



Centre for Environment  
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## South Africa

# Port Reception Waste Facilities Audit

### The Commonwealth Litter Programme

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## Executive summary

The Commonwealth Litter Programme (CLiP) is an initiative delivered by the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and funded by the United Kingdom's Department for Environment, Food and Rural Affairs (Defra). The initiative supports developing countries across the Commonwealth in preventing plastics entering the ocean.

In 2019, CLiP contracted Asia Pacific Waste Consultants (APWC) to carry out a review on the adequacy of waste reception facilities at targeted commercial (international) and smaller (domestic) ports in South Africa. This report outlines the findings from the review and gap analysis on the adequacy of waste reception facilities in the country's eight commercial ports. It also assesses the adequacy of facilities at 11 smaller domestic ports, harbours and marinas.

### **Summary of findings and recommendations:**

**Port-generated waste in South Africa is well managed and regulated but ship-generated waste has much lower levels of control.**

All eight commercial (international) ports in South Africa are managed by the Transnet National Ports Authority (Transnet). Transnet has a detailed National Waste Management Strategy that aligns with the requirements outlined in South Africa's National Environmental Management: *Waste Management Act*. Further to this, individual ports are required to develop and implement their own Integrated Waste Management Policy and Plan. Great care and attention is paid to the proper management of general and hazardous waste types generated through port operations. Service-level agreements are in place at most port locations to deal with high-volume operational waste streams, and port tenants are held to the same high standards enforced by Transnet at all its commercial port locations. However, the alignment with the International Convention for the Prevention of Pollution from Ships (MARPOL) is much weaker and essentially only as it pertains to Garbage (Annex V), which is known as 'galley waste' in South Africa.

**It proved challenging to get a clear picture of the management of ship-generated waste received at commercial ports.**

Despite demonstrated excellence in the area of operational waste generated by the ports themselves, this review finds that there appears to be some deficiencies in relation to port reception of ship-generated wastes other than 'galley waste' (MARPOL Annex V [garbage]). While Transnet has universal service-level agreements in place for Annex V waste, few arrangements are in place for other waste types and vessels independently use shipping agents to organise reception facilities. In the process, tracking against International Maritime Organization (IMO) obligations is weakened as the chain of custody is lost, with little formal reporting, tracking or recording of demand, receipt and disposal for oily wastes, sewage, and noxious liquid substances. The dependence on a small number of hazardous waste landfill sites in South Africa also makes it difficult for some ports to offer any port waste reception facilities due to the vast distances involved, with IMO recording refusals by South African ports in receiving even 'galley waste'. As a result, some ports are not fully meeting their

MARPOL port waste reception obligations. It is therefore recommended that universal tracking of MARPOL wastes be considered, including the creation of treatment/disposal options for more 'remote' ports.

**MARPOL-compliant waste management practices on board international vessels are being confounded by port waste reception norms at South Africa's commercial ports.**

This assessment has found clear evidence of rigorous separation of waste, as per MARPOL standards, on board international vessels visiting South African ports. Unfortunately, these efforts are not the same as South African categories of waste due to South Africa's port waste definitions not aligning with MARPOL definitions. As a result, the focus is on 'galley waste' only, due to concerns of quarantine waste rather than across all MARPOL Annex waste types. This has resulted in the current situation where 'galley waste' alone is recorded, tracked and has disposal confirmed; there is little information on the fate of oily wastes and no detail on sewage and noxious liquid substances (NLS). Without such information, there is a risk these substances are disposed of improperly. It is therefore recommended South Africa's waste reception norms be aligned with MARPOL categories.

**Incorporate cruise-liner waste management into PRF chain of custody and IMO Standards.**

Cruise liners potentially contribute more than 60% of garbage and plastics in South African waters and are a logical area of focus given the recent USA prosecution of a major international cruise liner for polluting waters and falsifying records.

Using IMO methodology estimates, cruise liners potentially generated more than 2,000 tonnes of garbage (Annex V) in South African waters in 2019, which is almost twice the volume of garbage estimated to have been produced from other international commercial shipping.

Therefore, there is a need to fully track, manage and record garbage in the same manner as other commercial shipping waste. It is recommended that improvements for commercial shipping presented in sections 17.4.1 and 17.4.2 are also applied to cruise liners.

**Port reception facility costs result in international ships withholding waste at some South African ports while 'remote' ports discourage waste discharge.**

Assessment of the IMO predictions for 'galley waste' (Annex V Garbage) generated compared with Transnet records of 'galley waste; received and disposed of' shows that much smaller volumes of galley waste are landed in South Africa in many ports than would be generated. This was confirmed by ship crew interviews at the ports of Durban, Cape Town and, to a lesser extent, Richards Bay. Crews advised disposal costs were a disincentive, leading to ship-generated wastes instead being withheld and discharged at ports outside South Africa. Other ports such as East London, Mossel Bay, Ngqura and Port Elizabeth appear to discourage or refuse acceptance of ship-generated waste, which has resulted in 'inadequacies' being reported on the IMO Global Integrated Shipping Information System GISIS register. Saldanha is the clear exception – it receives 240% more galley waste than any other port and 240% more than IMO method estimates. This implies only half the ship waste generated in South African waters by international port-of-call vessels is disposed of in South Africa.

This creates a problem in determining where the remainder is disposed of and a possible risk that waste is being disposed of improperly. It is recommended that further studies be undertaken in order to understand the low disposal rate of ‘galley waste’ at some ports, its refusal at other ports and the high disposal rates at Saldanha. It is recommended systems are modified to ensure the capture of as much galley waste as possible, or more thorough analysis of the fate of this waste.

**Improperly managed land-based sources of waste are more likely contributing to debris in port waters than ship-generated waste in South Africa.**

At both commercial (international) and smaller (domestic) ports, the infiltration of land-based debris into port waters via storm water outlets is a significant source of frustration for those tasked with waste management responsibilities. Mass infiltration events at some locations, caused by the confluence of poor land-based waste management practices and heavy rains, are said to occur at least annually. The existence of land-generated debris in port waters reflects badly on both commercial and domestic ports and ameliorating the accumulation of debris is a major burden on staff. It is recommended that catchment management plans incorporate mechanisms to prevent, arrest and collect land-based waste inputs to ports.

**Overall summary of assessments:**

Overall a summary of all assessments for port waste reception facilities at South Africa’s eight commercial ports are detailed below.

Table 1: Summary of PRF Assessments: All Commercial Ports

Commercial Port	Oily Wastes	NLS	Sewage	Garbage	WMS
Port of Durban	Satisfactory	Less than satisfactory	Satisfactory	Fully meets requirements	Satisfactory
Port of Richards Bay	Satisfactory	Satisfactory	Less than satisfactory	Satisfactory	Satisfactory
Port of Cape Town	Satisfactory	Less than satisfactory	Satisfactory	Fully meets requirements	Satisfactory
Port of Saldanha	Satisfactory	Fully meets requirements	Less than satisfactory	Fully meets requirements	Satisfactory
Port of Ngqura	Satisfactory	Less than satisfactory	Satisfactory	Less than satisfactory	Less than satisfactory
Port of Port Elizabeth	Less than satisfactory	Less than satisfactory	Less than satisfactory	Fully meets requirements	Satisfactory
Port of East London	Less than satisfactory	Less than satisfactory	Less than satisfactory	Less than satisfactory	Less than satisfactory
Port of Mossel Bay	Satisfactory	Fully meets requirements	Less than satisfactory	Less than satisfactory	Less than satisfactory

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## Acronyms

ACRONYMS	
<b>APWC</b>	Asia Pacific Waste Consultants
<b>CCOA</b>	Commonwealth Clean Ocean Alliance
<b>Cefas</b>	Centre for Environment, Fisheries and Aquaculture Science
<b>CEP</b>	Caribbean Environment Programme
<b>CLIP</b>	Commonwealth Litter Programme
<b>EEZ</b>	Exclusive Economic Zone
<b>FAO</b>	Food and Agriculture Organizations for the United Nations
<b>FFA/SPC</b>	Pacific Islands Forum Fisheries Agency
<b>GDP</b>	Gross Domestic Product
<b>IMO</b>	International Maritime Organisation
<b>LNG</b>	Liquefied Natural Gas
<b>LPG</b>	Liquified Petroleum Gas
<b>MARPOL 73/78</b>	The International Convention for the Prevention of Pollution from Ships (Marine Pollution), 1973 as modified by the Protocol of 1978
<b>MEA</b>	Multilateral Environmental Agreement
<b>MPEC</b>	Marine Environment Protection Committee
<b>NLS</b>	Noxious Liquid Substances
<b>ODS</b>	Ozone Depleting Substances
<b>PRF</b>	Port waste reception facilities
<b>RAC/REMPEITC-Caribe</b>	RAC/REMPEITC-Caribe (Regional Activity Centre/Regional Marine Pollution Emergency, Information and Training Centre – Wider Caribbean Region)
<b>RO/RO</b>	roll-on/roll-off vessels
<b>TEU</b>	twenty-foot equivalent unit
<b>Transnet</b>	Transnet National Ports Authority
<b>SHE</b>	Safety Health and Environment

# 1 Background

The Commonwealth Litter Programme (CLiP) is an initiative implemented by the Centre for Environment, Fisheries and Aquaculture Science (Cefas) and funded by the United Kingdom’s Department for Environment, Food and Rural Affairs (Defra). The initiative supports developing countries across the Commonwealth in preventing plastics from entering oceans.

CLiP’s main objectives are as follows:



Figure 1 CLiP objectives (Source, APWC compiled from CLiP documents)

In 2019, CLiP contracted Asia Pacific Waste Consultants (APWC) to carry out a review of the adequacy of waste reception facilities at targeted international and domestic ports in South Africa. The aim of the review is to collect and assess information on ship-generated waste, port reception facilities and waste reception handling plans, and to develop recommendations to reduce the leakage of ship-based sources of waste into the environment.

# 2 Scope

This report outlines the findings of this review and gap analysis of the adequacy of port waste reception facilities at the eight main international commercial ports of South Africa, with a focus on the vessels that pass through these ports and the waste they generate. Additionally, it reviews 11 smaller domestic South African ports and marinas with a focus on the facilities provided for waste reception from domestic and recreational vessels at these sites.

The analysis of the international ports provides an overview of the waste reception services currently provided, identifies gaps in this service with reference to the International Convention for the Prevention of Pollution from Ships (MARPOL), and outlines recommendations on how these gaps can be addressed. The findings have been prepared in accordance with the International Maritime Organization’s (IMO) Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities as outlined in Resolution MEPC.83 (44).

As MARPOL does not apply to smaller domestic ports and marinas, the analysis of these locations considers waste generated by vessels and the facilities available to prevent the leakage of ship-generated waste into oceans and waterways. The analysis concludes with recommendations on reducing the environmental impact of wastes generated by domestic, fishing and leisure crafts that visit these sites.

All audits and fieldwork were undertaken by APWC in August and September 2019.



Figure 2: The APWC port assessment team at the Port of Cape Town (Source: APWC, 2019).

### 3 Country information

South Africa is situated at the southern-most point of the African continent and is bordered by 2,798 kilometres of coastline spanning the South Atlantic Ocean to the west and the Indian Ocean to the east. It comprises nine provinces and has a total estimated population of just over 57 million<sup>1</sup>, the majority of whom reside in urban centres.

South Africa has three capitals: Pretoria serves as the executive capital; Cape Town the legislative capital; and Bloemfontein as the judicial capital. The largest urban area and site of the Constitutional Court is Johannesburg; Durban is a main industrial centre<sup>2</sup>. South Africa is considered a middle-income emerging market that benefits from a ready supply of natural resources and well-developed financial,

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<sup>1</sup> Source: <https://unctadstat.unctad.org/CountryProfile/MaritimeProfile/en-GB/710/index.html>

<sup>2</sup> Source: <https://www.britannica.com/place/South-Africa>

legal, communications, energy and transport sectors. Its key economic sectors are mining, transport, energy, manufacturing, tourism and agriculture<sup>3</sup>.



Figure 3: Map of South Africa and its nine provinces (Source: Wikimedia Commons<sup>4</sup>)

Although the country suffers from high rates of unemployment, poverty and income inequality, South Africa's GDP per capita (USD 6,374 in 2018<sup>5</sup>) is high in comparison to many other countries in Africa. It was granted nominal independence (Dominion status) on 31 May 1910. South Africa left the Commonwealth of States on 31 May 1961 but re-joined on 1 June 1994 following the country's first democratic elections and the abolition of Apartheid.

### 3.1 Maritime transport in South Africa

South Africa's geographic position is strategically important to maritime traffic. It sits on the South-South Trade Corridor linking Asia, Africa and the eastern coast of the Americas. Approximately 300 million tonnes of cargo are estimated to move through South Africa's ports each year, making it one of the top 20 shipping nations in the world, based on tonnage handled.

<sup>3</sup> Source: <https://www.britannica.com/place/South-Africa/Economy>

<sup>4</sup> Source: [https://en.wikipedia.org/wiki/File:Map\\_of\\_South\\_Africa.svg](https://en.wikipedia.org/wiki/File:Map_of_South_Africa.svg)

<sup>5</sup> Source: <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?locations=ZA>

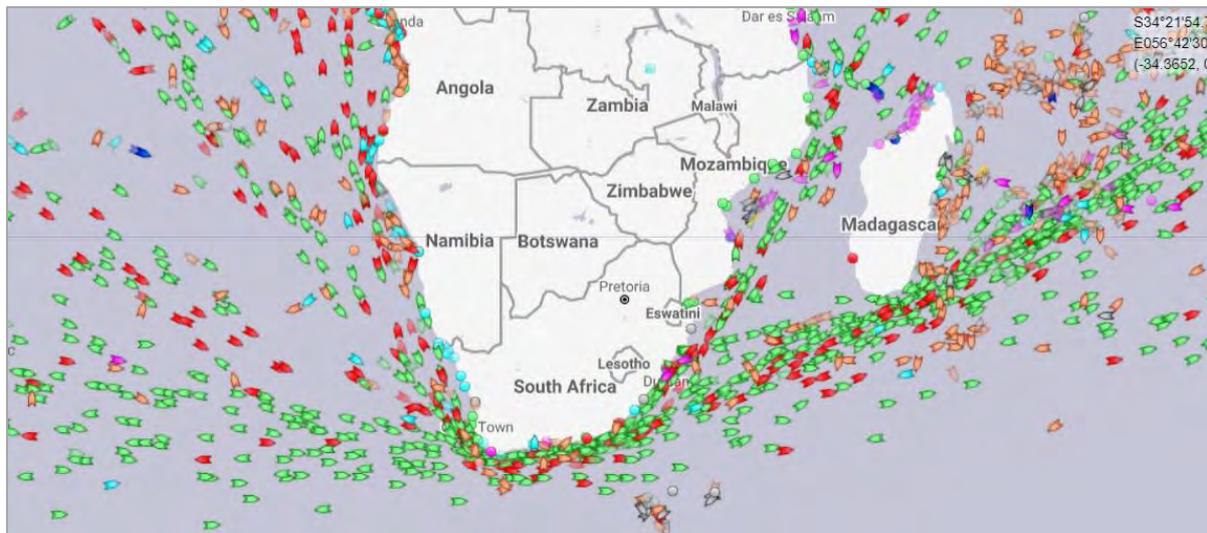


Figure 4: South African marine traffic (24 October 2019) (Source: MarineTraffic<sup>6</sup>).

South Africa’s maritime transport industry has been revitalised in recent years and continues to grow, thanks in part to the Government of South Africa’s Oceans Economy program known as Operation Phakisa. Launched in 2014, Operation Phakisa focuses on unlocking the economic potential of South Africa’s oceans through increased investment in maritime transport and marine manufacturing, offshore oil and gas exploration, aquaculture, marine protection services and ocean governance, coastal and marine tourism, and small-harbour development<sup>7</sup>.

Some key initiatives implemented since the commencement of Operation Phakisa include the establishment of the South African International Maritime Institute, refurbishment and upgrades at various ports, and work on an offshore oil and gas supply base in Saldanha.

During the 2016/2017 financial year, a total of 10,945 vessels docked at South Africa’s eight commercial ports. The total volume of cargo handled locally amounted to 227.17 million metric tonnes, while containerised cargo totalled 4,466,000 twenty-foot equivalent units (TEUs)<sup>8</sup>.

Foreign-owned vessels dominate the carriage of cargo, but efforts are underway to work towards the creation of a national shipping carrier to serve South Africa’s economic and trade interests, as outlined in the Comprehensive Maritime Transport Policy for South Africa (2017). South Africa’s national fleet has increased modestly in recent years, from 62 in 2014 to 79 in 2018. While cargo remains dominant within South Africa’s maritime transport sector, the passenger cruise segment is growing. Between October 2018 and April 2019 there was a 29.4% increase in passenger traffic at the Port of Durban<sup>9</sup>.

Foreign-flagged fishing vessels are not permitted to operate within South Africa’s EEZ without applying for a fishing vessel licence. In order for a vessel to be granted a licence it must have a joint venture with a South African fishing-rights holder. However, illegal fishing by South African and foreign-flagged

<sup>6</sup> Source: <https://www.marinetraffic.com/en/ais/home/centerx:-26.7/centery:-3.1/zoom:2>

<sup>7</sup> Source: <https://www.operationphakisa.gov.za/pages/home.aspx>

<sup>8</sup> Source: <https://www.transnet.net/InvestorRelations/Pages/AnnualResults.aspx>

<sup>9</sup> Source: <https://www.hellenicshippingnews.com/durban-named-africas-leading-cruise-port/>



vessels is also a significant problem in South African waters. Anecdotal information suggests up to 500 illegal vessels operate in South African waters per year. Foreign vessels routinely suspected of illegal fishing are pursued and sometimes seized in South African waters (such as the Chinese flagged Huang Yuan Yu in 2017). These vessels would contribute significantly to ship waste disposed of in South African waters, but this is difficult to calculate without knowing the size and number of days in South African waters.

## 3.2 Ports in South Africa

### 3.2.1 Commercial ports

There are eight international commercial ports in South Africa, all of which are controlled and managed by Transnet National Ports Authority (Transnet).



Figure 5: South Africa's commercial ports

Transnet is responsible for the safe, effective and efficient economic functioning of the national port system, which it manages in a landlord capacity. It provides port infrastructure and marine services and operates within the legislative and regulatory environment created by the *National Ports Act 2005* (Act No. 12 of 2005). Its core functions are:

- to plan, provide, maintain and improve port infrastructure;
- to provide or arrange marine-related services;
- to ensure the provision of port services, including the management of port activities and the port regulatory function at all South African ports; and
- to provide aids to navigation and assistance to the manoeuvring of vessels within port limits and along the coast.

Transnet is responsible for managing waste associated with its operational activities. This includes waste from Transnet offices, depot, port control, vacant sites and other public areas within the port limits. Most ports have a service-level agreement with at least one waste service provider, usually for garbage collection and disposal related to port operational waste. For some ports, these service-level agreements extend to waste reception (for a particular waste type) for berthing vessels. Where a service-level agreement is not in place, port-authorized private contractors are used to attend to requests for waste reception from vessels. In some cases, this service is arranged by the port and in other cases it is arranged directly by the vessel via a shipping agent.

The waste management function sits with the Safety Health and Environmental (SHE) Department of Transnet. In some circumstances, however, certain activities are undertaken by the Pollution Control Department, which lies within the Engineering Department, or with the Harbour Master. These activities include:

- Developing and maintaining the Port Waste Management Plan;
- Licensing waste contractors for collection of port wastes and provision of equipment;
- Recording various listed wastes in the plans which is integrated into the national reporting;
- Coordinating with incoming ships and shipping agents for waste services required; and

- Implementing the Transnet chain of custody system for Annex V waste (Garbage).

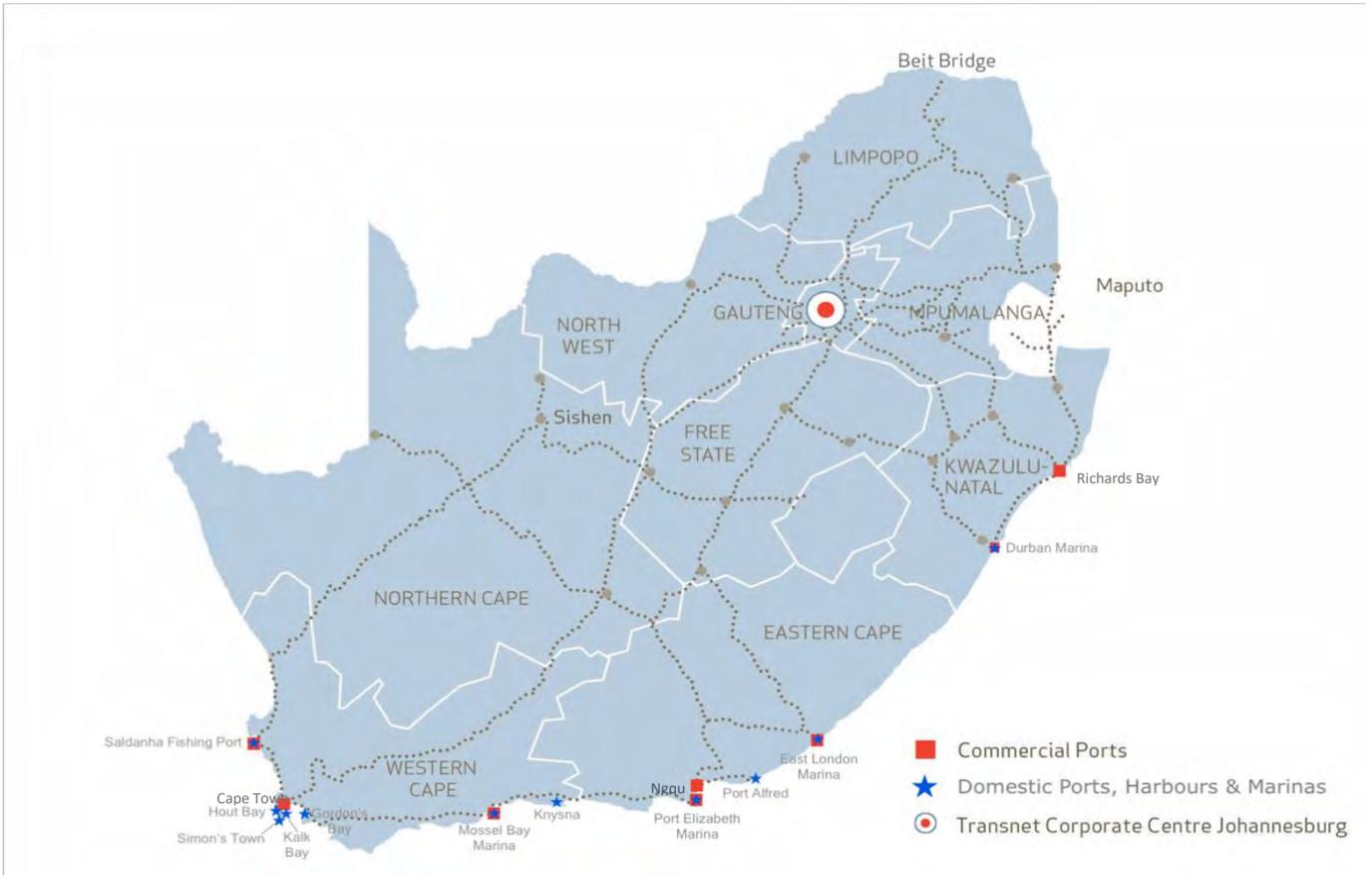


Figure 6 Location of International and domestic ports visited in South Africa (Source: Based on Transnet Annual Report 2019).

All commercial ports are required to develop an Integrated Waste Management Policy and Plan in line with the requirements in the *National Environmental Management: Waste Management Act 59 of 2008* and the National Waste Management Strategy developed by Transnet.

### 3.2.2 Smaller ports, harbours and marinas

In addition to the international ports, South Africa has a number of smaller domestic ports, harbours and marinas. For the purpose of this review, a total of 11 smaller ports were visited.

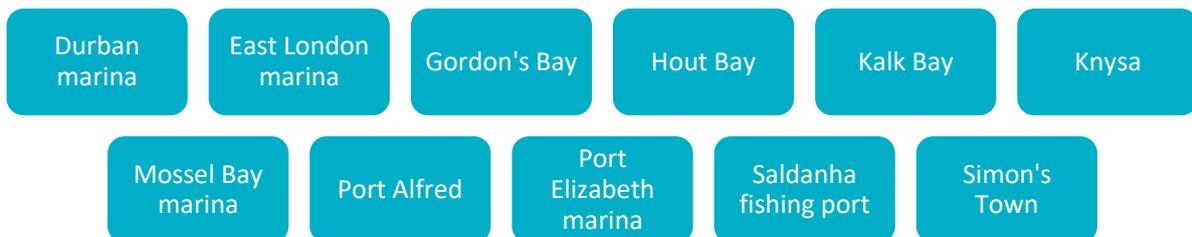


Figure 7: Domestic ports, harbours and marinas in South Africa

These small ports, harbours and marinas are managed by South Africa’s Department of Public Works, though areas adjacent to the commercial ports (so-called port limits) are accepted as being under the jurisdiction of Transnet’s Harbour Master. These areas are predominately frequented by small vessels used for either recreation or commercial purposes (such as fishing).

## 4 Legislative context

### 4.1 Multilateral Environmental Agreements

South Africa has either ratified or acceded to all Multilateral Environmental Agreements (MEAs) of relevance to the management and reduction of waste, pollution control and marine litter, as shown in Table 2.

Table 2 South Africa's participation in conventions related to waste, shipping and marine litter

Multilateral agreements and conventions	Status
Basel Convention on Control of Transboundary Movements of Hazardous Wastes and Their Disposal	Accession 05 May 1994 Entry into Force 03 August 1994
Bamako Convention	Entry into Force: 1998
Basel Ban Amendment	Ratified
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade	Accession 04 September 2002 Entry into Force 24 February 2004
Stockholm Convention on Persistent Organic Pollutants	Ratified
The Minamata Convention on Mercury	Signed: 10 October 2013 Ratified: 29 April 2019
Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central Africa Region (Abidjan Convention)	Ratified
Montreal Protocol on Substances that Deplete the Ozone Layer	Accession 15 January 1990
MARPOL 73/78: International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978 (Annexes I, II, III, IV, V, and VI)	Ratified
London Convention on the Prevention of Marine Pollution by the Dumping of Wastes and Other Matter	Ratified
Protocol to the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Protocol)	Ratified
Intervention on the High Seas in Cases of Oil Pollution Casualties (Convention 1969)	Ratified

Multilateral agreements and conventions	Status
Intervention on the High Seas in Cases of Oil Pollution Casualties (Protocol 1973)	Ratified
International Convention on Civil Liability for Oil Pollution Damage 1969 (renewed 1992)	Ratified
International Convention on the Protocol of 1976 to Amend the International Fund for Compensation for Oil Pollution Damage, 1971	Ratified
Protocol of 1992 to Amend the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, 1971	Ratified
International Convention on Oil Pollution Preparedness, Response and Co-operation Convention 1990	Ratified
Protocol on Preparedness, Response and Co-operation to pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC/HNS) 2000	Ratified
International Convention on Civil Liability for Bunker Oil Pollution Damage (BUNKER) 2001	Ratified
International Convention on the Control of Harmful Anti-fouling Systems in Ships (AFS Convention) 2001	Ratified
Vienna Convention for the Protection of the Ozone Layer	Accession: 15 January 1990

While South Africa’s commitment to all these MEAs is important in preventing degradation of the natural environment and preventing marine debris, of crucial importance to this analysis is the regulation underpinning the International Convention for the Prevention of Pollution from Ships, known as MARPOL. The relationship between MARPOL and its regulations related to port reception facilities (PRF) is explored in detail below.

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

The key international convention addressing pollution of the marine environment by ships is the International Convention for the Prevention of Pollution from Ships, known as MARPOL.

The MARPOL Convention was adopted in November 1973 at the IMO, with additional protocols and amendments incorporated over time. The Convention includes regulations aimed at preventing and minimising both accidental and routine pollution from ships and, at the time of writing this review, includes six technical annexes.

MARPOL outlines specific obligations with regard to the provision of waste reception facilities. The onus for meeting these obligations is on government authorities rather than on ships or private companies. These obligations are designed to ensure that ships are able to legally dispose of their waste, thereby preventing illegal discharge to the marine environment and/or inappropriate land disposal.

Under the provisions of the Convention, the international community of maritime states is mandated to put in place measures to ensure ships do not engage in the unacceptable practice of discharging their waste and cargo residues at sea. MARPOL prescribes that there must be a properly planned, easy-to-use and cost-effective system to manage incoming waste streams at the reception facilities of all operational ports. Specific regulations of relevance to the issues of PRFs are outlined in Table 3.

Table 3 MARPOL regulations of relevance to waste reception facilities.

<b>Annex I Regulations for the Prevention of Pollution by Oil (entered into force 2 October 1983)</b>
This Annex covers prevention of pollution by oil from operational measures as well as from accidental discharges. Of relevance to this report is Regulation 38.1, which requires the Government of each Party to provide facilities for the reception of oily residues and mixtures at oil-loading terminals, repair ports, and in other ports in which ships have oily residues to discharge. Such facilities must be adequate to meet the needs of the ships using them without causing undue delay. Regulations 38.2 and 38.3 expand on this basic requirement with reference to sludge tanks, oily bilge waters and certain other residues which are not permitted to be discharged <i>en route</i> .
<b>Annex II Regulations for the Control of Pollution by Noxious Liquid Substances in Bulk (entered into force 2 October 1983)</b>
Annex II details the discharge criteria and measures for the control of pollution by noxious liquid substances (NLS) carried in bulk. Regulation 18.1 requires the Government of each Party to ensure that ports and terminals involved in bulk NLS cargo handling or NLS tanker repairs have adequate facilities for the reception of residues and mixtures containing noxious liquid substances.
<b>Annex III Prevention of Pollution by Harmful Substances Carried by Sea in Packaged Form (entered into force 1 July 1992)</b>
This Annex contains general requirements for the issuing of detailed standards on packing, marking, labelling, documentation, stowage, quantity limitations, exceptions and notifications on substances identified as marine pollutants in the International Maritime Dangerous Goods Code.
<b>Annex IV Prevention of Pollution by Sewage from Ships (entered into force 27 September 2003)</b>
Annex IV focuses on requirements to control pollution of the sea by sewage. It prohibits the discharge of sewage into the sea, except when the ship has an approved sewage treatment plant or when the ship is discharging and disinfected sewage using an approved system at an approved distance. Regulation 12.1 requires the Government of each Party to ensure the adequate provision of facilities at ports and terminals for the reception of sewage, without causing delay to ships.
<b>Annex V Prevention of Pollution by Garbage from Ships (entered into force 31 December 1988)</b>
This Annex looks at different types of garbage and specifies the distances from land and the manner in which they may be disposed of. Notably, this Annex incorporates a complete ban on the disposal of all forms of plastics into the sea. MARPOL Annex V obliges governments to ensure the provision of adequate 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.
<b>Annex VI Prevention of Air Pollution from Ships (entered into force 19 May 2005)</b>
Annex VI sets limits on sulphur oxide and nitrogen oxide emissions from ship exhausts and prohibits deliberate emissions of ozone-depleting substances. Regulation 17.1 requires the Government of each Party 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. It further requires that reception facilities are provided for exhaust gas cleaning residues in enclosed ports, harbours and estuaries.



## 4.2 National legislative context

The following regulations address solid waste management and control of pollution, including waste from shipping, in South Africa.

Table 4 National regulations and legislation of relevance to waste reception facilities

<b>Constitution of South Africa Act (1996)</b>
The Constitution of South Africa: establishes the right to an environment that is not harmful to human health and well-being; establishes the right to have the environment protected through measures that promote conservation; balances the right to have the environment protected with rights to valid social and economic development; allocates environmental functions to a wide range of government agencies in all spheres; and requires co-operation between government agencies and the various spheres of government.
<b>The National Environmental Management: Waste Act, 59 of 2008 (NEM: WA)</b>
<i>The National Environmental Management: Waste Act, 59 of 2008</i> commenced on 1 July 2009 and is the overarching legislation for waste management in South Africa. It stipulates that holders of waste are required to take all reasonable measures to (a) avoid the generation of waste, and where such generation cannot be avoided, to minimise the toxicity and amounts of waste that are generated; (b) reduce, re-use, recycle and recover waste; (c) where waste must be disposed of, ensure that the waste is treated and disposed of in an environmentally sound manner; (d) manage the waste in such a manner that it does not endanger health or the environment or cause a nuisance through noise, odour or visual impacts; (e) prevent any employee or any person under his or her supervision from contravening this Act; and (f) prevent the waste from being used for an unauthorised purpose. The Act also addresses guiding principles for waste management including duty of care, the polluter-pays principle, the precautionary principle, and the cradle-to-grave approach. It outlines regulations related to the storage, collection and transportation of waste, waste management licences, compliance and enforcement, and regulations and standards including national waste information regulations, waste classification and management regulations.
<b>National Environmental Management: Waste Amendment Act, 26 of 2014 (NEM: WAA)</b>
The NEM: WAA came into operation on 2 June 2014 and amends the NEM: WA through: insertion of Chapter 3A which provides for the content and application of the pricing strategy for waste management charges; insertion of Part 7A which establishes the Waste Management Bureau; amendment of section 11 to exclude the Department from the spheres of government responsible for preparing integrated waste management plans; providing for transitional provisions in respect of existing industry waste management plans; and the insertion of a schedule on defined wastes.
<b>The National Water Act, 36 of 1998 (NWA)</b>
The National Water Act, 1998 deals with the protection of South Africa's water resources. The NWA includes pollution prevention requirements which place a pollution prevention duty on landowners, persons in control, users or occupiers of land to take all reasonable measures to prevent water pollution from occurring, continuing or recurring.
<b>National Environmental Management: Integrated Coastal Management Act, 24 of 2008 (NEM: ICMA)</b>
The NEM: ICMA seeks to establish a system of integrated coastal and estuarine management in South Africa by prohibiting incineration at sea, controlling dumping at sea and pollution in the coastal zone. Section 70 of the Act deals with dumping permits which must be applied for to dump waste or other material at sea. Permits may not be issued for wastes other than: dredged material; sewage sludge; fish waste or material resulting from industrial processing operations; vessels and platforms or other man-made structures at sea; inert, inorganic geological; organic material of a natural origin; or bulky items primarily comprising iron, steel, concrete and other similar non-harmful materials.

### National Ports Act, 12 of 2005 (NPA)

The *National Ports Act* has relevance for waste management at ports as it places a responsibility on ports to ensure that their infrastructure is managed and maintained in a manner which ensures efficient, safe and orderly port operations. It deals with licence requirements for port services and facilities and authorises the Harbour Master to give written or verbal instructions as may reasonably be necessary for: regulating the removal or disposal of any residues and mixtures containing oil or noxious liquid substances, sewage and garbage from vessels in a port and requiring any such matter to be deposited in reception facilities in the port; and detention of any vessel reasonably suspected of causing oil pollution and ensuring that the total cost of the pollution clean-up operation is recovered, or acceptable guarantees are provided, prior to the vessel being given permission to leave the port.

### The Port Rules, 255 of 2009

The Ports Rules address a number of aspects of waste, including the minimisation of waste, roles and responsibilities, and the provision of reception facilities. The Port Rules stipulate:

- *The owner, master or agent of a vessel must give at least 72 hours' notice in writing of the arrival of a vessel at a port to the Harbour Master of that port. The notice must include any nuclear installations, radioactive or toxic material or waste, explosives, flammable liquids or other dangerous goods on board.*
- *All persons within a port must take all reasonable steps to prevent/minimise and mitigate pollution or damage to or degradation of the environment.*
- *Any person who pollutes or causes damage to the environment will bear the costs associated with the combating and cleaning up of that pollution, damage or degradation, and the associated impacts relating thereto.*
- *No person may throw or deposit within the port limits any harmful matter or substance of whatsoever nature, including effluent or polluted water or foreign organisms without the permission of the Authority, and, in the case where it is to be thrown or deposited from a vessel, without the permission of the Harbour Master.*
- *No person may cause or allow pollutants, including paint, or cause or allow substances that can cause pollution or negatively impact on the environment, whether or not the substance or pollutant is of a mineral, animal or plant origin, to be dumped on the property of a port or to be discharged or to escape into waters within port limits.*
- *No oil of any description or harmful matter or substances of whatever nature, including effluent, polluted water or foreign organisms, may be discharged or dumped from a (a) vessel or be allowed to escape from a vessel into any part of the port, or (b) terminal or any other source, or be allowed to escape into port waters from a terminal or any other source.*
- *The master of a vessel that is berthed alongside a quay or jetty must cause all the discharge outlets of the vessel facing the quay or jetty to be closed or to be provided with adequate covers to prevent any inadvertent discharge of water or effluent or substances onto the quay or jetty surface, bollards, moorings, telephone cables, fenders or hose connections or into the environment.*
- *The clean-up of pollutants, including oil, which is spilled within port limits, must be dealt with in accordance with the applicable Port Contingency Plan.*
- *A person who drops or deposits any article within port limits that might cause a danger, obstruction, pollution, a negative impact upon the environment or a nuisance, or any person who witnesses a person doing this, must report the matter to the Authority immediately.*
- *Every terminal operator and master of a vessel must make use of the port's facilities for the reception of wastes from vessels. The Authority may require:*
  - *A terminal operator to provide or procure proper and adequate facilities from a licensed waste management operator for the reception of wastes from vessels using the port terminal.*

- *The vessel's owner or master to provide or procure proper and adequate facilities from a licensed waste disposal service provider for the reception of wastes from vessel if the berth is not operated by a terminal operator.*
- *In assessing the adequacy of the waste reception facilities to be provided or to be procured, the terminal operator must have regard to the Port Waste Management Plan. The Authority may, by written notice or by verbal instruction, direct the terminal operator that does not have adequate waste reception facilities to provide or procure them within a specified period.*
- *The owner or master of a vessel must arrange to dispose galley waste in accordance with the Port Waste Management Plan.*
- *Any waste reception facilities provided for a particular purpose by the terminal operator must be open for use for that purpose by all vessels using the terminal.*
- *No vessel may discharge or dump sewage into port waters or any part of the port except into a facility dedicated for that purpose.*

### 4.3 South Africa's MARPOL obligations

#### 4.3.1 Southern South African Waters Special Area

Some areas of South Africa's waters are considered to be of particular ecological significance due to colonies of endangered birds and marine mammals. As such, a Southern South African Waters Special Area under MARPOL Annex I was adopted as an amendment to MARPOL in 2006 and came into force on 1 August 2008. The Southern South African Waters Special Area extends from an area north of the Port of Saldanha on the western coast, through to an area just below the Port of East London of the east coast (see Figure 8). In 2019, twenty new marine protected areas (MPAs) were announced<sup>10</sup> – a move that increases the oceans protected around the country's mainland territory from 0.4% to 5%. This 5% protects 87% of the different marine ecosystem types found in the country's waters, to ensure that the network is representative of South Africa's important diversity.

