

CHAPTER 1

**Environment Bureau
Marine Department**

**Collection and removal of marine refuse
by the Marine Department**

**Audit Commission
Hong Kong
28 October 2020**

This audit review was carried out under a set of guidelines tabled in the Provisional Legislative Council by the Chairman of the Public Accounts Committee on 11 February 1998. The guidelines were agreed between the Public Accounts Committee and the Director of Audit and accepted by the Government of the Hong Kong Special Administrative Region.

Report No. 75 of the Director of Audit contains 10 Chapters which are available on our website at <https://www.aud.gov.hk>

Audit Commission
26th floor, Immigration Tower
7 Gloucester Road
Wan Chai
Hong Kong

Tel : (852) 2829 4210
Fax : (852) 2824 2087
E-mail : enquiry@aud.gov.hk

COLLECTION AND REMOVAL OF MARINE REFUSE BY THE MARINE DEPARTMENT

Contents

	Paragraph
EXECUTIVE SUMMARY	
PART 1: INTRODUCTION	1.1 – 1.16
Audit review	1.17 – 1.18
General response from the Government	1.19
Acknowledgement	1.20
PART 2: ADMINISTRATION OF MARINE REFUSE CLEANSING AND DISPOSAL CONTRACTS	2.1
Reporting of the quantity of marine refuse	2.2 – 2.6
Audit recommendations	2.7
Response from the Government	2.8
Reimbursement of disposal charges to the contractor	2.9 – 2.14
Audit recommendations	2.15
Response from the Government	2.16
Sub-contracting arrangement	2.17 – 2.20
Audit recommendations	2.21
Response from the Government	2.22

	Paragraph
Tendering of cleansing and disposal services	2.23 – 2.25
Audit recommendation	2.26
Response from the Government	2.27
PART 3: MONITORING OF MARINE REFUSE CLEANSING AND DISPOSAL SERVICES	3.1
Monitoring of the marine refuse cleansing work	3.2 – 3.18
Audit recommendations	3.19
Response from the Government	3.20
Monitoring of the management of marine refuse collection points	3.21 – 3.27
Audit recommendations	3.28
Response from the Government	3.29
PART 4: OTHER RELATED ISSUES	4.1
Enforcement against marine littering	4.2 – 4.8
Audit recommendations	4.9
Response from the Government	4.10
Dissemination of information on website	4.11 – 4.13
Audit recommendation	4.14
Response from the Government	4.15
New initiatives in tackling marine refuse	4.16 – 4.20
Audit recommendations	4.21
Response from the Government	4.22

Appendices	Page
A : Marine Department: Organisation chart (extract) (31 August 2020)	70
B : List of the 43 priority areas for floating refuse scavenging services	71 – 72
C : Illustration of level of cleanliness for open sea and typhoon shelters	73 – 74
D : Refuse disposal at landfills and refuse transfer stations by Vehicles 1 and 2 analysed by waste type (2012 to 2019)	75 – 76
E : Disposal of municipal solid waste at landfills and refuse transfer stations by the contractor analysed by location (2012 to 2019)	77
F : Acronyms and abbreviations	78

COLLECTION AND REMOVAL OF MARINE REFUSE BY THE MARINE DEPARTMENT

Executive Summary

1. The work of the Marine Department (MD) in tackling marine refuse includes: (a) collecting vessel-generated refuse and scavenging floating refuse in specified areas of Hong Kong waters through contractual services; (b) conducting publicity campaigns to keep the harbour clean; and (c) performing daily patrols in Hong Kong waters to inspect the cleanliness condition of various zones of Hong Kong waters and conducting enforcement against marine littering. In 2020-21, MD's estimated annual recurrent expenditure (excluding MD staff costs) on the work in tackling marine refuse was about \$102 million, of which \$95 million (93%) was related to the outsourcing of marine refuse cleansing and disposal services. The Audit Commission (Audit) has recently conducted a review to examine the collection and removal of marine refuse by MD with a view to identifying areas for improvement.

Administration of marine refuse cleansing and disposal contracts

2. Since July 2005, MD has fully outsourced the marine refuse cleansing and disposal services. MD's existing contract for marine refuse cleansing and disposal services covering the whole of Hong Kong waters is for a term of five years (October 2017 to September 2022) at an estimated contract expenditure of about \$447 million. The core services of the contract include scavenging of floating refuse, collection of domestic refuse from vessels, disposal of refuse collected and foreshore cleansing. In addition to the contract for the whole of Hong Kong waters, in 2018, MD awarded an additional contract for marine refuse cleansing and disposal services in Tai Po District for a term of two years (October 2018 to September 2020) at a sum of about \$9.5 million. Under the contract, the contractor, which was the same contractor of the contract for the whole of Hong Kong waters, deployed a foreshore cleansing team to perform cleansing work mainly, but not limited to the foreshore water areas of Tai Po District. A new contract (October 2020 to September 2022) was awarded to the same contractor at a sum of about \$10 million in late

Executive Summary

September 2020 (paras. 1.11 to 1.14). Audit examination revealed the following areas for improvement:

- (a) ***Need to ensure proper reporting of the quantity of marine refuse collected.***
The quantity of marine refuse collected is an important performance indicator of MD's work in tackling marine refuse as included in MD's Controlling Officer's Reports (CORs). It is also included in tender documents for bidders' reference and is one of the main factors for drawing up the list of priority areas for the floating refuse scavenging services. The statistics of the quantities (in tonnes converted from number of baskets/bags) of floating refuse and domestic refuse collected were provided by the contractor. MD made use of these statistics for reporting in CORs without verifying the accuracy. Audit found that from 2012 to 2019, there were significant discrepancies between the quantities of municipal solid waste disposed of by the contractor as per records of the Environmental Protection Department (EPD) and the quantities of marine refuse collected as reported by MD in CORs. Overall, the former represented only 19.9% (ranging from 16.9% in 2019 to 25% in 2014) of the latter. Moreover, the former might include other municipal solid waste in addition to marine refuse (paras. 2.2 and 2.4);

- (b) ***Need to clearly specify the arrangement for charges incurred in refuse disposal at refuse transfer stations.*** Disposal of marine refuse was free at landfills and subject to disposal charges at refuse transfer stations. Before January 2016, the contractor had transported most of the floating refuse and domestic refuse collected to the South East New Territories Landfill (in Tseung Kwan O) for disposal. In view of the cessation of the South East New Territories Landfill to receive municipal solid waste with effect from 6 January 2016, since 1 January 2016, the contractor had disposed of the bulk of marine refuse collected at refuse transfer stations with disposal charges reimbursed by MD. Audit noted that the reimbursement arrangement continued in the existing contract for the whole of Hong Kong waters. However, the tender documents only stated that the contractor should be responsible for refuse disposal at public landfills or other sites as arranged and provided by the contractor and approved by the Director of Marine, and did not mention that charges incurred in refuse disposal at refuse transfer stations would be borne by the Government. As such, when submitting tenders in May 2017, other potential tenderers might not have a complete picture of the reimbursement arrangement of the charges incurred at refuse transfer stations (paras. 2.10 and 2.11);

Executive Summary

- (c) ***Need to take measures to address the potential overpayment of reimbursement to the contractor.*** According to the provisions of the contract for Tai Po District (October 2018 to September 2020), no reimbursement of disposal charges would be arranged by MD for the contractor's conveyance and disposal of refuse collected. Under the contract for the whole of Hong Kong waters (October 2017 to September 2022) and the contract for Tai Po District (October 2018 to September 2020), the same vehicle (i.e. Vehicle 1) was used by the contractor for the transportation of marine refuse from the marine refuse collection points (MRCPs) to the disposal sites. Based on the transaction record slips (showing the in and out weights of a vehicle before and after waste disposal) issued to the driver of Vehicle 1 by the refuse transfer stations, it was not practicable to distinguish between the quantities of refuse collected under the contract for the whole of Hong Kong waters and the contract for Tai Po District. Therefore, since the commencement of the contract for Tai Po District in October 2018, the reimbursement of disposal charges charged by refuse transfer stations to the contractor had also covered the disposal charges incurred for such contract, which should have been borne by the contractor under the provisions of that contract (paras. 2.5 and 2.13);
- (d) ***Unauthorised sub-contracting arrangements.*** According to the tender documents of the existing contract for the whole of Hong Kong waters (October 2017 to September 2022), if any part of the tenderer's proposal was to be executed by sub-contractors, the tenderer should submit with its tender, among others, the information of proposed sub-contractors. According to the tender documents of the contract for Tai Po District (October 2018 to September 2020), the contractor should not sub-contract all or any part of the services except with the prior written approval of the Government. Without having submitted any sub-contracting proposal to MD for prior written approval, the contractor had not informed MD that the daily transportation of marine refuse under the two contracts had been sub-contracted to the same sub-contractor for the whole contract periods until March 2020 for the contract for the whole of Hong Kong waters (i.e. 29 months after the commencement of the sub-contracting arrangement) and August 2020 for the contract for Tai Po District (i.e. 22 months after the commencement of the sub-contracting arrangement and 2 months before the end of the contract) (paras. 2.17 to 2.19); and

Executive Summary

- (e) ***Need to enhance tender competition.*** The number of tenders received for the recent four tender exercises of the contract for the whole of Hong Kong waters had been on a decreasing trend from 2004 to 2017. On the other hand, there was a notable increase in the contract expenditure. Audit also noted that in August 2017, in approving the award of the marine refuse cleansing and disposal contract for the whole of Hong Kong waters, the Central Tender Board recommended that MD should consider adopting various measures (e.g. shortening the contract period) in future tenders to enhance tender competition (paras. 2.23 to 2.25).

Monitoring of marine refuse cleansing and disposal services

Monitoring of the marine refuse cleansing work

3. Under the contracts for the whole of Hong Kong waters (October 2017 to September 2022) and Tai Po District (October 2018 to September 2020), the contractor is required to, among others, ensure that each part of the service areas is clean and free from refuse, and maintain the cleanliness of the service areas at “Good” level between 8:00 a.m. and 6:00 p.m. For the contract for the whole of Hong Kong waters, if the level of cleanliness of any part of the Hong Kong waters falls below the “Good” level during the service hours, a “Good” level shall be re-established within 30 to 120 minutes, depending on the location of that particular area (paras. 3.3 and 3.5). Audit examination revealed the following areas for improvement:

- (a) ***Need to ensure that the required frequency of daily cleanliness patrols for each patrol area is met.*** According to MD’s guidelines, the whole of Hong Kong waters is divided into 12 patrol areas. There is a specific harbour cleanliness patrol route for each of the 12 patrol areas and each harbour cleanliness patrol route should be covered in MD’s daily cleanliness patrols at least once in a month. In 2019, in three patrol areas, namely Area 4 (Sai Kung), Area 8 (Lantau South) and Area 9 (Lantau West), the required frequency for conducting daily cleanliness patrols of at least once in a month could not be met. The numbers of months recording no daily cleanliness patrols ranged from 1 to 6 (paras. 3.7(a) and 3.8);
- (b) ***Need to take into account service requests received in selecting patrol areas.*** While there were a large number of service requests received from the public each year (ranging from 568 to 691 cases), MD’s guidelines only stated that the number of complaints received from the public should match

Executive Summary

with the frequency of patrol visits, but did not mention that the number of service requests received should also be taken into account in selecting patrol areas for conducting daily cleanliness patrols (paras. 3.10 and 3.11);

- (c) ***Need to step up monitoring of contractor's marine refuse cleansing work.*** Audit conducted four site inspections in June and July 2020, and noted that there was a need to step up the monitoring of contractor's marine refuse cleansing work. For example, the contract provides that if the level of cleanliness of any part of Hong Kong waters falls below the "Good" level during the service hours, a "Good" level shall be re-established within the specified time limit. However, Audit noted instances that the provision could not be met (para. 3.13); and
- (d) ***Pleasure vessels deployed to conduct marine refuse cleansing work.*** Prior to operating a vessel in Hong Kong waters, the owner of the vessel should apply to the Director of Marine for certification and licensing for the appropriate class and type specified in Schedule 1 to the Merchant Shipping (Local Vessels) (Certification and Licensing) Regulation (Cap. 548D). Each class of vessels is subject to a different set of safety standards and more stringent requirements are imposed on Classes I, II and III vessels as compared with Class IV vessels (i.e. pleasure vessels). During Audit's site inspections conducted in June and July 2020, Audit noted that the contractor deployed four Class IV vessels (i.e. pleasure vessels) for marine refuse cleansing work. As Class IV vessels should be used exclusively for pleasure purposes, deploying them for cleansing work may have contravened the legislation (paras. 3.16 and 3.17).

Monitoring of the management of MRCPs

4. ***Need to step up monitoring of the management of MRCPs.*** There are currently four MRCPs in Hong Kong. They are located in Cha Kwo Ling, Ap Lei Chau, Kowloon West and Tuen Mun, and managed by the contractor. Floating refuse and domestic refuse collected from boats and ships are transported to MRCPs for loading into temporary storage containers for subsequent conveyance to and disposal at disposal sites (para. 3.21). Audit's site inspections in July and August 2020 revealed the following areas for improvement:

- (a) there was no daily transportation of marine refuse from the MRCPs in Tuen Mun and Ap Lei Chau to disposal sites;

Executive Summary

- (b) the MRCP in Cha Kwo Ling was not in operation and might have been abandoned, and its lifting appliance for unloading marine refuse from the contractor's vessels was found to be out of order on 1 July 2020 and remained unrepaired up to 14 August 2020; and
- (c) the MRCP in Ap Lei Chau was not manned by any contractor's staff and its lifting appliance had been out of order since October 2017 (paras. 3.24 and 3.26).

