
4/06/2012	HMAS Darwin	HMAS Darwin	37	10
30/05/2012	USS CHAFEE	USS CHAFEE	137	43
31/05/2012	USS CHAFEE	USS CHAFEE	74	28
1/06/2012	HMNS Otago C/o Samoa Maritime Services	HMNS Otago	137	39
30/05/2012	Noaa Kaimimoana C/o Pacific Forum Line	Noaa Kaimimoana	27	12
11/06/2012	HMNS Otago C/o Samoa Shipping Services	HMNS Otago	40	15
9/06/2012	HMNS Canterbury C/o Samoa Shipping Services	HMNS Canterbury	120	46
13/06/2012	Soran Larsen (Yacht)	Soren Larsen	0	19
18/07/2012	Matua (Tokelau) C/o Samoa Maritime Services Ltd.	Matua	34	27
28/07/2012	HMNZS Otago Naval Ship C/o Samoa Shipping Services.	HMNZS Otago	49	37
15/08/2012	Betham Brothers Ltd.	Shin Fuji	10	1
15/08/2012	Betham Brothers Ltd.	Shin Fuji	10	1
28/08/2012	Samoa Maritime Services Ltd.	M/V Polynesia	26	0

Date	Client/ Agent	Vessel	Volume- # of dry bags of trash (Approx. 20Kg/ bag)	Volume- # of wet bags of trash (Approx. 40Kg/ bag)
29/08/2012	R/V Roger Ravelle C/o Transam	R/V Roger Ravelle	33	46
20/09/2012	Betham Brothers Ltd.	Shin Fuji	42	0
27/09/2012	R/V Roger Ravelle C/o Transam	R/V Roger Ravelle	29	21
29/09/2012	MV Polynesia C/o Samoa Maritime Services Ltd.	MV Polynesia	19	0
30/10/2012	Samoa Maritime Services Ltd.	Polynesia	48	0
1/11/2012	Le Well Company Ltd.	NR	15	0
5/11/2012	FS PRAIRIAL c/o Samoa Shipping Services Ltd.	FS PRAIRIAL	30	140
5/11/2012	USCG KUKUI c/o Pacific Forum Line	USCG KUKUI	0	85
6/11/2012	USCG KUKUI c/o Pacific Forum Line	USCG KUKUI	18	10
7/11/2012	FS PRAIRIAL c/o Samoa Shipping Services Ltd.	FS PRAIRIAL	10	30
29/11/2012	MV Polynesia C/o Samoa Maritime Services Ltd.	Polynesia	40	0
8/12/2012	SEDOV C/o Transam Company Ltd.	SEDOV	32	0
29/12/2012	Samoa Maritime Services Ltd.	MV Polynesia	120	12
7/01/2013	Pacific Freight Samoa Ltd.	Albacore	60	30
29/01/2013	MV Polynesia C/o Samoa Maritime Services Ltd.	MV Polynesia	131	0
2/02/2013	MV Artania C/o Samoa Shipping Services	MV Artania	844	1512

Date	Client/ Agent	Vessel	Volume- # of dry bags of trash (Approx. 20Kg/ bag)	Volume- # of wet bags of trash (Approx. 40Kg/ bag)
15/02/2013	MV Queen Victoria C/o PFL	MV Queen Victoria	240	0
3/03/2013	MV Polynesia C/o Samoa Maritime Services Ltd.	MV Polynesia	152	0
31/01/2013	British American Tobacco Co. Ltd.	NR	1305	375
3/04/2013	MV Polynesia C/o Samoa Maritime Services Ltd.	MV Polynesia	24	84
10/04/2013	Star Princess c/f Pacific Forum Line	Star Princess	450	0
3/06/2013	MV Polynesia C/o Samoa Maritime Services Ltd.	MV Polynesia	80	0
31/05/2013	La Moqueuse C/o Samoa Shipping Services	La Moqueuse	60	48
4/06/2013	Pearl Harbour C/o Pacific Forum Line	Pearl Harbour	800	250
4/07/2013	MV Polynesia C/o Samoa Maritime Services Ltd.	MV Polynesia	144	0
10/09/2013	Sea Princess C/o Pacific Forum Line	Sea Princess	240	0
7/10/2013	Samoa Maritime Services Ltd. c/o Polynesian V445	MV Polynesia	120	0
7/11/2013	MV Polynesia C/o Samoa Maritime Services Ltd.	MV Polynesia	114	0
Total			7569	3415
Average kg per year			75690	68300
Total			143990	