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<sup>10</sup> South Africa announces 20 new marine protected areas | Save Our Seas Foundation. (2020). Retrieved from <https://saveourseas.com/south-africa-announces-20-new-marine-protected-areas/>



Figure 8: The boundaries of the Southern South African Waters Special Area (Source: APWC, 2019).

When port reception facilities fall within MARPOL designated special areas, additional provisions apply. In this case, South Africa must ensure that all oil-loading terminals and repair ports within the special area are provided with facilities adequate for the reception and treatment of all the dirty ballast and tank washing water from oil tankers. In addition, all ports within the special area must be provided with adequate reception facilities for other residues and oily mixtures from all ships. Furthermore, such facilities must have adequate capacity to meet the needs of the ships using them without causing undue delay.

#### 4.3.2 Definition of ‘adequate’

MARPOL states that to achieve ‘adequate’ reception facilities, the port should have regard to the operational needs of users and provide reception facilities for the type and quantities of waste from ships normally using the port without causing undue delay.

As outlined in resolution MEPC.83(44), adequate facilities can be 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;
- contribute to the improvement of the marine environment;
- 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.

#### 4.3.3 South Africa’s obligations for port waste reception facilities

As a signatory to MARPOL, South Africa has an obligation to provide port reception facilities for all required waste types. In addition to this, South Africa must meet the special provisions related to the presence of a special area under Annex I of MARPOL.

A summary of South Africa’s port reception facility obligations under MARPOL is outlined in Table 5.

Table 5 South Africa’s obligations for port waste reception facilities

MARPOL ANNEX	Type of waste received	Criteria for provision of PRF
Annex I	Dirty ballast and tank washing water from oil tankers	All oil-loading terminals and repair ports within the special area
	Residues and oily mixtures from all ships	All ports within the special area
	Sludge tank residues	All ports and terminals which handle ships >400GT
	Oily bilge waters and other residues	All ports
Annex II	Residues and mixtures containing noxious liquid substances	All ports and terminals handling cargo from NLS bulk carriers or undertaking repairs to NLS bulk carriers
Annex IV	Sewage	All ports and terminals
Annex V	Garbage	All ports and terminals
Annex VI	Exhaust gas cleaning residues	All ports, terminals and repair ports

## 5 The review process

### 5.1 Preparation

In preparation for the review and analysis, several activities were carried out in advance of the in-country port visits, as follows:

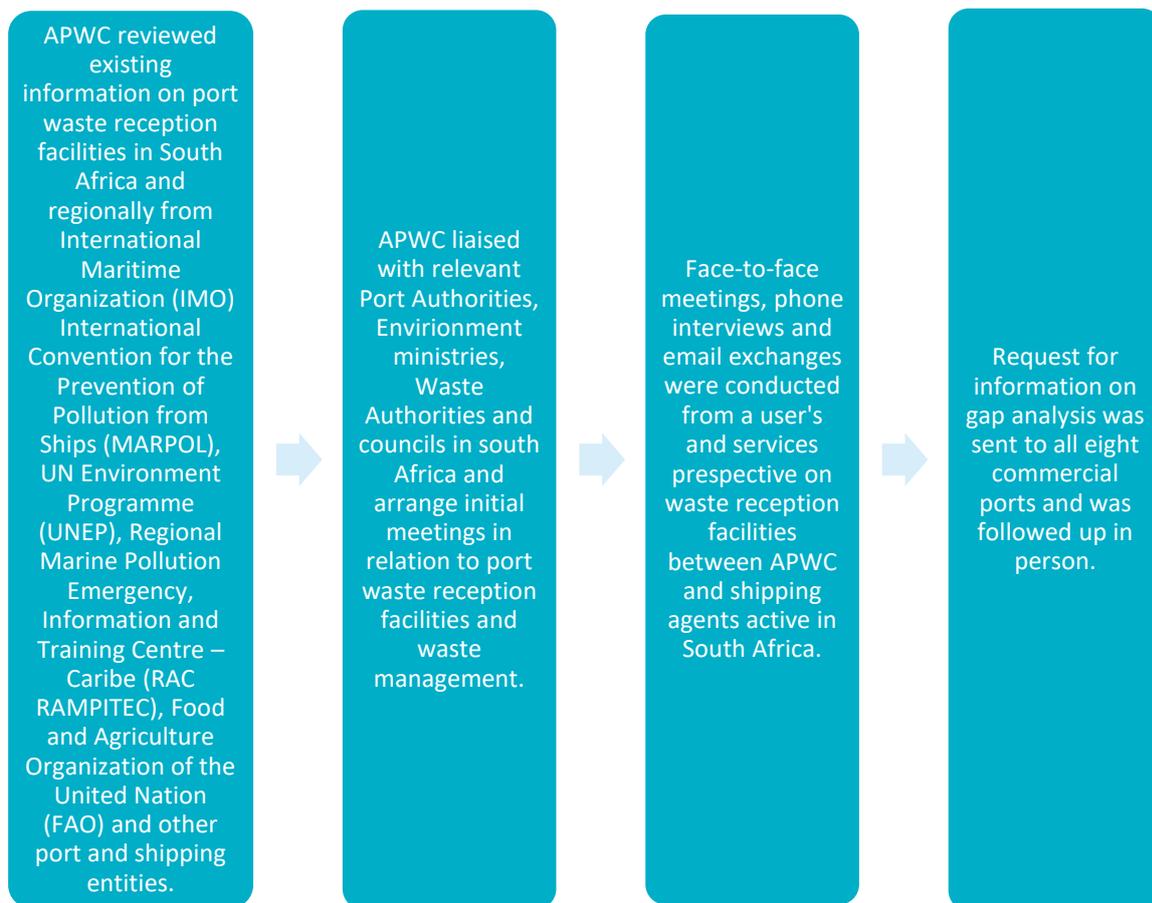


Figure 9: Pre-visit planning activities

Following the review process, it was determined that the in-country visits and assessments should focus on all eight commercial ports and 11 smaller domestic ports, harbours and marinas.

### 5.2 Port Visits

The port audit team conducted in-country work in South Africa from 20 August to 13 September 2019, including visits to above-mentioned commercial and smaller ports. The visits were undertaken as two parallel teams of two with a total of 45 man-days spent visiting ports.

Interviews were conducted with key stakeholders for ports and waste management, including Safety, Health & Environment (SHE) officers at each port and Harbour Masters (if they were present at the port at the time of the audits and available to meet).

## 6 Ship-generated waste at commercial ports in South Africa

To effectively review ship-generated waste in South Africa, the types and frequency of commercial vessels at the eight commercial ports were explored, together with a review of the waste types generated by these vessel types.

### 6.1 Type and frequency of commercial vessels

Data obtained from MarineTraffic<sup>11</sup> indicates that there were 7,218 commercial vessels accommodated across South Africa’s eight commercial ports in the period from the last two weeks of October 2018 to the first two weeks of October 2019 – an average of just under 602 vessels per month. It should be noted these values exclude non-commercial vessels such as cruise liners, fishing vessels, pleasure craft and special craft. These vessel numbers are a minimum and possibly miss 25% of the international ship traffic such as special vessels, naval vessels, pleasure craft, cruise liners and fishing vessels. Transnet data is preferred but they were unable to provide this for all ports.

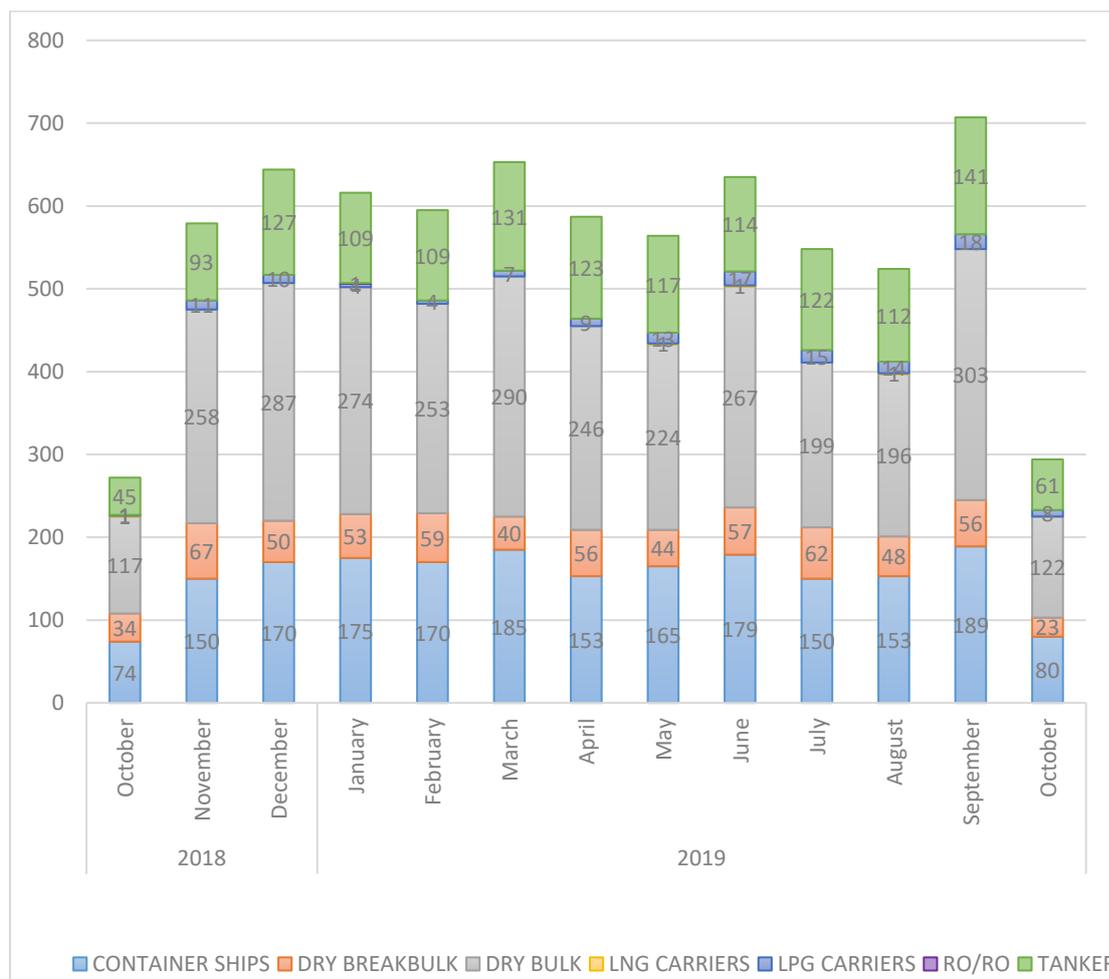


Figure 10: Commercial shipping traffic (52 weeks) in South Africa, by month <sup>11</sup>

<sup>11</sup> Source: <https://www.marinetraffic.com/en/ais/home/centerx:-26.9/centery:-3.2/zoom:2>

As displayed in Figure 11, the greatest contributors to the overall shipping activity were dry bulk carriers (42%), followed by container ships (28%), tankers (19%), and dry breakbulk carriers (9%). The remaining 2% was comprised mainly of Liquefied Petroleum Gas (LPG) carriers, plus a small number of Liquefied Natural Gas (LNG) carriers and roll-on/roll-off (RO/RO) vessels<sup>12</sup>. More detail on what the different types of vessels mean can be obtained by following [this link \(https://www.portinfo.co.uk/portinformation/ourmaritimeblog/vessel-types-explained\)](https://www.portinfo.co.uk/portinformation/ourmaritimeblog/vessel-types-explained).

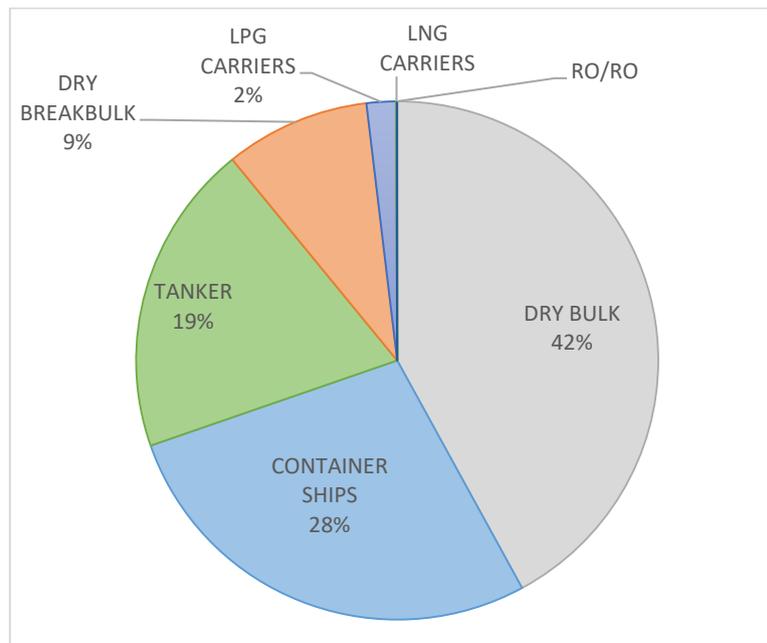


Figure 11: Commercial shipping traffic (52 weeks) in South Africa, by vessel type

Durban received the greatest number of vessels of all eight ports (35%), followed by Richards Bay (24%), Cape Town (14%), Saldanha (9%), Ngqura (8%), Port Elizabeth (7%), East London (2%) and Mossel Bay (1%).

<sup>12</sup> A further description of vessel types is available at <https://www.portinfo.co.uk/portinformation/ourmaritimeblog/vessel-types-explained>

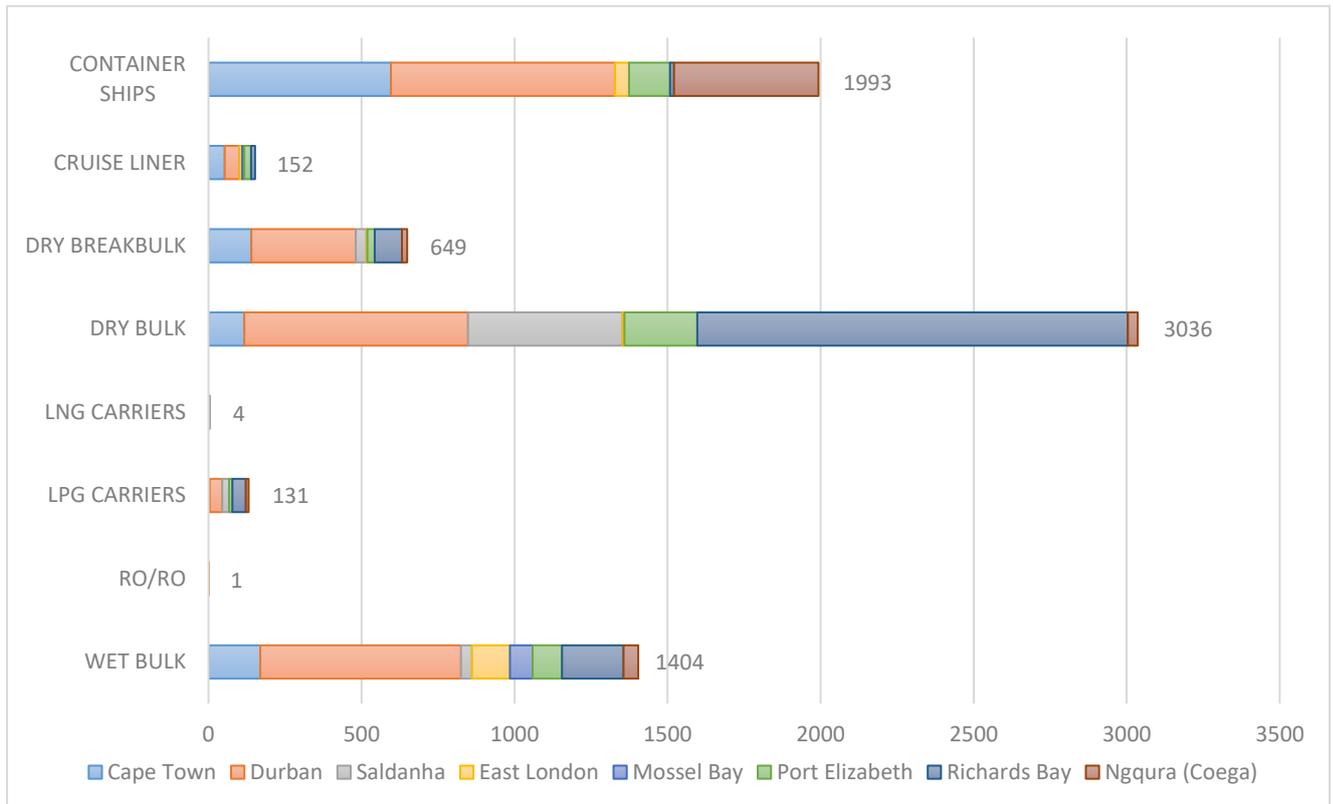


Figure 12: Commercial shipping and cruise liner traffic (52 weeks) in South Africa, by port and vessel type

## 6.2 Ship-generated waste types

A list of the types of waste generated by ships is outlined in the table below.

Table 6 Waste types generated by ships

Oily wastes	
Description	Oily wastes generated through shipping include oily bilge water, oily residues (sludge), oily tank washings (slops), and some types of operational wastes such as used cooking oil, used lubricants and oily rags.
Drivers	The generation of oily wastes varies and depends on factors such as the size of the ship, engine room design, preventative maintenance, age of the components on the ship, type of engine, the age of the engine, type of fuel burnt, engine running hours per day and (in the case of slops) the number of oil tank cleanings and the type of fuel carried.
Vessels	While the type and volume of oily waste generated varies between vessels, all vessels produce some oily residues (sludge).
Noxious liquid substances (NLS)	
Description	The IMO defines NLS as those which, if discharged into the sea from tank cleaning or de-ballasting operations, are deemed to: present a major hazard to either marine resources or human health (Category X); present a hazard to either marine resources or human health or cause harm to amenities or other legitimate uses of the sea (Category Y); or present a minor hazard to either marine resources or human health (Category Z).

Drivers	Efficiency and methods used in cleaning and offloading cargo.
Vessels	Waste from NLS is only generated through the carriage of chemicals in bulk.
<b>Sewage</b>	
Description	Sewage is defined as drainage and other wastes from any form of toilets and urinals; drainage from medical premises, via wash basins, wash tubs and scuppers located in such premises; drainage from spaces containing living animals; or other waste waters when mixed with the drainages outlined above.
Drivers	Drivers for the generation of sewage include: the number of crew members, passengers or livestock; the type of toilets; the length of voyage; and the type of sewage treatment, comminuting or disinfection facilities on board.
Vessels	All vessels potentially have sewage on board.
<b>Garbage</b>	
Description	Garbage generated on ships includes plastics (contaminated and clean), fishing gear waste, and domestic waste such as paper, cardboard, fluorescent lamps, synthetic material, foils, metal cans, lids, glass, pantry packaging waste, etc.
Drivers	The main drivers are the number of crew and passengers and the types of products used by crew and passengers.
Vessels	All vessels generate garbage. <ul style="list-style-type: none"> <li>• Cruise ships generate very large amounts of domestic garbage due to the number of persons on board. Cruise ships also generate high volumes of food wastes and food and beverage packaging as well as medical wastes and certain small hazardous items such as batteries, aerosol cans and photo processing chemicals.</li> <li>• General cargo vessels produce smaller amounts of domestic garbage, but garbage such as dunnage and other cargo-related waste is more significant.</li> <li>• Tankers produce similar volumes of domestic garbage as for general cargo ships.</li> <li>• Fishing vessels generate fishing gear waste such as damaged nets, lines and other fishing gear in addition to domestic garbage.</li> </ul>
<b>Ozone-depleting substances (ODS)</b>	
Description	Ozone-depleting substances are used on board ships in air-conditioning appliances or cooling equipment on reefers. They can also be contained in mobile equipment (fridges, mobile air conditioners).
Drivers	Presence of appliances and technologies that emit ODS.
Vessels	Only vessels equipped with appliances and technologies that emit ODS.

It is important to note that wastes associated with the bulk carriage of NLS and ODS are only relevant when vessels of these types visit a given port. However, all vessels – regardless of their size, purpose or cargo – produce some form of oily waste, sewage and garbage. The volumes of these waste types are highly dependent on the vessel type.

### 6.2.1 Ship-generated waste types in the South African context

South Africa uses slightly different definitions of ship-generated waste than those defined by the IMO (Table 7)– specifically, the term ‘galley waste’ is used across all eight commercial ports. Galley waste

is defined by Transnet as any waste that comes off ships, including paper, cans, cloths, plastics and food waste sourced from the kitchen (and crew accommodation) of a vessel (galley). As such, this combination of different IMO Annex V waste types needs to be treated in the same manner as quarantine waste due to the fact that it may or may not contain food waste, which is a serious quarantine risk for diseases such as African swine fever.

Table 7 Definition of type of waste according to IMO and Transnet

Waste Types Definitions	
IMO	Garbage, as defined in MARPOL Annex V, means all kind of food wastes, domestic wastes and operational wastes, all plastics, cargo residues, incinerator ashes, cooking oil, fishing gear and animal carcasses generated during the normal operation of the ship and liable to be disposed of continuously or periodically, except those substances which are defined or listed in other Annexes to the Convention. Garbage does not include fresh fish and parts thereof generated as a result of fishing activities undertaken during the voyage, or as a result of aquaculture activities which involve the transport of fish including shellfish for placement in the aquaculture facility and the transport of harvested fish, including shellfish, from such facilities to shore for processing.
Transnet	Galley Waste is defined as specific waste from ships, including paper, cans, cloths, plastics and food waste sourced from the kitchen (and crew accommodation) of a vessel (galley).  Dry waste refers to items such as paper, cardboard, synthetic material, wooden pallets, packaging materials and broken furniture.

Dry waste, according to TNA refers to items such as paper, cardboard, synthetic material, wooden pallets, packaging materials and broken furniture. Dry waste is not considered a quarantine risk and is usually collected in separate skip bins at the port to try to ensure no commingling occurs with galley waste so that the dry waste can be disposed of at a municipal landfill. But this does not always happen, and dry waste contaminated with galley waste must also be disposed of, expensively, as galley waste.

The use of the term ‘galley waste’ and ‘dry waste’ by Transnet instead of using standard the IMO Annex V term of ‘garbage’ therefore complicates the issues of waste disposal for vessels at South African ports, as international vessels do separate wastes on-board to exclude food wastes from dry waste types. However, upon berthing in South African waters, the segregated waste types risk being off-loaded into a single ‘galley waste’ receptacle, be it a wheelie bin or skip.

To avoid this, Transnet should align their nomenclature with IMO’s to ensure ships can direct their different waste streams to the correct waste management point, that is, all Annex V goes to a ‘garbage’ skip and then is managed as quarantine/hazardous waste and ‘dry waste’ goes to a separate skip and is managed as general waste.

It is worth noting APWC observed no disinfection of galley Annex V wastes (galley or dry wastes) at the point of collection by compactor trucks or at the discharge point at the hazardous waste landfill, in addition no fumigation was observed within the boundaries of the international ports.

### 6.3 Shipping wastes and marine litter

All shipping waste types have the potential for negative human health and environmental consequences. Garbage is the most detrimental, ship-based source of marine litter. Marine litter produced by fishing vessel also has an increased incidence of plastic. However, further studies need

to be undertaken to determine what this increased marine litter is composed of i.e. fishing nets or other packaging materials.

Of all the waste types, data related to Annex V waste types (garbage and plastics) has universally proven to be the most unreliable. A study conducted by independent research and consultancy organisation CE Delft (2017) for the European Maritime Safety Agency compared actual waste quantities from ships with reported waste quantities. The findings correlate with other similar studies, in that notified versus landed waste quantities were most accurate for MARPOL Annex I waste types (related to oil) and were least accurate for MARPOL Annex V waste types (garbage and plastics), with a differential of between 20% and 600%. Such findings are further supported by Western and Central Pacific Fisheries Commission (WCPFC, 2015) garbage reporting, which estimated an average of 27% of the garbage generated is landed.

## 6.4 Estimates of garbage generation from commercial vessels in South African Waters

This section considers the types and number of ships at the above-mentioned ports over a 12-month period and calculates a total estimate of garbage (Annex V) volumes, including plastics. Table 8 below includes a calculation for garbage generated for all international port-of-call vessels in South Africa. This is based on standard MARPOL methodology detailed in Appendix D for different ship types, and estimates a kilogram/person/day rate, numbers of persons on board and average days at sea. This is combined with the number of port calls to generate a volume of waste per vessel per visit.

Table 8 Commercial vessel generated waste: South Africa

Vessel type	Average number of persons on board	Average days at sea prior to port call	Annual visits	Garbage generated (kg/person/day)	Garbage generated per ship visit (kg)	Annual garbage generated (kg)
Tankers	25	3	1,539	2	150	230,850
Cargo	25	3	5,679	2	150	851,850
<b>TOTAL</b>						<b>1,082,700</b>

## 7 Gap Analysis – Port of Durban

### 7.1 Overview

The Port of Durban is located at longitude 31° 02'E and latitude 29° 52'S, approximately 680 nautical miles northeast of Cape Agulhas and 625 nautical miles south-south-west of the port of Maputo. The port handles the largest volume of sea-going traffic of any port in southern Africa. It has a total of 59 berths excluding those used by fishing vessels and ship repair. The port also has a fully equipped passenger terminal servicing cruise ships mostly operating between November and May. The port is well located with regard to major shipping routes and has excellent rail and road links. Due to its sheer size, the port plays an integral role in the economy of South Africa and the cargo port alone generates over 60% of the country's total revenue<sup>13</sup>. The port services its own industrial and commercial region (in addition to much of the South African hinterland) and a significant amount of traffic for neighbouring countries. The port operates 24 hours a day, seven days a week, although cargo working hours are restricted on official public holidays and can be impacted by weather.



Figure 13: Port of Durban container terminal (Source: APWC, 2019).

The combined catchment area of the rivers, canals and stormwater drainage systems that drain into Port of Durban is over 200 km<sup>2</sup>. During periods of heavy rain and flooding, the port waters receive a large volume of litter, effluent and sewage from the stormwater reticulation system within the catchment. This is said to happen almost annually, most recently in April 2019 when the port was significantly impacted by large volumes of waste and vegetation flowing into port waters during flooding.

In the 52-week period spanning the last two weeks of October 2018 through to the first two weeks of October 2019, data obtained from MarineTraffic indicates that the Port of Durban accommodated 2,502 commercial vessels in total with an average of 209 per month. It should be noted that these values exclude non-commercial vessels such as cruise liners, fishing vessels, pleasure craft and special

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<sup>13</sup> Source: [https://en.wikipedia.org/wiki/Port\\_of\\_Durban](https://en.wikipedia.org/wiki/Port_of_Durban)

craft. Figure 14 depicts the number of commercial vessels received at the port for each month, by vessel type.

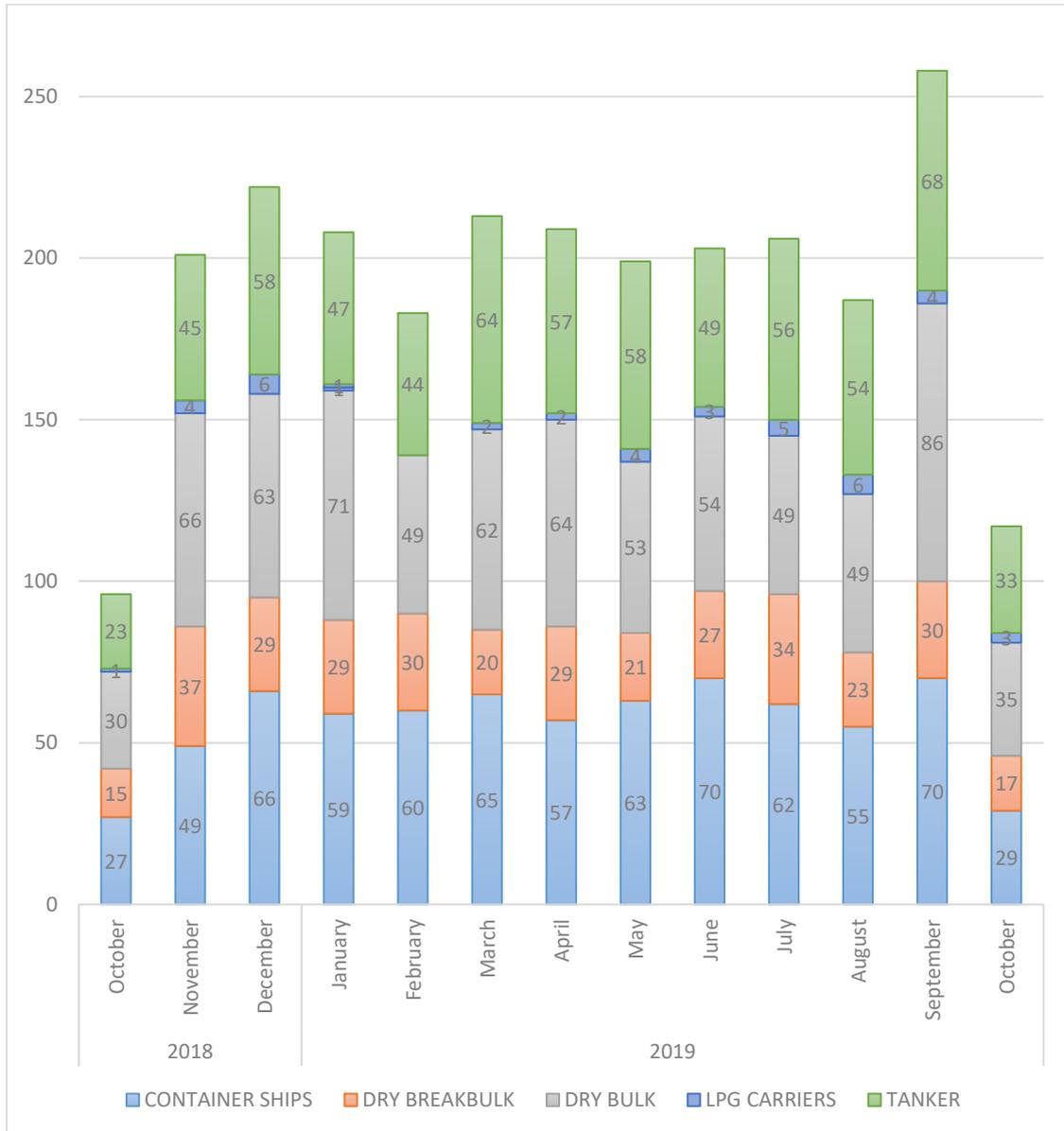


Figure 14: 2018-19 Commercial shipping log: Port of Durban

Of the 2,502 commercial vessels accommodated the most common vessel types are quite evenly distributed between container ships (29%), dry bulk carriers (29%) and tankers (26%). The remaining vessels types include dry breakbulk carriers (14%) and LPG carriers (2%). Traffic is quite consistent over the 52-week period (with the exception of September 2019) with a monthly range of between 18 to 258, keeping in mind that each of the October values depicted above constitute half-monthly values.

## 7.2 Summary of waste reception facilities: Port of Durban

The Port of Durban provides reception facilities for general garbage and galley waste through a service-level agreement with Averda Pty Ltd (a private contractor), while other waste streams are

managed directly via shipping agents using a number of licensed waste providers as shown in Table 9 below.

Good information is provided on the volumes and chain of custody for managing galley waste (quarantine waste), while little information is provided on oily wastes and no information is provided on the management of ship-generated sewage or NLS wastes.

Table 9 Licensed waste providers: Port of Durban

Licensed waste providers	
Africa Bunkering & Shipping CC	FFS Refiners (Pty) Ltd
Averda South Africa (Pty) Ltd	Honeysucker Haulage CC
Coalition Trading 1225 CC	MIB Waste Services CC
Commercial Waste Services	Northern Ocean Marine (Pty) Ltd
Compass Medical Waste Services (Pty) Ltd	Oil Separation Services (Pty) Ltd
Dolphin Coast Landfill Management (Pty) Ltd	Oricol Environmental Services (Pty) Ltd
Drizit Environmental CC	Separating Waste Solutions CC
DRUMNET CC	Siyaphambili Waste Services
Dynasty Ports International	Spill Tech (Pty) Ltd
Ekapa Drum Reconditioners (Pty) ltd	Tiasat (Pty) Ltd t/a Supply Five Marine
Envirocare Marine Waste	The Waste Group (Pty) Ltd
Enviroserv Waste Management (Pty) Ltd	Thekweni Marine Waste
Enviroshore	Pedal Trading 164 (Pty) Ltd t/a Wallace Bulk
Wastetrans CC	

A summary of waste reception facilities at the Port of Durban is outlined in Table 10 below.

Table 10 Summary of waste reception facilities: Port of Durban

Type of waste	Can waste be received?	Type of reception facility	Any limitations in capacity?	Service provider
Oily tank washings	Yes	Road Tanker	No	FFS Refiners Pty Ltd
Dirty ballast water	Yes	Road Tanker	No	FFS Refiners Pty Ltd
Oily bilge water	Yes	Road Tanker	No	FFS Refiners Pty Ltd
Oil sludges	Yes	Road Tanker	No	FFS Refiners Pty Ltd
Used lubricating oil	Yes	Road Tanker	No	FFS Refiners Pty Ltd
Noxious liquid substances	No	N/A	N/A	N/A
Sewage	No	N/A	N/A	N/A
Garbage	Yes	Compactor Truck	No	Averda
Quarantine wastes	Yes	Compactor Truck	No	Averda

### 7.3 Demand for waste reception facilities

In accordance with IMO guidelines, mandatory arrival notification and notice of the types and quantities of waste to be discharged are required 24 hours in advance. However, staff at the port advised that notification is not consistent and that it is not uncommon for incoming ships to fail to notify the port that they intend to discharge waste, or incorrectly advise of the quantities.

In 2018/19, 220.6 tonnes of galley waste were offloaded by port-of-call vessels at the Port of Durban, at a management cost of 1.2 million rand. This involved the collection of 15,542 wheelie bins in a seven-month period in 2018 and 76.5 skip bins over 12 months. This is a lower quantity (by 154.7 tonnes) when compared to the IMO estimate for garbage generated from port of call vessels for 12 months of more than 375 tonnes as shown in Table 11. However, interviews with ship crews, especially container ships, indicate that many vessels do not offload ship-generated waste in South Africa but withhold it and drop it off at other ports for economic reasons.

Table 11 Estimate of garbage generated for port of call vessels: Port of Durban

Vessel type	Average number of persons on board	Average days at sea prior to port call	Annual visits	Garbage generated (kg/person/day)	Garbage generated per ship visit (kg)	Annual garbage generated (kg)
Tankers	25	3	697	2	150	104,550
Cargo	25	3	1805	2	150	270,750
<b>TOTAL</b>						<b>375,300</b>

For oily waste, only a single collection was recorded of 1,034 litres for one month in 2019. It is unclear whether this is all that was unloaded or if record keeping is incomplete. Only some individual ports provided data on sewage or NLS, but advice from the national Transnet office indicates that generally collection services for all ship wastes (including NLS and sewage) is standardly provided privately via shipping agents.



Figure 15: Galley waste skip provided for a vessel berthing at the Port of Durban (Source: APWC, 2019).

Table 12 Waste Generation Data from 4 International Ships – Port of Durban

Vessel	Plastic waste (L)	Food waste (L)	Domestic waste (L)	Cooking oil (L)	Operational waste (L)	Total waste (L)	Days at sea (day)	No. of crew (person)	Waste generation rate (L person <sup>-1</sup> day <sup>-1</sup> )	Plastic waste generation rate (L person <sup>-1</sup> day <sup>-1</sup> )
Bernadette (container)	-	-	-	-	-	5,000	24	22	9.5	-
San Cristobal (container)	2000	400	3000	50	3000	8,450	23	20	18.4	4.3
Mucua (oil tanker)	1800	700	2000	30	1100	5,630	30	23	8.2	2.6

Table 12 illustrates waste generation data from three container ships and one oil tanker (source: Durban Port, interviews with safety officers). The quantities of waste are given in litres (1 m<sup>3</sup> = 1,000 L). Waste generation data is calculated as the amount of waste generated per X crew members in Y days at sea (L person<sup>-1</sup> day<sup>-1</sup>). Assuming the standard port services are utilized, these are disposed of at the hazardous waste landfill.

## 7.4 Assessment of waste reception facilities

### 7.4.1 Oily wastes

The assessment of waste reception facilities for oily wastes at the Port of Durban is detailed in Table 13.

Table 13 Assessment of waste reception facilities for oily waste: Port of Durban

		Yes	No
1	How are the oily wastes disposed of:		
	separation of oil and water then recycling	X	
	land disposal		X
	recycled	X	
	incineration		X
	other		X
2	Are there restrictions on receipt or collection of oily wastes by service providers:		
	minimum quantity		X
	maximum quantity		X
	discharge rate (m <sup>3</sup> /hour)		X
	vessel type		X
	vehicle access to berth	X	
	other		X
3	Are oily waste reception facilities available:		
	24 hours a day, 7 days per week	X	
	24 hours a day, 5 days per week		X
	business hours only, 7 days per week		X
	business hours only, 5 days per week		X
4	Is prior notice for receipt of oily wastes required:		
	0 hours		
	12 hours		
	24 hours	X	
	48 hours		X
5a	Is the waste receipt service available:		
	at no cost		X
	at a cost incorporated into standing port use charge		X
	at a cost charged in addition to other services	X	

		Yes	No
5b	Is the cost:		
	reasonable in terms of service		X
	a disincentive	X	
	other - excess amounts attract an additional fee		X
6.	Is a waste collection service available:		
	at all berths	X	
	at most berths		X
	at only one berth		X
	to vessels anchored within the port		X
	to vessels anchored outside the port		X

Based on the assessment conducted, the provision of waste reception facilities for oily waste at the Port of Durban was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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#### 7.4.2 Noxious Liquid Substances (NLS)

The assessment of waste reception facilities for NLS at the Port of Durban is detailed in Table 14. The assessment found that no NLS reception facility is provided.