Other related issues

Enforcement against marine littering

5. MD is one of the departments responsible for taking enforcement actions against marine littering. From 2015 to 2019, MD on average took enforcement actions on 15 marine littering cases each year (paras. 4.2 and 4.4). Audit examination revealed the following areas for improvement:

- (a) *Need to consider arranging more anti-marine littering operations by officers in plain clothes to take enforcement actions.* At the meetings of the then Inter-departmental Working Group on Clean Shorelines (now the Inter-departmental Working Group on Marine Environmental Management) held in May 2016 and January 2017, the Chairman (i.e. the Permanent Secretary for the Environment) invited MD to consider arranging officers to take enforcement actions in plain clothes in future enforcement operations with a view to increasing the deterrent effect. While the annual statistics on MD's enforcement against marine littering remained steady (ranging from 13 to 17 cases in the period from 2015 to 2019), of the 280 anti-marine littering operations conducted by MD in 2019, 270 (96%) were conducted during the daily cleanliness patrols by MD's officers wearing uniforms (paras. 4.5 and 4.6); and
- (b) *Need to take into consideration the source activities of marine refuse in planning enforcement operations.* According to the Marine Refuse Study commissioned by the Environmental Protection Department in March 2013 and released in April 2015, shoreline and recreational activities and ocean/waterway activities are the two major source activities of marine refuse and contributed about 89% of marine refuse in Hong Kong. In view of the high percentage of marine refuse resulting from shorelines and

Executive Summary

recreational activities, in planning its enforcement operations, MD should take into consideration the source activities of marine refuse (paras. 4.7 and 4.8).

New initiatives in tackling marine refuse

6. ***Need to expedite completion of the trial run of floating booms.*** Floating booms are floating barriers designed to contain and control pollutants, such as debris, trash and plastic rubbish, from spreading in the ocean, rivers and streams. In May 2019, MD informed the Legislative Council that a trial run of floating booms was planned to commence in 2019-20, which would tackle the issue of marine refuse by intercepting floating refuse, in waters causing no obstruction to vessel traffic. However, up to August 2020, MD had not yet commenced the trial run (paras. 4.16 and 4.17).

Audit recommendations

7. **Audit recommendations are made in the respective sections of this Audit Report. Only the key ones are highlighted in this Executive Summary. Audit has *recommended* that the Director of Marine should:**

Administration of marine refuse cleansing and disposal contracts

- (a) **investigate the significant discrepancies between the quantities of municipal solid waste disposed of by the contractor as per EPD records and the quantities of marine refuse collected as reported by MD in CORs in the period from 2012 to 2019, and based on the investigation results, take measures to ensure the proper reporting of the quantity of marine refuse collected (para. 2.7);**
- (b) **clearly specify the arrangement for charges incurred in refuse disposal at refuse transfer stations for tender exercises in future and take appropriate follow-up actions with the contractor so that Vehicle 1 will not be used for purposes other than transporting marine refuse (para. 2.15(a) and (c));**

Executive Summary

- (c) **strengthen the control on sub-contracting arrangement and ensure that all sub-contracting arrangements are properly approved in future (para. 2.21);**
- (d) **explore measures to enhance the tender competition of the marine refuse cleansing and disposal services in future, taking into account the comments of the Central Tender Board (para. 2.26);**

Monitoring of marine refuse cleansing and disposal services

- (e) **take measures to ensure that the required frequency of daily cleanliness patrols for each patrol area is met and take into account the number of service requests received in selecting patrol areas for conducting daily cleanliness patrols (para. 3.19(a) and (b));**
- (f) **step up the monitoring of the contractor's marine refuse cleansing work with a view to meeting the performance standards of the contracts (para. 3.19(c));**
- (g) **take measures to ensure that service requests made by the public are responded to in a timely manner and up to service requirements in accordance with the contract provisions (para. 3.19(d));**
- (h) **take appropriate follow-up actions with the contractor on the issue of vessel licensing, and take measures to ensure that only vessels with appropriate licences are deployed for marine refuse cleansing work (para. 3.19(e));**
- (i) **step up the monitoring of the management of the MRCs with a view to ensuring that the performance of the contractor is up to the standards specified in the contracts (para. 3.28(a));**
- (j) **review the need for the lifting appliances in the MRCs in Cha Kwo Ling and Ap Lei Chau, and expedite the repair/replacement as appropriate (para. 3.28(b));**

Executive Summary

Other related issues

- (k) **consider arranging more anti-marine littering operations by officers in plain clothes to take enforcement actions and take into consideration the source activities of marine refuse in planning enforcement operations (para. 4.9(a) and (b)); and**
- (l) **expedite completion of the trial run of floating booms to tackle marine refuse as soon as practicable (para. 4.21(a)).**

Response from the Government

8. The Director of Marine agrees with the audit recommendations.

PART 1: INTRODUCTION

1.1 This PART describes the background to the audit and outlines the audit objectives and scope.

Background

1.2 Hong Kong has a sea surface area of 1,650 square kilometres and a coastline of 1,189 kilometres. Hundreds of ships pass through Victoria Harbour daily ferrying goods and passengers. Thousands of people, both locals and visitors, visit beaches on hot summer days and walk along waterfront promenades in the cool autumn to enjoy sunshine, sea breeze and scenic views. The coastal waters and shores in Hong Kong are not only home to hundreds of wildlife species, they also provide venues for various recreational activities like swimming, wind-surfing and dragon-boat racing.

1.3 Marine pollution from marine littering and floating refuse (i.e. marine refuse floating on sea surface) is unsightly, and can pose human health risk and danger to ship navigation, and be harmful to ecology and marine life. It is necessary to minimise the impact of marine pollution through effective removal of marine refuse from the sea.

1.4 According to the report of a Marine Refuse Study completed by the Environmental Protection Department (EPD) in 2015, marine refuse refers to any solid waste, discarded or lost material, resulting from human activities, that has entered the marine environment irrespective of the sources. Refuse sunk to the sea bottom may become seabed waste if not decomposed through physical, chemical or biological process. Marine refuse consists of:

- (a) ***Floating refuse.*** Floating refuse comprises a wide range of materials, such as plastic items and foam packaging materials. According to the Government, over 80% of floating refuse comes from the land. There is a noticeable increase in floating refuse in the harbour following heavy rain as water courses and storm water drains carry refuse on land into the sea; and

Introduction

- (b) *Shoreline refuse washed up on the shores.* Floating refuse drifts by wind and tide and consequently scatters over large areas, and tends to accumulate near the coastline as shoreline refuse.

1.5 According to EPD records, from 2010 to 2019, an average of 15,354 tonnes (ranging from 14,862 to 16,488 tonnes) of marine refuse was collected by the Government annually. Among these, about 70% (ranging from 72% to 75%) was floating refuse and collected by the Marine Department (MD). The remaining 30% was shoreline refuse and collected by the Leisure and Cultural Services Department, the Agriculture, Fisheries and Conservation Department (Note 1), and the Food and Environmental Hygiene Department according to the locations of which they are in charge.

1.6 In relation to marine refuse, it is MD's long established practice to estimate the quantities of marine refuse collected in "tonnes". In MD's Controlling Officer's Report (COR), quantities of marine refuse are reported as performance indicators in tonnes. For estimation purpose, MD has assumed that one tonne is equivalent to approximately 55 baskets or 220 bags (Note 2) of marine refuse. According to MD:

- (a) the quantities of marine refuse collected under MD's marine refuse cleansing and disposal contracts were estimated in terms of volume (instead of the actual weight) and converted to tonnes for reporting to MD and subsequent inclusion in COR; and
- (b) the approach of measuring quantity of marine refuse in volume is similar to the approach adopted by the International Maritime Organization (Note 3). According to the Consolidated Guidance for Port Reception

Note 1: *Marine refuse in the waters within the Marine Parks and Marine Reserve is collected by the Agriculture, Fisheries and Conservation Department through contractual services.*

Note 2: *According to MD, since "basket" is no longer used by the contractor for collecting marine refuse, a "basket" is currently defined as a "large garbage bag" with the dimension of approximately 1.0 metre × 0.9 metre, and the dimension of a "bag" is approximately 0.8 metre × 0.5 metre.*

Note 3: *The International Maritime Organization is a specialised agency of the United Nations. It is the global standard-setting authority for the safety, security and environmental performance of international shipping.*

Facility Providers and Users of the International Maritime Organization, the quantities of waste and refuse collected at ports are measured in volume (Note 4), instead of actual weight.

Work of MD in tackling marine refuse

1.7 MD's work in tackling marine refuse includes the following:

- (a) ***Marine refuse cleansing and disposal services.*** MD is responsible for collecting vessel-generated refuse and scavenging floating refuse in specified areas of Hong Kong waters, including foreshore areas and typhoon shelters, through contractual services;
- (b) ***Publicity and public education.*** MD is responsible for conducting publicity campaigns to disseminate the message of "We are one in keeping our harbour clean" for promotional and educational purposes; and
- (c) ***Enforcement against marine littering.*** MD is responsible for performing daily patrols in Hong Kong waters to inspect the cleanliness condition of various zones of Hong Kong waters and conducting enforcement against marine littering. The relevant Ordinances are:
 - (i) the Summary Offences Ordinance (Cap. 228 – Note 5); and
 - (ii) the Fixed Penalty (Public Cleanliness and Obstruction) Ordinance (Cap. 570 – Note 6).

Note 4: *According to the Consolidated Guidance, quantity of waste and refuse is expressed in the measurement unit of cubic metre.*

Note 5: *Section 4D of the Ordinance stipulates penalties for marine littering. An offender is liable to a fine of \$10,000 and imprisonment for six months. If the offence is committed from a vessel or premises, the owner/master/proprietor/occupier of the vessel/premises is liable to a fine of \$50,000 and imprisonment for one year.*

Note 6: *The Ordinance regulates minor public cleanliness offences. An offender is liable to a fixed penalty of \$1,500.*

Introduction

1.8 Table 1 shows the three performance indicators of MD's work in tackling marine refuse reported in CORs for the period from 2010 to 2019.

Table 1
Performance indicators
of MD's work in tackling marine refuse
(2010 to 2019)

Year	Floating refuse collected (Note 1) (a) (Tonnes)	Refuse collected from ships (Note 1) (b) (Tonnes)	Refuse collected from locally-licensed and river trade vessels (Note 2) (c) (Tonnes)	Total (d) = (a) + (b) + (c) (Tonnes)
2010	11,368	2,456	1,964	15,788
2011	11,086	2,465	1,839	15,390
2012	10,996	2,519	1,832	15,347
2013	10,900	2,537	1,811	15,248
2014	11,265	2,494	1,858	15,617
2015	11,484	2,478	1,859	15,821
2016	11,794	2,466	1,938	16,198
2017	11,642	2,445	1,958	16,045
2018	11,534	2,449	2,101	16,084
2019	11,006	2,444	2,128	15,578

Source: Audit analysis of MD records

Note 1: The two performance indicators were reported under the programme area "Port Services" in MD's COR.

Note 2: The performance indicator was reported under the programme area "Local Services" in MD's COR.

Remarks: According to MD, the quantities of marine refuse collected by MD were estimated in terms of volume and converted to tonnes for reporting in COR (see para. 1.6).

1.9 The estimated annual recurrent expenditure on MD's work in tackling marine refuse in 2020-21 (excluding MD staff costs) was about \$102 million (see Table 2).

Table 2

**Recurrent expenditure on MD's work
in tackling marine refuse
(2016-17 to 2020-21)**

Nature	Recurrent expenditure (\$ million)					
	Actual				Estimate	Change between 2016-17 and 2020-21
	2016-17	2017-18	2018-19	2019-20	2020-21	
Outsourcing of marine refuse cleansing and disposal services	39.95	58.40	84.14	90.56	94.98	+55.03 (+138%) (Note 1)
Hire of launches	0.84	1.88	4.97	6.05	6.97	+6.13 (+730%) (Note 2)
Total	40.79	60.28	89.11	96.61	101.95	+61.16 (+150%)

Source: Audit analysis of MD records

Note 1: According to MD, the increase in the recurrent expenditure on the outsourcing of marine refuse cleansing and disposal services was mainly due to: (a) the increase in the contract expenditure of the recurrent five-year contract for the whole of Hong Kong waters commencing from October 2017 (see Note 9 to para. 1.12); and (b) the contract expenditure for the additional two-year contract for Tai Po District commencing from October 2018 (see para. 1.14).

Note 2: According to MD, with a view to stepping up inspection of cleanliness at sea across the territory and monitoring of the work performance of the contractor, the number of launches hired had increased from 2 to 4 since 2017-18.

1.10 The Pollution Control Unit of MD (see Appendix A for an extract of the organisation chart of MD) is responsible for, among others, the work in tackling

Introduction

marine refuse (Note 7). As at 31 March 2020, the Pollution Control Unit had a staff strength of 20 (including 9 frontline officers who were required to perform patrol duties for the Hong Kong waters).