Table 14 Assessment of waste reception facilities for NLS: Port of Durban

		Yes	No
1	Where is the NLS disposed of:		
	directly from the ship to a mobile facility		N/A
	ships to a holding tanks prior to being pumped out		N/A
	other (specify)		N/A
2	Are there any restrictions on receipt or collection of NLS wastes by service providers:		
	minimum quantity		N/A
	maximum quantity		N/A
	discharge rate (m <sup>3</sup> /hour)		N/A
	vessel type		N/A
	vehicle access to berth		N/A
3	Are NLS reception facilities available:		
	24 hours a day, 7 days per week		N/A
	24 hours a day, 5 days per week		N/A
	business hours only, 7 days per week		N/A
	business hours only, 5 days per week		N/A
	other (specify)		N/A
4	Is prior notice for receipt of NLS required:		
	0 hours		N/A
	12 hours		N/A
	24 hours		N/A
	48 hours		N/A
5a	Is the waste receipt service available:		
	at no cost		N/A
	at a cost incorporated into standing port use charge		N/A
	at a cost charged in addition to other services		N/A
5b	Is the cost:		
	reasonable in terms of service		N/A
	a disincentive		N/A
	other (specify)		N/A
6.	Is a waste collection service available:		
	at all berths		N/A
	at most berths		N/A
	at only one berth		N/A
	to vessels anchored within the port		N/A

		Yes	No
	to vessels anchored outside the port		N/A
	other		N/A

Based on the above, the provision of waste reception facilities for NLS at the Port of Durban was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 7.4.3 Sewage

The assessment of waste reception facilities for sewage at the Port of Durban is detailed in Table 15. It is believed that no sewage reception is available at the Port of Durban.

Table 15 Assessment of waste reception facilities for sewage: Port of Durban

		Yes	No
1	Where is the sewage disposed of:		
	directly to a reticulated sewerage system		X
	directly to a mobile facility	X	
	ships to holding tanks then pumped to a mobile facility		X
	ships to on-site treatment facility to sewerage system		X
	other (specify)		X
2	Are there any restrictions on receipt or collection of sewage wastes by service providers:		
	minimum quantity		X
	maximum quantity		X
	discharge rate (m <sup>3</sup> /hour)		X
	vessel type		X
	vehicle access to berth		X
3	Are sewage reception facilities available:		
	24 hours a day, 7 days per week		X
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
	other		
4	Is prior notice for receipt of sewage required:		
	0 hours		
	12 hours		
	24 hours	X	
	48 hours		
5a	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 - excess amounts attract additional fees	X	
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other (specify) - unknown	X	
6.	Is a waste collection service available:		
	at all berths	X	
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		
	other		

Based on the above, the provision of waste reception facilities for sewage at the Port of Durban was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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#### 7.4.4 Garbage disposal

The assessment of waste reception facilities for garbage disposal at the Port of Durban is detailed in Table 16.

Table 16 Assessment of waste reception facilities for garbage disposal: Port of Durban

		Yes	No
<b>Garbage disposal – on shore</b>			
1	Where is the garbage disposed:		
	local government dump/landfill		
	private dump/landfill	X	
	transfer station		
	materials recycling facility		
2	Where are quarantine wastes disposed:		
	incinerator		
	sterilisation		
	deep burial	X	
	normal landfill		
<b>Garbage disposal – ship to shore</b>			
3	Are there any restrictions on receipt or collection of garbage wastes:		
	minimum quantity		X
	maximum quantity		X
	vessel type		X
	vehicle access to berths		X
4	Are garbage waste reception facilities available?		
	24 hours a day, 7 days per week	X	
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
5	Is prior notice for receipt of waste required:		
	0 hours		
	12 hours		
	24 hours	X	
	48 hours		
6a	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 - excess amounts attract additional fees	X	
6b	Is the cost:		
	reasonable in terms of service		
	a disincentive	X	
7	Is a waste collection service available:		
	at all berths	X	
	at most berths		
	at only one berth		
	to vessels anchored within the port		X
	to vessels anchored outside the port		X

Based on the above, the assessment of the provision of waste reception facilities for garbage disposal at the Port of Durban was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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Other findings of relevance are as follows:

There is one case of alleged inadequacy of reception facilities for Annex V wastes (i.e. garbage) at the Port of Durban reported through the IMO’s Global Integrated Shipping Information System (GISIS). The case (reported in August 2017) alleged that no facility had been available at the port for the disposal of 6 m<sup>3</sup> of plastics at SBM Terminal.

Further notes on the GISIS stipulate that ‘Garbage removal of any type is not permitted at anchorage due to past history of vendors not acting in accordance with the customs regulations, therefore the Port Captain prohibited any removal of garbage at OPL.’ These problems were discussed with the port reception facility agent.

Many international vessels practise waste segregation on board. However, at the Port of Durban all the waste is disposed of in a galley waste skip. This means that all garbage collected needs to be treated and disposed of as quarantine waste (hazardous waste).

As outlined above, a galley waste skip is provided to all vessels and the cost is incorporated into the port usage charge for the first 2 skips. As it is a fixed cost, ships pay this fee regardless of the extent to which they make use of this service. This practice should theoretically prevent the withholding of waste from vessels due to cost.

However, it was observed that the skips are often not full (half loads are common) and no container ships (10 berthed at that time period) discharged any galley waste while the APWC team was present. This is possibly due to the fact that the volumes of garbage on board are well in excess of the capacity of the skips. As such, it may be easier for vessels to withhold their garbage until the total quantity can be received.

Figure 16: Durban: other relevant observations - garbage disposal

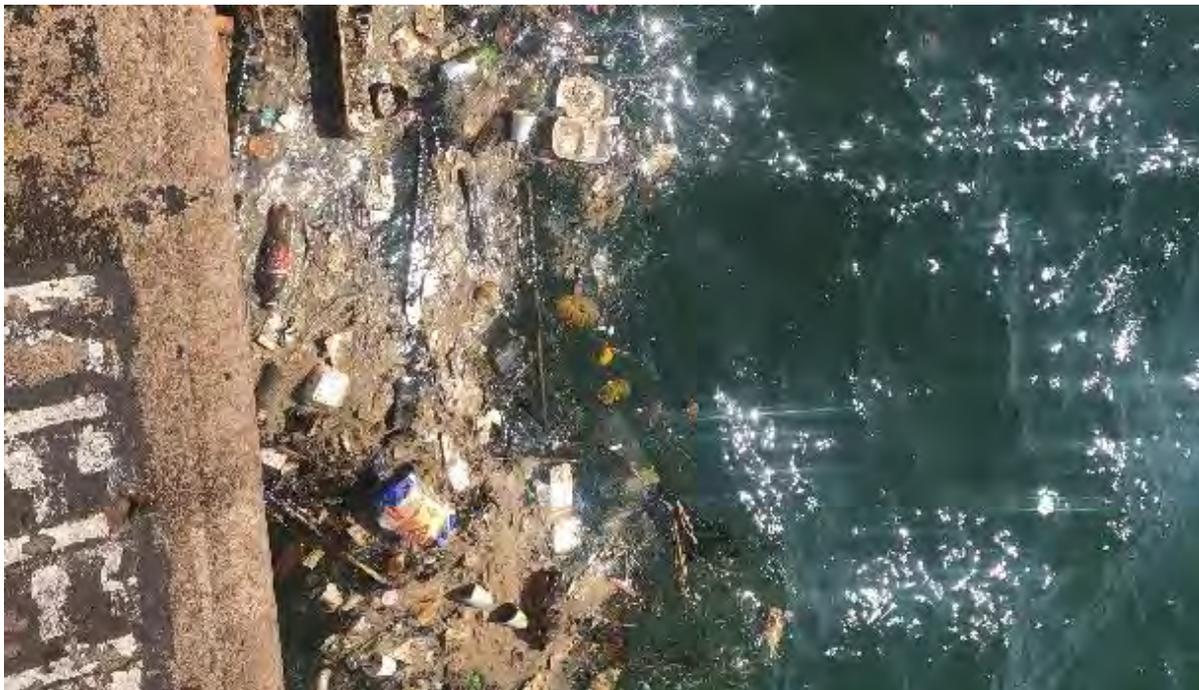


Figure 17: Flotsam visible in port waters at the Port of Durban (Source: APWC, 2019).

#### 7.4.5 Waste Management System

The assessment of the waste management system at the Port of Durban is detailed in Table 17. The assessment found that the Port of Durban has an Integrated Waste Management Policy and Plan that aligns with the requirements in the National Environmental Management: Waste Management Act and the National Waste Management Strategy developed by the Transnet National Ports Authority.

Table 17 Assessment of waste management system: Port of Durban

		Yes	No
1	Has a waste management plan (WMP) been developed and implemented for ship wastes?	X	
2	Is the WMP part of an overall environmental management system (EMS) for the port?	X	
3	Are marinas and fishing harbours covered by the port EMS or required to develop their own EMS?		X
4	Does the WMP provide a brief summary of the types of wastes received and the collection and disposal facilities/services?	X	
5	Does the WMP address and provide management objectives for:		
6	Operations:		
	facility management	X	
	maintenance	X	X
	signage	X	
	infrastructure	X	
	contractual arrangements	X	
	emergency response		X
	seasonal variations		X
	training and education	X	
	delegation of responsibilities and accountability	X	
	compliance with regulatory conditions, including auditing	X	
7	Technical standards:		
	facility requirements	X	
	incorporation of new technologies		X
	cleaning requirements		X
	maintenance of equipment to technical standards		X
8	Environmental considerations:		
	prevention of pollution to surface waters	X	
	noise emissions		X
	visual impacts		X
	odour emissions		X
	special considerations due to surrounding environment (e.g. proximity to wetland or mangrove areas)	X	
	coastal processes (e.g. extreme tides)		X
9	Plans for future expansion/upgrades:		
	oily wastes		X
	noxious liquid substances (NLS)		X
	sewage		X
	garbage		X
	recycling of wastes		X
	quarantine wastes		X
10	Are contact details held for all waste service providers?	X	
11	Are the service providers licensed/approved as required by legislation?	X	
12	Are a copy of the licenses on file?	X	
13	Are a copy of the licenses for the waste disposal facilities used by the service providers held on file?	X	
14	Have receipts for waste disposal been sighted/copies held on file?	X	
15	Are alternative waste service providers or disposal facilities available (e.g. spare drums, waste oil recyclers)?	X	
16	Is there a procedure for choosing waste disposal service providers (e.g. list of preferred contractors)?	X	
17	Are the details of back-up facilities available on file?	X	
18	Does the WMP include an emergency response plan?		

		Yes	No
19	Is the plan adequate in that it addresses at least the following issues?		
	spillage of liquid		X
	spillage of solids		X
	leakage of gas		X
	fire or explosion		X
	emergency contacts		X
	other (specify)		X
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? (Data sighted/copies attached)		X
	oily wastes		X
	noxious liquid substances		X
	sewage		X
	garbage	X	
	recycling of wastes		X
	quarantine wastes	X	
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	X	
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? (Graphs sighted)		X
23	Is on-going consideration given to changes in demand for waste reception facilities?		X
24	Do plans exist for future upgrades, extensions or reductions to the waste reception facilities?		X
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?		X
26	Are there provisions for audits against the WMP (at least within two (2) years of implementation and thereafter every three (3) years)?		
27	Is there provision for periodic review of the WMP?		
28	Are the relevant requirements of the MARPOL 73/78, UNCLOS and IMO generally adhered to by the users of the port?	X	
29	Is there information on the state and local regulations regarding (please list legislation if known):		
	waste management	X	
	pollution of water	X	
	pollution of air	X	
	noise emissions	X	
	discharges to sewer	X	
	storage of dangerous goods	X	
30	Is there information on waste minimisation hierarchy i.e. avoid/ reduce/ reuse/ recycle/ reprocess?	X	
31	Is an open and co-operative relationship maintained between the port authority and the relevant authorities and agents?	X	
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? (Give examples of consultation methods)	X	
33	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?	X	
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?	X	
35	Is clear and visible signage for waste reception facilities present and includes:		X
	advice at initial vessel contact point of waste reception facilities:		X
	direction to receptacle or disposal point location:		X
	labelling of all receptacles and disposal points:		X
	contact numbers:		X
	emergency procedures:		X
	translation into other languages as required:		X
36	Are there information sheets/leaflets available for each waste reception facility?		X

		Yes	No
37	Is this information conveyed to ships?	X	

Based on the above, the provision of the waste management systems at the Port of Durban was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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Other findings of relevance are as follows:

Plastic debris in the port water (flotsam) is an ongoing and serious problem each time it rains, with the Port being operationally closed for several days and clean-ups being conducted at a significant cost. Plastic waste is a significant component of this waste stream.

This waste originates in the upper catchments where poor waste management results in large quantities accumulating in waterways, which are then mobilised during flood periods. The quantities are becoming larger with each event and the plastic waste and other debris is ultimately lost to the marine environment.

During drought periods the issue ceases to be a problem.

Figure 18: Durban: other relevant observations: waste management system

## 7.5 Summary of assessments and key findings

As outlined in Table 18, the assessments found that port waste reception facilities at the Port of Durban are excellent for galley and dry waste, with a well-formulated management system that completely documents chain of custody, licensed and audited waste management providers and full quantification of galley waste received.

The port space at Durban is well managed and Transnet staff and waste contractors demonstrate a very good awareness of their system and issues. Unlike Cape Town and Saldanha, the Transnet environmental staff are co-located at the port with good access and visibility. This system does not, however, document oily wastes in the same way and very little information is available. It is unclear what (if any) services are provided for sewage and NLS, with Transnet staff having a lack of awareness relating to oily waste management.

Table 18 Summary assessment of port waste reception facilities: Port of Durban

Type of waste	Assessment	Comments
Oily wastes	Satisfactory	Services provided by a third-party contractor. Lack of recording/reporting on requests for service and quantities received/no COC
Noxious liquid substances	Less than satisfactory	No provided.
Sewage	Satisfactory	Not provided.
Garbage	Fully meets requirements	All garbage is categorised as galley waste and is disposed of as quarantine waste.
Waste Management System	Satisfactory	The plan is adequate and circa 2017-2018

Overall, it was found that the waste reception facilities at the Port of Durban are well planned and integrated into the national system for galley waste. This is aided by a well-developed chain of custody, responsive third-party contractors and committed staff who are well trained and informed.



Figure 19: In April 2019, the Port of Durban was impacted by large volumes of debris as a result of heavy flooding (Source: Transnet, 2019).

## 8 Gap Analysis – Port of Richards Bay

### 8.1 Overview

The Port of Richards Bay is South Africa's northernmost port and is located at longitude 32° 02' E and latitude 28° 48' S, approximately 87 nautical miles northeast of Durban and 252 nautical miles southwest of Maputo. It occupies a land space of 2,157 hectares and a water area of 1,495 hectares, making it one of the largest ports in the world in terms of geographic coverage. Richards Bay is South Africa's premier bulk port and handles approximately 80 million tonnes of cargo annually, primarily coal, manganite, aluminium bauxite, sulphur and pig iron. The port has 23 berths in total, including layby berths, and operates 24 hours a day, seven days a week.

The port consists of a dry bulk terminal, a multi-purpose terminal and a privately operated coal terminal. Other private operators within the port include several wood chip export terminals and a bulk liquid terminal.



Figure 20: Port of Richards Bay. Photograph by [Balou46 - Own work, CC BY-SA 4.0](#).

As well as handling cargo, Richards Bay is a popular destination for international cruise liners due to its proximity to the St Lucia world heritage site and game parks. Depending on the size of the vessel, cruise liners dock at either the small-craft berth or one of the cargo-handling berths.

In the 52-week period spanning the last two weeks of October 2018 through to the first two weeks of October 2019, data obtained from MarineTraffic indicates that the Port of Richards Bay accommodated 1,754 commercial vessels in total with an average of 146 per month. It should be noted that these values exclude non-commercial vessels such as cruise liners, fishing vessels, pleasure craft and special craft. Figure 21 depicts the number of commercial vessels received at the port for each month, by vessel type.

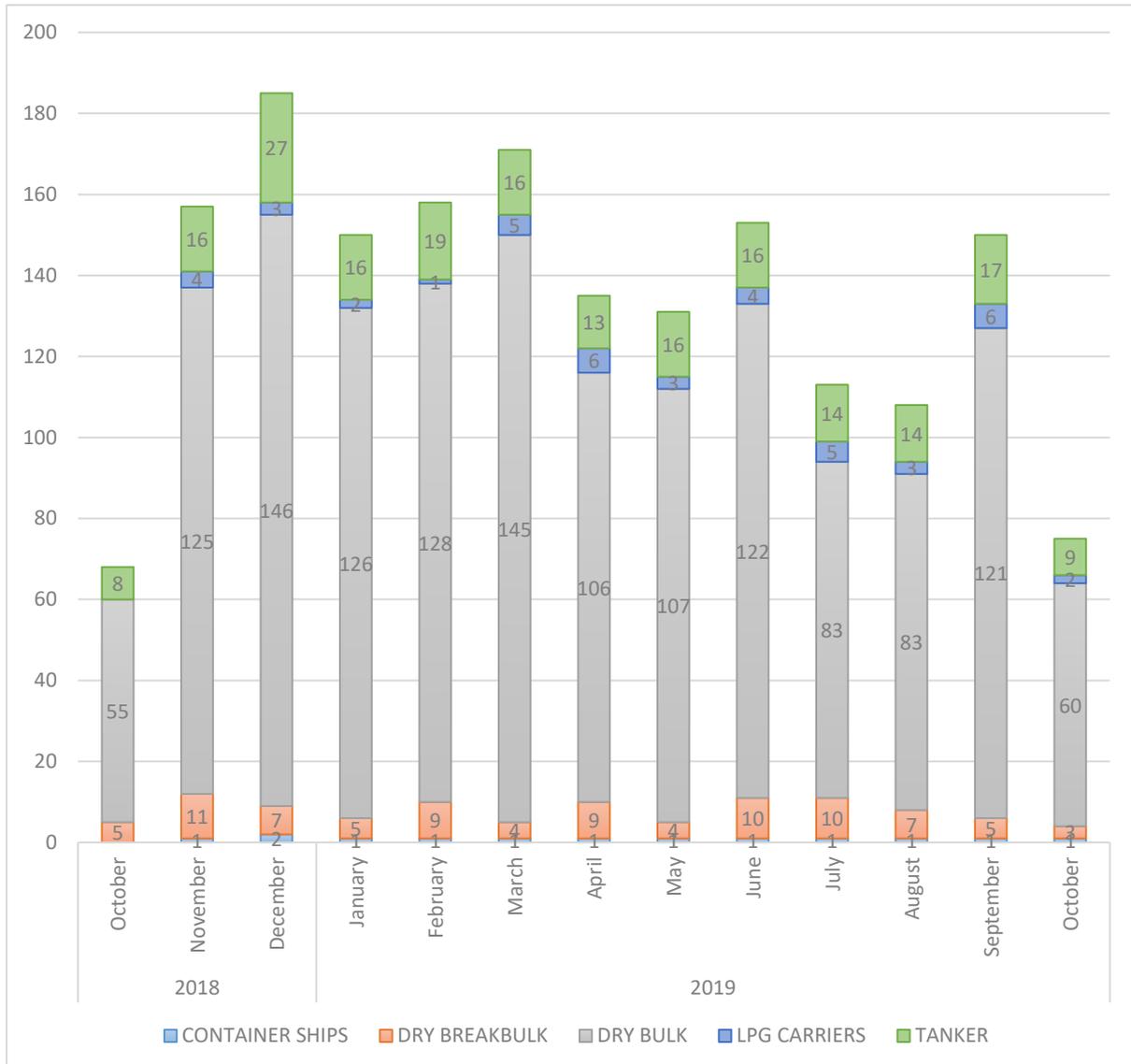


Figure 21: 2018-19 Commercial shipping log: Port of Richards Bay

Of the 1,754 vessels accommodated, by far the most common vessel type was dry bulk carriers (80%), followed by tankers (11%) and dry breakbulk carriers (5%). This is not surprising given the high volume of dry bulk exports such as coal.

Keeping in mind that each of the October values depicted above constitute half-monthly values, we can see that traffic is relatively consistent over the 52-week period (with a monthly range of between 108 to 185), but that it has distinct quarterly peaks.

## 8.2 Summary of waste reception facilities: Port of Richards Bay

The Port of Richards Bay directly provides reception facilities for galley waste only and requires 24-hour advance notification for the intention to offload galley waste. Galley waste reception services are provided by a third-party contractor (Enviroserv) through a service-level agreement with the port. Oily waste reception is provided by the port only for its own vessels (tugs).

Ships berthing at the port can access services for oily wastes, NLS and sewage but any such arrangements need to be made privately through a shipping agent as the port does not handle these requests. There are 10 port-licensed waste contractors that are able to receive and dispose of these wastes with details provided in Table 20 below.

Table 19 Licensed waste providers: Port of Richards Bay

Licensed waste providers	
Africa Bunkering and Shipping CC	Enviroserv Waste Management (Pty) Ltd
Abaphumeleli Trading 651 CC, t/a Pollution Control Services	FFS Refiners (Pty) Ltd
Compass Medical Waste Services (Pty) Ltd	MIB Waste Services CC
Dolphin Coast Landfill Management (Pty) Ltd	Spill Tech (Pty) Ltd
Endlovini General Services and Maintenance CC	Waco Africa (Pty) Ltd, t/a Sanitech

A summary of waste reception facilities at the Port of Richards Bay is outlined below.

Table 20 Summary of waste reception facilities: Port of Richards Bay

Type of waste	Can waste be received?	Type of reception facility	Any limitations in capacity?	Service provider
Oily tank washings	Yes	Road Tanker	Unknown	Private contractor
Dirty ballast water	Yes	Road Tanker	Unknown	Private contractor
Oily bilge water	Yes	Road Tanker	Unknown	Private contractor
Oil sludges	Yes	Road Tanker	Unknown	Private contractor
Used lubricating oil	Yes	Road Tanker	Unknown	Private contractor
Noxious liquid substances	Yes	Road Tanker	Unknown	Private contractor
Sewage	Yes	Road Tanker	Unknown	Private contractor
Garbage	Yes	Wheelie bins or skips	Excess amounts attract additional fees	Envirowaste
Quarantine wastes	Yes	Unknown	Unknown	Private contractor

### 8.3 Demand for waste reception facilities

Data on the number of requests for waste collection by waste type and ship type for the Port of Richards Bay was requested but not provided. However, based on Transnet records of garbage received (galley/quarantine waste), there is a considerable demand from port of call vessels, which is largely serviced.

IMO generated garbage estimates based on 12 months of MarineTraffic port-of-call vessels shows that an estimated 263 tonnes of garbage (galley/quarantine waste) is produced (see Table 21), which is close to the 232 tonnes of galley waste Transnet recorded as being collected from port-of-call vessels and disposed of to landfill from 5,425 wheelie bin and 30 skips, at a cost of 1.45 million rand for 12 months spanning 2018/2019.

Table 21 Estimate of garbage generated for port of call vessels: Port of Richards Bay

Vessel type	Average number of persons on board	Average days at sea prior to port call	Annual visits	Garbage generated (kg/person/day)	Garbage generated per ship visit (kg)	Annual garbage generated (kg)
Tankers	25	3	245	2	150	36,750
Cargo	25	3	1509	2	150	226,350
<b>TOTAL</b>						<b>263,100</b>

Transnet also recorded receiving 102 kg of used oil/slops and 21 'tankers' of slops from port-of-call vessels at a cost of 435,038 rand for 12 months spanning 2018/2019.

For oily waste, sewage and NLS, this may not be being fully met, with in-country interviews indicating that for bulk, breakbulk, tanker, and special/project/drilling rig vessels, approximately 20% of the vessels require oily waste reception, 30% require NLS prewash or solid bulk cargo residues, and approximately 50% of vessels require sewage reception. None of these services is currently provided by the port, which is why these arrangements need to be made directly through a shipping agent. This dispersal of information between different shipping agents presents a challenge for assessing levels of demand for waste reception facilities.

## 8.4 Assessment of waste reception facilities

### 8.4.1 Oily wastes

The assessment of waste reception facilities for oily wastes at Richards Bay is detailed below.

Table 22 Assessment of waste reception facilities for oily waste: Port of Richards Bay

		Yes	No
1	How are the oily wastes disposed of:		
	separation of oil and water then recycling	X	
	land disposal		X
	recycled	X	
	incineration		X
2	Are there restrictions on receipt or collection of oily wastes by service providers:		
	minimum quantity		
	maximum quantity		
	vessel type		
	vehicle access to berth		
	other – oil slops are required by private contractors to have a minimal water content.	X	
3	Are oily waste reception facilities available:		
	24 hours a day, 7 days per week	X	
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
4	Is prior notice for receipt of oily wastes required:		
	0 hours		
	12 hours		
	24 hours	X	
	48 hours		
5a	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	X	
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other - unknown	X	
6.	Is a waste collection service available:		
	at all berths	X	
	at most berths		
	at only one berth		
	to vessels anchored within the port		

Oily waste generated from vessels managed by the port itself (such as marine tugs) is pumped into a drum and then collected by a disposal service provider for recycling. The port itself does not receive oily wastes from vessels but if such a service is required, vessels can make appropriate arrangements through contacting private contractors either directly or via a shipping agent. Based on the assessment conducted, the provision of waste reception facilities for oily waste at the Port of Richards Bay was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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## 8.4.2 Noxious Liquid Substances (NLS)

The assessment of waste reception facilities for NLS at the Port of Richards Bay is detailed below.

Table 23 Assessment of waste reception facilities for NLS: Port of Richards Bay

		Yes	No
1	Where is the NLS disposed of:		
	directly from the ship to a mobile facility		
	ships to a holding tanks prior to being pumped out		
	other - unknown	X	
2	Are there any restrictions on receipt or collection of NLS wastes by service providers:		
	minimum quantity		
	maximum quantity		
	discharge rate (m <sup>3</sup> /hour)		
	vessel type		
	vehicle access to berth		
	other – unknown	X	
3	Are NLS reception facilities available:		
	24 hours a day, 7 days per week		
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
	other – unknown	X	
4	Is prior notice for receipt of NLS required:		
	0 hours		
	12 hours		
	24 hours		
	48 hours		
	other – unknown	X	
5a	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		
	other – unknown	X	
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other – unknown	X	
6.	Is a waste collection service available:		
	at all berths		
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		
	other – unknown	X	

The port itself does not receive NLS residues. If such a service is required, vessel agents are advised to make arrangements with a port-licensed waste disposal service provider. Based on the above, the provision of waste reception facilities for NLS at the Port of Richards Bay is:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 8.4.3 Sewage

The assessment of waste reception facilities for sewage at the Port of Richards Bay is detailed in Table 24.

Table 24 Assessment of waste reception facilities for sewage: Port of Richards Bay

		Yes	No
1	Where is the sewage disposed of:		
	directly to a reticulated sewerage system		
	directly to a mobile facility		
	ships to holding tanks then pumped to a mobile facility		
	ships to on-site treatment facility to sewerage system		
	other - unknown	X	
2	Are there any restrictions on receipt or collection of sewage wastes by service providers:		
	minimum quantity		
	maximum quantity		
	discharge rate (m <sup>3</sup> /hour)		
	vessel type		
	vehicle access to berth		
	other - unknown	X	
3	Are sewage reception facilities available:		
	24 hours a day, 7 days per week		
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	other - unknown	X	
4	Is prior notice for receipt of sewage required:		
	0 hours		
	12 hours		
	24 hours	X	
	48 hours		
5a	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 - excess amounts attract additional fees		
	other - unknown	X	
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other - unknown	X	
6.	Is a waste collection service available:		
	at all berths		
	at most berths		
	to vessels anchored within the port		
	to vessels anchored outside the port		
	other - unknown	X	

The port does not receive sewage from vessels. If the service is required, arrangements are made between private service providers and the shipping agent on an *ad-hoc* basis. Based on the above, the provision of waste reception facilities for sewage at the Port of Richards Bay is:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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#### 8.4.4 Garbage disposal

The assessment of waste reception facilities for garbage disposal at the Port of Richards Bay is detailed in Table 25.

Table 25 Assessment of waste reception facilities for garbage disposal: Port of Richards Bay

		Yes	No
<b>Garbage disposal – on shore</b>			
1	Where is the garbage disposed:		
	local government dump/landfill		
	private dump/landfill	X	
	transfer station	X	
	materials recycling facility		
2	Where are quarantine wastes disposed:		
	incinerator		
	sterilisation		
	deep burial	X	
	normal landfill		
<b>Garbage disposal – ship to shore</b>			
3	Are there any restrictions on receipt or collection of garbage wastes:		
	minimum quantity		
	maximum quantity		
	vessel type		
	vehicle access to berths		
	other – only galley waste is received by the port	X	
4	Are garbage waste reception facilities available:		
	24 hours a day, 7 days per week	X	
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
5	Is prior notice for receipt of waste required:		
	0 hours- 6 hour turnaround	X	
	12 hours		
	24 hours		
	48 hours		
6a	Is the waste receipt service available:		
	at no cost		
	at a cost incorporated into standing port use charge	X	
	at a cost charged in addition to other services - excess amounts attract additional fees	X	
6b	Is the cost:		
	reasonable in terms of service		
	a disincentive	X	
	other		
7	Is a waste collection service available:		
	at all berths	X	
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		

Reception services for IMO Annex V (Garbage) (i.e. galley waste) and dry ship waste are managed at the Port of Richards Bay by Transnet but provided by Envirowaste under a service-level agreement. The Galley Waste Handling Procedure stipulates that the Envirowaste must provide galley waste cages at all berths. The cages have three 120-litre wheelie bins in which the waste must be deposited. They are required to be emptied twice a day (morning and afternoon) but this is reported to not happen reliably. The wheelie bins are provided free but if a ship has more waste than the bins can

accommodate, a 7 m<sup>3</sup> skip or a trailer is made available for an additional charge. The additional charges incurred for excess galley waste are reported to be a disincentive. For passenger liners, an 11 m<sup>3</sup> leak-proof covered skip is made available for receiving galley waste. Waste collected from the wheelie bins or skips is stored securely before being transported to the privately operated Kwadukuza High Hazard Class A Landfill for deep burial.

Based on the above, the assessment of the provision of waste reception facilities for garbage disposal at the Port of Richards Bay was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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Other findings of relevance are as follows:

There are two reported cases of alleged inadequacy of reception facilities for Annex V wastes (i.e. garbage) at the Port of Richards Bay that have been reported through the IMO’s Global Integrated Shipping Information System (GISIS). The first case (reported in March 2013) alleged that no facility had been available at the port for the disposal of 0.12 m<sup>3</sup> of plastic, 0.55 m<sup>3</sup> of cargo residues, paper products, oily rags, and 0.06 m<sup>3</sup> of incinerator ash.

The second case (reported in October 2015) alleged that no facility had been available to dispose of 2.1 m<sup>3</sup> of plastic, 1.6 m<sup>3</sup> of domestic wastes, 0.15 m<sup>3</sup> of incinerator ashes, and 0.4 m<sup>3</sup> of operational wastes. This report further alleges that the maximum storage capacity of the wheelie bins (for the disposal of galley waste) was too small and that the bins were not emptied twice daily as promised.

While the service provider that collects galley waste is contracted to make two collections daily (morning and afternoon), shipping agents and vessels report that they often make only one collection on week days and that over weekends they sometimes do not make the collection at all.

The small bins provided, combined with the inadequate collection of galley waste, is reported to be a great inconvenience to vessels when they need to dispose of garbage but the bins are full.

The port authorities are reported to impose fines on a vessel if any garbage bags are placed on the ground around the bins, regardless of whether the waste is being collected as stipulated by the service-level agreement.

Shipping agents report that the charges incurred for excess waste are too high and serve as a disincentive for ships to offload excess galley waste. They also report that the restrictions around the types of waste that can be disposed of in port are very limiting and that the administrative burden of arranging for additional services is onerous and time-consuming.

Figure 22: Richards Bay: other relevant observations: garbage disposal

#### 8.4.5 Waste management system

The assessment of the waste management system at the Port of Richards Bay is detailed below. The assessment found that the Port of Richards Bay has an Integrated Waste Management Policy and Plan that aligns with the requirements in the National Environmental Management: Waste Management Act and the National Waste Management Strategy developed by the Transnet National Ports Authority.

Table 26 Assessment of waste management system: Port of Richards Bay

		Yes	No
1	Has a waste management plan (WMP) been developed and implemented for ship wastes?	X	
2	Is the WMP part of an overall environmental management system (EMS) for the port?	X	
3	Are marinas and fishing harbours covered by the port EMS or required to develop their own EMS?		X
4	Does the WMP provide a brief summary of the types of wastes received and the collection and disposal facilities/services?	X	

		Yes	No
5	Does the WMP address and provide management objectives for:		
6	Operations:		
	facility management	X	
	maintenance	X	
	signage		X
	infrastructure		X
	contractual arrangements	X	
	emergency response	X	
	seasonal variations	X	
	training and education	X	
	delegation of responsibilities and accountability	X	
	compliance with regulatory conditions, including auditing	X	
7	Technical standards:		
	facility requirements		X
	incorporation of new technologies		X
	cleaning requirements		X
	maintenance of equipment to technical standards		X
8	Environmental considerations:		
	prevention of pollution to surface waters	X	
	noise emissions	X	
	visual impacts	X	
	odour emissions	X	
	special considerations due to surrounding environment (e.g. proximity to wetland or mangrove areas)	X	
	coastal processes (e.g. extreme tides)	X	
9	Plans for future expansion/upgrades:		
	oily wastes		X
	noxious liquid substances (NLS)		X
	sewage		X
	garbage		X
	recycling of wastes		X
	quarantine wastes		X
10	Are contact details held for all waste service providers?	X	
11	Are the service providers licensed/approved as required by legislation?	X	
12	Are a copy of the licenses on file?	X	
13	Are a copy of the licenses for the waste disposal facilities used by the service providers held on file?	X	
14	Have receipts for waste disposal been sighted/copies held on file?		X
15	Are alternative waste service providers or disposal facilities available (e.g. spare drums, waste oil recyclers)?	X	
16	Is there a procedure for choosing waste disposal service providers (e.g. list of preferred contractors)?	X	
17	Are the details of back-up facilities available on file?	X	
18	Does the WMP include an emergency response plan?	X	
19	Is the plan adequate in that it addresses at least the following issues?		
	spillage of liquid	X	
	spillage of solids	X	
	leakage of gas	X	
	fire or explosion	X	
	emergency contacts	X	
	other (specify)	X	
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? (Data sighted/copies attached)		
	oily wastes	X	
	noxious liquid substances		X
	sewage		X
	garbage	X	
	recycling of wastes	X	
	quarantine wastes	X	

		Yes	No
21	Are there variations in the quantities of each waste stream received?:		
	in any one month (e.g. due to shipping variations)	X	
	in any one year (e.g. due to seasonal effects)	X	
	over a number of years (e.g. due to industry growth)	X	
	don't know	X	
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? (Graphs sighted)	X	
23	Is on-going consideration given to changes in demand for waste reception facilities?		X
24	Do plans exist for future upgrades, extensions or reductions to the waste reception facilities?		X
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?		X
26	Are there provisions for audits against the WMP (at least within two (2) years of implementation and thereafter every three (3) years)?	X	
27	Is there provision for periodic review of the WMP?	X	
28	Are the relevant requirements of the MARPOL 73/78, UNCLOS and IMO generally adhered to by the users of the port?	X	
29	Is there information on the state and local regulations regarding (please list legislation if known):	X	
	waste management	X	
	pollution of water	X	
	pollution of air	X	
	noise emissions	X	
	discharges to sewer	X	
	storage of dangerous goods	X	
30	Is there information on waste minimisation hierarchy i.e. avoid/ reduce/ reuse/ recycle/ reprocess?	X	
31	Is an open and co-operative relationship maintained between the port authority and the relevant authorities and agents?	X	
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? (Give examples of consultation methods)	X	
33	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?	X	
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?	X	
35	Is clear and visible signage for waste reception facilities present and includes?:		
	advice at initial vessel contact point of waste reception facilities:	X	
	direction to receptacle or disposal point location:	X	
	labelling of all receptacles and disposal points:	X	
	contact numbers:	X	
	emergency procedures:	X	
	translation into other languages as required:		X
36	Are there information sheets/leaflets available for each waste reception facility?		X
37	Is this information conveyed to ships?	X	

Based on the above, the provision of the waste management systems at the Port of Richards Bay was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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Figure 23 Galley waste reception facilities at the Port of Richards Bay. Source: APWC

## 8.5 Summary of assessments and key findings

As outlined in Table 27 the assessments found that port waste reception facilities provided at the Port of Richards Bay are variable, and some annex types were difficult to assess.

Table 27 Summary assessment of port waste reception facilities: Port of Richards Bay

Type of waste	Assessment	Comments
Oily wastes	Satisfactory	Services provided by a private contractor via shipping agent. Transnet need to provide a full COC
Noxious liquid substances	Satisfactory	Services provided by a private contractor via shipping agent. Transnet need to provide a full COC
Sewage	Less than satisfactory	Services provided by a private contractor via shipping agent. Transnet need to provide a full COC
Garbage	Satisfactory	Services provided via a Transnet licensed waste contractor.
Waste Management System	Satisfactory	Systems and processes for waste management are in place and are enacted.

While reception facilities are reportedly available for all waste types, adequate information was not available for those waste types that are managed through private contractors via shipping agents.

Due to the fact that the port does not handle requests for any reception facilities other than galley waste, there is a lack of awareness among Transnet staff as to which services are provided and what sort of reception facilities are available. Annex V wastes (garbage) are the one waste type for which the port takes responsibility. It was found that the provision of only three 120-litre wheelie bins per vessel for the collection of galley waste is inadequate. Furthermore, it is reported that the high cost of excess garbage disposal is a disincentive to vessels to offload their galley waste at port. Despite this, 18% of the total quantity of galley waste being collected is done so on request from vessels, indicating that the current measures are insufficient for the number of vessels utilising the port.

## 9 Gap Analysis – Port of Cape Town

### 9.1 Overview

The Port of Cape Town is located in Table Bay (longitude 18° 26' E and latitude 33° 54' S), approximately 120 nautical miles northwest of Cape Agulhas (the southernmost point in Africa). It is situated on one of the busiest trade routes in the world and is the second largest container port in South Africa, behind Durban. The port has 34 berths in total, including layby berths, and operates 24 hours a day, seven days a week.

In the 52-week period spanning the last two weeks of October 2018 through to the first two weeks of October 2019, data obtained from MarineTraffic indicates that the Port of Cape Town accommodated 1,028 commercial vessels in total with an average of 86 commercial vessels per month. It should be noted that these values exclude non-commercial vessels such as cruise liners, fishing vessels, pleasure craft and special craft. Table 25 depicts the number of commercial vessels received at the port for each month, by vessel type.