Outsourcing of marine refuse cleansing and disposal services covering the whole of Hong Kong waters

1.11 Since July 2005, MD has fully outsourced the marine refuse cleansing and disposal services and adopted objective-based specifications (see para. 1.16) for monitoring the performance of contractors. In October 2011, MD reformed the outsourcing arrangement by bundling previous two contracts (covering different areas of Hong Kong waters) into one contract to cover the whole of Hong Kong waters.

1.12 MD's existing contract for marine refuse cleansing and disposal services with Contractor A (Note 8) is for a term of five years (October 2017 to September 2022). The estimated contract expenditure was about \$447 million (Note 9). Under the contract, the contractor provides a fleet of about 80 vessels of various types (e.g. 13 marine refuse reception vessels (see Photograph 1 for an example) and 56 workboats (see Photograph 2 for an example)) to perform the marine refuse cleansing and disposal services.

Note 7: *The Pollution Control Unit is also responsible for preventing and cleaning oil discharges into the sea.*

Note 8: *Contractor A has been the sole contractor of MD's marine refuse cleansing and disposal services since July 2005.*

Note 9: *This represented an increase of about \$258 million (136%) in the contract expenditure when compared with the previous five-year contract (which was from October 2011 to September 2016 and subsequently extended for one year to September 2017 due to the cancellation of the following tender exercise). According to MD, under the existing contract, the contractor provides 10 more vessels (an increase of 14% as compared with those provided in the previous contract) which help enhance the efficiency and effectiveness in cleaning up marine refuse.*

Photograph 1

An example of marine refuse reception vessel



Source: Photograph taken by staff of the Audit Commission in July 2020

Photograph 2

An example of workboat



Source: Photograph taken by staff of the Audit Commission in June 2020

Introduction

1.13 The core services of the contract are as follows:

- (a) ***Floating refuse scavenging services.*** The contractor is responsible for deploying workboats to scavenge floating refuse from main fairways and 43 priority areas (Note 10) (see Appendix B) specified by MD in the contract. The daily scavenging work should commence in the morning for completion in the forenoon. The contractor's workboats should patrol the priority areas and typhoon shelters to search for floating refuse and scavenge them from the sea. As and when required by MD, the contractor should also collect and remove floating refuse from any areas within Hong Kong waters;
- (b) ***Collection of domestic refuse services.*** The contractor is responsible for collecting bagged domestic refuse (Note 11) from local vessels, which are moored in the typhoon shelters (Note 12) and sheltered areas (e.g. Chai Wan, Sai Kung and Tai O) within Hong Kong waters, not less than once a day. The contractor also arranges collection of domestic refuse from ocean-going vessels moored within the Victoria Harbour, Junk Bay and Western Anchorages (e.g. the Ma Wan Anchorage and the Tuen Mun Immigration Anchorage) on a daily basis;

Note 10: *According to MD, the list of priority areas covers locations which require particular attention in view of their prevalence of floating refuse. The list was drawn up based on the consolidation and analysis of the statistics of floating refuse collected, navigational safety considerations, as well as the number of complaints and service requests received from District Councils and the public in past years.*

Note 11: *To facilitate the collection of domestic refuse and its subsequent disposal, the contractor is required by the contract to provide and distribute recycled and environmental friendly plastic bags (of at least 0.8 metre × 0.5 metre × 0.6 millimetre with sufficient strength) to the local vessels.*

Note 12: *There are 14 typhoon shelters in Hong Kong, namely the New Yau Ma Tei Typhoon Shelter, the To Kwa Wan Typhoon Shelter, the Kwun Tong Typhoon Shelter, the Sam Ka Tsuen Typhoon Shelter, the Shau Kei Wan Typhoon Shelter, the Causeway Bay Typhoon Shelter, the Aberdeen South Typhoon Shelter, the Aberdeen West Typhoon Shelter, the Tuen Mun Typhoon Shelter, the Rambler Channel Typhoon Shelter, the Cheung Chau Typhoon Shelter, the Hei Ling Chau Typhoon Shelter, the Shuen Wan Typhoon Shelter and the Yim Tin Tsai Typhoon Shelter.*

- (c) ***Refuse disposal services.*** All floating refuse and domestic refuse collected is transported on vessels to the four marine refuse collection points (MRCPs) (Note 13) managed by the contractor. The contractor is responsible for transporting refuse from MRCPs to the landfills for disposal on a daily basis (Note 14); and
- (d) ***Foreshore cleansing services.*** The contractor is responsible for deploying three foreshore cleansing teams, of 12 workers each, to scavenge floating refuse from the waters close inshore and collect refuse along the foreshore in the littoral areas.

Additional outsourcing of marine refuse cleansing and disposal services covering Tai Po District

1.14 In the 2017 Policy Address, the Chief Executive of the Hong Kong Special Administrative Region stated that the Government had implemented a series of improvement measures through co-ordination across relevant departments under the Steering Committee on District Administration (Note 15). These included, in particular, increasing the cleaning frequency: cleaning hygiene blackspots in all districts more frequently, and conducting large-scale clean-up operations regularly at coastal areas and typhoon shelters. In this connection, MD has stepped up efforts in tackling marine refuse. In particular, MD conducted a tender exercise in June 2018 and entered into an additional contract for marine refuse cleansing and disposal services in Tai Po District with Contractor A (which was the only tenderer of the tender exercise and also the same contractor of the contract for the whole of Hong

Note 13: *The four MRCPs are located in Cha Kwo Ling, Ap Lei Chau, Kowloon West and Tuen Mun.*

Note 14: *In March 2020, Contractor A informed MD that the daily transportation of refuse from MRCPs to disposal sites for disposal had been sub-contracted for the whole contract period from October 2017 to September 2022. Under the sub-contract, the sub-contractor was required to submit to the contractor the transaction record slips issued by the landfills and refuse transfer stations on a monthly basis.*

Note 15: *Chaired by the Permanent Secretary for Home Affairs, the Steering Committee on District Administration, comprising representatives from relevant government departments, provides a platform for interdepartmental discussion and consultation to enable the departments to make concerted efforts to address district issues.*

Introduction

Kong waters) for a term of two years (October 2018 to September 2020 — Note 16), involving a contract expenditure of about \$9.5 million. Under the contract, the contractor provided a quick response workboat and a marine refuse reception vessel, and deployed a foreshore cleansing team of 12 workers to perform cleansing work mainly, but not limited to the foreshore water areas of Tai Po District.

Monitoring of the contractor's performance

1.15 Staff of the Pollution Control Unit perform daily patrol duties to monitor the cleanliness condition of the sea and the contractor's work. There are altogether 12 patrol areas covering the whole of Hong Kong waters (see Figure 1). According to MD, the Pollution Control Unit's patrol normally covers four to six patrol areas every day and each patrol area would be covered at least once a month.

Note 16: *In October 2020, MD informed the Audit Commission that a new contract (October 2020 to September 2022) was awarded to Contractor A at a sum of about \$10 million in late September 2020 through a tender exercise conducted in July 2020.*

Figure 1

12 patrol areas



Source: MD records

1.16 Under the two contracts, the contractor shall ensure that each part of the service areas (i.e. the whole of Hong Kong waters and Tai Po District) is clean and free from refuse. Staff of the Pollution Control Unit will inspect and rate the cleanliness condition in “Good”, “Satisfactory”, “Fair”, “Unsatisfactory” and “Poor” levels (see Appendix C for the illustration of level of cleanliness for open sea and typhoon shelters). The contractor shall maintain the waters of Hong Kong at “Good” level during the service hours (i.e. between 8:00 a.m. and 6:00 p.m.).

Audit review

1.17 In 2004, the Audit Commission (Audit) completed a review on the marine scavenging services provided by MD and the results were reported in Chapter 9 of the Director of Audit’s Report No. 43 of October 2004. The review found areas for improvement in the provision of marine scavenging services, including tightening the

Introduction

control of overtime expenditures of in-house staff, and enhancing the cost-effectiveness of in-house and contractors' scavenging services. After the last review, MD's marine refuse cleansing and disposal services have been fully outsourced since July 2005 (see para. 1.11).

1.18 In May 2020, Audit commenced a review to examine the collection and removal of marine refuse by MD (the subject matter of this review) and another review on the Government's efforts in tackling shoreline refuse (see Chapter 2 of the Director of Audit's Report No. 75). This review focuses on the following areas:

- (a) administration of marine refuse cleansing and disposal contracts (PART 2);
- (b) monitoring of marine refuse cleansing and disposal services (PART 3); and
- (c) other related issues (PART 4).

Audit has found room for improvement in the above areas and has made a number of recommendations to address the issues.

General response from the Government

1.19 The Director of Marine agrees with the audit recommendations and expresses her gratitude to Audit for the time and efforts spent in the review.

Acknowledgement

1.20 During the audit review, in light of the outbreak of coronavirus disease (COVID-19), the Government had implemented various special work arrangements and targeted measures for government employees, including working from home. Audit would like to acknowledge with gratitude the full cooperation of the staff of MD and EPD during the course of the audit review amid the COVID-19 epidemic.

PART 2: ADMINISTRATION OF MARINE REFUSE CLEANSING AND DISPOSAL CONTRACTS

2.1 This PART examines the administration of marine refuse cleansing and disposal contracts by MD, focusing on:

- (a) reporting of the quantity of marine refuse (paras. 2.2 to 2.8);
- (b) reimbursement of disposal charges to the contractor (paras. 2.9 to 2.16);
- (c) sub-contracting arrangement (paras. 2.17 to 2.22); and
- (d) tendering of cleansing and disposal services (paras. 2.23 to 2.27).

Reporting of the quantity of marine refuse

2.2 The quantity of marine refuse collected is an important performance indicator of MD's work in tackling marine refuse (see Table 1 in para. 1.8) as included in MD's CORs. It is also used for planning the collection of marine refuse, as follows:

- (a) ***Tender information.*** In the tender documents of the marine refuse cleansing and disposal contract for the whole of Hong Kong waters (October 2017 to September 2022), the monthly quantities of floating refuse and domestic refuse collected from boats and ships in 2015 and 2016 were included for bidders' reference (Note 17); and
- (b) ***Prioritisation of sites for marine refuse cleansing work.*** According to MD, the navigational safety considerations, the number of complaints and service requests received from District Councils and the public, and the quantity of marine refuse collected in the past are three main factors for drawing up the list of priority areas (see Note 10 to para. 1.13(a)).

Note 17: *As stated in the tender documents, one tonne of marine refuse was equivalent to 55 baskets or 220 bags of marine refuse. No other information (e.g. capacity) of the bags and baskets (see Note 2 to para. 1.6) was provided in the tender documents.*

Administration of marine refuse cleansing and disposal contracts

Audit noted that the statistics of the quantities (in tonnes converted from number of baskets/bags) of floating refuse and domestic refuse collected were provided to MD by the contractor, and staff of the Pollution Control Unit (see para. 1.10) of MD had not verified the accuracy of such statistics. In other words, MD made use of the statistics provided by the contractor for reporting in CORs.

Significant discrepancies between the quantities of municipal solid waste disposed of by the contractor as per EPD records and the quantities of marine refuse collected as reported by MD in CORs

2.3 According to the contract provisions of the two contracts for the whole of Hong Kong waters (October 2017 to September 2022) and Tai Po District (October 2018 to September 2020), all floating refuse and domestic refuse collected should be disposed of at disposal sites (i.e. public landfills or other sites as arranged and provided by the contractor and approved by the Director of Marine). Audit noted that:

- (a) for the previous contract for the whole of Hong Kong waters from October 2011 to September 2017 (see Note 9 to para. 1.12), the contractor had stated in its tender that two vehicles (i.e. Vehicles 1 and 2) would be provided for the daily transportation of marine refuse from MRCPs to disposal sites;
- (b) for the existing contract for the whole of Hong Kong waters (October 2017 to September 2022), while the contractor had stated in its tender submissions that Vehicles 1 and 2 would be provided for the daily transportation of marine refuse from MRCPs to disposal sites, under the sub-contracting arrangement (see para. 2.19(a)), only one vehicle (i.e. Vehicle 1) was provided. Vehicle 1 was also the only vehicle provided under the contract for Tai Po District (October 2018 to September 2020) (see para. 2.19(b)); and
- (c) according to requirements of the two contracts, records of the attendance and daily log books proving deployment of the vehicles and their work should be maintained by the contractor throughout the contract period for inspection by Government representatives. However, no such records had been maintained by the contractor.

Administration of marine refuse cleansing and disposal contracts

In September 2020, MD informed Audit that Vehicle 1 was the main vehicle used for transporting marine refuse from 2012 to 2019. From 2012 to 2016, Vehicle 2 served as a backup vehicle and was only used for transporting marine refuse under rare circumstances (not more than two times a month). From 2017 to 2019, Vehicle 2 was not deployed for the collection and transportation of marine refuse.

2.4 Audit examination revealed that:

- (a) from 2012 to 2019, there were significant discrepancies between the quantities of municipal solid waste (Note 18) disposed of by the contractor as per EPD records and the quantities of marine refuse collected as reported by MD in CORs (see Table 3). Overall, the former represented only 19.9% (i.e. $25,113.1 \div 125,938 \times 100\%$), ranging from 16.9% (i.e. $2,627.5 \div 15,578 \times 100\%$) in 2019 to 25% (i.e. $3,906.6 \div 15,617 \times 100\%$) in 2014, of the latter. Moreover, the former might include other municipal solid waste in addition to marine refuse (Note 19) (see Appendix D); and
- (b) while the quantities of marine refuse collected as reported by MD in CORs were about 15,000 to 16,000 tonnes per year from 2012 to 2019 (see para. 1.8), the quantities of municipal solid waste disposed of by the contractor decreased significantly by 32.7% from 3,906.6 tonnes in 2014 to 2,627.5 tonnes in 2019, as follows:
 - (i) in 2014, the quantity of municipal solid waste disposed of was 3,906.6 tonnes (comprising 3,549.3 tonnes at landfills and 357.3 tonnes at refuse transfer stations); and

Note 18: *According to MD: (a) there was no contract requirement that vehicles stated in tender submissions must be exclusively used for performing services under MD's contracts; and (b) the construction waste of 23,313.3 tonnes disposed of by Vehicles 1 and 2 during the period should be excluded from the analysis because the disposal of construction waste was not related to MD's contracts.*

Note 19: *According to EPD, marine refuse falls under the category of domestic waste. In October 2020, MD informed Audit that when the drivers of Vehicles 1 and 2 transporting marine refuse reported the sources of refuse to a landfill/refuse transfer station weighbridge operator, the marine refuse delivered was often categorised as domestic waste, commercial waste or industrial waste (i.e. municipal solid waste) after the operator's review.*

Administration of marine refuse cleansing and disposal contracts

- (ii) in 2019, the quantity of municipal solid waste disposed of was 2,627.5 tonnes (comprising 416.3 tonnes at landfills and 2,211.2 tonnes at refuse transfer stations).

Administration of marine refuse cleansing and disposal contracts

Table 3

**Quantities of municipal solid waste disposed of by the contractor as per EPD records
and quantities of marine refuse collected as reported by MD in CORs
(2012 to 2019)**

Year	Quantity of municipal solid waste disposed of by the contractor as per EPD records (Note 1)			Quantity of marine refuse collected as reported by MD in CORs (Note 2)
	At landfills (a) (Tonnes)	At refuse transfer stations (b) (Tonnes)	Total (c) = (a) + (b) (Tonnes)	(d) (Tonnes)
2012	2,739.4	348.3	3,087.7	15,347
2013	3,101.8	599.9	3,701.7	15,248
2014	3,549.3	357.3	3,906.6	15,617
2015	2,828.3	312.5	3,140.8	15,821
2016	35.4	2,878.9	2,914.3	16,198
2017	9.2	2,923.4	2,932.6	16,045
2018	192.5	2,609.4	2,801.9	16,084
2019	416.3	2,211.2	2,627.5	15,578
Total	12,872.2	12,240.9	25,113.1	125,938

Source: Audit analysis of EPD and MD records

Note 1: See Appendix E for details.

Note 2: According to MD, one tonne is equivalent to approximately 55 baskets or 220 bags of marine refuse (see Note 2 to para. 1.6).

Remarks:

- (a) *Overall, the quantity of municipal solid waste disposed of by the contractor from 2012 to 2019 as per EPD records represented only 19.9% (ranging from 16.9% in 2019 to 25% in 2014) of the quantity of marine refuse collected as reported by MD in CORs.*
- (b) *Municipal solid waste disposed of at landfills and refuse transfer stations by the contractor might include other municipal solid waste in addition to marine refuse (see Appendix D).*
- (c) *According to MD, for the contract for Tai Po District which commenced on 1 October 2018, refuse of 88 tonnes reported by the contractor from October to December 2018 was inadvertently excluded from COR.*

Need to ensure proper reporting of the quantity of marine refuse collected

2.5 **Record keeping.** At the monthly meeting between MD and the contractor held in November 2019, in response to MD's enquiry, the contractor said that records of the quantity of refuse collected from the four MRCs and disposed of at the refuse transfer stations and landfills were kept (see Note 14 to para. 1.13(c)). MD reminded the contractor to keep those records in an organised manner for inspection by MD when necessary. Following up on the significant discrepancies between the quantities of municipal solid waste disposed of by the contractor as per EPD records and the quantities of marine refuse collected as reported by MD in CORs (see para. 2.4(a)), Audit requested records (i.e. transaction record slips issued by landfills and refuse transfer stations — Note 20) for examination. However, up to September 2020, MD could not provide the transaction record slips issued by the landfills since October 2017 (i.e. the commencement of the existing contract for the whole of Hong Kong waters) to Audit for examination. According to MD:

- (a) for the purpose of financial records and reimbursement (see para. 2.10), MD has all along required the contractor to provide the transaction record slips for refuse disposal at the refuse transfer stations; and
- (b) since refuse disposal at landfills is free of charge, MD has not requested the contractor to provide the transaction record slips issued by the landfills. Hence, when MD requested the contractor to submit past transaction record slips, such records were found to be incomplete (e.g. the data printed on the thermal paper transaction record slips had faded).

2.6 **Accuracy of records.** According to contract provisions, the contractor is required to provide the quantities of floating refuse and domestic refuse collected to MD. However, Audit noted that staff of the Pollution Control Unit had not verified the accuracy of such statistics. According to MD:

Note 20: *All vehicles shall be weighed at the in-weighbridge and out-weighbridge before and after waste disposal at a landfill or refuse transfer station. The waste haulers/drivers concerned can obtain a transaction record slip with detailed information (including date, time, in and out weights, etc.) at the out-weighbridge for record purpose.*

Administration of marine refuse cleansing and disposal contracts

- (a) the contracts only require the contractor to provide a specific number of vessels and workers for collecting and transporting marine refuse. It is not MD's intention to assess the contractor's performance based on the quantity of marine refuse collected since the quantity of floating refuse and domestic refuse collected from boats and ships varies every day, especially during inclement weather. Hence, MD does not consider it necessary to verify in detail the quantity of marine refuse collected by the contractor. That said, MD's staff have been discussing the trend of the statistics and the locations of the marine refuse with the contractor during the monthly meetings with a view to identifying black spots of marine refuse for follow-up action;
- (b) regarding the planning of cleansing services, the statistics provided by the contractor is only one of the main factors considered by MD (see para. 2.2(b)). MD's patrol unit will also assess the cleanliness of the sea during daily patrols and report to the unit supervisors; and
- (c) as for the tender process, the contracts required the tenderers to provide a specific number of vessels and workers for collecting marine refuse. The quantity of marine refuse is not used for drawing up the marking scheme/assessment criteria (which are made known to prospective bidders through the tender documents) for tender evaluation. Considerations of the tenders submitted mainly focus on the operating costs of the vessels and the salary of the workers. MD has explicitly stated in the tender documents of the marine refuse cleansing and disposal contract for the whole of Hong Kong waters that the monthly quantities of floating refuse and domestic refuse collected from boats and ships in previous years are included for bidders' reference only and they are not to be used as performance or workload indicators. In response to Audit's enquiry on whether the quantity of marine refuse collected will affect the tender price submissions by bidders, MD said in September and October 2020 that:

Administration of marine refuse cleansing and disposal contracts

- (i) since the quantity of marine refuse collected is not an indicator to assess the contractor's performance, it should not affect bidders' assessment of the bidding price (Note 21); and
- (ii) in fact, no information on the monthly quantities of floating refuse and domestic refuse collected from boats and ships was included in the tender documents of the contract for Tai Po District in the tender exercises conducted in June 2018 and July 2020 (see para. 1.14).

While the quantity of marine refuse collected is only one of the main factors in prioritising sites for marine refuse cleansing work (see para. 2.2(b)), and is not used for assessing contractor's performance and tender evaluation, it remains an important performance indicator for stakeholders to evaluate MD's cost-effectiveness in deploying resources to collect and remove marine refuse, which has been included in MD's CORs. In view of the significant discrepancies between the quantities of municipal solid waste (mainly marine refuse according to MD — see Note 19 to para. 2.4(a)) disposed of by the contractor as per EPD records and the quantities of marine refuse collected as reported by MD in CORs, MD needs to investigate the discrepancies and take measures to ensure the proper reporting of the quantity of marine refuse collected (e.g. requiring the contractor to follow specific procedures in preparing statistics of the quantity of marine refuse collected and verifying the statistics provided by the contractor).

Note 21: *According to MD, the statistics of marine refuse collected did not constitute a relevant factor affecting the tender price. Since MD did not mandate the contractor to collect a specific quantity of marine refuse, the quantity of marine refuse collected shall have no impact on the bidder's assessment of the scale of services and the resources required for performing the contract. The major factors in estimating the scale of services and resources required are as follows: (a) the service area (i.e. the whole of Hong Kong waters) and number of sites required to be regularly kept cleaned (i.e. 43 priority areas); (b) the spatial spread of the sites and time for the cleansing vessels to reach them; (c) the number and different types of vessels required to be provided by the contractor to perform the cleansing services at different sites (i.e. not less than 60 scavenging and supporting vessels for the core service); (d) the cleanliness conditions of the service area to be maintained at "Good" level during the service hours; and (e) the time to re-establish the level of sea surface cleanliness during the service hours (see para. 3.3(c)).*

Audit recommendations

- 2.7 **Audit has *recommended* that the Director of Marine should:**
- (a) **investigate the significant discrepancies between the quantities of municipal solid waste disposed of by the contractor as per EPD records and the quantities of marine refuse collected as reported by MD in CORs in the period from 2012 to 2019; and**
 - (b) **based on the investigation results, take measures to ensure the proper reporting of the quantity of marine refuse collected.**

Response from the Government

2.8 The Director of Marine agrees with the audit recommendations. She has said that:

- (a) the “discrepancies” arise due to the comparison of two sets of figures with different measurement units. MD will include a remarks in COR in future to qualify the measurement unit used in the estimation of marine refuse collected;
- (b) in future, MD will periodically cross-check the quantity of marine refuse disposed of and that reported by the contractor; and
- (c) surprise checks will be conducted to monitor the performance of the contractor.

Reimbursement of disposal charges to the contractor

Disposal of marine refuse at refuse transfer stations

2.9 According to the provisions of the contracts for the whole of Hong Kong waters and Tai Po District, for the floating refuse and domestic refuse collected, the contractor is responsible for its conveyance to and disposal at disposal sites (i.e. public landfills or other sites as arranged and provided by the contractor and approved by

Administration of marine refuse cleansing and disposal contracts

the Director of Marine). There are currently three landfills in Hong Kong, namely the West New Territories Landfill (in Tuen Mun), the South East New Territories Landfill (in Tseung Kwan O) and the North East New Territories Landfill (in Ta Kwu Ling). With effect from 6 January 2016, the South East New Territories Landfill has only received construction waste. Disposal of municipal solid waste (including marine refuse) at the other two landfills is free of charge.

2.10 According to MD:

- (a) before January 2016, the contractor had transported most of the floating refuse and domestic refuse collected to the South East New Territories Landfill (in Tseung Kwan O) for disposal. In view of the cessation of the South East New Territories Landfill to receive municipal solid waste with effect from 6 January 2016, since 1 January 2016, the contractor had disposed of the bulk of marine refuse collected at refuse transfer stations with disposal charges reimbursed by MD;
- (b) in deciding to reimburse the contractor for the disposal charges in December 2015, MD considered that while disposal of marine refuse was free at landfills but subject to disposal charges at refuse transfer stations, transferring marine refuse to the other two landfills would inevitably increase transportation time and costs, and certainly affect the efficiency of the whole refuse transportation process; and
- (c) considering that the contractor was collecting and disposing of the marine refuse on behalf of the Government and that other government departments (i.e. the Food and Environmental Hygiene Department and the Leisure and Cultural Services Department) have been exempted from paying the disposal charges charged by refuse transfer stations, MD considered it reasonable to reimburse the contractor at the material time.

Table 4 shows the reimbursement to the contractor from 2016 to 2019.

Table 4

**Reimbursement to the contractor for disposal charges
charged by the refuse transfer stations
(2016 to 2019)**

Year	Reimbursement
2016	\$75,224
2017	\$87,766
2018	\$77,705
2019	\$69,217
Total	\$309,912

Source: Audit analysis of MD records

Remarks:

- (a) In December 2015, MD estimated that an average of about 1,000 tonnes of refuse would be transported to the refuse transfer stations for disposal every month, and the disposal charges would be about \$35,000 per month (i.e. \$420,000 per annum).
- (b) In October 2020, MD informed Audit that the discrepancies between the actual and the estimated disposal charges arose as the former were levied based on the actual weight of the refuse disposed of by the contractor at refuse transfer stations while the latter were based on the original quantity of the refuse in “tonnes” converted from volume.

***Need to clearly specify the arrangement
for charges incurred in refuse disposal at refuse transfer stations***

2.11 Audit noted that the reimbursement arrangement continued in the existing contract for the whole of Hong Kong waters (October 2017 to September 2022). However, the tender documents only stated that the contractor should be responsible for refuse disposal at public landfills or other sites as arranged and provided by the contractor and approved by the Director of Marine, and did not mention that charges incurred in refuse disposal at refuse transfer stations would be borne by the

Administration of marine refuse cleansing and disposal contracts

Government. As such, when submitting tenders in May 2017, other potential tenderers might not have a complete picture of the reimbursement arrangement of the charges incurred at refuse transfer stations, notwithstanding the fact that the awarded contractor might choose to arrange refuse disposal at landfills, which was free of charge.