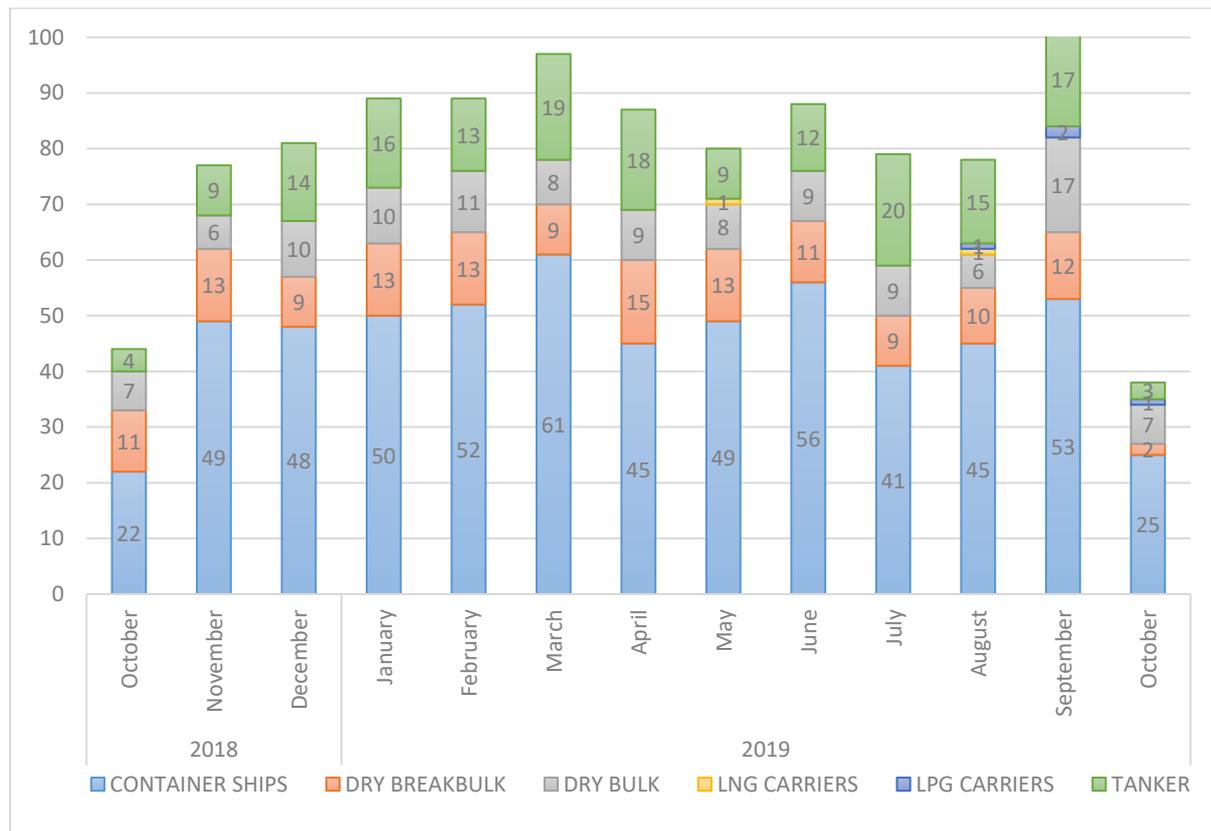


Figure 24: 2018–19 Commercial shipping log: Port of Cape Town

Of the 1,028 vessels accommodated, the most common vessel type was container ships (58%), followed by tankers (16%) and dry breakbulk carriers (14%). Traffic is relatively consistent over the 52-week period with a monthly range of between 77 and 101, keeping in mind that each of the October values depicted above constitute half-monthly values.

## 9.2 Summary of waste reception facilities: Port of Cape Town

The Port of Cape Town provides reception facilities for oily wastes, sewage, garbage and quarantine wastes. The primary waste discharged at the port is categorised as galley waste which, as discussed earlier, comprises food and related wastes generated as a result of crew or passenger consumption. With the reception of 169 tankers in 2018/2019, it is likely that some of these may have been chemical tankers. It is therefore assumed there would be a need to provide a service for NLS cargo residues.

For sewage, advice was given that direct arrangements are made between port-of-call vessels and the agents. As a result, no information has been provided on how many vessels are serviced or the quantity and costs of ship sewage waste management.

As is the case with all international ports operating in South Africa, the responsibility for the waste management function at the Port of Cape Town falls within the Transnet Safety Health and Environmental (SHE) Department. The SHE Department is responsible for ensuring that there are adequate waste reception facilities for all incoming vessels for berthing and repair services. Waste services are provided by third-party service providers under contract to the SHE Department. Galley waste services are provided by Averda South Africa and oily wastes are managed by FFS Refineries. A summary of waste reception facilities at the Port of Cape Town is outlined in Table 28 below.

Table 28 Summary of waste reception facilities: Port of Cape Town

Type of waste	Can waste be received?	Type of reception facility	Any limitations in capacity?	Service provider
Oily tank washings	Yes	Road tanker	No	FFS Refineries
Dirty ballast water	Yes	Road tanker	No	FFS Refineries
Oily bilge water	Yes	Road tanker	No	FFS Refineries
Oil sludges	Yes	Road tanker	No	FFS Refineries
Used lubricating oil	Yes	Road tanker	No	FFS Refineries
Noxious liquid substances	No	N/A	N/A	Unknown
Sewage	Yes	Road tanker	Road tanker	Unknown
Garbage	Yes	Compactor truck	No	Averda South Africa
Quarantine wastes	Yes	Compactor truck	No	Averda South Africa

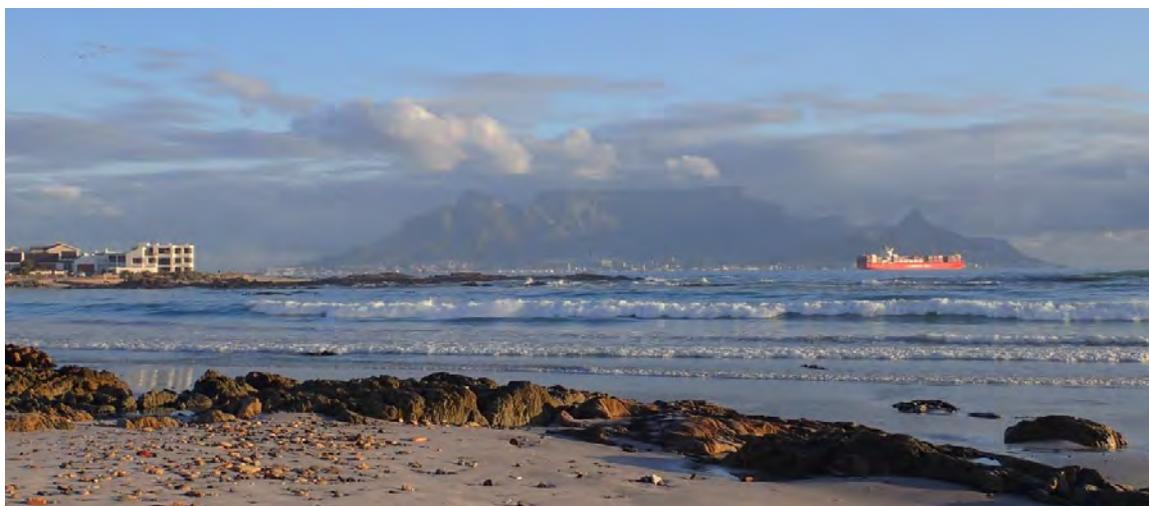


Figure 25: Long view of the Port of Cape Town (Source: APWC, 2019).

### 9.3 Demand for waste reception facilities

In accordance with IMO guidelines, mandatory arrival notification and notice of the types and quantities of waste to be discharged are required 24 hours in advance. However, staff at the port advised that notification is not consistent and that it is not uncommon for incoming ships to fail to notify the port that they intend to discharge waste, or to incorrectly advise of the quantities.



Figure 26: Galley waste skips are provided to berthing vessels at the Port of Cape Town (Source: APWC, 2019).

Data provided by the Port of Cape Town shows that approximately 544.4 tonnes of galley waste is landed each year with more than 8,900 skip bins being emptied at an approximate cost of 2.53 million rand (based on 6 months of data in 2019). This is an average of only 61 kg of waste per skip bin removed daily, indicating only some galley waste generated on port-of-call vessels is being discharged.

Interviews and ship waste audits conducted at the Port of Cape Town confirmed that most of the container ships withheld their galley waste for financial reasons and discharged these wastes (and presumable other wastes) at other international ports of call.

For oily wastes, the records provided indicated only 40 kg being landed at a cost of approximately 102,000 rand. It was unclear whether the information provided was accurate, as this is a very small quantity compared with the predicted amount generated based on IMO methodologies.

No information has been provided on whether NLS is catered for at the Port of Cape Town.

### 9.4 Assessment of waste reception facilities

Each port waste assessed as being one of the following, based on the assessments undertaken by APWC:

- **Fully Meets requirements:** all elements are present and all waste of that type can be taken.
- **Satisfactory:** Most of that waste type can be taken but elements such as tracking, quantification, and tracking systems are incomplete.

- **Less than satisfactory:** The waste of that type cannot be received even though there is a demand or no information is available to determine if it can be received.

#### 9.4.1 Oily wastes

The assessment of waste reception facilities for oily wastes at the Port of Cape Town is detailed in Table 29.

Table 29 Assessment of waste reception facilities for oily waste: Port of Cape Town

		Yes	No
1	How are the oily wastes disposed of:		
	separation of oil and water then recycling	X	
	land disposal		X
	recycled		X
	incineration		X
	other		X
2	Are there restrictions on receipt or collection of oily wastes by service providers:		
	minimum quantity		X
	maximum quantity		X
	discharge rate (m <sup>3</sup> /hour)		X
	vessel type		X
	vehicle access to berth		X
	other		X
3	Are oily waste reception facilities available:		
	24 hours a day, 7 days per week	X	
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
4	Is prior notice for receipt of oily wastes required:		
	0 hours		
	12 hours		
	24 hours	X	
	48 hours		
5a	Is the waste receipt service available:		
	at no cost		
	at a cost incorporated into standing port use charge	X	
	at a cost charged in addition to other services		
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other – excess amounts attract an additional fee	X	
6.	Is a waste collection service available:		
	at all berths	X	
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		

Based on the assessment conducted, the provision of waste reception facilities for oily waste at the Port of Cape Town was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 9.4.2 Noxious Liquid Substances (NLS)

The assessment of waste reception facilities for NLS at the Port of Cape Town is detailed in Table 30. The assessment found that the Port of Cape Town may receive chemical tankers, so there is a presumed need to provide a service for NLS cargo residues.

Table 30 Assessment of waste reception facilities for NLS: Port of Cape Town

		Yes	No
1	Where is the NLS disposed of:		
	directly from the ship to a mobile facility		X
	ships to a holding tanks prior to being pumped out		X
	other (specify)		X
2	Are there any restrictions on receipt or collection of NLS wastes by service providers:		
	minimum quantity		X
	maximum quantity		X
	discharge rate (m <sup>3</sup> /hour)		X
	vessel type		X
	vehicle access to berth		X
3	Are NLS reception facilities available:		
	24 hours a day, 7 days per week		X
	24 hours a day, 5 days per week		X
	business hours only, 7 days per week		X
	business hours only, 5 days per week		X
	other (specify)		X
4	Is prior notice for receipt of NLS required:		
	0 hours		X
	12 hours		X
	24 hours		X
	48 hours		X
5a	Is the waste receipt service available:		
	at no cost		X
	at a cost incorporated into standing port use charge		X
	at a cost charged in addition to other services		X
5b	Is the cost:		
	reasonable in terms of service		X
	a disincentive		X
	other (specify)		X
6.	Is a waste collection service available:		
	at all berths		X
	at most berths		X
	at only one berth		X
	to vessels anchored within the port		X
	to vessels anchored outside the port		X
	other		X

Based on the above, the provision of waste reception facilities for NLS at the Port of Cape Town was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 9.4.3 Sewage

The assessment of waste reception facilities for sewage at the Port of Cape Town is detailed in Table 31.

Table 31 Assessment of waste reception facilities for sewage: Port of Cape Town

		Yes	No
1	Where is the sewage disposed of:		

		Yes	No
	directly to a reticulated sewerage system		
	directly to a mobile facility	X	
	ships to holding tanks then pumped to a mobile facility		
	ships to on-site treatment facility to sewerage system		
	other (specify)		
2	Are there any restrictions on receipt or collection of sewage wastes by service providers:		
	minimum quantity		X
	maximum quantity		X
	discharge rate (m <sup>3</sup> /hour)		X
	vessel type		X
	vehicle access to berth		X
3	Are sewage reception facilities available:		
	24 hours a day, 7 days per week	X	
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
	other		
4	Is prior notice for receipt of sewage required:		
	0 hours		
	12 hours		
	24 hours	X	
	48 hours		
5a	Is the sewage receipt service available:		
	at no cost		
	at a cost incorporated into standing port use charge	X	
	at a cost charged in addition to other services – excess amounts attract additional fees	X	
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other (specify) – unknown, as insufficient information was provided	X	
6.	Is a waste collection service available:		
	at all berths	X	
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		
	other		

Based on the above, the provision of waste reception facilities for sewage at the Port of Cape Town was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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#### 9.4.4 Garbage Disposal

The assessment of waste reception facilities for garbage disposal at the Port of Cape Town is detailed in Table 32.

Table 32 Assessment of waste reception facilities for garbage disposal: Port of Cape Town

		Yes	No
	Garbage disposal – on shore		
1	Where is the garbage disposed:		
	Local government dump/landfill		
	Private dump/landfill	X	
	Transfer station		
	Materials recycling facility		

		Yes	No
2	Where are quarantine wastes disposed:		
	incinerator		
	sterilisation		
	deep burial	X	
Garbage disposal – ship to shore			
3	Are there any restrictions on receipt or collection of garbage wastes:		X
	minimum quantity		
	maximum quantity		
	vessel type		
	vehicle access to berths		
4	Are garbage waste reception facilities available:		
	24 hours a day, 7 days per week	X	
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
5	Is prior notice for receipt of waste required:		
	0 hours		
	12 hours		
	24 hours	X	
	48 hours		
6a	Is the waste receipt service available:		
	at no cost		
	at a cost incorporated into standing port use charge	X	
	at a cost charged in addition to other services - excess amounts attract additional fees	X	
6b	Is the cost:		
	reasonable in terms of service		
	a disincentive	X	
	other		
7	Is a waste collection service available:		
	at all berths	X	
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		

Based on the above, the assessment of the provision of waste reception facilities for garbage disposal at the Port of Cape Town was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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The assessment found that garbage ('galley waste' and 'dry waste') can be accepted from all international vessels berthing in port and that garbage is subject to appropriate quarantine and disposal procedures. All vessels berthing at the port are provided with a 2 m<sup>3</sup> galley waste skip for the collection and disposal of garbage. Garbage collection is unsorted, with dry waste such as wood pallets and non-putrescible waste mixed in with food and related galley wastes. As galley waste is considered to be a form of quarantine waste, it is considered potentially hazardous and is collected by a compactor truck for deep burial at the Vissershok hazardous waste landfill site.

At the Port of Cape Town, plastic fishing lines, ropes, netting and non-putrescible waste types were clearly visible in galley waste skips.

The cost of transport and disposal of galley waste is incorporated into the standing port usage charge provided the waste does not exceed the volume of the skip provided. Other findings of relevance are provided in the following figure.

Many international vessels practise waste segregation on board. However, at the Port of Cape Town all the waste is disposed of in a galley waste skip. This means that all garbage collected needs to be treated and disposed of as if it were potentially hazardous waste.

As outlined above, a galley waste skip is provided to all vessels and the cost is incorporated into the port usage charge. As it is a fixed cost, ships pay this fee regardless of the extent to which they make use of this service. This practice should theoretically prevent the withholding of waste from vessels due to cost.

However, it was observed that the skips are often not full (half loads are common) and no container ships (10 berthed at that time period) discharged any galley waste while the APWC team was present. This is possibly due to the fact that the volumes of garbage on board are well in excess of the capacity of the skips. As such, it may be easier for vessels to withhold their garbage until the total quantity can be received.

There is an excellent tracking and management system for 'garbage' which is principally known as 'galley waste' due to its designation as being a quarantine waste. It is however noted that the compactor truck collection nor the deep burial were observed to involve any form of disinfection which is usually required in other jurisdictions.

For other ship waste types such as oily wastes, sewage and NLS there appears to be much lower levels of scrutiny and data appears to be incomplete or completely missing though this could be the result of little or none of these waste types being landed at the Port of Cape Town.

Figure 27: Cape Town: other relevant observations - garbage disposal

#### 9.4.5 Waste management system

The assessment of the waste management system at the Port of Cape Town is detailed in Table 33. The assessment found that the Port of Cape Town has an Integrated Waste Management Policy and Plan that aligns with the requirements in the National Environmental Management: Waste Management Act and the National Waste Management Strategy developed by the Transnet National Ports Authority.

Table 33 Assessment of waste management system: Port of Cape Town

		Yes	No
1	Has a waste management plan (WMP) been developed and implemented for ship wastes?	X	
2	Is the WMP part of an overall environmental management system (EMS) for the port?	X	
3	Are marinas and fishing harbours covered by the port EMS or required to develop their own EMS?		X
4	Does the WMP provide a brief summary of the types of wastes received and the collection and disposal facilities/services?	X	
5	Does the WMP address and provide management objectives for:		
6	Operations:		
	facility management		
	maintenance	X	
	signage	X	
	infrastructure	X	
	contractual arrangements	X	
	emergency response	X	
	seasonal variations	X	
	training and education	X	

		Yes	No
	delegation of responsibilities and accountability	X	
	compliance with regulatory conditions, including auditing	X	
7	Technical standards:		
	facility requirements		X
	incorporation of new technologies		X
	cleaning requirements		X
	maintenance of equipment to technical standards		X
8	Environmental considerations:		
	prevention of pollution to surface waters	X	
	noise emissions	X	
	visual impacts	X	
	odour emissions	X	
	special considerations due to surrounding environment (e.g. proximity to wetland or mangrove areas)	X	
	coastal processes (e.g. extreme tides)	X	
9	Plans for future expansion/upgrades:		
	oily wastes		X
	noxious liquid substances (NLS)		X
	sewage		X
	garbage		X
	recycling of wastes		X
	quarantine wastes		X
10	Are contact details held for all waste service providers?	X	
11	Are the service providers licensed/approved as required by legislation?	X	
12	Are copies of the licences on file?	X	
13	Are copies of the licences for the waste disposal facilities used by the service providers held on file?	X	
14	Have receipts for waste disposal been sighted/copies held on file?	X	
15	Are alternative waste service providers or disposal facilities available (e.g. spare drums, waste oil recyclers)?	X	
16	Is there a procedure for choosing waste disposal service providers (e.g. list of preferred contractors)?	X	
17	Are the details of back-up facilities available on file?	X	
18	Does the WMP include an emergency response plan?	X	
19	Is the plan adequate in that it addresses at least the following issues?		
	spillage of liquid		X
	spillage of solids		X
	leakage of gas		X
	fire or explosion		X
	emergency contacts	X	
	other (specify)	X	
20	Is information recorded on the quantities of each waste stream received, date of receipt, disposal contractor and method of disposal or treatment? (Data sighted/copies attached)		
	oily wastes		X
	noxious liquid substances		X
	sewage		X
	garbage	X	
	recycling of wastes	X	
	quarantine wastes	X	
21	Are there variations in the quantities of each waste stream received?:		
	in any one month (e.g. due to shipping variations)	X	
	in any one year (e.g. due to seasonal effects)	X	
	over a number of years (e.g. due to industry growth)	X	
	don't know	X	
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? (Graphs sighted)		X
23	Is on-going consideration given to changes in demand for waste reception facilities?		X
24	Do plans exist for future upgrades, extensions or reductions to the waste reception facilities?		X

		Yes	No
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?		X
26	Are there provisions for audits against the WMP (at least within two (2) years of implementation and thereafter every three (3) years)?	X	
27	Is there provision for periodic review of the WMP?	X	
28	Are the relevant requirements of the MARPOL 73/78, UNCLOS and IMO generally adhered to by the users of the port?	X	
29	Is there information on the state and local regulations regarding (please list legislation if known):	X	
	waste management	X	
	pollution of water	X	
	pollution of air	X	
	noise emissions		X
	discharges to sewer		X
	storage of dangerous goods	X	
30	Is there information on waste minimisation hierarchy, i.e. avoid/reduce/reuse/recycle/reprocess?	X	
31	Is an open and co-operative relationship maintained between the port authority and the relevant authorities and agents?	X	
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? (Give examples of consultation methods)	X	
33	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?	X	
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?	X	
35	Is clear and visible signage for waste reception facilities present and includes:		X
	advice at initial vessel contact point of waste reception facilities:		X
	direction to receptacle or disposal point location:		X
	labelling of all receptacles and disposal points:		X
	contact numbers:		X
	emergency procedures:		X
	translation into other languages as required:		X
36	Are there information sheets/leaflets available for each waste reception facility?		X
37	Is this information conveyed to ships?	X	

Based on the above, the provision of the waste management systems at the Port of Cape Town was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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Significant improvements in waste management have been made at the port in recent years and this was evident during the assessment. Overall, the waste management system is robust and well executed. However, it could be improved through the installation of signage, covered areas for waste and a dedicated area for waste equipment.

Other findings of relevance are as follows:

Plastic debris in the port water (flotsam) is reported to have been a significant issue in the past. However, improvements to the waste management system combined with periodical clean-ups have made a significant difference on this front.

Some of the flotsam in the port waters at present is said to occur as a result of port activities, but it is believed that the bulk of the marine debris is distributed by stormwater outlets originating from the City of Cape Town.

During the site visit, Transnet staff noted that the port experiences issues with plastic waste clogging the drains during periods of heavy rain.

Figure 28: Cape Town: other relevant observations - waste management systems

## 9.5 Summary of assessments and key findings

As outlined in Table 34, the assessments found that port waste reception facilities at the Port of Cape Town fully meet the requirements for all waste types, except for NLS.

Table 34 Summary assessment of port waste reception facilities: Port of Cape Town

Type of waste	Assessment	Comments
Oily wastes	Satisfactory	Services provided by a third-party contractor.
Noxious liquid substances	Less than satisfactory	Not provided, but the high volume of tankers frequenting the port would suggest that the service is needed.
Sewage	Satisfactory	Services provided by a third-party contractor.
Garbage	Fully meets requirements	All garbage is categorised as galley waste and is disposed of as a potentially hazardous waste type.
Waste Management System	Satisfactory	Systems and processes for waste management are in place and are enacted.

The port space at Cape Town is well managed and Transnet staff and waste contractors demonstrate good awareness of their system and issues. However, the geographic distance between the Transnet environmental staff and the port makes ready access and visibility a challenge. As such, there is a heavy dependence on the Harbour Master, waste contractors and other staff to relay information from the port when problems or issues around compliance arise. This is possibly a result of the fact that the position of Pollution Control Officer is currently vacant (and has been for at least two years), as this role would normally be co-located at the office of the Harbour Master.

Overall, it was found that the waste reception facilities at the Port of Cape Town are well planned and integrated into the national system. This is aided by a well-developed chain of custody, responsive third-party contractors and committed staff who are well trained and informed. Port reception facilities could be improved through the provision of services for the proper management of NLS residues, assuming that chemical tankers frequent the port.



Figure 29: Plastic fishing lines, ropes, netting and non-putrescible waste types were clearly visible in galley waste skips (Source: APWC, 2019).

## 10 Gap Analysis – Port of Saldanha

### 10.1 Overview

The Port of Saldanha is located at longitude 17° 58' E and latitude 33° 02' S, approximately 60 nautical miles northwest of Cape Town. It is the largest and deepest natural port in the southern hemisphere and is the largest iron ore export facility in Africa.

The Port of Saldanha accommodates vessels with a draught of up to 21.5 metres. The port has a 990-metre jetty with two iron ore berths connected to the shore via a breakwater wall, which acts as a shelter for the bay. There is also an 874-metre multi-purpose quay for the handling of breakbulk cargo and a 365-metre tanker berth at the end of the ore jetty. Cargo handled at the multi-purpose quay includes steel coils, mineral exports and pig iron. Imports include anthracite, coking coal and steel pellets. There are no bunkering facilities and ship repair is limited to the fishing industry. The port operates 24 hours a day, seven days a week.



Figure 30: Port of Saldanha (Source: Transnet, 2019).

The Port of Saldanha has a purpose-built rail link directly connected to a jetty bulk-loading facility for the shipment of iron ore (pictured above). The rail link connects to mines in Sishen in the Northern Cape, which are more than 800 kilometres away.

As the town of Saldanha has very limited fresh water, the port has a reverse-osmosis plant. This takes existing sea water and removes the salt for use in dust control management.

Saldanha is located within the Southern South African waters Special Area under MARPOL Annex I (see Figure 8), which means that special conditions apply for the reception of oily waste types.

In the 52-week period spanning the last two weeks of October 2018 through to the first two weeks of October 2019, data obtained from MarineTraffic indicates that the port accommodated 600 commercial vessels in total with an average of 50 per month. Figure 31 depicts the number of commercial vessels received at the port for each month, by vessel type.

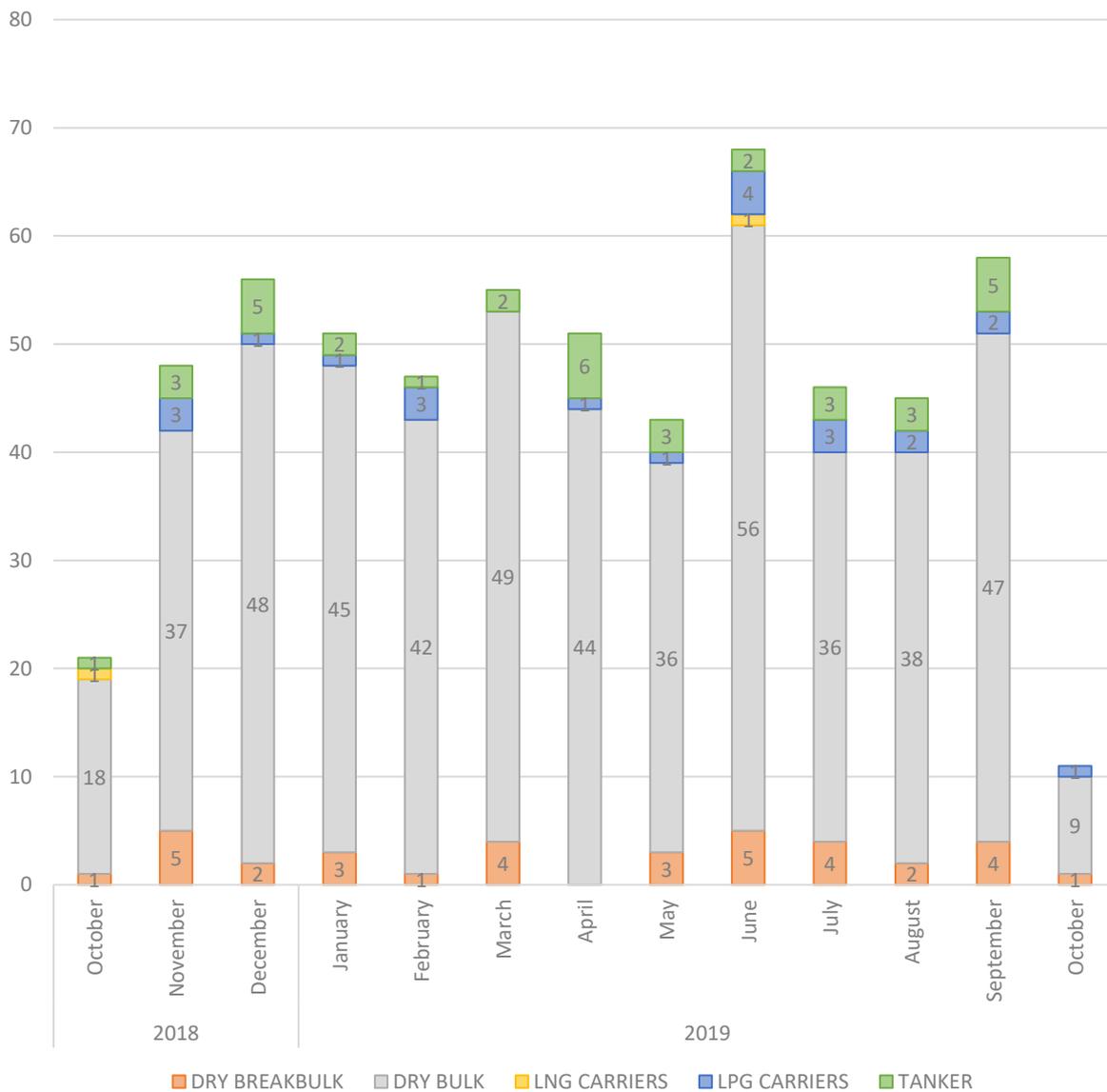


Figure 31: 2018–19 commercial shipping log: Port of Saldanha

Of the 600 vessels accommodated, the most common vessel types were dry bulk (iron ore) carriers (84%), followed by wet bulk (6%) and dry breakbulk carriers (5.8%). During the period there were also a small number of LPG and LNG carriers.

Traffic at the port is reasonably consistent over the 12-month period with a monthly range of between 43 to 68 vessels.

## 10.2 Summary of waste reception facilities: Port of Saldanha

The Port of Saldanha provides reception facilities for oily wastes, garbage and quarantine wastes. No sewage or NLS reception is available to berthing vessels. The primary waste discharged at the port is categorised as galley waste which, as discussed earlier, comprises food and related wastes generated as a result of crew or passenger consumption. Garbage and galley waste services are provided by Averda South Africa and oily wastes are managed by FFS Refineries. Galley waste and oily wastes are

transported more than 120 kilometres to facilities near Cape Town. Galley waste is deep-buried in the hazardous waste section of the Vissershok landfill, while oily waste is treated at the adjacent refinery.

A summary of waste reception facilities at the Port of Saldanha is outlined in Table 35 below.

Table 35 Summary of waste reception facilities: Port of Saldanha

Type of waste	Can waste be received?	Type of reception facility	Any limitations in capacity?	Service provider
Oily tank washings	Yes	Road tanker	No	FFS Refineries
Dirty ballast water	Yes	Road tanker	No	FFS Refineries
Oily bilge water	Yes	Road tanker	No	FFS Refineries
Oil sludges	Yes	Road tanker	No	FFS Refineries
Used lubricating oil	Yes	Road tanker	No	FFS Refineries
Noxious liquid substances	No	N/A	N/A	N/A
Sewage	No	N/A	N/A	N/A
Garbage	Yes	Compactor truck	No	Averda South Africa
Quarantine wastes	Yes	Compactor truck	No	Averda South Africa



Figure 32: Vessel berthing at the Port of Saldanha (Source: APWC, 2019).

### 10.3 Demand for waste reception facilities

In accordance with IMO guidelines, mandatory arrival notification and notice of the types and quantities of waste to be discharged are required 24 hours in advance. However, staff at the port advised that notification is not consistent and that it is not uncommon for incoming ships to fail to notify the port that they intend to discharge waste, or to incorrectly advise of the quantities.

The current mechanism for notification is for ships to give notice to the Transnet, via a shipping agent, or through email. However, Transnet does have a module on the Integrated Port Management System

(IPMS) for notifying of the intention to discharge waste at the same time as gaining clearance from the Harbour Master to enter the port. Using this method would give the Harbour Master the ability, via the IPMS, to secure full notice and accuracy on waste needs. Having this information would assist the environment officer and waste contractors in planning correctly for ship waste collection.

SHE staff advised there is very high demand for galley waste (quarantine waste) from vessels docking in the Port of Saldanha with 206.19 tonnes being landed for disposal in the 12 months from October 2018 to September 2019 (see Table 36) involving the collection of 2,994 skip bins at a cost of over 2.5 million rand.

Table 36 Galley waste disposal volumes (Oct 2018–Sep 2019): Port of Saldanha

Waste type	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	TOTAL
Galley waste (tonnes)	14.08	19.9	11.16	18.14	14.7	17.16	21.8	13.34	21.82	12.96	15.5	25.63	206.19

A substantial demand was also reported for oily waste, with the Port of Saldanha recording 16 vessels requiring pump out and disposal of 728,500 litres of oily sludge in the 12 months from September 2018 to August 2019 (see Table 37).

Table 37 Sludge oil disposal volumes (Sep 2018–Aug 2019): Port of Saldanha

Waste type	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	TOTAL
Sludge oil ('000 litres)	238.5	25	7	79	16	69.5	54.5	104	6	40	64	25	728.5

The port advised there are no facilities for sewage wastes, though potentially this is handled directly through the shipping agent. It is understood that no chemical tankers call at the Port of Saldanha, so demand for services for NLS waste categories are potentially nil.

## 10.4 Assessment of waste reception facilities

### 10.4.1 Oily wastes

The assessment of waste reception facilities for oily wastes at the Port of Saldanha is detailed Table 38.

Table 38 Assessment of waste reception facilities for oily waste: Port of Saldanha

		Yes	No
1	How are the oily wastes disposed of:		
	separation of oil and water then recycling	X	
	land disposal		X
	recycled		X
	incineration		X
	other		X
2	Are there restrictions on receipt or collection of oily wastes by service providers:		
	minimum quantity		X
	maximum quantity		X
	discharge rate (m <sup>3</sup> /hour)		X
	vessel type		X
	vehicle access to berth		X
3	Are oily waste reception facilities available:		
	24 hours a day, 7 days per week	X	
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
4	Is prior notice for receipt of oily wastes required:		
	0 hours		
	12 hours		
	24 hours	X	
	48 hours		
5a	Is the waste receipt service available:		
	at no cost		
	at a cost incorporated into standing port use charge	X	
	at a cost charged in addition to other services	X	
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other - excess amounts attract an additional fee	X	
6.	Is a waste collection service available:		
	at all berths	X	
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		

Based on the assessment conducted, and the fact that Saldanha is located in the Southern South African Waters Special Area under MARPOL Annex I, the provision of waste reception facilities for oily waste at the Port of Saldanha was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 10.4.2 Noxious Liquid Substances (NLS)

The assessment of waste reception facilities for NLS at the Port of Saldanha is detailed below. The assessment found that the Port of Saldanha does not provide a service for NLS cargo residues.

Table 39 Assessment of waste reception facilities for NLS: Port of Saldanha

		Yes	No
1	Where is the NLS disposed of:		
	directly from the ship to a mobile facility		N/A
	ships to a holding tanks prior to being pumped out		N/A
	other (specify)		N/A
2	Are there any restrictions on receipt or collection of NLS wastes by service providers:		
	minimum quantity		N/A
	maximum quantity		N/A
	discharge rate (m <sup>3</sup> /hour)		N/A
	vessel type		N/A
	vehicle access to berth		N/A
3	Are NLS reception facilities available:		
	24 hours a day, 7 days per week		N/A
	24 hours a day, 5 days per week		N/A
	business hours only, 7 days per week		N/A
	business hours only, 5 days per week		N/A
	other (specify)		N/A
4	Is prior notice for receipt of NLS required:		
	0 hours		N/A
	12 hours		N/A
	24 hours		N/A
	48 hours		N/A
5a	Is the waste receipt service available:		
	at no cost		N/A
	at a cost incorporated into standing port use charge		N/A
	at a cost charged in addition to other services		N/A
5b	Is the cost:		
	reasonable in terms of service		N/A
	a disincentive		N/A
	other (specify)		N/A
6.	Is a waste collection service available:		
	at all berths		N/A
	at most berths		N/A
	at only one berth		N/A
	to vessels anchored within the port		N/A
	to vessels anchored outside the port		N/A
	other		N/A

Assuming that NLS carriers do not visit the port, the provision of waste reception facilities for NLS at the Port of Saldanha was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 10.4.3 Sewage

The assessment of waste reception facilities for sewage at the Port of Saldanha is detailed below.

Table 40 Assessment of waste reception facilities for sewage: Port of Saldanha

		Yes	No
1	Where is the sewage disposed of:		
	directly to a reticulated sewerage system		
	directly to a mobile facility		
	ships to holding tanks then pumped to a mobile facility		
	ships to on-site treatment facility to sewerage system		
	other – sewage is not received	X	
2	Are there any restrictions on receipt or collection of sewage wastes by service providers:		
	minimum quantity		N/A
	maximum quantity		N/A
	discharge rate (m <sup>3</sup> /hour)		N/A
	vessel type		N/A
	vehicle access to berth		N/A
3	Are sewage reception facilities available:		
	24 hours a day, 7 days per week		N/A
	24 hours a day, 5 days per week		N/A
	business hours only, 7 days per week		N/A
	business hours only, 5 days per week		N/A
	other		N/A
4	Is prior notice for receipt of sewage required:		
	0 hours		N/A
	12 hours		N/A
	24 hours		N/A
	48 hours		N/A
5a	Is the sewage receipt service available:		
	at no cost		N/A
	at a cost incorporated into standing port use charge		N/A
	at a cost charged in addition to other services - Excess amounts attract additional fees		N/A
5b	Is the cost:		
	reasonable in terms of service		N/A
	a disincentive		N/A
	other (specify)		N/A
6.	Is a waste collection service available:		
	at all berths		N/A
	at most berths		N/A
	at only one berth		N/A
	to vessels anchored within the port		N/A
	to vessels anchored outside the port		N/A
	other		N/A

Based on the above, the provision of waste reception facilities for sewage at the Port of Saldanha was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 10.4.4 Garbage Disposal

The assessment of waste reception facilities for garbage disposal at Saldanha is detailed below.

Table 41 Assessment of waste reception facilities for garbage disposal: Port of Saldanha

		Yes	No
	Garbage disposal – on shore		
1	Where is the garbage disposed:		

		Yes	No
	local government dump/landfill		
	private dump/landfill	X	
	transfer station		
	materials recycling facility		
2	Where are quarantine wastes disposed:		
	incinerator		
	sterilisation		
	deep burial	X	
	normal landfill		
Garbage disposal – ship to shore			
3	Are there any restrictions on receipt or collection of garbage wastes:		X
	minimum quantity		
	maximum quantity		
	vessel type		
	vehicle access to berths		
4	Are garbage waste reception facilities available:		
	24 hours a day, 7 days per week	X	
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
5	Is prior notice for receipt of waste required:		
	0 hours		
	12 hours		
	24 hours	X	
	48 hours		
6a	Is the waste receipt service available:		
	at no cost		
	at a cost incorporated into standing port use charge	X	
	at a cost charged in addition to other services - excess amounts attract additional fees	X	
6b	Is the cost:		
	reasonable in terms of service	X	
	a disincentive		
	other		
7	Is a waste collection service available:		
	at all berths	X	
	at most berths		
	at only one berth		
	to vessels anchored within the port	X	
	to vessels anchored outside the port		

Based on the above, the assessment of the provision of waste reception facilities for garbage disposal at the Port of Saldanha was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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Garbage collection at the Port of Saldanha is unsorted. Dry waste (wood pallets and non-putrescible waste) and galley waste is dropped into 2 m<sup>3</sup> skip bins, two of which are provided at each berth. It is common for ships to have much more garbage than this – the average waste load equates to five 2 m<sup>3</sup> skips per ship, plus two skips of ash per week.