2.12 Since the South East New Territories Landfill ceased receiving municipal solid waste in January 2016, before tenders for the existing contract were invited in March 2017, any tender bid (contract price) should have included all collection and disposal costs of marine refuse. Therefore, continuing the practice of reimbursing the contractor for the disposal charges charged by refuse transfer stations needs to have good justifications. In September 2020, MD said that:

- (a) the reimbursement arrangement in 2017 was undesirable. MD had already ceased the reimbursement arrangement in the tender exercise conducted in 2018 for the contract for Tai Po District, and explicitly stated in the relevant tender documents that the contractor was responsible for any charges on disposal of waste at disposal sites (see para. 2.13); and
- (b) MD would adopt the same arrangement for the tender exercise for the contract for the whole of Hong Kong waters in future.

In Audit's view, for tender exercises in future, MD should clearly specify the arrangement for charges incurred in refuse disposal at refuse transfer stations.

Need to take measures to address the potential overpayment of reimbursement to the contractor

2.13 According to the provisions of the contract for Tai Po District (October 2018 to September 2020), for the floating refuse and domestic refuse collected, the contractor was responsible for its conveyance to and disposal at disposal sites at the contractor's expense. In other words, no reimbursement of disposal charges would be arranged by MD. Audit noted that under the contract for the whole of Hong Kong waters (October 2017 to September 2022) and the contract for Tai Po District (October 2018 to September 2020), the same Vehicle 1 (see para. 2.19) was used by the contractor for the transportation of marine refuse from MRCs to the disposal sites. Based on the transaction record slips issued to the driver of Vehicle 1 by the refuse transfer stations, it was not practicable to distinguish between the

Administration of marine refuse cleansing and disposal contracts

quantities of refuse collected under the contract for the whole of Hong Kong waters and the contract for Tai Po District. Therefore, since the commencement of the contract for Tai Po District in October 2018, the reimbursement of disposal charges charged by refuse transfer stations to the contractor had also covered the disposal charges incurred for such contract, which should have been borne by the contractor under the provisions of that contract. Furthermore, Vehicle 1 might have been used for purposes other than the transportation of marine refuse under MD's contracts (see para. 2.4(a)).

2.14 In October 2020, MD informed Audit that:

- (a) MD had already taken recovery actions against the contractor on the overpayment on disposal charges arising from the contract for Tai Po District in September 2020;
- (b) regarding the use of Vehicle 1, the contractor had confirmed that Vehicle 1 only occasionally transported construction waste to landfills and hence there was no issue of reimbursement of disposal charges charged by refuse transfer stations; and
- (c) the conditions in the contracts did not require that the vehicles stated must be exclusively used for transporting marine refuse collected under MD's contracts. Nevertheless, in the light of Audit's findings, MD will discuss with the contractor so that Vehicle 1 should not be used for purposes other than transporting marine refuse.

In Audit's view, with a view to monitoring the use of vehicles provided by the contractor, MD needs to remind the contractor to maintain proper records of the attendance and daily log books proving deployment of the vehicles and their work (see para. 2.3(c)) and review such records periodically. MD also needs to take appropriate follow-up actions with the contractor so that Vehicle 1 will not be used for purposes other than transporting marine refuse.

Audit recommendations

- 2.15 **Audit has *recommended* that the Director of Marine should:**
- (a) **clearly specify the arrangement for charges incurred in refuse disposal at refuse transfer stations for tender exercises in future;**
 - (b) **remind the contractor to maintain proper records of the attendance and daily log books proving deployment of the vehicles and their work, and review such records periodically; and**
 - (c) **take appropriate follow-up actions with the contractor so that Vehicle 1 will not be used for purposes other than transporting marine refuse.**

Response from the Government

- 2.16 The Director of Marine agrees with the audit recommendations.

Sub-contracting arrangement

Unauthorised sub-contracting arrangements

2.17 ***Requirements of the contract for the whole of Hong Kong waters.*** According to the tender documents of the existing contract for the whole of Hong Kong waters (October 2017 to September 2022), if any part of the tenderer's proposal was to be executed by sub-contractors, the tenderer should submit with its tender:

- (a) the information of proposed sub-contractors; and
- (b) undertakings from the proposed sub-contractors to the effect that:
 - (i) they would enter into sub-contracts with the tenderer for the execution of the services in question in accordance with the provisions contained in the tender documents; and

- (ii) they would not further sub-contract any of the services.

Details of the previous experience of the sub-contractors, their roles and responsibilities should also be submitted. Failure to submit the sub-contractors' undertakings would render the sub-contracting proposals invalid.

The tender documents also stated that the contractor should not sub-contract any of its obligations whether in whole or in part without the prior written consent of the Government.

2.18 ***Requirements of the contract for Tai Po District.*** According to the tender documents of the contract for Tai Po District (October 2018 to September 2020), the contractor should not sub-contract all or any part of the services except with the prior written approval of the Government. The contractor shall not be relieved from any of its obligations under the contract by entering into any sub-contract.

2.19 ***Unauthorised sub-contracting arrangements under the two contracts.*** Audit examination revealed the following issues:

- (a) ***Contract for the whole of Hong Kong waters.*** For the contract for the whole of Hong Kong waters, no sub-contracting proposal was included in the contractor's tender submissions and no subsequent written consent for engaging sub-contractors had been given by MD. However, according to MD records, in March 2020 (i.e. 29 months after the commencement of the contract and the sub-contracting arrangement), the contractor informed MD that the daily transportation of marine refuse from MRCPs to disposal sites for disposal had been sub-contracted for the whole contract period from October 2017 to September 2022 (see Note 14 to para. 1.13(c)). Audit also noted that the vehicle (i.e. Vehicle 1 — see para. 2.3(b)) provided by the sub-contractor was the same as one of the two vehicles named in the contractor's tender submissions for the daily transportation of marine refuse; and
- (b) ***Contract for Tai Po District.*** For the contract for Tai Po District, while no written approval for engaging sub-contractors had been given by MD, the same vehicle (i.e. Vehicle 1) of the sub-contractor of the contract for the whole of Hong Kong waters was used to dispose of the additional refuse

Administration of marine refuse cleansing and disposal contracts

collected in Tai Po District. In response to Audit's enquiry, in August 2020, MD informed Audit that a letter was received from the contractor in the same month (i.e. 22 months after the commencement of the contract and the sub-contracting arrangement, and 2 months before the end of the contract) stating that the daily transportation of marine refuse under the contract for Tai Po District had also been sub-contracted for the whole contract period from October 2018 to September 2020, and the sub-contractor was the same one as for the contract for the whole of Hong Kong waters.

2.20 In September 2020, MD informed Audit that:

- (a) to rectify the unauthorised sub-contracting arrangements, MD had approved the sub-contracting arrangements of the contracts for the whole of Hong Kong waters and Tai Po District on 28 July 2020 and 14 August 2020 respectively; and
- (b) MD had reminded the contractor to strictly follow the terms and conditions of the contracts in future.

In Audit's view, engaging a sub-contractor without obtaining prior written approval from MD is in breach of the contracts. MD should strengthen the control on sub-contracting arrangement, and ensure that all sub-contracting arrangements are properly approved in future.

Audit recommendations

2.21 **Audit has *recommended* that the Director of Marine should:**

- (a) **strengthen the control on sub-contracting arrangement; and**
- (b) **ensure that all sub-contracting arrangements are properly approved in future.**

Response from the Government

2.22 The Director of Marine agrees with the audit recommendations. She has said that MD:

- (a) has reminded the contractor to strictly follow the terms and conditions in the contract; and
- (b) will require the contractor to provide documents of sub-contracting for approval before the contract commences in future.

Tendering of cleansing and disposal services

Need to enhance tender competition

2.23 As shown in Table 5, the number of tenders received for the recent four tender exercises of the contract for the whole of Hong Kong waters had been on a decreasing trend from 2004 to 2017.

Table 5

**Number of tenders received
for the recent four tender exercises
of the contract for the whole of Hong Kong waters
(2004 to 2017)**

Year of tender exercise	Contract period	Number of tenders (conforming tenders) received (Note 1)		Contract price of successful bidder	
				(\$ million)	
2004	July 2005 to June 2010 (Note 2)	3 (3)	4 (4)	82.3	72.1
2011	October 2011 to September 2016 (Note 3)	4 (1)		189.9	
2016	October 2016 to September 2021	3 (2)		NA (Note 4)	
2017	October 2017 to September 2022	2 (2)		447.4	

Source: Audit analysis of MD records

Note 1: Since the tender exercise in 2011, MD had bundled the previous two contracts (for the Eastern and Western part of Hong Kong waters respectively) into one contract for the whole of Hong Kong waters.

Note 2: The two contracts were extended to September 2011 to allow sufficient time for preparing the tender exercise in 2011.

Note 3: The contract was extended to September 2017 due to the cancellation of the tender exercise in 2016.

Note 4: The tender exercise was cancelled due to the unexpected surge of tender price (i.e. \$417 million) which had exceeded MD's approved project estimate of \$247 million.

Remarks: Contractor A has been the sole contractor of MD's marine refuse cleansing and disposal services since July 2005.

2.24 In August 2017, in approving the award of the marine refuse cleansing and disposal contract for the whole of Hong Kong waters, the Central Tender Board recommended that MD should consider adopting the following measures in future tenders to enhance tender competition:

- (a) allowing a longer tender period so that there would be more time for potential tenderers to prepare their proposals;
- (b) shortening the contract period to allow more flexibility for relevant operators in deploying their vessels/manpower in different projects, hence increasing the attractiveness of the contract; and
- (c) allowing a longer gearing up period so that there would be more time for successful tenderers to acquire/line up the necessary vessels and manpower after contract award, hence minimising hurdles to new comers.

2.25 As stated in the Stores and Procurement Regulations, competition is a reliable safeguard against bidders overcharging and holding Government to ransom. In view of the decreasing number of tenders received and the notable increase in the contract expenditure, Audit considers that MD should explore measures to enhance the tender competition of the marine refuse cleansing and disposal services in future, taking into account the comments of the Central Tender Board.

Audit recommendation

2.26 **Audit has *recommended* that the Director of Marine should explore measures to enhance the tender competition of the marine refuse cleansing and disposal services in future, taking into account the comments of the Central Tender Board.**

Response from the Government

2.27 The Director of Marine agrees with the audit recommendation. She has said that MD will take follow-up actions accordingly.

PART 3: MONITORING OF MARINE REFUSE CLEANSING AND DISPOSAL SERVICES

3.1 This PART examines the monitoring of the marine refuse cleansing and disposal services by MD, focusing on:

- (a) monitoring of the marine refuse cleansing work (paras. 3.2 to 3.20); and
- (b) monitoring of the management of MRCPs (paras. 3.21 to 3.29).

Monitoring of the marine refuse cleansing work

Requirements of contract for the whole of Hong Kong waters

3.2 ***Core services.*** The core services provided by the contractor include scavenging of floating refuse, collection of domestic refuse from local vessels and ocean-going vessels, disposal of refuse and foreshore cleansing (see para. 1.13).

3.3 ***Service hours and performance standards.*** Under the existing contract (October 2017 to September 2022), the contractor is required to, among others:

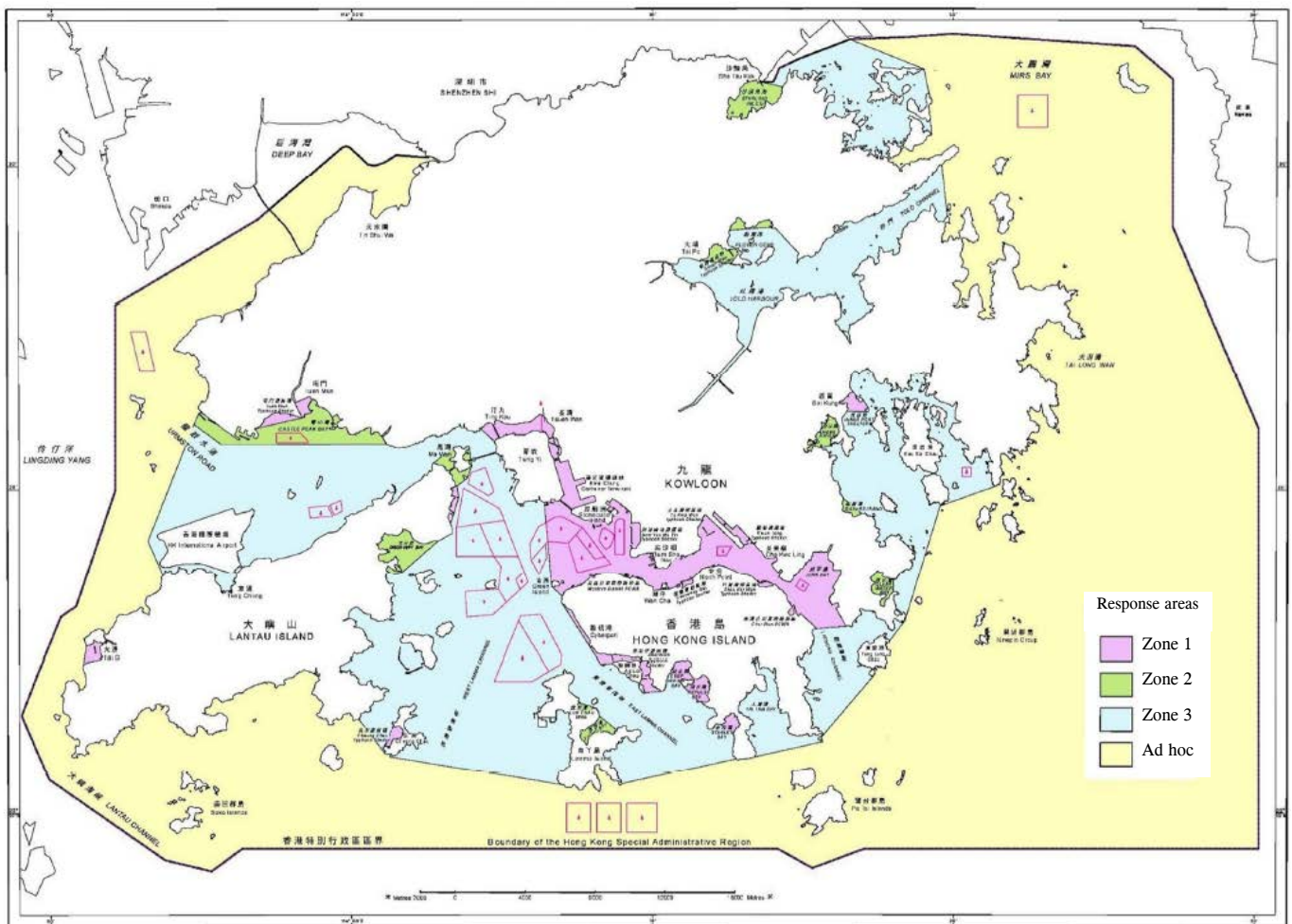
- (a) provide marine refuse cleansing and disposal services during daylight period as defined by the Hong Kong Observatory on each and every day throughout the year including Sundays and General Holidays;
- (b) ensure that each part of the service areas is clean and free from refuse and maintain the cleanliness of the service areas at “Good” level between 8:00 a.m. and 6:00 p.m.;
- (c) if the level of cleanliness of any part of the Hong Kong waters falls below the “Good” level during the service hours, a “Good” level shall be re-established within 30 to 120 minutes, depending on the location of that particular area (see Figure 2), as follows:
 - (i) 30 minutes for areas within Zone 1;