Excess galley waste is often left on the port in large numbers of black bags (see below). A compactor truck collects the waste from skips at all berths and takes it to the designated hazardous waste site at the Vissershok hazardous waste landfill site in Cape Town for deep burial.



Figure 33: Excess galley waste is deposited on the port in plastic bags (Source: APWC, 2019).

Other findings of relevance are as follows:

During the assessment it was reported that incoming ships will often not notify the port they will be dropping waste off, or they do not correctly advise of the quantity of waste. In some cases the waste volumes can be very large (up to 20 skips). Not having advance notice impacts on preparation and planning and risks waste spillage from the port into the marine environment.

At the ore-loading terminal there is insufficient space for skips. This leads to bags of waste being lined up and risks loss into the marine environment. Transnet staff and contractors are aware of the problem and take active measures to limit this from happening (collections twice a day), but there is a need for compacted skips or other system to better manage this reoccurring situation.

Some bulky waste has been illegally left by ships and still requires removal.

Figure 34: Saldanha: other relevant observations - garbage disposal

#### 10.4.5 Waste Management System

The assessment of the waste management system at the Port of Saldanha is detailed in Table 42. The assessment found that the Port of Saldanha has an Integrated Waste Management Policy and Plan that aligns with the requirements in the National Environmental Management: Waste Management Act and the National Waste Management Strategy developed by the Transnet National Ports Authority.

Table 42 Assessment of waste management system: Port of Saldanha

		Yes	No
1	Has a waste management plan (WMP) been developed and implemented for ship wastes?	X	
2	Is the WMP part of an overall environmental management system (EMS) for the port?	X	
3	Are marinas and fishing harbours covered by the port EMS or required to develop their own EMS?		X
4	Does the WMP provide a brief summary of the types of wastes received and the collection and disposal facilities/services?	X	
5	Does the WMP address and provide management objectives for:		
6	Operations:		
	facility management		
	maintenance	X	
	signage	X	
	infrastructure	X	
	contractual arrangements	X	
	emergency response	X	
	seasonal variations	X	
	training and education	X	
	delegation of responsibilities and accountability	X	
	compliance with regulatory conditions, including auditing	X	
7	Technical standards:		
	facility requirements		X
	incorporation of new technologies		X
	cleaning requirements		X
	maintenance of equipment to technical standards		X
8	Environmental considerations:		
	prevention of pollution to surface waters	X	
	noise emissions	X	
	visual impacts	X	
	odour emissions	X	
	special considerations due to surrounding environment (e.g. proximity to wetland or mangrove areas)	X	
	coastal processes (e.g. extreme tides)	X	
9	Plans for future expansion/upgrades:		X
	oily wastes		X
	noxious liquid substances (NLS)		X
	sewage		X
	garbage		X
	recycling of wastes		X
	quarantine wastes		X
10	Are contact details held for all waste service providers?	X	
11	Are the service providers licensed/approved as required by legislation?	X	
12	Are a copy of the licenses on file?	X	
13	Are a copy of the licenses for the waste disposal facilities used by the service providers held on file?	X	
14	Have receipts for waste disposal been sighted/copies held on file?	X	
15	Are alternative waste service providers or disposal facilities available (e.g. spare drums, waste oil recyclers)?	X	
16	Is there a procedure for choosing waste disposal service providers (e.g. list of preferred contractors)?	X	
17	Are the details of back-up facilities available on file?	X	
18	Does the WMP include an emergency response plan?	X	
19	Is the plan adequate in that it addresses at least the following issues?		
	spillage of liquid	X	
	spillage of solids	X	
	leakage of gas	X	
	fire or explosion	X	
	emergency contacts	X	
	other (specify)	X	

		Yes	No
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? (Data sighted/copies attached)		
	oily wastes	X	
	noxious liquid substances	X	
	sewage		X
	garbage	X	
	recycling of wastes	X	
	quarantine wastes	X	
21	Are there variations in the quantities of each waste stream received?:		
	in any one month (e.g. due to shipping variations)	X	
	in any one year (e.g. due to seasonal effects)	X	
	over a number of years (e.g. due to industry growth)	X	
	don't know	X	
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? (Graphs sighted)		X
23	Is on-going consideration given to changes in demand for waste reception facilities?		X
24	Do plans exist for future upgrades, extensions or reductions to the waste reception facilities?	X	
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?		X
26	Are there provisions for audits against the WMP (at least within two (2) years of implementation and thereafter every three (3) years)?	X	
27	Is there provision for periodic review of the WMP?	X	
28	Are the relevant requirements of the MARPOL 73/78, UNCLOS and IMO generally adhered to by the users of the port?	X	
29	Is there information on the state and local regulations regarding (please list legislation if known):	X	
	waste management	X	
	pollution of water	X	
	pollution of air	X	
	noise emissions	X	
	discharges to sewer	X	
	storage of dangerous goods	X	
30	Is there information on waste minimisation hierarchy i.e. avoid/ reduce/ reuse/ recycle/ reprocess?	X	
31	Is an open and co-operative relationship maintained between the port authority and the relevant authorities and agents?	X	
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? (Give examples of consultation methods)	X	
33	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?	X	
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?	X	
35	Is clear and visible signage for waste reception facilities present and includes:		X
	advice at initial vessel contact point of waste reception facilities:		X
	direction to receptacle or disposal point location:		X
	labelling of all receptacles and disposal points:		X
	contact numbers:		X
	emergency procedures:		X
	translation into other languages as required:		X
36	Are there information sheets/leaflets available for each waste reception facility?		X
37	Is this information conveyed to ships?	X	

The waste management system could be improved through the provision of a dedicated area for waste equipment, a covered area for waste and the installation of signage (it is noted that the heavy dust load at the port may have obscured existing signage). Based on the above, the provision of the waste management systems at the Port of Saldanha was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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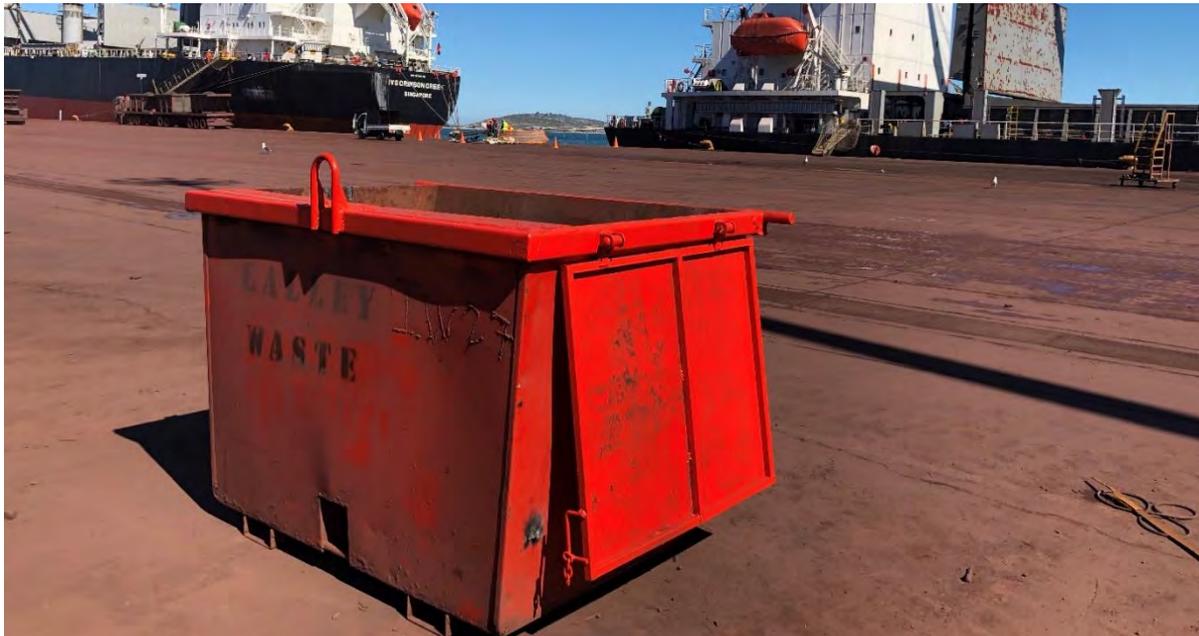


Figure 35: Galley waste skips are provided to berthing vessels at the Port of Saldanha (Source: APWC, 2019).

## 10.5 Summary of assessments and key findings

As outlined in Table 43, the assessments found that port waste reception facilities at the Port of Saldanha are variable.

Table 43 Summary assessment of port waste reception facilities: Port of Saldanha

Type of waste	Assessment	Comments
Oily wastes	Satisfactory	Services provided by a third-party contractor.
Noxious liquid substances	Fully meets requirements	Not provided but not required.
Sewage	Less than satisfactory	Not provided.
Garbage	Fully meets requirements	All garbage is categorised as galley waste and is disposed of as a potentially hazardous waste type. Volumes catered for appear insufficient.
Waste Management System	Satisfactory	Systems and processes for waste management are in place and are enacted.

The lack of reception facilities for sewage at the Port of Saldanha contravenes MARPOL Regulation 12.1 of Annex IV, which requires the government of each Party to ensure the adequate provision of facilities at ports and terminals for the reception of sewage without causing delay to ships.

The Port of Saldanha receives a considerable demand in galley waste through large volumes landed on the iron ore jetty. Garbage waste volumes catered for appear to be insufficient for demand, resulting in excess garbage being placed around the port in plastic bags and the potential loss of waste to the marine environment. The small size and poor condition of the Averda compactor truck can make this difficult to manage. Consideration should be given to using compactor bin technology on the jetty so that the galley waste can be pre-compacted, along with a larger sized compactor truck to reduce the frequency of trips to the Vissershok landfill. Galley waste services would improve with accurate notification of types, volumes and timing for waste services via the IPMS.

Waste collected from anchored vessels may not be well secured and measures should be taken to ensure these are captured in the same chain of custody that is applied to shipping waste collected from the ports.

It is apparent that the SHE staff are not based at the port and therefore have to rely on second-hand information from the Averda waste contractor and the Harbour Master. Ideally, the SHE staff should be located in proximity to the port, so they are better able to monitor port activities in relation to waste management.

For oily wastes, services appear to be effective, although the absence of equivalent sewage services could contribute to a risk of unlawful discharge.

## 11 Gap Analysis – Port of Ngqura

### 11.1 Overview

The deepwater Port of Ngqura is approximately 20 kilometres northeast of Port Elizabeth and is situated at the mouth of the Coega River in Nelson Mandela Bay (Algoa Bay). It is South Africa's most recent commercial port development. The port is part of a 12,000-hectare site that includes the river and an industrial development zone, known as the Coega IDZ. The IDZ serves as a primary location for new industrial development for export-driven industries. The Port of Ngqura is the only port in South Africa that has an environmental authorisation (Record of Decision or RoD) for its construction and operation.

The main intended function of the Port of Ngqura is to service the industrial bulk commodity requirements of the regional and national hinterland. The port was also planned to serve as a container terminal that would relieve congestion in other ports and to serve as a trans-shipment hub serving primarily the African east and west coast traffic and also inter-line traffic from South America to Asia.

Two berths in the Port of Ngqura are dedicated to containers, two berths are dedicated to breakbulk and dry bulk, and one berth is dedicated to liquid bulk cargoes. When the Port of Ngqura is fully developed, it will contain a total of 32 berths stretching further up the Coega River valley and along the southwestern coast.



Figure 36: The MSC Savannah at the Port of Ngqura in 2018 (Source: Whitehouse, B. [2019]. Port of Ngqura Welcomes One of the Biggest Container Vessels Yet | SA Shipping News).

Jahleel Island is situated 500 metres from the Port of Ngqura's eastern breakwater. The island is an important breeding site for number of bird species, including the African penguin (*Spheniscus demersus*) and the roseate tern (*Sterna dougallii*). Biota on the island is very susceptible to impacts from litter and debris associated with the operation of the port.

In the 52-week period spanning the last two weeks of October 2018 through to the first two weeks of October 2019, data obtained from MarineTraffic indicates that the Port of Ngqura accommodated 578 commercial vessels in total with an average of 48 per month. It should be noted that these values exclude non-commercial vessels, including fishing vessels. Figure 23 depicts the number of commercial vessels received at the port for each month.

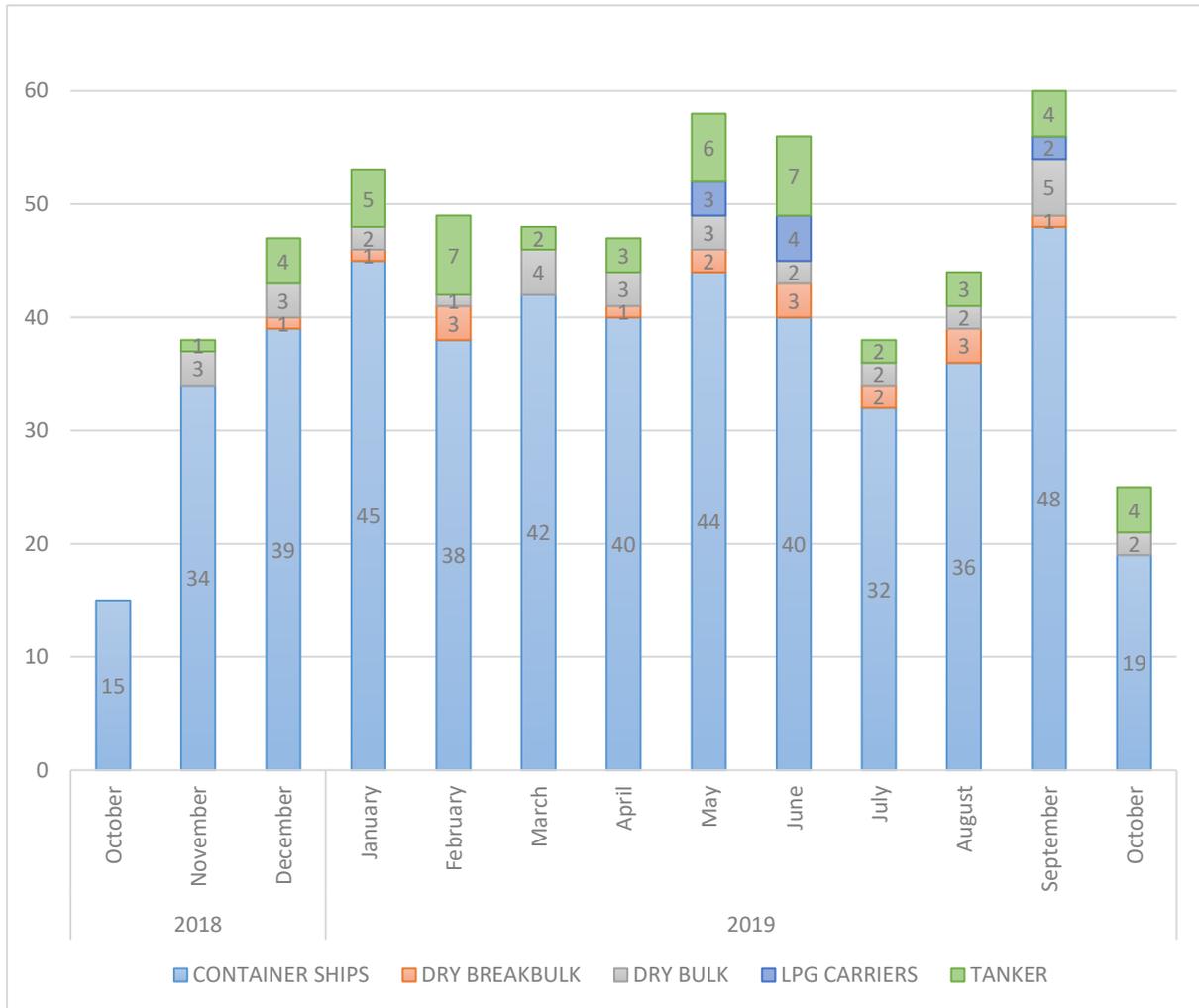


Figure 37: 2018–19 Commercial shipping log: Port of Ngqura

Of the 578 vessels accommodated, container ships were by far the most common vessel type, accounting for 82% of the total annual traffic. Tankers were the next most common vessel type, accounting for 8% of the total annual number of vessels. The port also received small number of dry breakbulk (17 per annum), dry bulk (32 per annum) and LPG carriers (9 per annum). Keeping in mind that each of the October values depicted above constitute half-monthly values, the number of vessels accessing the port each month does tend to fluctuate. Within this 12-month period, the lowest number of vessels accommodated was 38 vessels in November 2018, and the highest was 60 vessels in September 2019.

## 11.2 Summary of waste reception facilities: Port of Ngqura

The port has a service-level agreement with a waste contractor (Oricol), but the terms of this agreement are limited to garbage and oily waste generated by port staff, port equipment and tenants; it does not extend to the provision of garbage collection to vessels. Vessels requiring reception facilities must advise Port Control to access a list of port-licensed contract providers, as shown below.

Table 44 Licensed waste providers: Port of Ngqura

Licensed waste providers
FFS Refiners (Pty) Ltd

XP Ibhayi Environmental Specialist (Pty) Ltd t/a Xtreme Projects
Enviroserv Waste Management (Pty) Ltd
Spill Tech (Pty) Ltd

A summary of waste reception facilities at the Port of Ngqura is outlined in Table 45 below.

Table 45 Summary of waste reception facilities: Port of Ngqura

Type of waste	Can waste be received?	Type of reception facility	Any limitations in capacity?	Service provider
Oily tank washings	Yes	Tanker	Capacity of vessel	Private contractor
Dirty ballast water	Yes	Tanker	Capacity of vessel	Private contractor
Oily bilge water	Yes	Tanker	Capacity of vessel	Private contractor
Oil sludges	Yes	Tanker	Capacity of vessel	Private contractor
Used lubricating oil	Yes	Tanker	Capacity of vessel	Private contractor
Noxious liquid substances	No	N/A	N/A	N/A
Sewage	Yes	Unknown	Unknown	Private contractor
Garbage	Yes	Unknown	Unknown	Private contractor
Quarantine wastes	Unknown	Unknown	Unknown	Unknown

### 11.3 Demand for waste reception facilities

Data on the number of requests for waste collection by waste type and ship type for the Port of Ngqura was requested but not provided. However, even in the absence of this data, it can be surmised that the demand for waste reception facilities is reasonably high, given the number of vessels utilising the port. Estimates using IMO methodology for garbage generation (see Table 46) shows that the 578 port of call vessels would produce approximately 86.7 tonnes of garbage (galley/quarantine waste) in a 12-month period with significant amounts of oily and sewage waste to also expected to be generated.

Table 46 Estimate of garbage generated for port of call vessels: Port of Ngqura

Vessel type	Average number of persons on board	Average days at sea prior to port call	Annual visits	Garbage generated (kg/person/day)	Garbage generated per ship visit (kg)	Annual garbage generated (kg)
Tankers	25	3	57	2	150	8,550
Cargo	25	3	521	2	150	78,150
<b>TOTAL</b>						<b>86,700</b>

### 11.4 Assessment of waste reception facilities

#### 11.4.1 Oily wastes

The assessment of waste reception facilities for oily wastes at the Port of Ngqura is detailed below.

Table 47 Assessment of waste reception facilities for oily waste: Port of Ngqura

		Yes	No
1	How are the oily wastes disposed of:		
	separation of oil and water then recycling		
	land disposal		
	recycled		
	incineration		

		Yes	No
	other - unknown	X	
2	Are there restrictions on receipt or collection of oily wastes by service providers:		X
	minimum quantity		
	maximum quantity		
	discharge rate (m <sup>3</sup> /hour)		
	vessel type		
	vehicle access to berth		
	other - unknown		
3	Are oily waste reception facilities available:		
	24 hours a day, 7 days per week	X	
	24 hours a day, 5 days per week		
4	Is prior notice for receipt of oily wastes required:		
	12 hours		
	24 hours	X	
	48 hours		
5a	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		
	other - unknown	X	
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other - unknown	X	
6.	Is a waste collection service available:		
	at all berths		
	at most berths		
	to vessels anchored within the port		
	other - unknown	X	

The service provider for the port (Oricol) collects oily rags and containers generated by the port itself and disposes of these at the Aloes hazardous waste landfill. Vessels requiring reception of oily waste types must contact a port-authorized private contractor to arrange for disposal. Details of the services provided by private contractors were not available. Based on the above, the provision of waste reception facilities for oily wastes at the Port of Ngqura was found to be as follows:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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#### 11.4.2 Noxious Liquid Substances (NLS)

The assessment of waste reception facilities for NLS at the Port of Ngqura is detailed below. The assessment found that the Port of Ngqura does not provide a service for NLS cargo residues. With 48 tankers visiting Ngqura in a 12-month period, it is assumed that some of these are chemical tankers.

Table 48 Assessment of waste reception facilities for NLS: Port of Ngqura

		Yes	No
1	Where is the NLS disposed of:		
	directly from the ship to a mobile facility		N/A
	ships to a holding tanks prior to being pumped out		N/A
	other (specify)		N/A
2	Are there any restrictions on receipt or collection of NLS wastes by service providers:		
	minimum quantity		N/A
	maximum quantity		N/A
	discharge rate (m <sup>3</sup> /hour)		N/A
	vessel type		N/A

		Yes	No
	vehicle access to berth		N/A
3	Are NLS reception facilities available:		
	24 hours a day, 7 days per week		N/A
	24 hours a day, 5 days per week		N/A
	business hours only, 7 days per week		N/A
	business hours only, 5 days per week		N/A
	other (specify)		N/A
4	Is prior notice for receipt of NLS required:		
	0 hours		N/A
	12 hours		N/A
	24 hours		N/A
	48 hours		N/A
5a	Is the waste receipt service available:		
	at no cost		N/A
	at a cost incorporated into standing port use charge		N/A
	at a cost charged in addition to other services		N/A
5b	Is the cost:		
	reasonable in terms of service		N/A
	a disincentive		N/A
	other (specify)		N/A
6.	Is a waste collection service available:		
	at all berths		N/A
	at most berths		N/A
	at only one berth		N/A
	to vessels anchored within the port		N/A
	to vessels anchored outside the port		N/A
	other		N/A

Based on the above, the provision of waste reception facilities for NLS at the Port of Ngqura was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 11.4.3 Sewage

The assessment of waste reception facilities for sewage at the Port of Ngqura is detailed below.

Table 49 Assessment of waste reception facilities for sewage: Port of Ngqura

		Yes	No
1	Where is the sewage disposed of:		
	directly to a reticulated sewerage system		
	directly to a mobile facility	X	
	ships to holding tanks then pumped to a mobile facility		
	ships to on-site treatment facility to sewerage system		
2	Are there any restrictions on receipt or collection of sewage wastes by service providers:		
	minimum quantity		X
	maximum quantity		X
	discharge rate (m <sup>3</sup> /hour)		X
	vessel type		X
	vehicle access to berth		X
3	Are sewage reception facilities available:		
	24 hours a day, 7 days per week		
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
	other - unknown	X	
4	Is prior notice for receipt of sewage required:		
	0 hours		
	12 hours		
	24 hours		
	48 hours		
	other - unknown	X	
5a	Is the sewage receipt service available:		
	at no cost	X	
	at a cost incorporated into standing port use charge		
	at a cost charged in addition to other services – excess amounts attract additional fees		
	other - unknown		
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other - unknown	X	
6.	Is a waste collection service available:		
	at all berths		
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		
	other - unknown	X	

Vessels such as rigs and those that are in port for a long period of time (a year or longer) are able to request to discharge effluent in the port's effluent discharge line if it meets the minimum EPA requirements. Other vessels requiring reception facilities for sewage are required to contact a port-authorised private contractor. Information on services provided by private contractors was not available. Based on the above, the provision of sewage reception facilities at Ngqura was found to be as follows:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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#### 11.4.4 Garbage disposal

The assessment found that the port does not provide designated waste receptacles for vessels. Garbage collection services, contracted to Oricol, are restricted to collection and disposal of waste generated by port tenants and staff. If vessels need to dispose of garbage, they are required to contact a port-authorized licensed waste service provider or private contractor.

The assessment of waste reception facilities for garbage disposal at the Port of Ngqura is detailed in Table 50.

Table 50 Assessment of waste reception facilities for garbage disposal: Port of Ngqura

		Yes	No
<b>Garbage disposal – on shore</b>			
1	Where is the garbage disposed:		X
	local government dump/landfill		
	private dump/landfill*	X	
	transfer station		
	materials recycling facility		
2	Where are quarantine wastes disposed:		X
	incinerator		
	sterilisation		
	deep burial		
	normal landfill		
	other – not received		
<b>Garbage disposal – ship to shore</b>			X
3	Are there any restrictions on receipt or collection of garbage wastes:		
	minimum quantity		
	maximum quantity		
	vessel type		
	vehicle access to berths		
4	Are garbage waste reception facilities available:		X
	24 hours a day, 7 days per week		
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
	by request		
5	Is prior notice for receipt of waste required:		
	0 hours		
	12 hours		
	24 hours		
	48 hours		
	other – before the vessel docks	X	
6a	Is the waste receipt service available:		X
	at no cost		
	at a cost incorporated into standing port use charge		
	at a cost charged in addition to other services - Excess amounts attract additional fees		
	other - unknown		
6b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other - unknown	X	
7	Is a waste collection service available**:		X
	at all berths		
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		
	other – unknown		

- \* Aloes Landfill site, which is a privately run hazardous handling facility
- \*\* Service is provided by an external licensed waste service provider

Based on the above, the provision of waste reception facilities for garbage at the Port of Ngqura was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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Other findings of relevance are as follows:

The port has a service-level agreement with Oricol Waste Management Services for the disposal of garbage but this is limited to garbage generated by the port – not vessels.

As part of their service to the port, Oricol provides two green guards to observe and report when skips are full, and to collect litter on-site that has not been disposed of properly.

Colour-coded recycling receptacles have recently been implemented for port-generated waste.

Figure 38: Ngqura: other relevant observations - garbage collection

#### 11.4.5 Waste management system

The assessment of the waste management system at the Port of Ngqura is detailed in Table 51.

Table 51 Assessment of waste management system: Port of Ngqura

		Yes	No
1	Has a waste management plan (WMP) been developed and implemented for ship wastes?	X	
2	Is the WMP part of an overall environmental management system (EMS) for the port?	X	
3	Are marinas and fishing harbours covered by the port EMS or required to develop their own EMS?		X
4	Does the WMP provide a brief summary of the types of wastes received and the collection and disposal facilities/services?	X	
5	Does the WMP address and provide management objectives for:		
6	Operations:		
	facility management	X	
	maintenance		X
	signage		X
	infrastructure		X
	contractual arrangements	X	
	emergency response	X	
	seasonal variations		X
	training and education	X	
	delegation of responsibilities and accountability	X	
	compliance with regulatory conditions, including auditing		X
7	Technical standards:		
	facility requirements		X
	incorporation of new technologies		X
	cleaning requirements		X
	maintenance of equipment to technical standards		X
8	Environmental considerations:		
	prevention of pollution to surface waters		X
	noise emissions		X
	visual impacts		X
	odour emissions		X
	special considerations due to surrounding environment (e.g. proximity to wetland or mangrove areas)		X
	coastal processes (e.g. extreme tides)		
9	Plans for future expansion/upgrades:		
	oily wastes		X
	noxious liquid substances (NLS)		X
	sewage		X
	garbage		X
	recycling of wastes		X
	quarantine wastes		X
10	Are contact details held for all waste service providers?		X
11	Are the service providers licensed/approved as required by legislation?	X	
12	Are a copy of the licenses on file?		X
13	Are a copy of the licenses for the waste disposal facilities used by the service providers held on file?		
14	Have receipts for waste disposal been sighted/copies held on file?		X
15	Are alternative waste service providers or disposal facilities available (e.g. spare drums, waste oil recyclers)?		X
16	Is there a procedure for choosing waste disposal service providers (e.g. list of preferred contractors)?		X
17	Are the details of back-up facilities available on file?		X
18	Does the WMP include an emergency response plan?		X
19	Is the plan adequate in that it addresses at least the following issues?		X
	spillage of liquid		X
	spillage of solids		X
	leakage of gas		X
	fire or explosion		X

		Yes	No
	emergency contacts		X
	other (specify)		X
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? (Data sighted/copies attached)		X
	oily wastes		X
	noxious liquid substances		X
	sewage		X
	garbage		X
	recycling of wastes		X
	quarantine wastes		X
21	Are there variations in the quantities of each waste stream received:	X	
	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	X	
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? (Graphs sighted)		X
23	Is on-going consideration given to changes in demand for waste reception facilities?		X
24	Do plans exist for future upgrades, extensions or reductions to the waste reception facilities?		X
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?		X
26	Are there provisions for audits against the WMP (at least within two (2) years of implementation and thereafter every three (3) years)?		X
27	Is there provision for periodic review of the WMP?		X
28	Are the relevant requirements of the MARPOL 73/78, UNCLOS and IMO generally adhered to by the users of the port?		X
29	Is there information on the state and local regulations regarding (please list legislation if known):		
	waste management	X	
	pollution of water	X	
	pollution of air	X	
	noise emissions	X	
	discharges to sewer	X	
	storage of dangerous goods	X	
30	Is there information on waste minimisation hierarchy i.e. avoid/reduce/reuse/recycle/reprocess?	X	
31	Is an open and co-operative relationship maintained between the port authority and the relevant authorities and agents?	X	
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? (Give examples of consultation methods)	X	
33	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?	X	
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?	X	
35	Is clear and visible signage for waste reception facilities present and includes:		X
	advice at initial vessel contact point of waste reception facilities:		X
	direction to receptacle or disposal point location:		X
	labelling of all receptacles and disposal points:		X
	contact numbers:		X
	emergency procedures:		X
	translation into other languages as required		X
36	Are there information sheets/leaflets available for each waste reception facility?		X
37	Is this information conveyed to ships?	X	

Based on the above, the provision of the waste management systems at the Port of Ngqura was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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Other findings of relevance are as follows:

Transnet SHE staff meet regularly with the managers of the different operational departments who operate within the port facility to ensure adherence to the port waste management plan. It was reported that there are challenges with business units within the Transnet structure not seeing waste management as a critical element within their business units.

As part of its corporate social responsibility program, Transnet supports and promotes marine and coastal clean-up initiatives organised by local NGOs.

The Waste Management Plan was prepared ten years ago, before the port became operational. The plan is due for review before the end of the 2019–20 financial year. The Plan has very little detail on Port Waste Reception Facilities, instead focusing on general waste from Transnet office buildings, port control tower, security offices, general and hazardous waste arising from the operations of the port, such as oily waste from port-operated tugboats.

Figure 39: Ngqura: other relevant observations - waste management systems

## 11.5 Summary of assessments and key findings

As outlined in Table 52, the assessments found that port waste reception facilities at the Port of Ngqura could not be adequately assessed.

Table 52 Summary assessment of port waste reception facilities: Port of Ngqura

Type of waste	Assessment	Comments
Oily wastes	Satisfactory	Oily waste services are available on request by port- authorised private contractors.
Noxious liquid substances	Less than satisfactory	Not provided but unsure as to whether NLS carriers utilise the port
Sewage	Satisfactory	Sewage reception services are available on request by port-authorized private contractors.
Garbage	Less than satisfactory	Annex V (Garbage) is not accepted
Waste Management System	Less than satisfactory	Systems and processes for waste management are in place but the waste management plan requires updating. The current plan is focused almost entirely on port-generated waste.

## 12 Gap Analysis – Port of Port Elizabeth

### 12.1 Overview

The Port of Port Elizabeth is located in Algoa Bay at longitude 25° 42' E and latitude 34° 01' S, approximately 384 nautical miles southwest of Durban and 423 nautical miles east of Cape Town. The multi-cargo services industry in the local area is also used as an alternative port of call for container

ships when the port terminals at Durban or Cape Town are congested. The port has a container terminal with three berths equipped with gantry container cranes and straddle carriers. It also has a breakbulk terminal with six berths of 1,170 metres, two bulk berths totalling 360 metres and a tanker berth of 242 metres.



Figure 40 Port of Port Elizabeth container terminal (Source: APWC, 2019).

The primary products handled at the Port of Port Elizabeth include manganese ore, which is transported by rail from the Northern Cape, and petroleum products which are imported from other South African ports. The motor industry is an important industrial activity for the Eastern Cape and the port has a large open-area car terminal for this purpose. The fishing industry and passenger ships also make use of the port, which operates 24 hours a day, seven days a week.

In the 52-week period spanning the last two weeks of October 2018 through to the first two weeks of October 2019, data obtained from MarineTraffic indicates that the Port of Port Elizabeth accommodated 503 commercial vessels in total with an average of 42 per month. It should be noted that these values exclude non-commercial vessels such as cruise liners, fishing vessels, pleasure craft and special craft. Table 42 depicts the number of commercial vessels received at the port for each month, by vessel type.

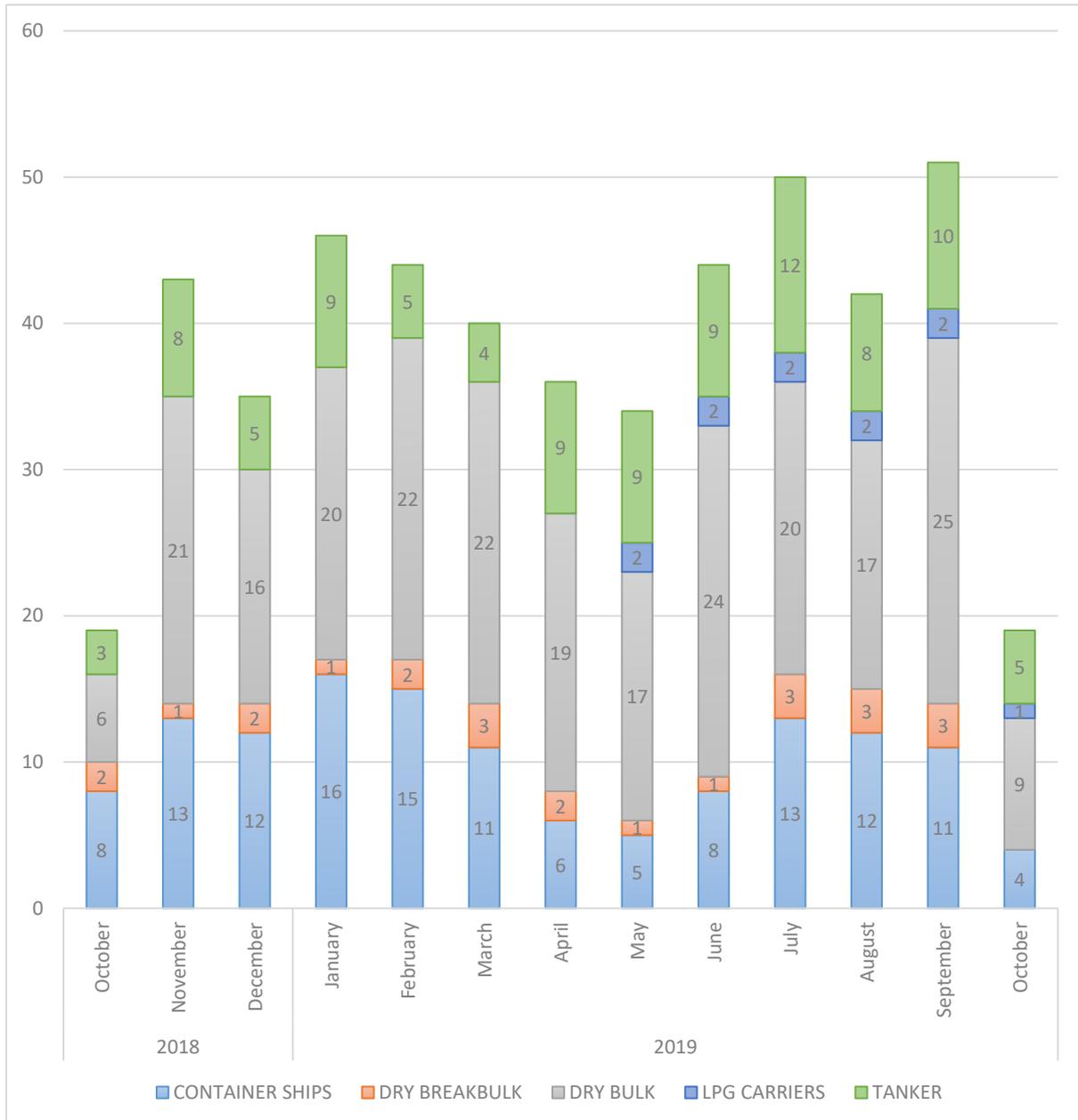


Figure 41: 2018–19 Commercial shipping log: Port of Port Elizabeth

Of the 503 commercial vessels accommodated at the port, the most common vessel types were dry bulk carriers (47%), followed by container ships (27%), tankers (19%), dry breakbulk carriers (5%) and LPG carriers (2%). Traffic is quite consistent over the 52-week period with a monthly range of between 34 to 51, keeping in mind that each of the October values depicted above constitute half-monthly values.

## 12.2 Summary of waste reception facilities: Port of Port Elizabeth

The Port of Port Elizabeth provides reception facilities for galley waste through a service-level agreement with Oricol. This same service provider, Oricol, also provides a general waste, hazardous waste, and oily wastes service but the services are limited to port and tenant operations only, not

vessels. In addition to Oricol, Transnet have licensed four other companies to provide waste services (Table 53).

Table 53 Licensed waste providers: Port of Port Elizabeth

Licensed waste providers
Enviroserv Waste Management (Pty) Ltd
FFS Refiners (Pty) Ltd
Spill Tech (Pty) Ltd
XP Ibhayi Environmental Specialist (Pty) Ltd t/a Xtreme Projects Ibhayi
Enviroserv Waste Management (Pty) Ltd

A summary of waste reception facilities at the Port of Port Elizabeth is outlined in Table 54 below.

Table 54 Summary of waste reception facilities: Port of Port Elizabeth

Type of waste	Can waste be received?	Type of reception facility	Any limitations in capacity?	Service provider
Oily tank washings	Unknown	Unknown	Unknown	Unknown
Dirty ballast water	Unknown	Unknown	Unknown	Unknown
Oily bilge water	Unknown	Unknown	Unknown	Unknown
Oil sludges	Unknown	Unknown	Unknown	Unknown
Used lubricating oil	Unknown	Unknown	Unknown	Unknown
Noxious liquid substances	Unknown	Unknown	Unknown	Unknown
Sewage	Unknown	Unknown	Unknown	Unknown
Garbage	Yes	Skip	No	Oricol
Quarantine wastes	Yes	Skip	No	Oricol



Figure 42: Galley waste skip at the Port of Port Elizabeth (Source: APWC, 2019).