Monitoring of marine refuse cleansing and disposal services

- (ii) 60 minutes for areas within Zone 2; and
- (iii) 120 minutes for areas within Zone 3;

Figure 2

Marine refuse cleansing service areas



Source: MD records

Monitoring of marine refuse cleansing and disposal services

- (d) during the service hours, notwithstanding the cleanliness conditions within the service areas, at least 50% of the contractor's scavenging/collection fleet (Note 22) shall be in operation carrying out the marine refuse cleansing services or patrolling the designated service areas in search for floating refuse; and
- (e) provide foreshore cleansing services every day (except on Sundays and General Holidays) for 9 continuous working hours (including an hour of meal break) within the period between 8:00 a.m. and 7:00 p.m.

Requirements of additional contract for Tai Po District

3.4 ***Core services.*** The core services provided by the contractor include scavenging of floating refuse, collection of domestic refuse from local vessels (when required by MD), disposal of refuse and foreshore cleansing.

3.5 ***Service hours and performance standards.*** Under the contract, the contractor is required to, among others:

- (a) provide marine refuse cleansing and disposal services six days a week including Sundays and General Holidays; and
- (b) ensure that each part of the service areas is clean and free from refuse and maintain the cleanliness of the service areas at "Good" level between 8:00 a.m. and 6:00 p.m.

Monitoring work of MD

3.6 For monitoring the contractor's performance, staff of the Pollution Control Unit are responsible for:

Note 22: *According to the contract, scavenging/collection fleet refers to the total number of vessels to be provided and utilised by the contractor for the purpose of the contract (i.e. 85 vessels provided by the contractor and 3 Government-owned Sea Cleaner class scavenging vessels chartered to the contractor).*

Monitoring of marine refuse cleansing and disposal services

- (a) conducting daily cleanliness patrols on a surprise basis to ensure that cleanliness level is maintained and sufficient resources are deployed by the contractor in accordance with the contract requirements;
- (b) conducting helicopter surveillance regularly to facilitate monitoring of sea surface cleanliness and to respond to any marine refuse found in Hong Kong waters;
- (c) reviewing the various returns and reports submitted by the contractor (e.g. the daily vessel deployment schedules, the monthly work plans for the foreshore cleansing teams and the monthly situation report on “black spots”); and
- (d) conducting monthly meetings with the contractor to follow up on issues relating to the performance of the cleansing contracts.

Need to ensure that the required frequency of daily cleanliness patrols for each patrol area is met

3.7 According to MD’s guidelines:

- (a) the whole of Hong Kong waters is divided into 12 patrol areas (see Figure 1 in para. 1.15). There is a specific harbour cleanliness patrol route for each of the 12 patrol areas and each harbour cleanliness patrol route should be covered in MD’s daily cleanliness patrols at least once in a month;
- (b) the purpose of conducting cleanliness patrols is to inspect and record the cleanliness conditions of the service districts along the selected patrol routes;
- (c) during patrol, the patrol officer is also required to check and record the amount of committed cleansing resources deployed in the cleansing service areas as committed by the contractor in the contracts; and
- (d) for inclusion of a surprise element in the patrol routes, a Marine Inspector I, who is responsible for deciding the patrol routes, should only

Monitoring of marine refuse cleansing and disposal services

inform the patrol officers (at the rank of Marine Inspector II) the evening before conducting the daily cleanliness patrols.

3.8 Audit examined MD's daily cleanliness patrol records of 2019 and noted that in three patrol areas, namely Area 4 (Sai Kung), Area 8 (Lantau South) and Area 9 (Lantau West), the required frequency for conducting daily cleanliness patrols of at least once in a month could not be met. The numbers of months recording no daily cleanliness patrols ranged from 1 to 6. According to MD, besides daily cleanliness patrols, helicopter surveillance was also conducted (see para. 3.6(b)). Taking into account the number of helicopter surveillance conducted in 2019, two areas, namely Area 4 (Sai Kung) and Area 9 (Lantau West) were not inspected by either MD's daily cleanliness patrol or helicopter surveillance at least once in a month. Table 6 shows the numbers of daily cleanliness patrols and helicopter surveillance conducted by MD in 2019.

Monitoring of marine refuse cleansing and disposal services

Table 6

**Numbers of daily cleanliness patrols and
helicopter surveillance conducted in the 12 patrol areas
(January to December 2019)**

Month	Number of daily cleanliness patrols/helicopter surveillance conducted (Note)																										
	Area 1		Area 2		Area 3		Area 4		Area 5		Area 6		Area 7		Area 8		Area 9		Area 10		Area 11		Area 12		Total		
	Harbour		Tolo Harbour		Mirs Bay		Sai Kung		Hong Kong Island East, Tung Lung and Po Toi		Hong Kong Island South and Lamma East		Cheung Chau and Lamma West		Lantau South		Lantau West		Sha Chau and New Territories North		Tuen Mun and Lantau North		Lantau East and Peng Chau				
(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
January	30	2	23	-	20	-	-	-	16	-	24	1	20	1	-	1	1	-	1	-	8	1	3	2	146	8	
February	22	2	27	-	24	-	-	-	1	1	26	1	26	1	-	1	1	-	1	-	13	-	5	1	146	7	
March	28	2	28	1	24	1	3	1	11	1	14	-	7	-	4	-	2	-	8	-	10	-	2	1	141	7	
April	25	2	23	-	14	-	-	-	8	-	14	1	5	1	-	1	-	-	3	-	14	1	4	2	110	8	
May	27	1	27	-	23	-	2	-	19	-	15	-	4	1	-	1	1	-	11	-	2	-	1	1	132	4	
June	29	2	28	1	25	1	2	1	25	1	10	-	9	-	3	-	3	-	8	-	15	-	6	1	163	7	
July	28	2	29	-	25	-	1	-	24	-	18	1	11	1	-	1	2	-	4	-	12	1	4	2	158	8	
August	30	2	27	-	26	-	2	-	21	1	14	1	10	1	1	1	4	-	7	-	19	-	5	1	166	7	
September	26	2	28	1	25	1	3	1	18	1	8	-	7	-	1	-	3	-	2	-	14	-	4	1	139	7	
October	29	1	28	-	24	-	6	-	26	-	14	1	7	1	-	1	2	-	6	-	21	-	3	1	166	5	
November	28	1	29	-	27	-	4	-	27	1	12	1	6	-	2	-	5	-	16	-	9	-	4	-	169	3	
December	28	1	30	-	25	-	4	-	21	1	15	-	5	-	1	-	4	-	2	-	9	-	3	1	147	3	
Total	330	20	327	3	282	3	27	3	217	7	184	7	117	7	12	7	28	-	69	-	146	3	44	14	1,783	74	

Source: Audit analysis of MD records

Note: Columns (a) and (b) show the number of daily cleanliness patrols and the number of helicopter surveillance conducted respectively.

Monitoring of marine refuse cleansing and disposal services

3.9 While MD had conducted helicopter surveillance regularly, Audit considers that helicopter surveillance may not fully serve the purpose of daily cleanliness patrols because:

- (a) during helicopter surveillance, responsible officers were not required to check and record the amount of committed cleansing resources deployed in the cleansing areas as committed by the contractor in the contracts (see para. 3.7(c));
- (b) two patrol areas, namely Area 9 (Lantau West) and Area 10 (Sha Chau and New Territories North), were not covered by any of the six routes of helicopter surveillance; and
- (c) there was no surprise element (see para. 3.7(d)) in helicopter surveillance. In 2019, the routes were determined at least one week (up to one month) before conducting the helicopter surveillance.

In Audit's view, MD needs to take measures to ensure that the required frequency of daily cleanliness patrols for each patrol area is met.

Need to take into account service requests received in selecting patrol areas

3.10 *A large number of service requests received by MD.* MD received complaints and service requests (Note 23) from various channels, including the Government's 24-hour hotline (i.e. 1823) and the departmental hotline. Audit noted that since the introduction of its classification in 2017, a large number of service requests relating to marine refuse had been received by MD (ranging from 568 to 691 cases annually) (see Table 7).

Note 23: *The classification of service request was introduced in 2017. According to MD's guidelines, a service request is defined as a case where the intention of the public is to draw MD's attention on work that is needed to be done so as to keep public order and cleanliness.*

Table 7**Numbers of complaints and service requests
relating to marine refuse received by MD
(2015 to 2019)**

	2015	2016	2017	2018	2019
Number of complaints	708	1,110	11	9	12
Number of service requests (Note)	Not applicable		678	691	568
Total	708	1,110	689	700	580

Source: Audit analysis of MD records

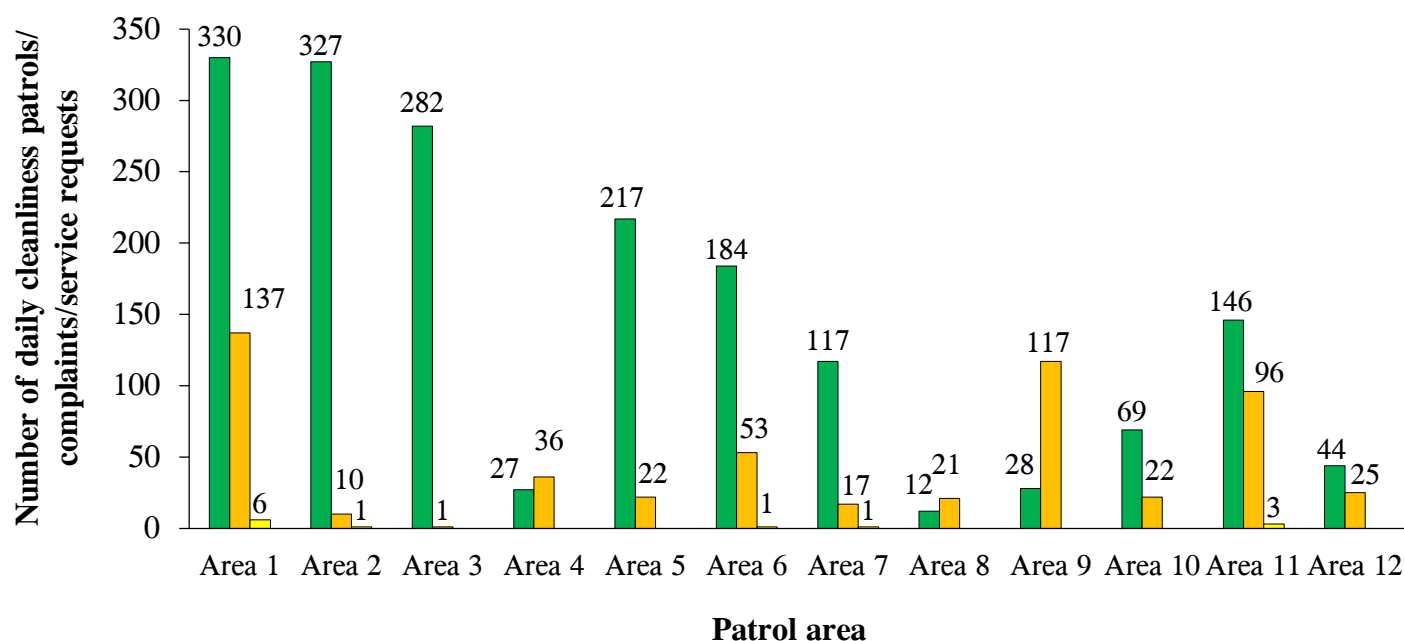
Note: The classification of service request was introduced in 2017.