### 12.3 Demand for waste reception facilities

In accordance with IMO guidelines, mandatory arrival notification and notice of the types and quantities of waste to be discharged are required in advance. At the Port of Port Elizabeth, vessels notify the Harbour Master’s office of their waste reception needs at the same time as notifying their

berthing requirements. This notification includes whether the vessel intends disposing of galley or any other generated waste.

Using the IMO methodology for estimating quantities of garbage (galley/quarantine waste) expected to be produced from the 503 port of call vessels, the result is that over 75 tonnes would be produced (as shown in Table 55), with significant amounts of sewage and oily waste as well.

Table 55 Estimate of garbage generated for port of call vessels: Port of Port Elizabeth

Vessel type	Average number of persons on board	Average days at sea prior to port call	Annual visits	Garbage generated (kg/person/day)	Garbage generated per ship visit (kg)	Annual garbage generated (kg)
Tankers	25	3	107	2	150	16,050
Cargo	25	3	396	2	150	59,400
<b>TOTAL</b>						<b>75,450</b>



Figure 43: Hazardous waste skip at the Port of Port Elizabeth (Source: APWC, 2019).

## 12.4 Assessment of waste reception facilities

### 12.4.1 Oily wastes

The assessment of waste reception facilities for oily wastes at Port Elizabeth is detailed below.

Table 56 Assessment of waste reception facilities for oily waste: Port of Port Elizabeth

		Yes	No
1	How are the oily wastes disposed of:		
	separation of oil and water then recycling		
	land disposal		
	recycled		
	incineration		
	other - unknown	X	
2	Are there restrictions on receipt or collection of oily wastes by service providers:		
	minimum quantity		
	maximum quantity		
	discharge rate (m <sup>3</sup> /hour)		
	vessel type		
	vehicle access to berth		
	other – unknown	X	
3	Are oily waste reception facilities available:		
	24 hours a day, 7 days per week		
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	other – unknown	X	
4	Is prior notice for receipt of oily wastes required:		
	0 hours		
	12 hours		
	24 hours		
	other – unknown	X	
5a	Is the waste receipt service available:		
	at no cost		
	at a cost incorporated into standing port use charge		
	other – unknown	X	
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other - unknown	X	
6.	Is a waste collection service available:		
	at all berths		
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		
	other - unknown	X	

Based on the assessment conducted, the provision of waste reception facilities for oily waste at the Port of Port Elizabeth was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 12.4.2 Noxious Liquid Substances (NLS)

The assessment of waste reception facilities for NLS at the Port of Port Elizabeth is detailed in Table 57.

Table 57 Assessment of waste reception facilities for NLS: Port of Port Elizabeth

		Yes	No
1	Where is the NLS disposed of:		
	directly from the ship to a mobile facility		
	ships to a holding tanks prior to being pumped out		
	other - unknown	X	
2	Are there any restrictions on receipt or collection of NLS wastes by service providers:		
	minimum quantity		
	maximum quantity		
	discharge rate (m <sup>3</sup> /hour)		
	vessel type		
	vehicle access to berth		
	other – unknown	X	
3	Are NLS reception facilities available:		
	24 hours a day, 7 days per week		
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
	other – unknown	X	
4	Is prior notice for receipt of NLS required:		
	0 hours		
	12 hours		
	24 hours		
	48 hours		
	other - unknown	X	
5a	Is the waste receipt service available:		
	at no cost		
	at a cost incorporated into standing port use charge		
	other - unknown	X	
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other - unknown	X	
6.	Is a waste collection service available:		
	at all berths		
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		
	other - unknown	X	

Based on the above, the provision of waste reception facilities for NLS at the Port of Port Elizabeth was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 12.4.3 Sewage

The assessment of waste reception facilities for sewage at the Port of Port Elizabeth is detailed below.

Table 58 Assessment of waste reception facilities for sewage: Port of Port Elizabeth

		Yes	No
1	Where is the sewage disposed of:		
	directly to a reticulated sewerage system		
	directly to a mobile facility		
	ships to holding tanks then pumped to a mobile facility		
	ships to on-site treatment facility to sewerage system		
	other - unknown	X	
2	Are there any restrictions on receipt or collection of sewage wastes by service providers:		
	minimum quantity		
	maximum quantity		
	discharge rate (m <sup>3</sup> /hour)		
	vessel type		
	other - unknown	X	
3	Are sewage reception facilities available:		
	24 hours a day, 7 days per week		
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
	other - unknown	X	
4	Is prior notice for receipt of sewage required:		
	0 hours		
	12 hours		
	24 hours		
	48 hours		
	other - unknown	X	
5a	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 - excess amounts attract additional fees		
	other - unknown	X	
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other - unknown	X	
6.	Is a waste collection service available:		
	at all berths		
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		
	other - unknown	X	

Based on the above, the provision of waste reception facilities for sewage at the Port of Port Elizabeth was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 12.4.4 Garbage disposal

The assessment of waste reception facilities for garbage disposal at Port Elizabeth is detailed in Table 59.

Table 59 Assessment of waste reception facilities for garbage disposal: Port of Port Elizabeth

		Yes	No
<b>Garbage disposal – on shore</b>			
1	Where is the garbage disposed:		
	local government dump/landfill		
	private dump/landfill	X	
	transfer station		
	materials recycling facility		
2	Where are quarantine wastes disposed:		
	incinerator		
	sterilisation		
	deep burial	X	
	normal landfill		
<b>Garbage disposal – ship to shore</b>			
3	Are there any restrictions on receipt or collection of garbage wastes:		
	minimum quantity		
	maximum quantity		
	vessel type		
	vehicle access to berths		
	other - unknown	X	
4	Are garbage waste reception facilities available:		
	24 hours a day, 7 days per week		
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	other – unknown	X	
5	Is prior notice for receipt of waste required:		
	12 hours		
	24 hours		
	48 hours		
	other – unknown	X	
6a	Is the waste receipt service available:		
	at no cost		
	at a cost incorporated into standing port use charge	X	
	at a cost charged in addition to other services - Excess amounts attract additional fees		
6b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other - unknown	X	
7	Is a waste collection service available:		
	at all berths	X	
	at most berths		
	at only one berth		

Based on the above, the assessment of the provision of waste reception facilities for garbage disposal at the Port of Port Elizabeth was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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When a vessel indicates that galley waste reception is required, the request is passed onto the engineering department, which provides a galley waste receptacle of 1.8 m<sup>3</sup> on the berth for the vessel to use while in port. When full, the receptacle is emptied into a large, locked skip of 10 m<sup>3</sup> provided by Oricol. Once the skip is full, the engineering department contacts Oricol to empty it. This is done on an ad-hoc basis, every three to six months on average. Galley waste is disposed of at a hazardous waste landfill site privately managed by EnviroServ.

Other findings of relevance are as follows:

The team was able to observe first-hand the waste receptacle facilities in port for ship-generated waste and operational waste generated in the port.

The team was able to observe that the galley waste receptacles were being used and that galley waste received in port is managed in accordance with Transnet and Department of Environmental Affairs (DEA) protocols.

The team noted that there was minimal litter at the Port of Port Elizabeth berthing and operational areas.

Figure 44: Port Elizabeth: other relevant observations - garbage disposal

### 12.4.5 Waste management system

The assessment of the waste management system at the Port of Port Elizabeth is detailed below.

Table 60 Assessment of waste management system: Port of Port Elizabeth

		Yes	No
1	Has a waste management plan (WMP) been developed and implemented for ship wastes?	X	
2	Is the WMP part of an overall environmental management system (EMS) for the port?	X	
3	Are marinas and fishing harbours covered by the port EMS or required to develop their own EMS?	X	
4	Does the WMP provide a brief summary of the types of wastes received and the collection and disposal facilities/services?	X	
5	Does the WMP address and provide management objectives for:		
6	Operations:		
	facility management		X
	maintenance		X
	signage		X
	infrastructure		X
	contractual arrangements		X
	emergency response		X
	seasonal variations		X
	training and education		X
	delegation of responsibilities and accountability		X
	compliance with regulatory conditions, including auditing		X
7	Technical standards:		X
	facility requirements		X
	incorporation of new technologies		X
	cleaning requirements		X
	maintenance of equipment to technical standards		X
8	Environmental considerations:		
	prevention of pollution to surface waters		X
	noise emissions		X
	visual impacts		X
	odour emissions		X
	special considerations due to surrounding environment (e.g. proximity to wetland or mangrove areas)		X
	coastal processes (e.g. extreme tides)		X
9	Plans for future expansion/upgrades:		
	oily wastes		X

		Yes	No
	noxious liquid substances (NLS)		X
	sewage		X
	garbage		X
	recycling of wastes		X
	quarantine wastes		X
10	Are contact details held for all waste service providers?	X	
11	Are the service providers licensed/approved as required by legislation?	X	
12	Are a copy of the licenses on file?	X	
13	Are a copy of the licenses for the waste disposal facilities used by the service providers held on file?		X
14	Have receipts for waste disposal been sighted/copies held on file?	X	
15	Are alternative waste service providers or disposal facilities available (e.g. spare drums, waste oil recyclers)?		X
16	Is there a procedure for choosing waste disposal service providers (e.g. list of preferred contractors)?		X
17	Are the details of back-up facilities available on file?		X
18	Does the WMP include an emergency response plan?		X
19	Is the plan adequate in that it addresses at least the following issues?		X
	spillage of liquid		X
	spillage of solids		X
	leakage of gas		X
	fire or explosion		X
	emergency contacts		X
	other (specify)		X
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? (Data sighted/copies attached)		
	oily wastes		X
	noxious liquid substances		X
	sewage		X
	garbage	X	
	recycling of wastes	X	
	quarantine wastes	X	
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	X	
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? (Graphs sighted)		X
23	Is on-going consideration given to changes in demand for waste reception facilities?		X
24	Do plans exist for future upgrades, extensions or reductions to the waste reception facilities?		X
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?		X
26	Are there provisions for audits against the WMP (at least within two (2) years of implementation and thereafter every three (3) years)?		X
27	Is there provision for periodic review of the WMP?		X
28	Are the relevant requirements of the MARPOL 73/78, UNCLOS and IMO generally adhered to by the users of the port?	X	
29	Is there information on the state and local regulations regarding (please list legislation if known):		X
	waste management	X	
	pollution of water	X	
	pollution of air	X	
	noise emissions	X	
	discharges to sewer	X	
	storage of dangerous goods	X	
30	Is there information on waste minimisation hierarchy i.e. avoid/ reduce/ reuse/ recycle/ reprocess?		

		Yes	No
31	Is an open and co-operative relationship maintained between the port authority and the relevant authorities and agents?	X	
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? (Give examples of consultation methods)	X	
33	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?	X	
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?	X	
35	Is clear and visible signage for waste reception facilities present and includes:	X	
	advice at initial vessel contact point of waste reception facilities:	X	
	direction to receptacle or disposal point location:	X	
	labelling of all receptacles and disposal points:	X	
	contact numbers:	X	
	emergency procedures:	X	
	translation into other languages as required	X	
36	Are there information sheets/leaflets available for each waste reception facility?		X
37	Is this information conveyed to ships?	X	

Based on the above, the provision of the waste management systems at the Port of Port Elizabeth was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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Other findings of relevance are as follows:

Port-generated general waste and hazardous waste are managed by Oricol. Skips are emptied once a month and not often full. There are 11 sites across the port with two skips at each site - one for hazardous waste and one for general waste.

There are four recycling receptacles at four sites across the port for plastic, cardboard, paper and cans. Oricol sells the recycling to a company called Rainbow for reuse/repurposing and manufacturing into other products. This recycling initiative is part of the waste minimisation strategy the contractor is required to develop and implement as part of its service-level agreement.

Four 'green guards' are provided by Oricol as part of the contract. They monitor the skips and notify Oricol when the skips are ready to be emptied and perform the role of on-the-ground monitoring of waste related issues.

Figure 45: Port Elizabeth: other relevant observations - port-generated waste

## 12.5 Summary of assessments and key findings

As outlined in Table 61, the assessments found that port waste reception facilities at the Port of Port Elizabeth could largely not be assessed.

Table 61 Summary assessment of port waste reception facilities: Port of Port Elizabeth

Type of waste	Assessment	Comments
Oily wastes	Less than satisfactory	No information captured on oily waste reception.
Noxious liquid substances	Less than satisfactory	No information captured on NLS reception.
Sewage	Less than satisfactory	No information captured on sewage reception.
Garbage	Fully meets requirements	All IMO Annex V (Garbage) is categorised by Transnet as galley waste and is disposed of in South Africa as quarantine/hazardous waste.
Waste Management System	Satisfactory	Systems and processes for waste management are in place and are enacted.

Despite not being able to make a final assessment, the team was satisfied through their audit and discussions with key personnel that garbage (Annex V) is disposed of at the Port of Port Elizabeth is managed in accordance with Transnet's waste management protocols and in alignment with MARPOL Convention 73/78 and directive 2000/59/EC, though provisions for oily wastes, noxious liquid substances and sewage did not meet MARPOL requirements.

## 13 Gap Analysis – Port of East London

### 13.1 Overview

The Port of East London, established in 1963, is the last remaining river port in South Africa and is located at longitude 27° 55' E and latitude 33° 1' S, at the mouth of the Buffalo River in the East Cape Province.

The East London Terminal has 11 berths in total as well as a roll-on/roll-off (RORO) facility, grain silo and a combi terminal with facilities for handling breakbulk and containers. Mercedes Benz is a major economic player in the East London area and a large volume of motor vehicle components are shipped through the port for assembly nearby, after which the vehicles are shipped out. After motor vehicles and their components, the port predominantly handles import and export cargo such as textiles, sugar, rice, timber, scrap steel and chemicals. The port also has facilities suitable for the export of livestock.

In the 52-week period spanning the last two weeks of October 2018 through to the first two weeks of October 2019, data obtained from MarineTraffic indicates that the Port of East London accommodated 179 commercial vessels in total with an average of 15 per month. It should be noted that these values exclude non-commercial vessels such as cruise liners, fishing vessels, pleasure craft and special craft. Figure 46 depicts the number of commercial vessels received at the port for each month, by vessel type.

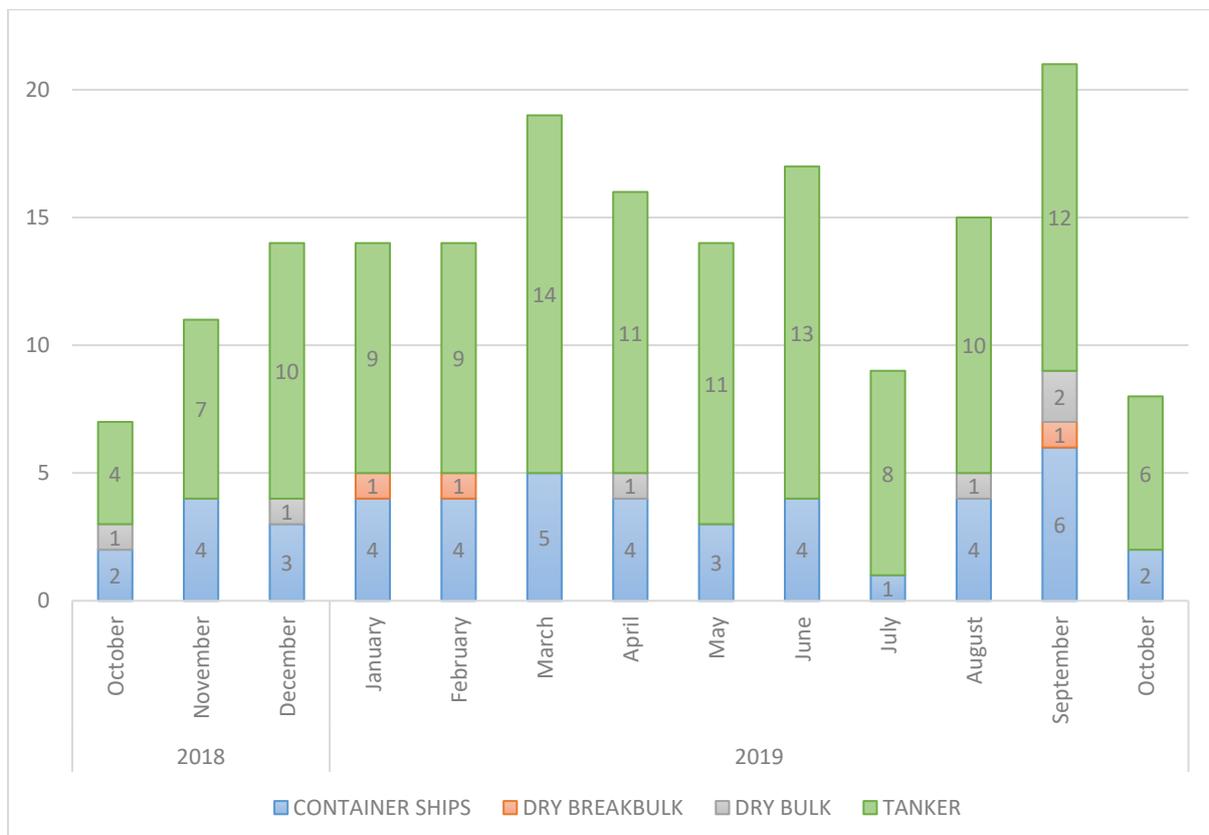


Figure 46: 2018 port log data: Port of East London

Of the 179 vessels accommodated, by far the most common vessel type was tankers (69%), followed by container ships (26%) and a small number of dry breakbulk and dry bulk carriers.

### 13.2 Summary of waste reception facilities: Port of East London

The Port of East London provides reception facilities for some oily wastes, garbage and hazardous/quarantine wastes. The primary waste discharged at the port is garbage, comprising general (dry) waste. Skips are provided at the berth, prior to a vessel’s arrival, and as part of its service-level agreements with the waste contractor, skips are emptied every 48 hours. While galley/potentially hazardous waste can be received, there is no hazardous landfill nearby at which it can be disposed. If a vessel requests to discharge galley waste they are asked whether they intend to stop at the Port of Port Elizabeth and are encouraged to take it there, if possible.

As with all international ports in South Africa, the waste management function at the port falls within the Transnet Safety Health and Environmental (SHE) Department. The SHE Department is responsible for ensuring that there are adequate waste reception facilities for all incoming vessels. Waste services are provided by third-party service providers under contract to the SHE Department. At the Port of East London galley (quarantine) services are provided by Interwaste, limited oily waste services are provided by port-authorized private contractors such as Spill Tech and Waste Tech, while Averda South Africa manages garbage including galley waste.

A summary of waste reception facilities at the Port of East London is outlined in Table 62 below.

Table 62 Summary of Waste Reception Facilities: Port of East London

Type of waste	Can waste be received?	Type of reception facility	Any limitations in capacity?	Service provider
Oily tank washings	Yes	Unknown	Unknown	Burner & Boiler Fuels
Dirty ballast water	No	N/A	N/A	N/A
Oily bilge water	Yes	Unknown	Unknown	Unknown
Oil sludges	Yes	Road tanker	Capacity of tanker	Private contractor
Used lubricating oil	Yes	Road tanker	Capacity of tanker	Private contractor
Noxious liquid substances	N/A	N/A	N/A	N/A
Sewage	Yes	Sewage line and tank	Unknown	Unknown
Garbage	Yes	Skip and offsite transport	No	Averda South Africa
Quarantine/hazardous wastes	Yes	Skip and offsite transport	Yes, it is discouraged due to lack of proximity to a hazardous waste landfill.	Interwaste

While the information provided by Transnet staff indicated that only oil sludges and used lubricating oil was accepted, information on the IMO GISIS site indicates that Waste Tech can receive oily residues, oily bilge water, oily tank washing, dirty ballast water and scale and sludges.

### 13.3 Demand for waste reception facilities

Data on the number of requests for waste collection by waste type and ship type for the Port of East London was requested but not provided. However, even in the absence of this data, it can be surmised

that the demand for waste reception facilities is reasonably high for garbage, oily waste and sewage given the number of vessels using the port. There is evidence of chemical tankers making port calls at East London, which means port waste facilities for NLS should be provided.

Estimates generated using IMO methodology and 12 months of ship data from MarineTraffic show that port of call vessels would generate 26.85 tonnes of garbage each year requiring disposal as quarantine waste.

Table 63 Estimate of garbage generated for port of call vessels: Port of East London

Vessel type	Average number of persons on board	Average days at sea prior to port call	Annual visits	Garbage generated (kg/person/day)	Garbage generated per ship visit (kg)	Annual garbage generated (kg)
Tankers	25	3	124	2	150	18,600
Cargo	25	3	55	2	150	8,250
TOTAL						26,850

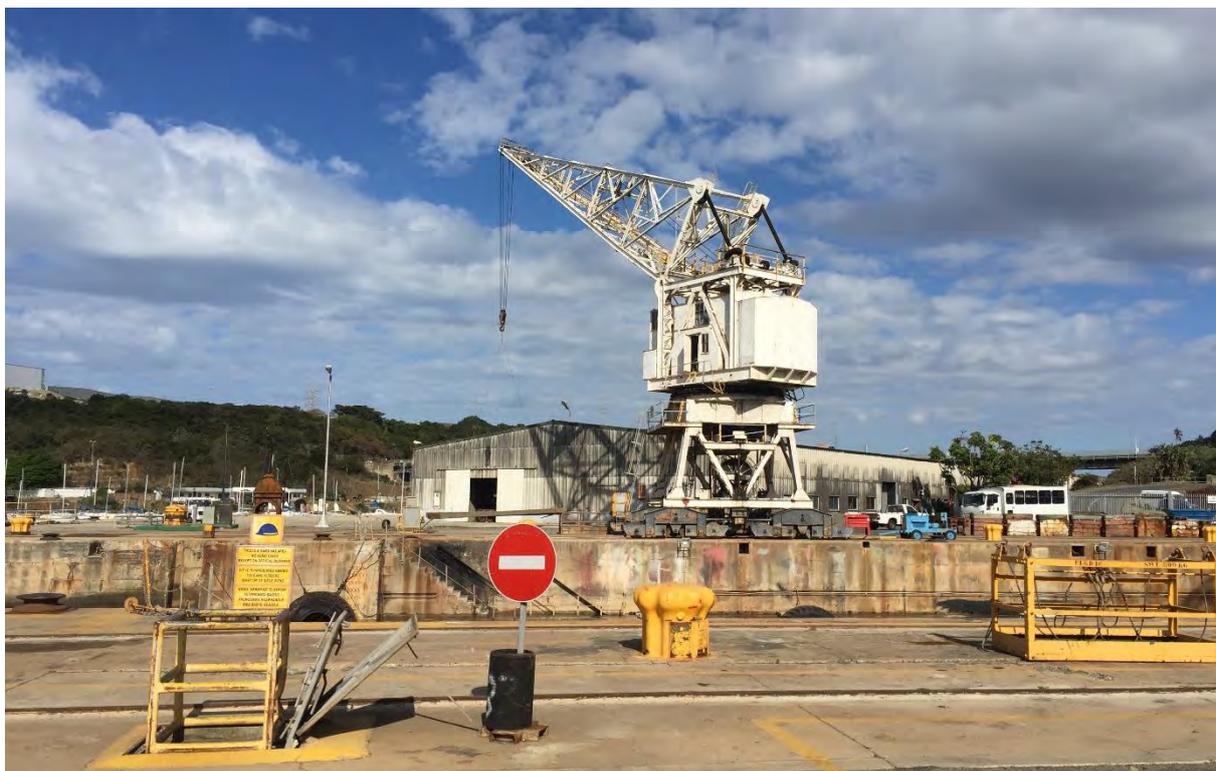


Figure 47: Port of East London (Source: APWC, 2019).

## 13.4 Assessment of waste reception facilities

### 13.4.1 Oily wastes

The Port of East London has some capacity to receive oily wastes. At present this is limited to the collection of used oil and oil sludges, which are collected by a private contractor and recycled off-site. The assessment of waste reception facilities for oily wastes at East London is detailed Table 64.

Table 64 Assessment of waste reception facilities for oily waste: Port of East London

		Yes	No
1	How are the oily wastes disposed of:		
	separation of oil and water then recycling	X	
	land disposal		
	recycled	X	
	incineration		
2	Are there restrictions on receipt or collection of oily wastes by service providers:		X
	minimum quantity		
	maximum quantity		
	discharge rate (m <sup>3</sup> /hour)		
	vessel type		
	vehicle access to berth		
3	Are oily waste reception facilities available:		
	24 hours a day, 7 days per week	X	
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	other - unknown		
4	Is prior notice for receipt of oily wastes required:		
	12 hours		
	24 hours	X	
	48 hours		
	other (specify) - unknown		
5a	Is the waste receipt service available:		
	at no cost		
	at a cost incorporated into standing port use charge	X	
	at a cost charged in addition to other services		
	other (specify) - unknown		
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other (specify) - unknown	X	
6.	Is a waste collection service available:		
	at all berths		
	at most berths		
	at only one berth	X	
	to vessels anchored within the port		

Based on the assessment conducted, the provision of waste reception facilities for oily waste at the Port of East London was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 13.4.2 Noxious Liquid Substances (NLS)

The assessment of waste reception facilities for NLS at the Port of East London is detailed in Table 65. The assessment found that the Port of East London does not provide a service for NLS cargo residues despite a large number of product tankers making port calls.

Table 65 Assessment of waste reception facilities for NLS: Port of East London

		Yes	No
1	Where is the NLS disposed of:		
	directly from the ship to a mobile facility		N/A
	ships to a holding tanks prior to being pumped out		N/A
	other (specify)		N/A
2	Are there any restrictions on receipt or collection of NLS wastes by service providers:		
	minimum quantity		N/A
	maximum quantity		N/A

		Yes	No
	discharge rate (m <sup>3</sup> /hour)		N/A
	vessel type		N/A
	vehicle access to berth		N/A
3	Are NLS reception facilities available:		
	24 hours a day, 7 days per week		N/A
	24 hours a day, 5 days per week		N/A
	business hours only, 7 days per week		N/A
	business hours only, 5 days per week		N/A
	other (specify)		N/A
4	Is prior notice for receipt of NLS required:		
	0 hours		N/A
	12 hours		N/A
	24 hours		N/A
	48 hours		N/A
5a	Is the waste receipt service available:		
	at no cost		N/A
	at a cost incorporated into standing port use charge		N/A
	at a cost charged in addition to other services		N/A
5b	Is the cost:		
	reasonable in terms of service		N/A
	a disincentive		N/A
	other (specify)		N/A
6.	Is a waste collection service available:		
	at all berths		N/A
	at most berths		N/A
	at only one berth		N/A
	to vessels anchored within the port		N/A
	to vessels anchored outside the port		N/A
	other		N/A

Based on the above, the provision of waste reception facilities for NLS at the Port of East London was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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### 13.4.3 Sewage

The assessment of waste reception facilities for sewage at the Port of East London is presented in Table 66. While services are available for sewage, disposal generally occurs outside port limits.

Table 66 Assessment of waste reception facilities for sewage: Port of East London

		Yes	No
1	Where is the sewage disposed of:		
	directly to a reticulated sewerage system		
	directly to a mobile facility		
	ships to holding tanks then pumped to a mobile facility		
	ships to on-site treatment facility to sewerage system		
	other (specify) - unknown	X	
2	Are there any restrictions on receipt or collection of sewage wastes by service providers:		
	minimum quantity		
	maximum quantity		
	discharge rate (m <sup>3</sup> /hour)		
	vessel type		
	vehicle access to berth		
	other (specify) - unknown	X	
3	Are sewage reception facilities available:		
	24 hours a day, 7 days per week		

		Yes	No
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
	other (specify) - unknown	X	
4	Is prior notice for receipt of sewage required:		
	0 hours		
	12 hours		
	24 hours		
	48 hours		
	other (specify) - unknown	X	
5a	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		
	other (specify) - unknown	X	
5b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other (specify) - unknown	X	
6.	Is a waste collection service available:		
	at all berths		
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	other (specify) - unknown	X	

Based on the above, the provision of waste reception facilities for sewage at the Port of East London was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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#### 13.4.4 Garbage disposal

The assessment of waste reception facilities for garbage disposal at the Port of East London is detailed in Table 67. Quarantine waste can be accepted at the Port of East London. However, the closest Hazardous Landfill is almost 295kms by road. Therefore, it is discouraged due to high costs.

Table 67 Assessment of waste reception facilities for garbage disposal: Port of East London

		Yes	No
Garbage disposal – on shore			
1	Where is the garbage disposed:		
	local government dump/landfill		
	private dump/landfill	X	
	transfer station		
	materials recycling facility		
2	Where are quarantine wastes disposed:		
	incinerator		
	sterilisation		
	deep burial	X	
	normal landfill		
Garbage disposal – ship to shore			
3	Are there any restrictions on receipt or collection of garbage wastes:		
	minimum quantity		
	maximum quantity		
	vessel type		
	vehicle access to berths		
	other – galley and other potentially hazardous waste types are discouraged	X	

		Yes	No
4	Are garbage waste reception facilities available? - Limited	X	
	24 hours a day, 7 days per week		
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
5	Is prior notice for receipt of waste required:		
	0 hours		
	12 hours		
	24 hours		
	48 hours	X	
6a	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		
	other - unknown	X	
6b	Is the cost:		
	reasonable in terms of service		
	a disincentive		
	other - unknown	X	
7	Is a waste collection service available:		
	at all berths		
	at most berths		
	at only one berth	X	
	to vessels anchored within the port		
	to vessels anchored outside the port		
	other		

Based on the above, the assessment of the provision of waste reception facilities for garbage disposal at the Port of East London was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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Ship-generated waste is generally not accepted due to logistical constraints of collecting and transporting such wastes very long distances to the few facilities lawfully capable of receiving, treating and disposing of such wastes.

There are 14 skips located around the port area for general waste (dry waste), one of which is located at a berth. The skips are collected every 48 hours.

All general (dry) waste goes into the same skip – with the intention that it is separated at landfill. However, the port is in the process of implementing separation at source and has purchased different coloured wheelie bins for this purpose.

During the assessment visit the port was observed to be clean in terms of general litter on the port docks as well as in the different operational areas that were visited.

Figure 48: East London: observations regarding port-generated garbage disposal

### 13.4.5 Waste management system

The assessment of the waste management system at the Port of East London is detailed in Table 68. The assessment found that the Port of East London has a Waste Management Plan from 2014 that aligns with the requirements in the National Environmental Management: Waste Management Act

and the National Waste Management Strategy developed by the Transnet National Ports Authority. It also has an updated draft Integrated Waste Management Programme.

Table 68 Assessment of waste management system: Port of East London

		Yes	No
1	Has a waste management plan (WMP) been developed and implemented for ship wastes?	X	
2	Is the WMP part of an overall environmental management system (EMS) for the port?	X	
3	Are marinas and fishing harbours covered by the port EMS or required to develop their own EMS?	X	
4	Does the WMP provide a brief summary of the types of wastes received and the collection and disposal facilities/services?	X	
5	Does the WMP address and provide management objectives for:	X	
6	Operations:	X	
	facility management	X	
	maintenance	X	
	signage	X	
	infrastructure	X	
	contractual arrangements	X	
	emergency response	X	
	seasonal variations	X	
	training and education	X	
	delegation of responsibilities and accountability	X	
	compliance with regulatory conditions, including auditing	x	
7	Technical standards:		
	facility requirements	X	
	incorporation of new technologies	X	
	cleaning requirements	X	
	maintenance of equipment to technical standards	X	
8	Environmental considerations:		
	prevention of pollution to surface waters	X	
	noise emissions	X	
	visual impacts	X	
	odour emissions		X
	special considerations due to surrounding environment (e.g. proximity to wetland or mangrove areas)	X	
	coastal processes (e.g. extreme tides)	X	
9	Plans for future expansion/upgrades:		
	oily wastes		X
	noxious liquid substances (NLS)		X
	sewage		X
	garbage		X
	recycling of wastes		X
	quarantine wastes		X
10	Are contact details held for all waste service providers?	X	
11	Are the service providers licensed/approved as required by legislation?	X	
12	Are a copy of the licenses on file?	x	
13	Are a copy of the licenses for the waste disposal facilities used by the service providers held on file?	x	
14	Have receipts for waste disposal been sighted/copies held on file?		X
15	Are alternative waste service providers or disposal facilities available (e.g. spare drums, waste oil recyclers)?	X	
16	Is there a procedure for choosing waste disposal service providers (e.g. list of preferred contractors)?	X	
17	Are the details of back-up facilities available on file?	x	
18	Does the WMP include an emergency response plan?		X
19	Is the plan adequate in that it addresses at least the following issues?		X
	spillage of liquid		X
	spillage of solids		X
	leakage of gas		X
	fire or explosion		X
	emergency contacts		X

		Yes	No
	other (specify)		X
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? (Data sighted/copies attached)		
	oily wastes		X
	noxious liquid substances		X
	sewage		X
	garbage		X
	recycling of wastes <sup>14</sup>	X	
	quarantine wastes		X
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	X	
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? (Graphs sighted)		X
23	Is on-going consideration given to changes in demand for waste reception facilities?		X
24	Do plans exist for future upgrades, extensions or reductions to the waste reception facilities?		X
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?		X
26	Are there provisions for audits against the WMP (at least within two (2) years of implementation and thereafter every three (3) years)?	X	
27	Is there provision for periodic review of the WMP?	X	
28	Are the relevant requirements of the MARPOL 73/78, UNCLOS and IMO generally adhered to by the users of the port?		X
29	Is there information on the state and local regulations regarding (please list legislation if known):	X	
	waste management	X	
	pollution of water	X	
	pollution of air	X	
	noise emissions	X	
	discharges to sewer	X	
	storage of dangerous goods	X	
30	Is there information on waste minimisation hierarchy i.e. avoid/reduce/reuse/recycle/reprocess?	X	
31	Is an open and co-operative relationship maintained between the port authority and the relevant authorities and agents?	X	
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? (Give examples of consultation methods)	X	
33	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?	X	
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?	X	
35	Is clear and visible signage for waste reception facilities present and includes:		X
	advice at initial vessel contact point of waste reception facilities:		X
	direction to receptacle or disposal point location:		X
	labelling of all receptacles and disposal points:		X
	contact numbers:		X
	emergency procedures:		X
	translation into other languages as required		X
36	Are there information sheets/leaflets available for each waste reception facility?		X
37	Is this information conveyed to ships?	X	

<sup>14</sup> Data provided as annual updates in Transnet annual reporting.

Based on the above, the provision of the waste management systems at the Port of East London was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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Other findings of relevance are as follows:

There has been a reported cultural shift within the Port of East London with the adoption of the ‘Visible Felt Leadership’ (VFL) approach. The VFL encourages different heads of the various business units to be more proactive in managing waste and to recognise that waste is more than just the responsibility of the environment department.

Transnet staff interviewed during in-country visits indicated that they believed that a significant amount of the waste that enters the marine environment is from land-generated waste flowing down the estuaries and entering the sea, not from ships or the port.

Figure 49: Port of East London: other relevant observations - waste management system

## 13.5 Summary of assessments and key findings

As outlined in Table 69, the assessments found that port waste reception facilities at the Port of East London are variable.

Table 69 Summary assessment of port waste reception facilities: Port of East London

Type of waste	Assessment	Comments
Oily wastes	Less than satisfactory	Oily waste services are available on request by port-authorized private contractors but only for a limited amount of oily waste products.
Noxious liquid substances	Less than satisfactory	No NLS waste facilities are provided despite a significant amount of product tanker traffic.
Sewage	Less than satisfactory	Sewage reception services are available on request by port-authorized private contractors, but details are unavailable.
Garbage	Less than satisfactory	Garbage reception is available on request by port-authorized private contractors but seems to relate to general and not galley waste with little landed. Port based skip bins are used only for port generated waste.
Waste Management System	Less than satisfactory	Systems and processes for waste management are in place with the waste management plan currently being updated but not in relation to MARPOL Wastes.

East London faces significant challenges in providing port reception facilities due to the small number of hazardous waste landfills in South Africa, resulting in severe logistical challenges. Such isolated locations may need to consider other *in situ* options such as quarantine waste incineration if no landfills are able to be utilised for disposal of quarantine waste.

## 14 Gap Analysis – Port of Mossel Bay

### 14.1 Overview

The Port of Mossel Bay is located roughly halfway between Cape Town and Port Elizabeth at longitude 22° 08' E and latitude 34° 08' S. Of all the commercial harbours located along the South African coastline, Mossel Bay is the smallest. The port caters exclusively for the fishing, oil and gas industries. Ship movements are permitted during daylight hours only.

The harbour has two offshore mooring buoys inside port limits. One of these is a marine tanker terminal single-point mooring buoy used by feeder vessels from Durban and Cape Town. The other is a catenary buoy mooring that caters for ships up to 32,000DWT with a maximum length of 204 metres and draught of 12 metres. Bunkering inside the harbour is available at three quays and on the jetty. In comparison with other ports in the area, Mossel Bay has limited infrastructure. Due to this, tankers tend to make use of the offshore mooring buoys.

In the 52-week period spanning the last two weeks of October 2018 through to the first two weeks of October 2019, data obtained from MarineTraffic indicates that the Port of Mossel Bay accommodated 74 commercial vessels in total with an average of six per month. It should be noted that these values exclude non-commercial vessels, including fishing vessels. Figure 50 depicts the number of commercial vessels – all of which are tankers – received at the port for each month.

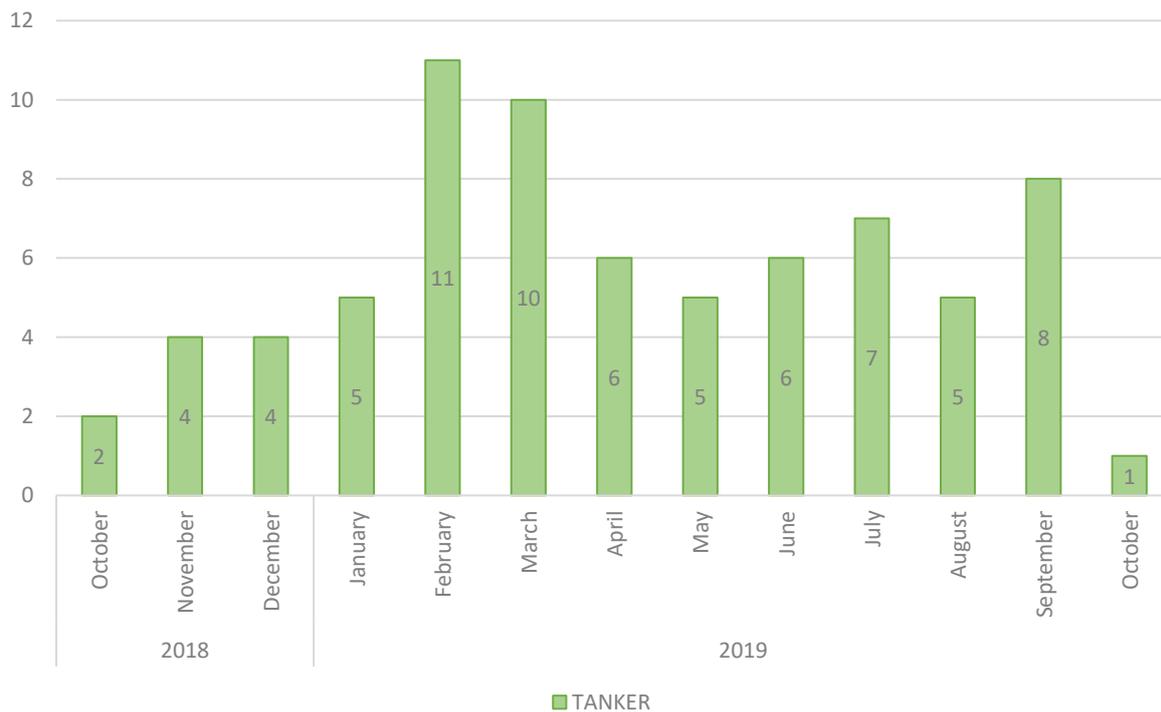


Figure 50: 2018-19 Commercial shipping log: Port of Mossel Bay

Traffic is variable over the 52-week period, with a monthly range of between three to 11, keeping in mind that each of the October values depicted above constitute half-monthly values.

## 14.2 Summary of waste reception facilities: Port of Mossel Bay

The Port of Mossel Bay provides reception facilities for garbage (general waste and recyclables) and oily wastes only. Galley waste is not accepted at the port. Vessels that have galley waste to off-load are instructed to do so in Port Elizabeth, Cape Town or at another port on their journey. The port does not accept sewage. Given that the port does not receive chemical tankers, there is no need to provide a service for NLS cargo residues.

Waste services for general waste, recyclables and oily wastes at Mossel Bay are provided by a third-party provider (Interwaste) through a service-level agreement. In addition to this, the port has a number of licensed waste providers as shown in Table 70 below.

Table 70 Licensed waste providers: Port of Mossel Bay

Licensed waste providers
FFS Refiners (Pty) Ltd
Interwaste (Pty) Ltd
Marine Slops (Pty) Ltd
OSS Sales & Services (Pty) Ltd
Spill Tech (Pty) Ltd

A summary of waste reception facilities at the Port of Mossel Bay is outlined in Table 71 below.

Table 71 Summary of waste reception facilities: Port of Mossel Bay

Type of waste	Can waste be received?	Type of reception facility	Any limitations in capacity?	Service provider
Oily tank washings	Yes	Used oil tank	Yes, 80,000 litres	Interwaste

Dirty ballast water	No	N/A	N/A	N/A
Oily bilge water	Yes	Bilge water tank	Yes, 20,000 litres	Interwaste
Oil sludges	Yes	Road tanker	Yes, 20,000 litres	Interwaste
Used lubricating oil	No	N/A	N/A	N/A
Noxious liquid substances	No	N/A	N/A	N/A
Sewage	No	N/A	N/A	N/A
Garbage	Yes (excluding galley waste)	Wheelie bins for recyclables. Skip bins for general waste.	Yes, 140 litres for wheelie bins and 6m <sup>3</sup> for skip bins.	Interwaste
Quarantine wastes	No	N/A	N/A	N/A

From the information provided, all oily waste needs are met, but neither quarantine waste nor sewage are received and therefore ships must withhold this waste until they are able to discharge it at another port.

This resulted in a formal complaint being made to the IMO’s Global Integrated Shipping Information System (GISIS) from an RMI-flagged vessel on 3 April 2019 after they had requested, via their agent, to dispose of plastic waste, food waste, domestic wastes, cooking oil, incinerator ash, operational waste and e-waste.



Figure 51: Port of Mossel Bay (Source: APWC, 2019).

### 14.3 Demand for waste reception facilities

Even though only a small number of vessels utilise the port (as most of the ships dock off-shore), there is still a clear demand based on the IMO GISIS-registered complaint and the waste service licensing granted as per Table 72.

Table 72 shows that the IMO methodology calculation for 12 months of waste generated in Mossel Bay by port-of-call vessels for 'garbage' (quarantine waste) was 11 tonnes.

Table 72 Summary of IMO calculation of garbage generated by port of call vessels: Port of Mossel Bay

Vessels	Average number of persons on board	Average days at sea prior to port call	Annual visits	Garbage generated (kg/person/day)	Garbage generated per ship visit (kg)	Annual garbage generated (kg)
Tankers	25	3	74	2	150	11,100
<b>TOTAL</b>						<b>11,100</b>

With regard to oily wastes, Transnet reports that 15 bags of oily rags were received in June 2018 and 58,500 litres of oil slops were received in May to June 2018. While Mossel Bay is a small port by South African standards, with less than 100 ships visiting per year, the direction to ships to call at other South African ports to discharge wastes may be considered an inconvenience, therefore it may not meet IMO obligations to provide Port Waste Reception Facilities.

## 14.4 Assessment of waste reception facilities

### 14.4.1 Oily wastes

The assessment of waste reception facilities for oily wastes at the Port of Mossel Bay is detailed in Table 73.

Table 73 Assessment of waste reception facilities for oily waste: Port of Mossel Bay

		Yes	No
1	How are the oily wastes disposed of:		
	separation of oil and water then recycling	X	
	land disposal		
	recycled	X	
	incineration		
	other - unknown	X	
2	Are there restrictions on receipt or collection of oily wastes by service providers:		
	minimum quantity		X
	maximum quantity		X
	discharge rate (m <sup>3</sup> /hour)		X
	vessel type		X
	vehicle access to berth		X
3	Are oily waste reception facilities available:		
	24 hours a day, 7 days per week	X	
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
4	Is prior notice for receipt of oily wastes required:		
	0 hours		
	12 hours		
	24 hours	X	
	48 hours		
5a	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	X	
5b	Is the cost:		

		Yes	No
	reasonable in terms of service		
	a disincentive		
	other - unknown	X	
6.	Is a waste collection service available:		
	at all berths		
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		
	other – at most quays	X	

Based on the assessment conducted, the provision of waste reception facilities for oily waste at the Port of Mossel Bay was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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#### 14.4.2 Noxious Liquid Substances (NLS)

The assessment of waste reception facilities for NLS at the Port of Mossel Bay is detailed in Table 74. The assessment found that the Port of Mossel Bay does not receive chemical tankers, so there is no need to provide a service for NLS cargo residues.

Table 74 Assessment of waste reception facilities for NLS: Port of Mossel Bay

		Yes	No
1	Where is the NLS disposed of:		
	directly from the ship to a mobile facility		N/A
	ships to a holding tanks prior to being pumped out		N/A
	other (specify)		N/A
2	Are there any restrictions on receipt or collection of NLS wastes by service providers:		
	minimum quantity		N/A
	maximum quantity		N/A
	discharge rate (m3/hour)		N/A
	vessel type		N/A
	vehicle access to berth		N/A
3	Are NLS reception facilities available:		
	24 hours a day, 7 days per week		N/A
	24 hours a day, 5 days per week		N/A
	business hours only, 7 days per week		N/A
	business hours only, 5 days per week		N/A
	other (specify)		N/A
4	Is prior notice for receipt of NLS required:		
	0 hours		N/A
	12 hours		N/A
	24 hours		N/A
	48 hours		N/A
5a	Is the waste receipt service available:		
	at no cost		N/A
	at a cost incorporated into standing port use charge		N/A
	at a cost charged in addition to other services		N/A
5b	Is the cost:		
	reasonable in terms of service		N/A
	a disincentive		N/A
	other (specify)		N/A
6.	Is a waste collection service available:		
	at all berths		N/A
	at most berths		N/A
	at only one berth		N/A

		Yes	No
	to vessels anchored within the port		N/A
	to vessels anchored outside the port		N/A
	other		N/A

Based on the above, and the fact that NLS carriers do not visit the port, the provision of waste reception facilities for NLS at the Port of Mossel Bay was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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#### 14.4.3 Sewage

Sewage is not received at the Port of Mossel Bay. This is in contravention of MARPOL Regulation 12.1, which requires the government of each Party to ensure the adequate provision of facilities at ports and terminals for the reception of sewage, without causing delay to ships. The assessment of waste reception facilities for sewage at the Port of Mossel Bay is detailed below.

Table 75 Assessment of waste reception facilities for sewage: Port of Mossel Bay

		Yes	No
1	Where is the sewage disposed of:		
	directly to a reticulated sewerage system		N/A
	directly to a mobile facility		N/A
	ships to holding tanks then pumped to a mobile facility		N/A
	ships to on-site treatment facility to sewerage system		N/A
	other – not received	X	
2	Are there any restrictions on receipt or collection of sewage wastes by service providers:		
	minimum quantity		N/A
	maximum quantity		N/A
	discharge rate (m <sup>3</sup> /hour)		N/A
	vessel type		N/A
	vehicle access to berth		N/A
3	Are sewage reception facilities available:		
	24 hours a day, 7 days per week		N/A
	24 hours a day, 5 days per week		N/A
	business hours only, 7 days per week		N/A
	business hours only, 5 days per week		N/A
	other		N/A
4	Is prior notice for receipt of sewage required:		
	0 hours		N/A
	12 hours		N/A
	24 hours		N/A
	48 hours		N/A
5a	Is the sewage receipt service available:		
	at no cost		N/A
	at a cost incorporated into standing port use charge		N/A
	at a cost charged in addition to other services - excess amounts attract additional fees		N/A
5b	Is the cost:		
	reasonable in terms of service		N/A
	a disincentive		N/A
	other (specify)		N/A
6.	Is a waste collection service available:		
	at all berths		N/A
	at most berths		N/A
	at only one berth		N/A
	to vessels anchored within the port		N/A
	to vessels anchored outside the port		N/A

Based on the above, the provision of waste reception facilities for sewage at the Port of Mossel Bay was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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#### 14.4.4 Garbage disposal

Galley waste and quarantine waste cannot be received and vessels that require the off-loading of these garbage types are requested to do so at a different port.

This is in contravention of regulations under MARPOL Annex V which oblige Governments to ensure the provision of adequate reception 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.

The assessment found that garbage that is generated whilst the vessels are berthed at the ports (comprising of recyclables and general waste) can be accepted, subject to volume, as this waste is generated whilst at the port and is therefore not considered quarantine waste. Wheelie bins are provided for recyclables and 6 m<sup>3</sup> skips are provided for general waste and the ships are required to separate the two wastes. This waste is then taken to the local municipal landfill for disposal.

The assessment of waste reception facilities for garbage disposal of waste coming off the ships at the Port of Mossel Bay is detailed in Table 76.

Table 76 Assessment of waste reception facilities for garbage disposal: Port of Mossel Bay

		Yes	No
Garbage disposal – on shore			
1	Where is the garbage disposed:	N/A	
	local government dump/landfill		
	private dump/landfill		
	transfer station		
	materials recycling facility		
2	Where are quarantine wastes disposed:	N/A	
	incinerator		
	sterilisation		
	deep burial		
	normal landfill		
	other – not received		
Garbage disposal – ship to shore			
3	Are there any restrictions on receipt or collection of garbage wastes:	N/A	
	minimum quantity		
	maximum quantity		
	vessel type		
	vehicle access to berths		
4	Are garbage waste reception facilities available:	N/A	
	24 hours a day, 7 days per week		
	24 hours a day, 5 days per week		
	business hours only, 7 days per week		
	business hours only, 5 days per week		
5	Is prior notice for receipt of waste required:	N/A	
	0 hours		
	12 hours		
	24 hours		
	48 hours		
6a	Is the waste receipt service available:	N/A	

		Yes	No
	at no cost		
	at a cost incorporated into standing port use charge		
	at a cost charged in addition to other services - excess amounts attract additional fees		
	other - unknown		
6b	Is the cost:	N/A	
	reasonable in terms of service		
	a disincentive		
	other - unknown		
7	Is a waste collection service available:	N/A	
	at all berths		
	at most berths		
	at only one berth		
	to vessels anchored within the port		
	to vessels anchored outside the port		
	other – at most quays		

Based on the above, the assessment of the provision of waste reception facilities for garbage disposal at the Port of Mossel Bay was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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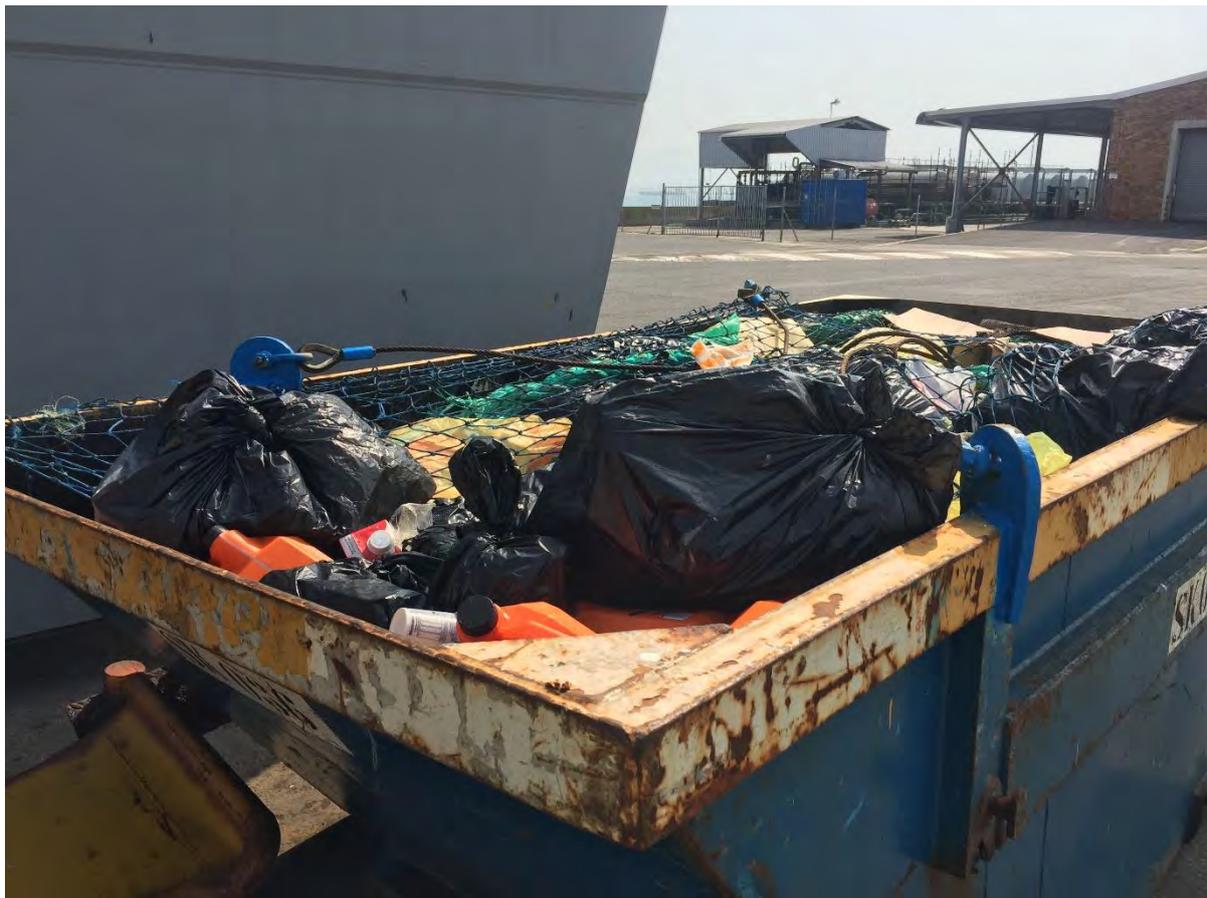


Figure 52: Four waste skips of 6 m<sup>3</sup> are available for receiving general waste from berthing vessels. Galley waste and other potentially hazardous garbage types cannot be received (Source: APWC, 2019).

#### 14.4.5 Waste management system

The assessment of the waste management system at the Port of Mossel Bay is detailed in Table 77.

Table 77 Assessment of waste management system: Port of Mossel Bay

		Yes	No
1	Has a waste management plan (WMP) been developed and implemented for ship wastes?		X
2	Is the WMP part of an overall environmental management system (EMS) for the port?		X
3	Are marinas and fishing harbours covered by the port EMS or required to develop their own EMS?		X
4	Does the WMP provide a brief summary of the types of wastes received and the collection and disposal facilities/services?		X
5	Does the WMP address and provide management objectives for:		X
6	Operations:		X
	facility management		X
	maintenance		X
	signage		X
	infrastructure		X
	contractual arrangements		X
	emergency response		X
	seasonal variations		X
	training and education		X
	delegation of responsibilities and accountability		X
	compliance with regulatory conditions, including auditing		X
7	Technical standards:		X
	facility requirements		X
	incorporation of new technologies		X
	cleaning requirements		X
	maintenance of equipment to technical standards		X
8	Environmental considerations:		X
	prevention of pollution to surface waters		X
	noise emissions		X
	visual impacts		X
	odour emissions		X
	special considerations due to surrounding environment (e.g. proximity to wetland or mangrove areas)		X
	coastal processes (e.g. extreme tides)		X
9	Plans for future expansion/upgrades:		X
	oily wastes		X
	noxious liquid substances (NLS)		X
	sewage		X
	garbage		X
	recycling of wastes		X
	quarantine wastes		X
10	Are contact details held for all waste service providers?	X	
11	Are the service providers licensed/approved as required by legislation?	X	
12	Are a copy of the licenses on file?	X	
13	Are a copy of the licenses for the waste disposal facilities used by the service providers held on file?	X	
14	Have receipts for waste disposal been sighted/copies held on file?		X
15	Are alternative waste service providers or disposal facilities available (e.g. spare drums, waste oil recyclers)?	X	
16	Is there a procedure for choosing waste disposal service providers (e.g. list of preferred contractors)?	X	
17	Are the details of back-up facilities available on file?		X
18	Does the WMP include an emergency response plan?		X
19	Is the plan adequate in that it addresses at least the following issues?		X
	spillage of liquid		X
	spillage of solids		X
	leakage of gas		X
	fire or explosion		X

		Yes	No
	emergency contacts		X
	other (specify)		X
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? (Data sighted/copies attached)		
	oily wastes	X	
	noxious liquid substances		X
	sewage		X
	garbage		X
	recycling of wastes	X	
	quarantine wastes		X
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)	X	
	don't know		
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? (Graphs sighted)		X
23	Is on-going consideration given to changes in demand for waste reception facilities?		X
24	Do plans exist for future upgrades, extensions or reductions to the waste reception facilities?		X
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?		X
26	Are there provisions for audits against the WMP (at least within two (2) years of implementation and thereafter every three (3) years)?		X
27	Is there provision for periodic review of the WMP?		X
28	Are the relevant requirements of the MARPOL 73/78, UNCLOS and IMO generally adhered to by the users of the port?		X
29	Is there information on the state and local regulations regarding (please list legislation if known):		X
	waste management	X	
	pollution of water	X	
	pollution of air	X	
	noise emissions	X	
	discharges to sewer	X	
	storage of dangerous goods	X	
30	Is there information on waste minimisation hierarchy i.e. avoid/ reduce/ reuse/ recycle/ reprocess?	X	
31	Is an open and co-operative relationship maintained between the port authority and the relevant authorities and agents?	X	
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? (Give examples of consultation methods)	X	
33	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?	X	
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?		X
35	Is clear and visible signage for waste reception facilities present and includes:		
	advice at initial vessel contact point of waste reception facilities:		X
	direction to receptacle or disposal point location:		X
	labelling of all receptacles and disposal points:	X	
	contact numbers:	X	
	emergency procedures:	X	
	translation into other languages as required		
36	Are there information sheets/leaflets available for each waste reception facility?		X
37	Is this information conveyed to ships?		

Based on the above, the provision of the waste management systems at the Port of Mossel Bay was found to be:

1	Less than satisfactory	2	Satisfactory	3	Fully meets requirements
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Other findings of relevance are as follows:

Petrol SA is a key tenant of the port and manages its site in accordance with strict Department of Environmental Affairs (DEA) conditions and has its own private landfill site.

The other three major tenants at the Port of Mossel Bay are SeaVuna, AfroFish and Vikings. All tenants must submit waste management plans and are required to be audited annually by Transnet as part of their lease agreements.

The receipt and disposal of ship and operational generated waste is done in strict adherence to the port waste management plan and in accordance with Transnet waste management framework.

The Port of Mossel Bay has a culture of taking waste management and environmental issues seriously. Staff at the port participate in community-based awareness programs on the importance of natural resource management.

Figure 53: Mossel Bay: other relevant observations: waste management systems

## 14.5 Summary of assessments and key findings

As outlined in Table 78, the assessments found that port waste reception facilities at the Port of Mossel Bay are variable.

Table 78 Summary assessment of port waste reception facilities: Port of Mossel Bay

Type of waste	Assessment	Comments
Oily wastes	Satisfactory	Almost all oily waste types can be received, and services are provided by a third-party contractor. Full COC however has not been provided. Services requested and volumes received have not been quantified.
Noxious liquid substances	Fully meets requirements	Not provided as no NLS carriers berth at the port.
Sewage	Less than satisfactory	Sewage is not received at the port.
Garbage	Less than satisfactory	Some garbage (general waste and recyclables) can be received at the port. Galley waste and other garbage types that need to be considered as potentially hazardous cannot be received.
Waste Management System	Less than satisfactory	No plan exists. MARPOL wastes are mostly not accepted Systems and processes for non-ship waste management mostly. Full descriptions of waste based on IMO classification is lacking and no COC or recording/quantification of oily wastes landed are recorded.

Port reception facilities were found to be lacking in that neither sewage nor galley waste can be received. While there is an explanation that most boats are at anchor and not at the wharf, there

nevertheless seems to be both demand and services for oily waste which is landed despite this rationale.

Given that all ships generate some garbage, sewage and oily waste, it appears there would be a need for all three waste streams to be catered for, not only the oily waste. Directing ships to another port to offload wastes would seem to be a clear inconvenience, as indicated by the RMI-flagged vessel's complaint to IMO GISIS.

In accordance with IMO requirements, port reception facilities for sewage and garbage (quarantine waste/galley waste) should be provided in addition to those for oily waste.

## 15 Gap Analysis – Smaller ports, harbours and marinas

### 15.1 Overview

South Africa has a network of more than 50 smaller ports, harbours and marinas that run along the coastal water–land border interface. These exist in support of the near-shore and offshore industries of fishing, aquaculture and other maritime economic activities, as well as, for recreation and tourism.

South Africa has not constructed new public small harbours since the 1960s. In 2017, South Africa's Department of Transport described these facilities in their Comprehensive Maritime Transport Policy (CMTF) as having 'deteriorated to a state of near collapse, through lack of maintenance, safety and security measures'. It cites the lack of a cohesive legislative and regulatory framework on small harbours, as well as, the absence of a single point of accountability as critical challenges affecting the proper custodianship, management and regulation of smaller ports, harbours and marinas in South Africa.



Figure 54: Gordon's Bay Harbour (Source: APWC, 2019).

As such, the Department of Transport is seeking to develop an effective socio-economic program for the development of small harbours. It is working in co-operation with the Department of Public Works and in consultation with the Department of Agriculture, Forestry and Fisheries, and other relevant organs of state to formulate and implement a Small Harbours Development Policy and Strategy.

## 15.2 Regulatory context

Areas adjacent to the commercial ports (so-called ‘port limits’) are accepted as being under the jurisdiction of the relevant Transnet Harbour Master. These areas are predominately frequented by small vessels used for either recreation or commercial purposes (such as fishing). Other areas are managed by the Department of Public Works, and others still are privately owned and operated.

In the past, vessels navigating on sea were regulated by the South African Maritime Safety Authority (SAMSA) and those navigating on inland waters were regulated by a range of different authorities including national departments, provincial governments and municipalities. Voluntary regulation also takes place outside the statutory framework through boat clubs and other civil organisations. The Department has now assigned SAMSA to regulate the safety standards of small vessels in both tidal and inland waters.

## 15.3 Site visits

The locations visited are outlined in Figure 55 below.



Figure 55: Domestic ports, harbours and marinas visited



Figure 56: Knysna Marina (Source: APWC, 2019).

## 15.4 Waste management at small ports, harbours and marinas

Waste management facilities at the majority of smaller ports, harbour and marinas visited by the project team was limited to the provision of general waste receptacles for both ship- and port-generated garbage. These are usually in the form of wheelie bins but in some locations skips, drums or other unlined receptacles were being used for this purpose. At some locations, such as Gordon's Bay, requests had been made at the municipal level for the provision of colour-coded recycling bins but none of these were observed during site visits.



Figure 57: Waste receptacles at Durban Marina (left) and Hout Bay (right) (Source: APWC, 2019).

None of the smaller ports, harbours or marinas reported the existence of facilities for the reception of wastes other than garbage. The team was advised that sewage or grey water is generally discharged by smaller vessels outside of port limits.

At some locations, notably Durban Marina and Port Alfred, the major challenge facing the management of waste is not ship-generated waste but the plastics and other garbage that washes into the port from the surrounding areas as a consequence of heavy rains.

At Durban Marina, efforts have been made to prevent land-based waste from entering the port through the implementation of a grate and the use of booms at stormwater outlets. However, due to a lack of basic maintenance, the effectiveness of these measures had deteriorated over time.



Figure 58: Stormwater debris at Durban Marina (Source: APWC, 2019).



Figure 59: Grate and boom at stormwater outlet at Durban Marina (Source: APWC, 2019).

## 15.5 Waste from domestic fishing

### 15.5.1 Waste management on board fishing vessels

The domestic fishing sector in South Africa is comprised of more than 100 boats from artisanal vessels to large purse-seiners targeting a range of different fisheries.

This is illustrated in Table 80 below, which shows the vessels by size and fishery.

Table 79: Summary of Domestic Fishing Vessels, South Africa – Source FAO

VESSEL	HAKE TRAWL FISHERY	MIDWATER TRAWL FISHERY	TUNA POLING FISHERY	PELAGIC LONGLINE	SOUTH COAST ROCK LOBSTER	NEAR SHORE FISHERIES	TOTAL
STERN TRAWLERS (LENGTH 23–90 M)	70						70
SMALLER TRAWLERS (LENGTH 14–30 M)	31						31
VESSELS (LENGTH 11–48 M)		100					100
SMALL VESSELS			200		105		305
VESSELS				31			31
SQUID BOATS						138	138
COMMERCIAL HANDLINE BOATS						400	400
TOTAL	101	100	200	31	105	538	1,075

Given data on number of days at sea were not available, it has not been possible to calculate the potential volume of garbage from the domestic shipping and fishing vessels and therefore further study is required. The scale and size of vessels suggests it would be considerable.

SAMSA and South African Bureau of Standards (SABS) provide environment and safety education for crew members of fishing vessels. Crew members must take a SAMSA PreSea course and pass the test before being issued a Blue Card (or PreSea card), which is a pre-requisite for all fishing vessel crew members.

All fishing vessels are subject to regulations regarding waste management practices on board. Beyond these fundamental regulations, different fishing vessels apply different rules for the onboard management of waste depending on the views of the captain or vessel owner. In some cases, fishing vessel crew members advised that they were not permitted to throw any waste in the ocean, including cigarette butts.



Figure 60: Signage onboard fishing vessel (Source: APWC, 2019).

During interviews with fishing vessel crew members, some indicated that waste was separated on board into different coloured plastic bags, but the majority indicated that all garbage, excluding food waste, was bagged without separation for eventual disposal at the port. When the vessel arrives back at port, the designated safety officer of each vessel has to report the estimated amount of generated waste and dispose of it in a general bin provided. Depending on the size of the vessel, the chef and skipper may also keep logs of garbage volumes. All vessels that were inspected had a designated area for the storage of waste, although in some cases the storage area appeared too small for the accumulation of 7 to 14 days of garbage.



Figure 61: Waste storage compartment onboard fishing vessel (Source: APWC, 2019).

Based on the interviews and inspections, the proper disposal of waste appears to be understood and enacted on fishing vessels. The team was advised the regular inspections from government patrol vessels was common and that fines were enforced for any dumping of garbage overboard.

### 15.5.2 Fish processing plants

The team visited two fish-processing plants at the Port of Mossel Bay – Afro Fishing and the SeaVuna Fishing Company. Both plants were found to manage their waste in an environmentally sustainable manner and engaged in the active recycling of waste materials including wooden pallets, cardboard, plastics and glass.

At both locations, wastewater generated during the production process is filtered before being released back into the port. This ensures that no oily residues enter the marine environment. During site visits the team observed clean working environments and no garbage strewn on the site.

At SeaVuna, all waste that has the potential for repurposing including, old fishing equipment (nets and ropes) are all either repaired or sold to a third party for recycling locally. All waste is viewed as a cost driver, either as a cost to business or as potential revenue.



Figure 62: Mossel Bay SeaVuna – fishing gear for recycling locally (Source: APWC, 2019).

## 15.6 Key findings



Figure 63: Small vessels at Kalk Bay (Source: APWC, 2019).

Waste management facilities at the smaller ports, harbours and marinas are variable and heavily dependent on the size of the area and resources available. Waste receptacles were observed at all locations although not always in sufficient quantities. While MARPOL regulations do not apply to domestic vessels, the lack of waste reception facilities for oily wastes are of concern.

The infiltration of land-based debris into the marine environment via stormwater outlets is a significant source of frustration for those working to contain ship-based sources of waste at the smaller ports, harbours and marinas of South Africa. The existence of land-generated debris in port waters reflects badly on the staff at these locations and ameliorating the accumulation of debris is a major burden.

There appears to be a high level of awareness on board fishing vessels of the importance of proper waste management at sea. All vessels had appropriate waste management systems in place, but the application of such practices varies between vessels.

The two fish-processing plants visited showed high levels of awareness around environmental sustainability, including waste management. At SeaVuna in particular there is a strong culture within the organisation of waste minimisation and consideration of waste generation and disposal on both the land and marine environments. SeaVuna's operations may be considered as a case study in good practice and sustainability.

## 16 Cruise Liners



Figure 64: Cruise liner at Cape Town (Source: Africa Geographic)

### 16.1 Overview

Unfortunately, APWC were unable to obtain quantitative data in relation to waste generated during international cruise line visits. In addition, no information was able to be sought in relation to specific waste management practices of cruise liners. This may be due to field visits coinciding with a low period of cruise line activity but may also be that such information is not held by one central agency. For example, arrangements may be in place where a number of berths across the country are leased to entities other than Transnet who become responsible for waste management independently and do not report back waste data to a central agency.

Information on cruise-liner activity was therefore gathered from other external source such as Crew-Centre.Com and Marinetraffic.com for cruise-line scheduling for the period of January to December in 2019. Domestic cruise liners are also in operation, but no data was able to be obtained for this assignment.

As shown in Figure 65 below, 152 international cruise-liner port of calls occurred in South Africa in 2019 in two main activity periods, which included January to April and October to December. No international cruise-liner activity occurred between May and September, which coincides with South African 'winter' period.

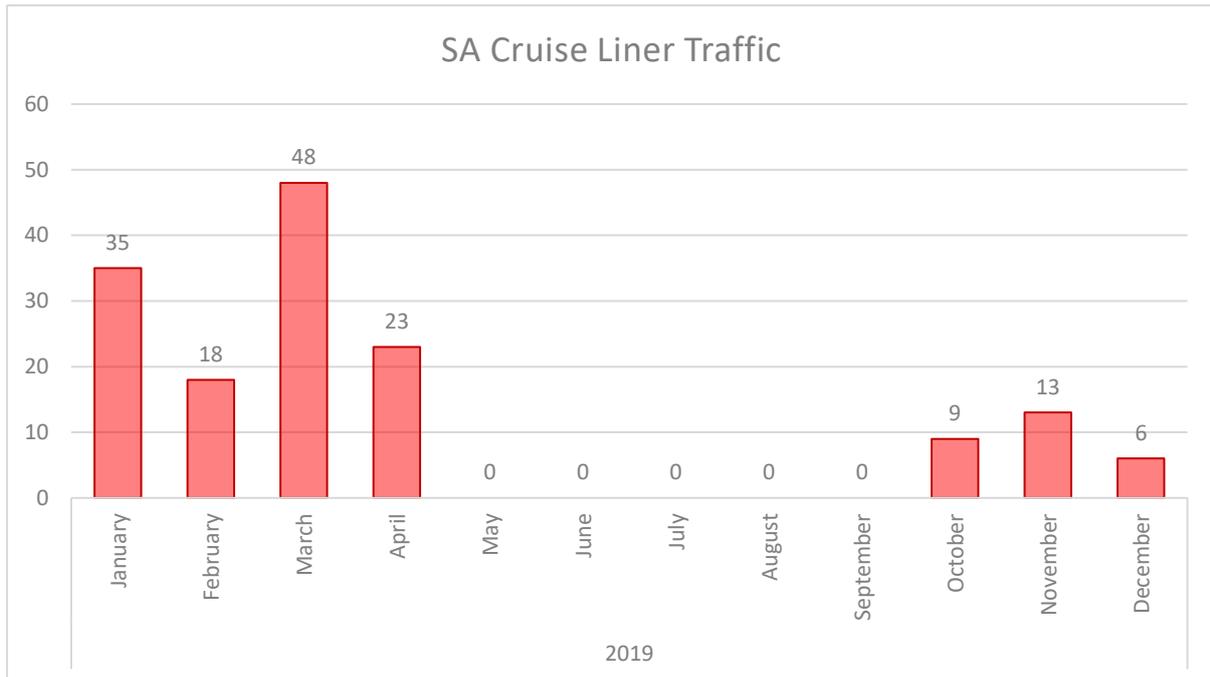


Figure 65: 2019 Cruise Liner Port Calls: South Africa<sup>15</sup>

## 16.2 Calculated Waste Volumes

As shown in Table 80, the calculated volume of Annex V (Garbage) produced by cruise-liner port of calls in South Africa for the 12-month period of January to December 2019 is approximately 2169 tonnes. This followed the IMO methodology with 152 international cruise liner port of calls in total including with 102 in the 1000 range, 11 in the 2000 range and 39 in the 3000 range.

Table 80: Calculated 2019 Volume of Annex V (Garbage) for International Cruise Liners, South Africa – Source Crew-Center

Vessels	Average number of people on board	Average days at sea prior to port call	Annual visits	Garbage generated (kg/person/day)	Garbage generated per ship visit (kg)	Annual garbage generated (kg)
Cruise Liners	3,000	3	39	3	27,000	1,053,000
Cruise Liners	2,000	3	11	3	18,000	198,000
Cruise Liners	1,000	3	102	3	9,000	918,000
<b>TOTAL</b>						<b>2,169,000</b>

## 16.3 Cruise Liner Traffic by International Port

International cruise-liner port calls are summarised in Figure 66 below. This shows six of South Africa's eight international ports, and highlights that that majority of port calls occur the Port of Cape Town (35%) and Durban (32%). Port Elizabeth was the third most visited (14%) and a small number of port

<sup>15</sup> <http://crew-center.com/cape-town-south-africa-cruise-ship-schedule-2019>

calls occurred at Richards Bay (8%), East London (6%) and Mossel Bay (5%). There were no recorded port calls by cruise liners at the ports of Saldanha and Ngqura.

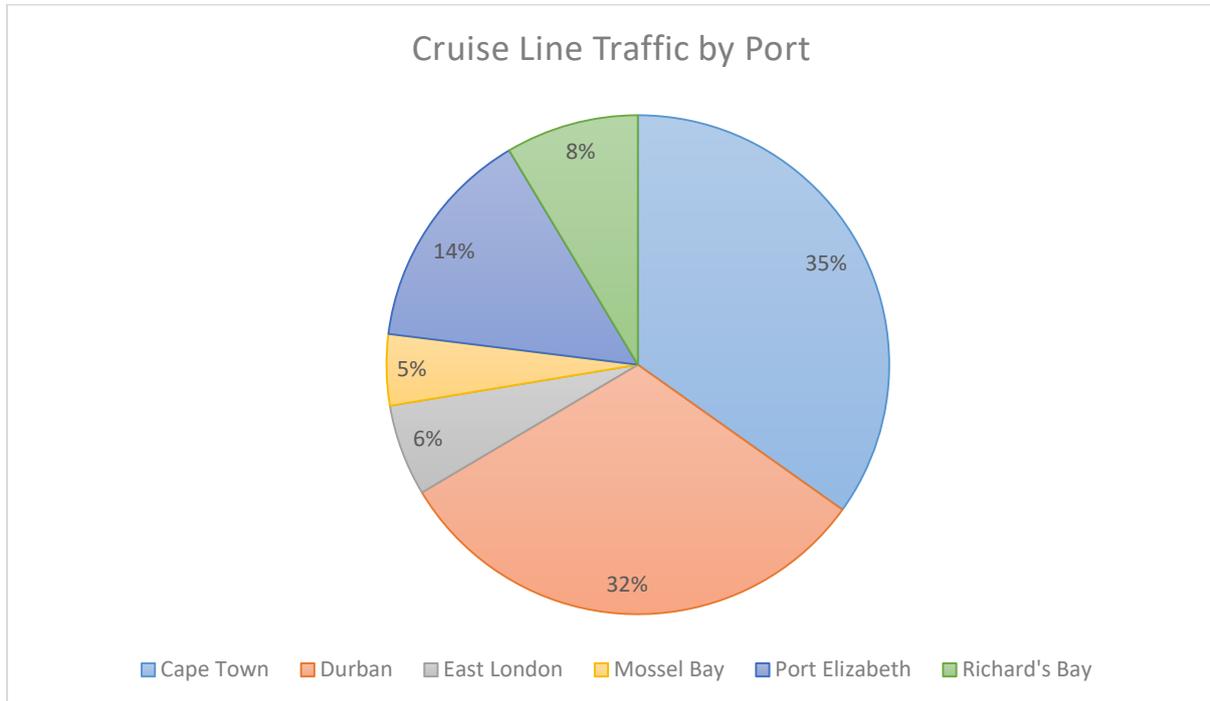


Figure 66: 2019 Cruise Liner Traffic by Port: South Africa (Source Crew-Center).

## 16.4 Key findings

IMO calculations for garbage (Annex V) estimate that international cruise liners theoretically produced 2,169 tonnes in South African waters, which is almost double the amount of garbage produced commercial shipping (1,082 tonnes in 2018/2019).

Little information was available in South Africa about the management of international cruise-liner waste as a specific shipping component, with Transnet and the Port Authorities having little knowledge and shipping stakeholders involved with cruise liners being inactive during the field visits.

Management of cruise-liner services including waste management appears to be conducted separately to other commercial shipping, but little information was able to be obtained on how it is incorporated with Port Reception facilities for waste.

With recent serious prosecutions having been recorded against international cruise liners and the very large volumes of waste they can potentially produce in South African waters, there is an urgent need to incorporate international cruise-liner waste management into an integrated chain of custody as has been proposed for commercial shipping.