3.11 ***Number of service requests not taken into account in selecting patrol areas for conducting daily cleanliness patrols.*** Audit noted that while there were a large number of service requests received each year, MD's guidelines only stated that the number of complaints received from the public should match with the frequency of patrol visits, but did not mention that the number of service requests received should also be taken into account in selecting patrol areas for conducting daily cleanliness patrols (Note 24). Audit analysed the numbers of daily cleanliness patrols conducted, complaints and service requests relating to marine refuse received in 2019. As shown in Figure 3, Area 9 (Lantau West) ranked second in the number of service requests received (117) but the number of patrol visits (28) was significantly fewer than most other patrol areas.

Note 24: *According to MD's guidelines, other factors that should be taken into consideration include the recent patrol routes taken, recent comments made by preceding patrol officers, and the possible accumulation of floating refuse hinted by the prevailing weather condition.*

Figure 3

Numbers of daily cleanliness patrols conducted, complaints and service requests received analysed by patrol area (2019)



Legend:
■ Daily cleanliness patrols
■ Service requests
■ Complaints

Source: Audit analysis of MD records

Remarks:

- (a) No complaint was received for Areas 3 to 5, 8 to 10 and 12 in 2019.
- (b) 11 service requests were not included because their locations had not been recorded.

3.12 In response to Audit's enquiry, in September 2020, MD said that for Area 9 (Lantau West):

- (a) of the 117 service requests received in 2019, 79 (68%) were filed by a single pier operator. Due to the need to maintain normal operation of the high-speed craft, the operator might have concern on the sea surface cleanliness. Hence, the operator had filed multiple requests and the contractor had been instructed to clean the area upon each service request received; and

- (b) given that there were multiple requests for cleansing service at the same location, the frequency of patrol visits was less than the number of service requests received.

In Audit's view, the number of service requests received for a patrol area may be an indicator of the cleanliness condition, reflecting the contractor's performance in that particular patrol area. MD needs to take into account the number of service requests received in selecting patrol areas for conducting daily cleanliness patrols.

Need to step up monitoring of contractor's marine refuse cleansing work

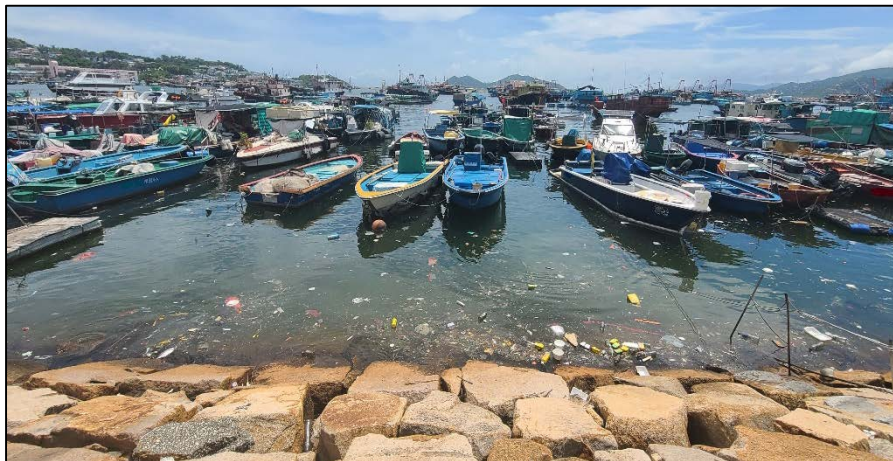
3.13 To assess the performance of the contractor's marine refuse cleansing work, Audit conducted four site inspections in June and July 2020, and noted room for improvement, as follows:

- (a) ***Cheung Chau Typhoon Shelter.*** On Friday, 26 June 2020 (at 10:10 a.m.), Audit noted that there was floating refuse in the Cheung Chau Typhoon Shelter along the Pak She Praya Road and near the Kwok Man Road Refuse Collection Point, and at the same time, the workers of the contractor were conducting marine refuse cleansing work at the Cheung Chau Ferry Pier (about 270 metres from the location where the floating refuse was found). In the afternoon (at 1:50 p.m.), Audit found that the floating refuse along the promenade had not been removed (see Photograph 3) and reported (in the capacity of a member of the public) the location concerned to MD at 2:21 p.m. for arranging marine refuse cleansing work via the 24-hour hotline (i.e. 1823) (Note 25). While the workers of the contractor came to the Typhoon Shelter to conduct marine refuse cleansing work at 3:04 p.m., they did not remove the floating refuse (see Photograph 4) at the reported location and left the Typhoon Shelter at 3:53 p.m. Audit revisited the Cheung Chau Typhoon Shelter on Tuesday, 30 June 2020 (at 3:30 p.m.) and noted that there was still floating refuse (see Photograph 5) at the same location reported to MD on 26 June 2020;

Note 25: *According to MD, the service request was received from the 24-hour hotline at 2:41 p.m. and referred to the contractor for follow-up actions at 3:01 p.m.*

Photograph 3

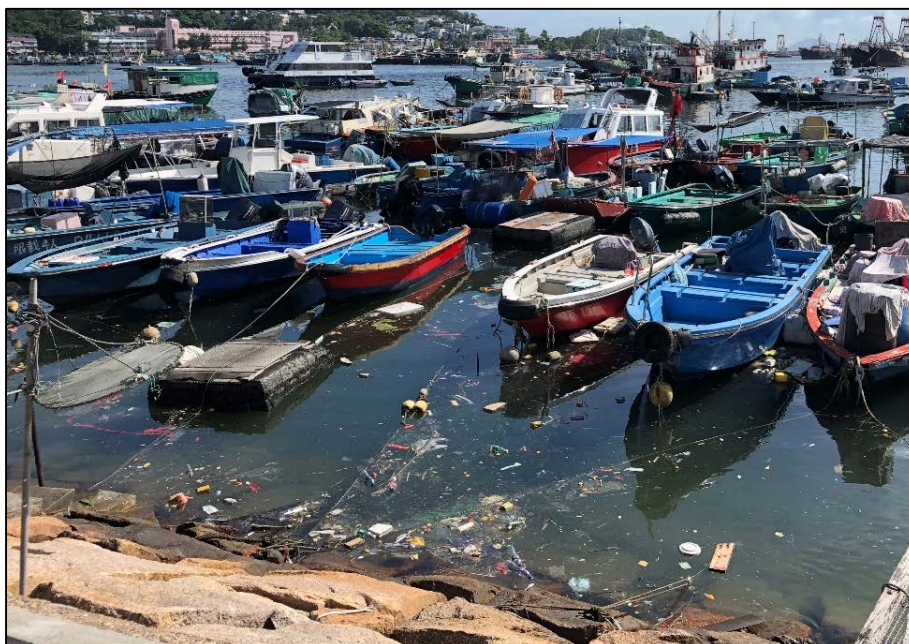
Floating refuse found in Cheung Chau Typhoon Shelter



*Source: Photograph taken by Audit staff on Friday, 26 June 2020
(at 1:50 p.m.)*

Photograph 4

Floating refuse found in Cheung Chau Typhoon Shelter



*Source: Photograph taken by Audit staff on Friday, 26 June 2020
(at 3:53 p.m.)*

Photograph 5

Floating refuse found in Cheung Chau Typhoon Shelter



Source: Photograph taken by Audit staff on Tuesday, 30 June 2020 (at 3:30 p.m.)

- (b) ***Sam Ka Tsuen Typhoon Shelter.*** The Sam Ka Tsuen Typhoon Shelter is one of the 43 priority areas, at which the contractor's workboats should patrol to search for floating refuse and scavenge them from the sea (see para. 1.13(a)). On Friday, 3 July 2020, during Audit's site inspection from 9:00 a.m. to 6:00 p.m., Audit noted that the workers of the contractor had come to the Typhoon Shelter and conducted floating refuse scavenging work, foreshore cleansing work and collection of domestic refuse for about 1 hour and 24 minutes. However, after the workers had left the Typhoon Shelter at 4:00 p.m., the level of cleanliness of the Typhoon Shelter appeared to be not up to the "Good" level (see Photograph 6) as required by the contract (see para. 1.16);

Photograph 6

Sam Ka Tsuen Typhoon Shelter



Source: Photograph taken by Audit staff on Friday, 3 July 2020
(at 5:00 p.m.)

- (c) ***Tuen Mun Typhoon Shelter and Castle Peak Bay Waterfront Promenade.***
The Tuen Mun Typhoon Shelter is next to the Castle Peak Bay Waterfront Promenade. They are located within Zone 2 (see para. 3.3(c)). According to contract provisions, if the level of cleanliness of any part within Zone 2 falls below the “Good” level during the service hours (i.e. between 8:00 a.m. and 6:00 p.m.), a “Good” level shall be re-established within 60 minutes. On Friday, 10 July 2020 (at 9:30 a.m.), Audit noted that there was floating refuse (see Photograph 7) near the Tuen Mun Typhoon Shelter and the Castle Peak Bay Waterfront Promenade, and reported (in the capacity of a member of the public) the location concerned to MD for arranging marine refuse cleansing work via the 24-hour hotline (i.e. 1823) at 10:41 a.m. (Note 26). However, up to 1:00 p.m., no workers of the contractor had come to the Tuen Mun Typhoon Shelter to remove the floating refuse (see Photograph 8) at the reported location. After Audit had

Note 26: According to MD, the service request was received from the 24-hour hotline at 11:34 a.m. and referred to the contractor for follow-up actions at 11:56 a.m.

Monitoring of marine refuse cleansing and disposal services

made another report (in the capacity of a member of the public) via the contractor's hotline at 1:05 p.m., the workers of the contractor came to conduct marine refuse cleansing work at 1:39 p.m. However, they did not remove all the floating refuse (see Photograph 9) at the reported location and left at 2:23 p.m. Until the end of Audit's site inspection at 4:00 p.m., the contractor had not turned up again to remove the refuse; and

Photographs 7 and 8

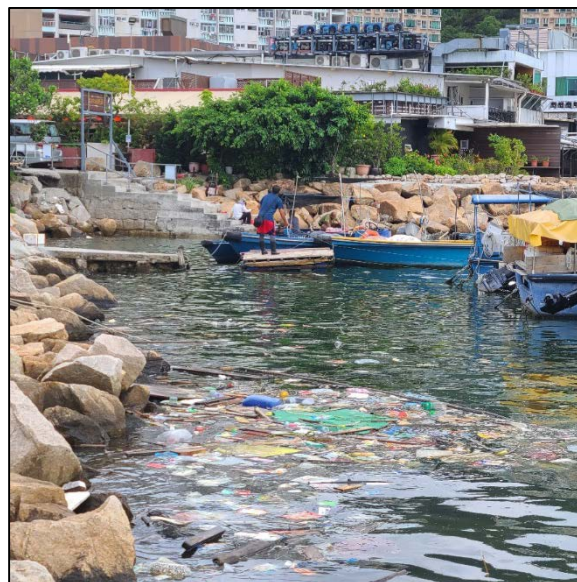
Floating refuse found in Tuen Mun Typhoon Shelter and Castle Peak Bay Waterfront Promenade

Photograph 7



At 9:30 a.m.

Photograph 8



At 1:00 p.m.

Source: Photographs taken by Audit staff on Friday, 10 July 2020

Photograph 9

**Floating refuse found in Tuen Mun Typhoon Shelter
and Castle Peak Bay Waterfront Promenade**



Source: Photograph taken by Audit staff on Friday, 10 July 2020 (at 2:23 p.m.)

- (d) ***Kwun Tong Typhoon Shelter and Kwun Tong Promenade.*** The Kwun Tong Typhoon Shelter, which is one of the 43 priority areas, is next to the Kwun Tong Promenade. They are located within Zone 1. According to contract provisions, if the level of cleanliness of any part within Zone 1 falls below the “Good” level during the service hours, a “Good” level shall be re-established within 30 minutes. On Monday, 13 July 2020 (at 9:00 a.m.), Audit noted that there was floating refuse along the Kwun Tong Promenade in the Kwun Tong Typhoon Shelter. As no workers of the contractor had come to the Typhoon Shelter to conduct marine refuse cleansing work by noon (see Photographs 10 and 11), Audit reported (in the capacity of a member of the public) the location concerned to MD for arranging marine refuse cleansing work via the 24-hour hotline (i.e. 1823) at 1:46 p.m. (Note 27). MD’s patrol launch and the workers of the contractor arrived at the reported location at 2:48 p.m. and 2:52 p.m. (i.e. more than 60 minutes after Audit had reported the case) respectively. While MD’s launch left at 3:26 p.m., the workers of the contractor also left the Typhoon Shelter at 3:35 p.m. after conducting marine refuse

Note 27: *According to MD, the service request was received from the 24-hour hotline at 1:56 p.m. and referred to the contractor for follow-up actions at 2:11 p.m.*

Monitoring of marine refuse cleansing and disposal services

cleansing work at the reported location. However, Audit noted that the floating refuse concerned had not been fully removed and the level of cleanliness appeared to be not up to the “Good” level (see Photograph 12) as required by the contract. Until the end of Audit’s site inspection at 5:00 p.m., the contractor had not turned up again to remove the refuse.