## 17 Conclusion and Recommendations

### 17.1 Summary of port waste reception facility assessments

The summary of all assessments for port waste reception facilities at South Africa’s eight commercial ports are detailed below.

Table 81: Summary of PRF Assessments: All Commercial Ports

Commercial Port	Oily Wastes	NLS	Sewage	Garbage	WMS
Port of Durban	Satisfactory	Less than satisfactory	Satisfactory	Fully meets requirements	Satisfactory
Port of Richards Bay	Satisfactory	Satisfactory	Less than satisfactory	Satisfactory	Satisfactory
Port of Cape Town	Satisfactory	Less than satisfactory	Satisfactory	Fully meets requirements	Satisfactory
Port of Saldanha	Satisfactory	Fully meets requirements	Less than satisfactory	Fully meets requirements	Satisfactory
Port of Ngqura	Satisfactory	Less than satisfactory	Satisfactory	Less than satisfactory	Less than satisfactory
Port of Port Elizabeth	Less than satisfactory	Less than satisfactory	Less than satisfactory	Fully meets requirements	Satisfactory
Port of East London	Less than satisfactory	Less than satisfactory	Less than satisfactory	Less than satisfactory	Less than satisfactory
Port of Mossel Bay	Satisfactory	Fully meets requirements	Less than satisfactory	Less than satisfactory	Less than satisfactory

The assessment of the port waste reception facilities in South Africa reveals great variation among the ports studied. Significant improvements can be made through a more deliberate alignment of port waste reception facilities with full MARPOL requirements.

For Garbage (Annex V), the four major ports all meet MARPOL requirements fully, with a comprehensive quantifying, tracking and chain-of-custody system that should be emulated for all other MARPOL wastes. From the information gathered, it appears that four other ports discourage or refuse to receive Annex V wastes. The limitation in facilities designated to receive Annex V (H:H designated landfills) was a significant factor.

As shown in Annex V below, it is estimated that in total South African ports receive approximately 70% of the amount of waste that the IMO methodology predicts but this varies from 0% at some ports and up to 240% at the Port of Saldanha.

The IMO estimates are based on MarineTraffic data which does not include cruise liners, international shipping vessels, naval vessels, special craft and illegal vessels. Therefore, it can be argued that the actual quantity captured would be closer to 50% of Annex V generated by international shipping in South African waters.

Table 82: Annex V Generation Estimate vs Actual Quantity discharged for Commercial Shipping

	Cape town	Durban	East London	Mossel Bay	Ngqura	Port Elizabeth	Richards Bay	Saldanha	TOTAL
Actual (kgs)	54440	220600	0*	0**	0*	36000	232000	216000	759040
Estimate (kgs)	154200	375300	26850	11,100	86,700	75,450	263,100	90000	1082700
Difference (kgs)	-99760	-154700	-26850	-11100	-86700	-39450	-31100	126000	
% per port <sup>1</sup>	35%	59%	0%	0%	0%	48%	88%	240%	
% of total <sup>2</sup>	14%	35%	2.50%	1.03%	8%	7%	24%	8%	
% Captured <sup>3</sup>	5%	20%	0%	0%	0%	3%	21%	20%	<b>70%</b>

Note: \*No Data Provided \*\*Mossel Bay does not permit galley waste to be offloaded 1. Port Actual/Port Estimate 2.Port Estimate/Total Estimate 3. Port Actual/Total Estimate. Period 15 October 18- 14 October 19 source: marinetraffic.com

For oily waste (Annex I), it was difficult to assess how many of the sub-categories are serviced at each port due to a lack of tracking conducted for this waste stream. However, private collection services were provided in six ports with only two receiving small or minor amounts. There are dedicated treatment systems for oily waste in South Africa.

For sewage (Annex IV), there was very little awareness at ports on whether services are provided, and information was difficult to collect, resulting in an assessment of only three ports providing services through private contractors and five ports assessed as less than satisfactory. The audit team was unable to determine the fate of ship sewage received.

For NLS (Annex II), there was a lack of information on which ports actually have chemical tankers making port calls. In the absence of this information, ports with major ‘tanker traffic’ were assumed to receive chemical tankers and were assessed accordingly. The lack of information resulted in no ports being found to provide acceptable port waste reception facilities for NLS, although two ports did ‘fully meet requirements’ as they were found to receive no chemical tankers.

## 17.2 Key findings

Estimates are that only 50 % of all Garbage (Annex V) generated from all International Commercial Vessels is disposed of in South Africa with the remainder disposed of 'elsewhere'. The estimates of landed waste are around 70% for those ports visited by APWC.

Regulatory systems need strengthening to move from tracking only 'galley waste' (Annex V) to verify shipping 'does the right thing' for all Marpol Waste Types.

IMO GISIS system is documenting South Africa but is not meeting all MARPOL obligations for all SGW generated in the South African EEZ. This could contribute to waste dumping.

South Africa depends on other unknown port states to manage some SGW generated in South African waters with no agreements in place.

Infrastructure for SGW (Annex V) exists in South Africa (landfills) for some ports but is lacking for more remote port locations and needs to be expanded.

Direct waste costs are a disincentive for waste discharge at some International ports, while remote ports discourage or refuse to accept ship-generated waste.

Better auditing of all ship-generated waste types from all sources is needed to effectively plan for full Port Waste Reception Facility establishment.

Waste management from domestic shipping (fishing, touristic) would be significant but is undocumented.

## 17.3 Key challenges

Infrastructure development for provision of full range of port waste reception facilities especially remoter ports.

Development of monitoring to show cause and effect or improvement from baseline to improve ship waste management.

Resources and expertise to undertake full ship waste regulatory and audit actions for international and domestic shipping.

Resources to enable alignment of port recording and tracking system to be extended from 'galley waste' (Annex V) to all Marpol Waste types.

Resources to develop, document and quantify ship-generated waste volumes, management and impacts from the significant domestic shipping sector (especially fisheries).

Incentivising disposal of ship-generated wastes that are currently withheld due to perceived higher charges (main ports) or lack of port waste reception facilities (remoter ports).

## 17.4 Recommendations

Each recommendation is discussed in detail below.

### 17.4.1 Universal tracking of MARPOL wastes and the creation of treatment/disposal options for 'remoter' ports

It is recommended that all MARPOL wastes received at international ports are tracked, recorded and quantified using the same chain-of-custody systems that are utilised for 'galley waste'. This includes updating the excellent data recording system already used by Transnet, which records data both at the individual port level as well as at the national level.

It should be considered whether a 'domestic shipping' version could also be used to track waste streams from that sector, including garbage, oily waste and sewage but potentially also the various fishing waste streams that could assist with fishing ghost gear.

### 17.4.2 Alignment of South African waste reception norms with MARPOL categories

It is recommended that the South African ports system effectively mirrors the MARPOL system, so that 'galley waste' is recognised as Annex V and sewage, oily waste, noxious liquid substances and other categories are recorded, tracked and monitored under the MARPOL designations.

This would avoid the confusion encountered in some ports on the definitions of 'dry waste' and 'galley waste'. It would also ensure ports officers are clear on all the MARPOL categories and foster a well-developed chain of custody so that the management, fate and quantification of each MARPOL Annex is recorded.

This will assist in being able to accurately understand how South African ports are performing against MARPOL and will assist in creating infrastructure and private sector arrangements to ensure South Africa can move towards providing full port waste reception facilities.

When this is matched with ship waste audits and ship checks on waste logbooks, it will also allow South Africa to verify if all waste expected is accounted for.

### 17.4.3 Disincentives for disposal of ship-generated waste removed

Disincentives for disposing of ship-generated waste from international vessels can both be a breach of MARPOL obligations and can also result in ships potentially unlawfully disposing of waste – both of which are problematic.

Two forms of disincentives were observed in South Africa. The first occurs due to extra waste charges being levied at some ports (such as Cape Town, Durban and Saldanha) if a ship requires more than 4 m<sup>3</sup> (2 x 2 m<sup>3</sup> skips) to be disposed of per day. Interviews with ship crew and captains at Durban and Cape Town indicate they have more affordable options and consequently withhold their waste. Conversely, Saldanha receives much more waste than expected therefore it is not as great a disincentive for ships visiting that port.

This can potentially be addressed through developing indirect charges for ship wastes similar to approaches adopted by the European Union. As an incentive for ships to deliver their waste on shore, ships pay a mandatory fee to the port, regardless of whether they actually use the waste facilities provided (an indirect fee). It covers oily waste, garbage and usually also sewage. Where other waste-related costs arise (NLS, ozone, etc.), these are covered by a direct fee, based on the quantity and type of waste delivered.

The second disincentive is when ports discourage or refuse to accept waste (Mossel Bay, Richards Bay), which has been recorded by the IMO port reception facilities capability register. It should be recognised that South Africa has both an obligation (under MARPOL) and a capability (for solid waste) to dispose of certain types of SGW (some Annex I and Annex V). But ports such as Richards Bay and Mossel Bay refuse as a result of the large distance to designated hazardous waste landfills.

However, as the main concern with landing Annex V or garbage/galley waste is due to the quarantine risk, this can be managed even in remote ports through fumigation and/or incineration, which are common practices throughout the world and can be appropriately sized for smaller ports. A dedicated cell area could be provided if there are small local landfills.

The risk that vessels may pollute in South African waters by holding onto ship-generated waste may also increase because adequate waste disposal services are unavailable or due to lack of storage capability, inconvenience and cost. Addressing the two disincentives to landing ship-generated wastes can also be used to further develop shipping service industries that both assist international shipping, can be used by domestic shipping (sewage and oily wastes), create service industry jobs and assist in the reduction of pollution by minimising dumping events through provision of a suitable outlet for lawful disposal.

To further develop a ship-generated waste service-level industry, it is recommended that the South African government, in conjunction with relevant stakeholders, work closely with the private sector to meet South Africa's MARPOL obligations for oily wastes, sewage and garbage.

As garbage generated on board domestic vessels (such as the more than 1,000 domestic fishing vessels) is not classified as quarantine waste, it is recommended that provisions are made to incorporate this into the relevant local government solid waste management system. This would include provision of proper waste receptacles to ensure waste is captured and disposed of to the appropriate solid waste landfills along with other residential and commercial waste.

#### 17.4.4 Cruise-liner waste management is incorporated in PRF chain of custody

With cruise-liner waste potentially making up twice the volume of other commercial shipping waste and serious offences having been recently committed by major international cruise liners, there is a need to fully track, manage and record it consistently with other commercial shipping waste.

Improvements to be directed on all international shipping (including cruise liners) have already been recommended in section 17.4.1 and 17.4.2 above.

#### 17.4.5 Quantification of domestic shipping waste is formalised

With more than 100 domestic fishing vessels and a multitude of other craft including cruise liners, port vessels, pleasure craft and domestic freight, the potential quantity of domestic ship-generated waste from such vessels is high and includes garbage, oily waste, sewage and fishing gear. This is not captured under any IMO reporting and instead falls to the government to develop regulation and management approaches.

It is therefore recommended a project be developed that monitors the management of domestic ship waste, including approaches to quantify the amounts of the different critical streams. This 'baseline' can then be used to record progress in the level of domestic shipping waste that is generated, how it is managed and what areas are priorities for management to reduce any leakage to the environment.

#### 17.4.6 Improve data collection for shipping waste in South African waters through targeted sector waste audits

IMO waste generation data for international shipping is based on the number of port calls made by international shipping vessels, the numbers of passengers on board and waste generation per person. This is the general approach used by all port reception waste facility audits, as the resources and time required to measure ship-generated wastes directly would be considerable.

Given that established methodology is dated (1990s) and covers only international port-of-call vessels, it is recommended that South Africa improve this scenario by ensuring data collected and methodologies used to extrapolate waste quantities and characteristics are revisited and amended. This should include conducting a quantification and characterisation (weight and volume) study on SGW for a range of port-of-call vessels to amend the current IMO approaches. This should also be conducted on those vessels which operate in the EEZ but do not call to port (for example, international fishing vessels). A similar process is also needed for domestic vessels.

This also needs to include methods of recording the total number of ships days (at port/moorings or moving) for both international and domestic vessels. For fishing vessels, this could be based on known effort level.

#### 17.4.7 Catchment management plans and mechanisms to prevent, arrest and collect land-based waste inputs to ports require planning

The episodic mass infiltration events caused by the confluence of poor land-based waste management practices and heavy rains need to be addressed, not only to stop ports being out of operation for several days with the enormous costs in clean-up and lost productivity that ensue, but also due to the mass leakage of plastic and other land-based wastes this represents.

It is therefore recommended that catchment management plans and mechanisms to prevent, arrest and collect land-based waste inputs to ports are planned for to prevent the port inundation and the loss of land-based plastics and wastes.

#### 17.4.8 Engage private sector and civil society communicates through education, awareness and resources on shipping waste issues

It is recommended that the private sector is further developed to expand and integrate operations in collecting and treating the full volume and range of ship-generated waste, and that this service is applied to both international and domestic vessels. Better business models should be developed for oily and sewage wastes on a service model supported by government systems for shipping waste.

NGOs' capabilities to act as environmental advocates should be recognised and leveraged. There is a great opportunity for outreach groups to target port users, such as domestic fishermen (especially at the artisanal scale), to conduct awareness and waste management training and integrate skill sets. In addition, it is also recommended for civil society to have the ability to report pollution activities.

On-going engagement with NGOs, domestic and international and community-based organisations is required in terms of awareness and education for visiting international crew, domestic fishing and recreational boat users, as well as awareness of the public on the impact of any waste on the marine environment.

## 18 Conclusions

Given neither SGW from international nor from domestic vessels is directly measured, the focus of this report has been to identify which vessel types have the greatest potential to produce ship-based sources of marine pollution, including garbage and waste plastic.

The review found that despite clear obligations under MARPOL, there is a mixed ability to receive each of the main annex waste types. For Garbage (Annex V), the capability for major ports is well developed, but for remoter ports this is poorly serviced due to a lack of disposal or treatment options and has resulted in a number of complaints by international ships that have sought to discharge waste and have been refused. In addition, it was found that the use of the term 'galley waste' and 'dry waste' by Transnet instead of using standard the IMO Annex V term of 'garbage' complicates waste disposal for vessels at South African ports.

General estimates are that approximately 50% of the Annex V waste generated by international commercial shipping is actually landed in South Africa, with container ships in particular withholding significant amounts of waste for disposal in other international ports.

The main reason appears to be the extra cost incurred when more than two skip bins of waste are disposed of per ship per day for ports that accept Annex V waste. This could be addressed through adoption of a system of indirect fees similar to those employed by European Union.

For cruise liners, there seems to be little awareness of how waste is managed as a separate shipping sector. It appears to be dominated by the private sector with little knowledge, recording or systems applied by Transnet, the Ports Authority or other regulators. This should be improved, given IMO methods show cruise liners in South Africa potentially generate almost twice as much garbage (Annex V) as other commercial shipping. However, it is worth noting anecdotal evidence highlights domestic cruise liners conduct good waste management practices.

For domestic shipping, which is a mixture of large and small fishing vessels, and coastal transports, the audit found anecdotally that there appears for the most part to be good self-management of waste practices but more deliberate assessment and monitoring is required to determine the effectiveness of waste management and to improve in areas where problems are found.

For illegal fishing, anecdotal information suggests up to 500 illegal vessels operate in South African waters per year, but insufficient data was available on the size and types of fishing vessels and the number of days on water. They could, however, be significant sources of both garbage (Annex V) and ghost gear and more work is needed to quantify the impacts.

Annex V wastes are disposed of through deep burial in designated hazardous waste landfills in South Africa. No fumigation was observed within the boundaries of the international ports, which should be investigated as this is a minimum standard requirement elsewhere in the world.

No disinfection of Annex V wastes was observed at the point of collection by compactor truck or at the discharge point at the hazardous waste landfill, though APWC was advised lime is meant to be applied. There is a risk here from serious diseases such as African swine fever and such approaches would not be accepted in jurisdictions such as Australia.

The large distances in South Africa and limited hazardous waste landfills result in a long transport chain, with the Port of Saldanha, for example, transporting waste approximately 120 kilometres to Vissershok landfill in Cape Town.

More remote ports have no lawful options, with the distance to landfills being extreme. Consideration should be given to the treatment options used by other ports around the world, such as fumigation or high-temperature incineration, which is common in the Pacific.

The ability to assess the management of Oily Waste (Annex I), Sewage (Annex IV) and NLS (Annex II) was hampered due to the lack of any formal recording systems for ships requiring port reception waste facility services for such wastes, information on what was received by shipping agents and the fate of these wastes.

Information was better yet still fragmented for oily waste, with no record-keeping by port authorities. Records for sewage and NLS were almost non-existent, with little information on treatment capacity in relation to international requirements, and no scrutiny from port authorities and related entities.

Port authorities, Transnet and others need to focus on Annexes I, II and IV with the same recoding and tracking system that is applied to Annex V.



SGW from domestic shipping (1,000-plus small fishing vessels) is not currently integrated within the wider waste management strategy of any of the responsible parties (ports, city councils and provincial authorities). However, there is potential for this to be included under the broader umbrella of waste improvement.

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## Appendix A: Agent survey questions

### Agent 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 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 port?

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## Appendix B: MPEC Questionnaire for adequacy of port waste reception facilities<sup>16</sup>

### Contents

SECTION A	ASSESSMENT DETAILS
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SECTION E	ASSESSMENT OF ADEQUACY OF SERVICE
SECTION F	QUESTIONS FOR SHIPPING AGENTS

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<sup>16</sup> Derived from RESOLUTION MEPC.83(44), adopted on 13 March 2000: Guidelines for Ensuring the Adequacy of Port Waste Reception Facilities

Section A Assessment details

Auditor	Organisation & Address	Contact Details	Date
		Phone: Fax:	
Name of Port and Location			
Name and Contact Details of Port Representatives			
	Name: Position: Organisation: Address: Telephone/Fax: E-mail:		
	Name: Position: Organisation: Address: Telephone/Fax: E-mail:		
	Name: Position: Organisation: Address: Telephone/Fax: E-mail:		

Section B Summary of waste reception facilities provided

Type of waste	Can Waste be Received (Y or N)	Type of Reception Facility (Fixed, Road Tanker or Barge)	Any Limitations in Capacity (m <sup>3</sup> )	Service Provider (Port, Private Contractor, State Authority or Other) Indicate the number of service providers
Oily <sup>8</sup>				
Oily tank washings				
Dirty ballast water				
Oily bilge water				
Oil Sludges				
Used lubricating oil				
Noxious Liquid Substances <sup>9</sup>				
Category A				
Category B				
Category C				
Category D				
Sewage				
Garbage <sup>10</sup>				
Category 1				
Category 2				
Category 3				
Category 4				
Category 5				
Quarantine Wastes				

Section C Demand for waste reception facilities

Ship Type*	No of ship visits during the period of review	Average Range of dead weight (tonnes)	Average No. of Persons on Board	Oily Wastes	Number of Requests for Waste Collection			
					Noxious Liquid Substances	Sewage	Garbage	Quarantine Wastes
Oil Tankers								
Crude oil tankers								
Combination carriers*								
Chemical Tankers								
General Cargo								
Container Carriers								
Bulk Carriers								
Passenger ships								
Livestock Carriers								
Fishing Vessels								
Recreational Crafts								
Other								

\*The ship types marked with an asterisk (\*) are defined in the Annexes to MARPOL 73/78. The other types of ships have been indicatively inserted as their operations may influence the reception facilities required.

Section D 1 Oily wastes

Question	Yes	No
<p>1 How are the oily wastes disposed of? (Please give details, on separate sheet, if available)</p> <p style="text-align: right;">separation of oil and water then recycling land disposal recycled incineration other (specify)</p>		
<p>2 Are there any restrictions on receipt or collection of oily wastes by service providers? (Please give details if available)</p> <p style="text-align: right;">Minimum quantity Maximum quantity Discharge rate (m<sup>3</sup> /hour) Vessel type Vehicle Access to Berth Other (specify)</p>		
<p>4 Are oily waste reception facilities available–</p> <p style="text-align: right;">24 hours a day, 7 days per week 24 hours a day, 5 days per week Business hours only, 7 days per week Business hours only, 5 days per week</p>		
<p>5 Is prior notice for receipt of oily wastes required –</p> <p style="text-align: right;">0 hours 12 hours 24 hours 48 hours</p>		
<p>6 .1 Is the waste receipt service available:</p> <p style="text-align: right;">At no cost at a cost incorporated into standing port use charge at a cost charged in addition to other services</p> <p>.2 Is the cost:</p> <p style="text-align: right;">reasonable in terms of service a disincentive other (specify)</p>		
<p>7 Is a waste collection service available:</p> <p style="text-align: right;">At all berths At most berths At only one berth to vessels anchored within the port To vessels anchored outside the port Other (specify)</p>		
<p>Comments:</p>		

Based on the above, please provide an assessment of the provision of waste reception facilities:

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

Section D 2 Noxious Liquid Substances (NLS)

Question	Yes	No
<p>1 Where is the NLS disposed of? (Please give details if available)</p> <p style="padding-left: 40px;">Directly from the ship to a mobile facility</p> <p style="padding-left: 40px;">Ships to a holding tanks prior to being pumped out</p> <p style="padding-left: 40px;">Other (specify)</p>		
<p>2 Are there any restrictions on receipt or collection of NLS wastes by service providers? (Please give details if available)</p> <p style="padding-left: 40px;">Minimum quantity</p> <p style="padding-left: 40px;">Maximum quantity</p> <p style="padding-left: 40px;">Discharge rate (m<sup>3</sup> /hour)</p> <p style="padding-left: 40px;">Vessel type</p> <p style="padding-left: 40px;">Vehicle Access to Berth</p>		
<p>3 Are NLS reception facilities available -</p> <p style="padding-left: 40px;">24 hours a day, 7 days per week</p> <p style="padding-left: 40px;">24 hours a day, 5 days per week</p> <p style="padding-left: 40px;">Business hours only, 7 days per week</p> <p style="padding-left: 40px;">Business hours only, 5 days per week</p> <p style="padding-left: 40px;">Other (specify)</p>		
<p>4 Is prior notice for receipt of NLS required -</p> <p style="padding-left: 40px;">0 hours</p> <p style="padding-left: 40px;">12 hours</p> <p style="padding-left: 40px;">24 hours</p> <p style="padding-left: 40px;">48 hours</p>		
<p>5 Is the waste receipt service available:</p> <p style="padding-left: 40px;">at no cost</p> <p style="padding-left: 40px;">at a cost incorporated into standing port use charge</p> <p style="padding-left: 40px;">at a cost charged in addition to other services</p>		
<p>7 Is a waste collection service available:</p> <p style="padding-left: 40px;">At all berths</p> <p style="padding-left: 40px;">at most berths</p> <p style="padding-left: 40px;">At only one berth</p> <p style="padding-left: 40px;">To vessels anchored within the port</p> <p style="padding-left: 40px;">To vessels anchored outside the port</p> <p style="padding-left: 40px;">Other (specify)</p>		
<p>Comments:</p>		

Based on the above, please provide an assessment of the provision of waste reception facilities:

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

Section D 3 Sewage

Question	Yes	No
<p>1 Where is the sewage disposed of? (Please give details if available)</p> <p style="text-align: center;">Directly to a reticulated sewerage system            Directly to a mobile facility            Ships to holding tanks then pumped to a mobile facility            Ships to on-site treatment facility to sewerage system            Other (specify)</p>		
<p>2 Are there any restrictions on receipt or collection of sewage wastes by service providers? (Please give details if available)</p> <p style="text-align: center;">Minimum quantity            Maximum quantity            Discharge rate (m<sup>3</sup>/hour)            Vessel type            Vehicle Access to Berth</p>		
<p>3 Are sewage reception facilities available -</p> <p style="text-align: center;">24 hours a day, 7 days per week            24 hours a day, 5 days per week            Business hours only, 7 days per week            Business hours only, 5 days per week            Other (specify)</p>		
<p>4 Is prior notice for receipt of sewage required -</p> <p style="text-align: center;">0 hours            12 hours            24 hours            48 hours</p>		
<p>5 Is the waste receipt service available:</p> <p style="text-align: center;">At no cost            At a cost incorporated into standing port use charge            At a cost charged in addition to other services</p>		
<p>7 Is a waste collection service available to:</p> <p style="text-align: center;">At all berths            at most berths            At only one berth            Vessels anchored within the port            Vessels anchored outside the port</p>		
<p>Comments:</p>		

Based on the above, please provide an assessment of the provision of waste reception facilities:

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

Section D 4 Garbage Disposal – On Shore

Question	Yes	No
<p>1 Where is the garbage disposed of? (Please give details if available)</p> <p style="text-align: center;">Local Government dump/landfill Private dump/landfill Transfer Station Materials Recycling Facility Don't know</p>		
<p>2 Where are quarantine wastes disposed of? (Please give details if available)</p> <p style="text-align: center;">incinerator sterilisation deep burial normal landfill</p>		
Garbage Disposal – Ship to Shore		
<p>3 Are there any restrictions on receipt or collection of garbage wastes? (Please give details if available)</p> <p style="text-align: center;">Minimum quantity Maximum quantity Vessel type Vehicle Access to Berths</p>		
<p>4 Are garbage waste reception facilities available-</p> <p style="text-align: center;">24 hours a day, 7 days per week 24 hours a day, 5 days per week Business hours only, 7 days per week Business hours only, 5 days per week</p>		
<p>5 Is prior notice for receipt of waste required -</p> <p style="text-align: center;">0 hours 12 hours 24 hours 48 hours</p>		
<p>6 Is the waste receipt service available:</p> <p style="text-align: center;">at no cost at a cost incorporated into standing port use charge at a cost charged in addition to other services</p>		
<p>7 Is a waste collection service available:</p> <p style="text-align: center;">at all berths at most berths at only one berth to vessels anchored within the port to vessels anchored outside the port</p>		
Comments:		

Based on the above, please provide an assessment of the provision of waste reception facilities:

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

Section D 5 Waste Management System

Question	Yes	No
1 Has a waste management plan (WMP) been developed and implemented for ship wastes?		
2 Is the waste management plan part of an overall environmental management system (EMS) for the port?		
3 Are marinas and fishing harbours covered by the port EMS or required to develop their own EMS?		
4 Does the WMP provide a brief summary of the types of wastes received and the collection and disposal facilities/services?		
5 Does the WMP address and provide management objectives for:		
6 Operations: <ul style="list-style-type: none"> <li>Facility Management</li> <li>Maintenance</li> <li>Signs</li> <li>Infrastructure</li> <li>Contractual arrangements</li> <li>Emergency Response</li> <li>Seasonal Variations</li> <li>Training and Education</li> <li>Delegation of Responsibilities and Accountability</li> <li>Compliance with regulatory conditions, including auditing</li> </ul>		
7 Technical Standards: <ul style="list-style-type: none"> <li>Facility Requirements Incorporation of new technologies</li> <li>Cleaning requirements</li> <li>Maintenance of equipment to technical standards</li> </ul>		
8 Environmental Considerations: <ul style="list-style-type: none"> <li>Prevention of pollution to surface waters</li> <li>Noise Emissions Visual Impacts Odour Emissions</li> <li>Special considerations due to surrounding environment (e.g. proximity to wetland or mangrove areas)</li> <li>Coastal processes (e.g. extreme tides)</li> </ul>		

<p>9 Plans for future expansion / upgrades:</p> <p style="text-align: right;">Oily Wastes Noxious Liquid Substances Sewage Garbage Recycling of wastes Quarantine wastes</p>		
<p>10 Are contact details held for all waste service providers?</p>		
<p>11 Are the service providers licensed/approved as required by legislation?</p>		
<p>12 Are a copy of the licences on file?</p>		
<p>13 Are a copy of the licences for the waste disposal facilities used by the service providers held on file?</p>		
<p>14 Have receipts for waste disposal been sighted / copies held on file?</p>		
<p>15 Are alternative waste service providers or disposal facilities available (e.g. spare drums, waste oil recyclers)?</p>		
<p>16 Is there a procedure for choosing waste disposal service providers (e.g. list of preferred contractors)?</p>		
<p>17 Are the details of back-up facilities available on file?</p>		
<p>18 Does the WMP include an emergency response plan?</p>		
<p>19 Is the plan adequate in that it addresses at least the following issues?</p> <p style="text-align: right;">Spillage of liquid Spillage of solids Leakage of gas fire or explosion Emergency contacts Other (specify)</p>		
<p>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? (Data sighted/copies attached)</p> <p style="text-align: right;">Oily wastes Noxious Liquid Substances Sewage Garbage Recycling of wastes Quarantine wastes</p>		
<p>21 Are there variations in the quantities of each waste stream received?</p> <p style="text-align: right;">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</p>		
<p>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</p>		

reductions) and assist in formulating future plans? (Graphs sighted)		
23 Is on-going consideration given to changes in demand for waste reception facilities?		
24 Do plans exist for future upgrades, extensions or reductions to the waste reception facilities?		
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?		
26 Are there provisions for audits against the WMP (at least within 2 years of implementation and thereafter every 3 years?)		
27 Is there provision for periodic review of the WMP?		
28 Are the relevant requirements of the MARPOL 73/78, UNCLOS and IMO generally adhered to by the users of the port?		
29 Is there information on the state and local regulations regarding (please list legislation if known):  <div style="text-align: right; padding-right: 20px;"> Waste management  Pollution of water  Pollution of air  Noise emissions  Discharges to sewer  Storage of dangerous goods  Local Government requirements </div>		
30 Is there information on waste minimisation hierarchy, i.e. avoid/reduce/ reuse/recycle/reprocess?		
31 Is an open and co-operative relationship maintained between the port authority and the relevant authorities and agents?		
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? (Give examples of consultation methods)		
33 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?		
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?		
35 Is clear and visible signage for waste reception facilities present and includes: <div style="text-align: right; padding-right: 20px;"> advice at initial vessel contact point of waste reception facilities:  direction to receptacle or disposal point location:  labelling of all receptacles and disposal points:  contact numbers: </div>		

emergency procedures: translation into other languages as required:		
36 Are there information sheets/ leaflets available for each waste reception facility?		
37 How is this information conveyed to ships?		

Comments:

Based on the above, please provide an assessment of the waste management systems:

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



Assessment of adequacy of service

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Organisation:	Representative Interviewed:	Contact Details Address: Phone: Fax:	Interview Date:
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In the view of the representative interviewed, what overall rating would be given for the waste reception service?

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

Please provide details of the good aspects of the waste reception services:

Please provide details of the deficiencies of the waste reception services:

Based on the above, please provide an assessment of the adequacy of waste reception service:

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

## Appendix C Estimates for ship-generated waste

METHODOLOGY QUESTIONNAIRE ELEMENTS (RAC-REMPEITC, 2018 page 33–35, 36, 37–38)

Derived from RESOLUTION MEPC.83(44), adopted on 13 March 2000: GUIDELINES FOR ENSURING THE ADEQUACY OF PORT WASTE RECEPTION FACILITIES

Contents

Section I	Calculations for MARPOL Annex I SGW Estimates
Section II	Calculations for MARPOL Annex V SGW Estimates
Section III	Calculations for International Fishing Vessels (non-port of call)

For Annex I types of wastes and residues, the estimation method is based on averaged amounts of wastes.

- For the wastes that are associated with the cargo spaces of tankers, these averaged amounts of wastes are expressed as a percentage of the tankers deadweight tonnage (DWT).
- For the sludge tank residues and oily bilge waters, which are related to the operation of the engines and therefore relevant to all motor propelled vessels, other reference values are used.
- The applicable values and references are displayed in the table below. It is also indicated to which type of ports and facilities PRF for the reception of such wastes must be provided.

Type of waste	Which ports	Averaged amount of wastes
Wash water	Crude oil loading ports involved in regional trade (<1200 nm)/ Oil product loading ports > 1000 tonnes/day	4-8% of tankers DWT
Liquid oil residues		0.2-1% of tankers DWT
Oily solids		0.01-0.1% of tankers DWT
Sludge tank residues	All ports and terminals which handle ships > 400 GT	2-3% of daily fuel consumption
Oily bilge waters and other residues	All ports	1-10 m <sup>3</sup> per ship

Tanker-related wastes and residues

For the assessment of the expected waste quantities per country, the typical DWT of oil tankers attending that country is analysed. This concerns both crude oil and oil product tankers. The averages of the percentages as indicated above are used to estimate the amounts of waste: 6%, 0.6% and 0.06% respectively.

The values are calculated in cubic metres, assuming an average density of 1 t/m<sup>3</sup> for all types of wastes.

Sludges

The amount of sludge is expressed as a percentage of the daily fuel consumption per ship. Stopford provides the daily fuel consumption for container ships, bulk carriers and tankers of different sizes based on their ship register for the year 2006. The minimum values apply respectively to a 0-499 TEU feeder, 10,000-20,000 DWT handysize bulk carrier and a 1,000-5,000 DWT small tanker. The maximum values apply to a 600–12,000 TEU VLBC, and capesize bulk carriers and VLCC tankers of over 200,000 DWT.

For cruise ships, generally accepted data values are about 150 tons per day up to 250 tons per day, for large cruise ships sailing full speed. For the mentioned ship types the minimum, maximum and average values are displayed in the table below. Also, the reference ship sizes are included, associated with the listed fuel consumptions.

Fuel consumption for different types and sizes of ships

Ship type		Reference ship size	Fuel consumption (t/day)
Container ship	Min	Feeder 0-499 TEU	15.7
	Average	Handy+ 1000-3000 TEU	65.4
	Max	VLBC 6,000-12,000 TEU	211.3
Bulk carrier	Min	Handy 10-20 kDWT	22.5
	Average	Handymax 40-60 kDWT	33.4
	Max	Capesize >200 kDWT	60.3
Tanker	Min	Small <5000 DWT	7.9
	Average	Handy/ Panamax 30-80 kDWT	37.8
	Max	VLCC >200 kDWT	85.7
Cruise	Average		150
	Max		250

Based on the numbers listed above, the fuel consumption per ship is estimated based on interpolation for all ships over 400 GT. For cruise ships, an average value of 150 t/day is applied for all ships. All ships of other types than the ones listed above are assumed to have a similar DWT – fuel consumption relationship as container ships.

Using the range of percentages as described above, (2–3% of the daily fuel consumption), the amounts of sludges (in tons) to be provided to PRF can be derived. These are calculated per port based on an average value of 2.5% and a fuel density of  $1 \text{ t/m}^3$ . The volumes are calculated for all ships that visited the considered ports in 2016, also if their GT is under 400 GT.

#### Oily bilge waters

Oily bilge waters are associated with all types of motor-propelled vessels, where ships over 400 GT are allowed to discharge these at sea. However, as per the requirements in Annex I, all ports have to provide facilities for the reception of oily bilge waters.

The amount of oily bilge waters to be discharged from the ship is expressed as a volume range indicating the average amount of bilge water to be discharged per ship, which is 1 to  $10 \text{ m}^3$  per ship,

based on the typical sizes of bilge water holding tanks. However, research shows<sup>17</sup> that for ships engaged in near-coastal voyages, the tank sizes are smaller, between 1 and 3 m<sup>3</sup>.

In order to estimate the amounts of oily bilge waters, the following volumes of wastewater generation per day are used as a function of the vessel's GT:

Estimated daily volumes of oily bilge water generation (ref: REMPEC, 2004)

Gross tonnage (GT)	Estimated daily volume of oily bilge water (l/day)
<400	75
400–3,000	375
3,000–5,000	1125
5,000–7,000	1875
7,000–10,000	3000
>10,000	5000

## Section II Calculations for MARPOL Annex V SGW Estimates

All ports and terminals have to provide facilities for the reception of garbage, under MARPOL Annex V. Formulae to estimate the amounts of waste retained onboard vessels are provided in Annex A of the ISO Standard 21070:2011 'ships and marine technology – Marine environment protection – Management and handling of shipboard garbage'. The general format of the formulae is as follows:

Where:

V is the volume of the relevant type of waste in dm<sup>3</sup>

d is the duration of the voyage in days (at least 30 days)

P is the number of persons onboard

The factors used in this study are taken from the study 'Assessment Of The Existing Situation And Needs Of Albania, Croatia And Slovenia Regarding Port Reception Facilities For Collecting Ship-Generated Garbage, Bilge Water And Oily Wastes - Activity 1: Collection And Treatment Of Solid And Liquid Wastes' (REMPEC, 2004).

These factors are based on the IMO 'Guidelines for the implementation of Annex V of MARPOL 73/78' and were adjusted based on surveys held with ship masters calling at the ports considered in the study. Factors are provided for different types of waste (domestic, maintenance and cargo related waste) and for different ship types (cargo ships, passenger ships and harbour craft).

For cargo-associated waste, the study provides values expressed as fractions of the amount of cargo received. Since these numbers are not available on a ship-by-ship basis for most ports, factors from Palabryk (2003), expressing the amount of waste per day, have been used instead.

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<sup>17</sup> REMPEC (2004), Assessment of The Existing Situation and Needs of Albania, Croatia And Slovenia Regarding Port Reception Facilities for Collecting Ship- Generated Garbage, Bilge Water and Oily Wastes - Activity 1: Collection and Treatment of Solid and Liquid Wastes

The used rates of waste generation per day for different types of waste (in kg) and ships are presented below:

Table 14 Annex V waste generation rates used

Tankers and all ships in the ship-type group ‘dry cargo’ are attributed to the group of cargo ships and passenger ships are all ships in the ship-type group ‘passenger’. All other ships are assumed to fall into the group of ‘harbour craft’, as these ships are typically non-cargo carrying or passenger ships.

The duration of the voyage is calculated for each voyage in the LLI data, based on the dates of departure in the port of origin and of arrival in the destination port. By using the voyage duration for the estimation of waste generation on board, it is implicitly assumed that the ships discharge their waste in each port of call. As such, the estimated values might give an underestimation for other cases.

The numbers of persons on board are defined for passenger ships, cargo ships and harbour craft, based on data from literature and online information on passenger ships. The used values for cargo and passenger ships are presented in the tables below. For ‘harbour craft’, it is assumed that the average crew consists of eight persons.

Waste type	Cargo ships	Passenger ships	Harbour craft
Domestic	2 per person/day	3 per person/day	1 per person/day
Maintenance	11 per day	11 per day	11 per day
Cargo associated – general cargo	8.2 per day		
Cargo associated – dry bulk	49.3 per day		

The waste generation factors provide the amount of waste in kilograms. An average density of 250 kg/m<sup>3</sup> is applied in order to convert these values to cubic metres.

### Section III Calculations for International Fishing Vessels

This was calculated based on:

- Average numbers of crew (eight for long-liners/pole-liners and 30 for purse-seiners/trawlers – FFA Report Estimate);
- The previously reported generation of 2 kilograms of garbage per person per day;
- Average trip period of (14 days for long-liners/pole-liners and 28 days for purse-seiners/trawlers from a recent FFA report); and
- Average number of trips per year for long liners/purse-seiners – derived from the FFA Report Estimate.



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