Photographs 10 and 11

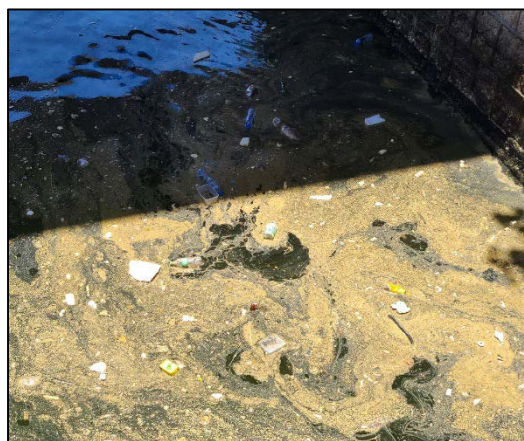
Floating refuse found in Kwun Tong Typhoon Shelter and Kwun Tong Promenade

Photograph 10



At 12:08 p.m.

Photograph 11



At 12:35 p.m.

Source: Photographs taken by Audit staff on Monday, 13 July 2020

Photograph 12

**Floating refuse found in
Kwun Tong Typhoon Shelter and Kwun Tong Promenade**



*Source: Photograph taken by Audit staff on Monday, 13 July 2020
(at 4:18 p.m.)*

3.14 ***Feedback from MD and the contractor.*** In September 2020, MD said that according to MD's records and the reports submitted by the contractor:

- (a) ***Cheung Chau Typhoon Shelter.*** The workers of the contractor had arrived at the area and conducted cleansing work from 3:12 p.m. to 4:00 p.m. on Friday, 26 June 2020. For the floating refuse observed during Audit's site inspection on Tuesday, 30 June 2020, considering the time difference between Audit's two site inspections, there was a possibility that the floating refuse reappeared after the contractor had collected the refuse;
- (b) ***Tuen Mun Typhoon Shelter and Castle Peak Bay Waterfront Promenade.*** The workers of the contractor had arrived at the area at 12:05 p.m. to conduct cleansing work on Friday, 10 July 2020. However, the workboat deployed by the contractor could not reach the foreshore area due to shallow water. The contractor then deployed a foreshore cleansing team to conduct cleansing work at the area from 1:30 p.m. to 2:00 p.m., and MD's officers had inspected the area at 2:15 p.m.; and

- (c) *Kwun Tong Typhoon Shelter and Kwun Tong Promenade.* Prior to receiving the service request (made by Audit in the capacity of a member of the public at 1:56 p.m.) from the 24-hour hotline, MD had received two service requests from an anonymous caller and the Harbour Patrol Section of MD at 1:10 p.m. and 1:30 p.m. respectively. For the service request made by Audit, workers of the contractor arrived at the area to conduct cleansing work from 2:11 p.m. to 2:35 p.m.

3.15 According to MD:

- (a) based on existing practice, upon receiving a request from the 24-hour hotline, MD will notify the contractor of the area concerned and instruct the contractor to restore the cleanliness level to a “Good” level during the service hours;
- (b) the time limit (see para. 3.3(c)) for restoring the area concerned to a “Good” level starts to count when the contractor receives an order from MD; and
- (c) given that time may be lost from communicating the service requests from the 24-hour hotline to MD and then from MD to the contractor, from the perspective of the person filing the service request, it may take longer than expected for the cleanliness level to restore. Nevertheless, MD understands that there is room for improvement on the contractor’s performance in responding to service requests.

In Audit’s view, with a view to meeting the performance standards of the contracts that the cleanliness of each part of Hong Kong waters should be maintained at “Good” level during the service hours (i.e. between 8:00 a.m. and 6:00 p.m.), MD needs to step up the monitoring of the contractor’s marine refuse cleansing work. MD also needs to take measures to ensure that service requests made by the public are responded to in a timely manner and up to service requirements in accordance with the contract provisions.

Pleasure vessels deployed to conduct marine refuse cleansing work

3.16 Prior to operating a vessel in Hong Kong waters, the owner of the vessel should apply to the Director of Marine for certification and licensing for the appropriate class and type specified in Schedule 1 to the Merchant Shipping (Local Vessels) (Certification and Licensing) Regulation (Cap. 548D). Broadly speaking, Classes I to IV refer to vessels with the following functions:

- (a) **Class I.** Class I vessels are passenger vessels (e.g. ferries and launches);
- (b) **Class II.** Class II vessels are cargo vessels (e.g. dry cargo vessels and work boats);
- (c) **Class III.** Class III vessels are fishing vessels (e.g. fish carriers and fishing sampans); and
- (d) **Class IV.** Class IV vessels are pleasure vessels (e.g. cruisers and auxiliary powered yachts).

Each class of vessels is subject to a different set of safety standards. Audit noted that more stringent requirements (such as requirements for statutory survey and crew requirements) are imposed on Classes I, II and III vessels as compared with Class IV vessels (i.e. pleasure vessels).

3.17 During the site inspections conducted in June and July 2020, Audit noted that the contractor deployed four vessels (see Photographs 13 and 14 for examples) which had not been included in the list of vessels (which formed part of the tender) submitted to MD. Based on the licence numbers of the four vessels, Audit noted that they were Class IV vessels (i.e. pleasure vessels). As Class IV vessels should be used exclusively for pleasure purposes, deploying them for marine refuse cleansing work might have contravened the legislation.

Photograph 13

**Class IV vessel (i.e. pleasure vessel) used for
marine refuse cleansing work in Cheung Chau
Typhoon Shelter**



*Source: Photograph taken by Audit staff on Friday,
26 June 2020*

Photograph 14

**Class IV vessel (i.e. pleasure vessel) used for
marine refuse cleansing work in
Sam Ka Tsuen Typhoon Shelter**



*Source: Photograph taken by Audit staff on Friday,
3 July 2020*

Monitoring of marine refuse cleansing and disposal services

3.18 In early September 2020, Audit referred the information relating to the four Class IV vessels (i.e. pleasure vessels) deployed by the contractor to MD for taking follow-up actions. In late September 2020, MD informed Audit that:

- (a) for the use of three of the four Class IV vessels, two default notices had been issued to the contractor. The relevant information had been referred to the enforcement section of MD for necessary follow-up actions; and
- (b) for the remaining case, MD was conducting an investigation.

In order to safeguard the safety of the contractor's workers and comply with the requirements of the pertinent regulation, MD needs to take appropriate follow-up actions with the contractor on the issue of vessel licensing, and take measures to ensure that only vessels with appropriate licences are deployed for marine refuse cleansing work.

Audit recommendations

3.19 **Audit has *recommended* that the Director of Marine should:**

- (a) **take measures to ensure that the required frequency of daily cleanliness patrols for each patrol area is met;**
- (b) **take into account the number of service requests received in selecting patrol areas for conducting daily cleanliness patrols;**
- (c) **step up the monitoring of the contractor's marine refuse cleansing work with a view to meeting the performance standards of the contracts;**
- (d) **take measures to ensure that service requests made by the public are responded to in a timely manner and up to service requirements in accordance with the contract provisions; and**
- (e) **take appropriate follow-up actions with the contractor on the issue of vessel licensing, and take measures to ensure that only vessels with appropriate licences are deployed for marine refuse cleansing work.**

Response from the Government

3.20 The Director of Marine agrees with the audit recommendations. She has said that:

- (a) for the issue on deploying pleasure vessels to conduct marine refuse cleansing work, default notices have already been issued to the contractor; and
- (b) the relevant information had been referred to the enforcement section of MD for necessary follow-up actions. MD will continue to monitor the work of the contractor.

Monitoring of the management of marine refuse collection points

Operation of MRCPs

3.21 There are currently four MRCPs in Hong Kong. They are located in Cha Kwo Ling, Ap Lei Chau, Kowloon West and Tuen Mun, and managed by the contractor. Floating refuse and domestic refuse collected from boats and ships are transported to MRCPs for loading into temporary storage containers for subsequent conveyance to and disposal at disposal sites.

3.22 According to the tender documents of the contracts for the whole of Hong Kong waters (October 2017 to September 2022) and Tai Po District (October 2018 to September 2020), for MRCPs, the contractor is required to, among others:

- (a) supply containers with proper covers for temporary storage of refuse, and secure the containers within the collection points;
- (b) operate the lifting appliances to unload refuse from scavenging/collection vessels;
- (c) empty the containers at the collection points at the end of each working day; and

Monitoring of marine refuse cleansing and disposal services

- (d) maintain the collection points in tidy and clean conditions to the satisfaction of MD's inspecting officers.

3.23 According to the implementation plan (which formed part of the contract) of the contract for the whole of Hong Kong waters (October 2017 to September 2022):

- (a) each of the four MRCPs is manned by one operator, who is responsible for:
 - (i) operating the lifting appliance (if applicable — see para. 3.26); and
 - (ii) keeping the hygiene and security condition at good level; and
- (b) service hours of MRCPs are from 8:00 a.m. to 7:00 p.m. every day.

Need to step up monitoring of the management of MRCPs

3.24 ***Audit's site inspections.*** In July and August 2020, Audit conducted six site inspections on the operations of the four MRCPs and noted the following (see Table 8):

- (a) ***No daily transportation of marine refuse from MRCPs to disposal sites.*** While Audit noted that there was marine refuse unloaded to the containers in the MRCPs in Tuen Mun and Ap Lei Chau on 14 July 2020 (Tuesday) and 15 July 2020 (Wednesday) respectively, the sub-contractor's vehicle (i.e. Vehicle 1) did not visit the two MRCPs to collect the marine refuse for disposal during the service hours of MRCPs (i.e. 8:00 a.m. to 7:00 p.m.) on those two days;
- (b) ***MRCP in Cha Kwo Ling not in operation.*** Audit noted that the MRCP in Cha Kwo Ling was not in operation and might have been abandoned, as evidenced by the following:
 - (i) the MRCP was not manned by any contractor's staff and its gate was found open on both 1 July 2020 (Wednesday) and 14 August 2020 (Friday);

Monitoring of marine refuse cleansing and disposal services

- (ii) the lifting appliance was found to be out of order on 1 July 2020 and remained unrepaired on 14 August 2020 (see Photograph 15);
 - (iii) a container, which might be used as the contractor's office, was found abandoned on 1 July 2020 (see Photograph 16) and remained the same on 14 August 2020; and
 - (iv) the MRCP was not in a tidy and clean condition on both 1 July 2020 and 14 August 2020 (see Photographs 17 and 18); and
- (c) ***MRCP in Ap Lei Chau not manned by contractor's staff.*** While refuse was unloaded from a contractor's vessel (by the vessel's lifting equipment) to the container in the MRCP in Ap Lei Chau, Audit noted that the MRCP was not manned by any contractor's staff and the gate was locked during Audit's inspections on 15 July 2020 (Wednesday) and 14 August 2020 (Friday). The gate was only opened twice on 15 July 2020 by a driver of the sub-contractor to collect and return to park Vehicle 1 respectively.

Audit further examined the employment contracts of the MRCP operators and noted that they were only required to work six days a week from 8:00 a.m. to 5:30 p.m. (see para. 3.23(b)) (Note 28).

Note 28: *According to MD, the vehicle collecting marine refuse usually arrives at the MRCP during day time. If necessary, the MRCP operators will be required to work overtime from 5:30 p.m. to 7:00 p.m. and there is a relief operator employed by the contractor to maintain the service of the four MRCPs every day.*

Monitoring of marine refuse cleansing and disposal services

Table 8

**Results of Audit's site inspections of the operations of the four MRCPs
(July and August 2020)**

MRCP	Date of inspection	Time of inspection	During Audit's site inspection		
			Presence of contractor's staff	Refuse unloaded from contractor's vessels	Visit by sub-contractor's vehicle to collect refuse
Cha Kwo Ling (Note 1)	1 July 2020	3:00 p.m. to 3:30 p.m.	No	No	No
	14 August 2020	2:00 p.m. to 2:30 p.m.	No	No	No
Tuen Mun	14 July 2020	7:45 a.m. to 7:00 p.m.	Yes	Yes	No
Ap Lei Chau (Note 2)	15 July 2020	7:45 a.m. to 7:00 p.m.	No	Yes	No
	14 August 2020	4:15 p.m. to 7:00 p.m.	No	No	No
Kowloon West (Note 3)	18 July 2020	1:00 p.m. to 5:00 p.m.	Yes	Yes	No

Source: Audit's site inspections in July and August 2020

Note 1: The MRCP in Cha Kwo Ling was not in operation and its gate was found open during Audit's inspections. It might have been abandoned.

Note 2: The MRCP in Ap Lei Chau was locked during Audit's inspections. The gate was only opened twice on 15 July 2020 by a driver of the sub-contractor to collect and return to park Vehicle 1 respectively.

Note 3: On the day of Audit's site inspection, some contractor's staff of the MRCP in Kowloon West closed the gate and left the MRCP at 4:30 p.m. Audit could not ascertain whether there were other contractor's staff present in the MRCP after 4:30 p.m. by observing the MRCP from outside.

Photograph 15

Lifting appliance in MRCP in Cha Kwo Ling out of order



Source: Photograph taken by Audit staff on 14 August 2020

Photograph 16

Abandoned container in MRCP in Cha Kwo Ling



Source: Photograph taken by Audit staff on 1 July 2020

Photograph 17

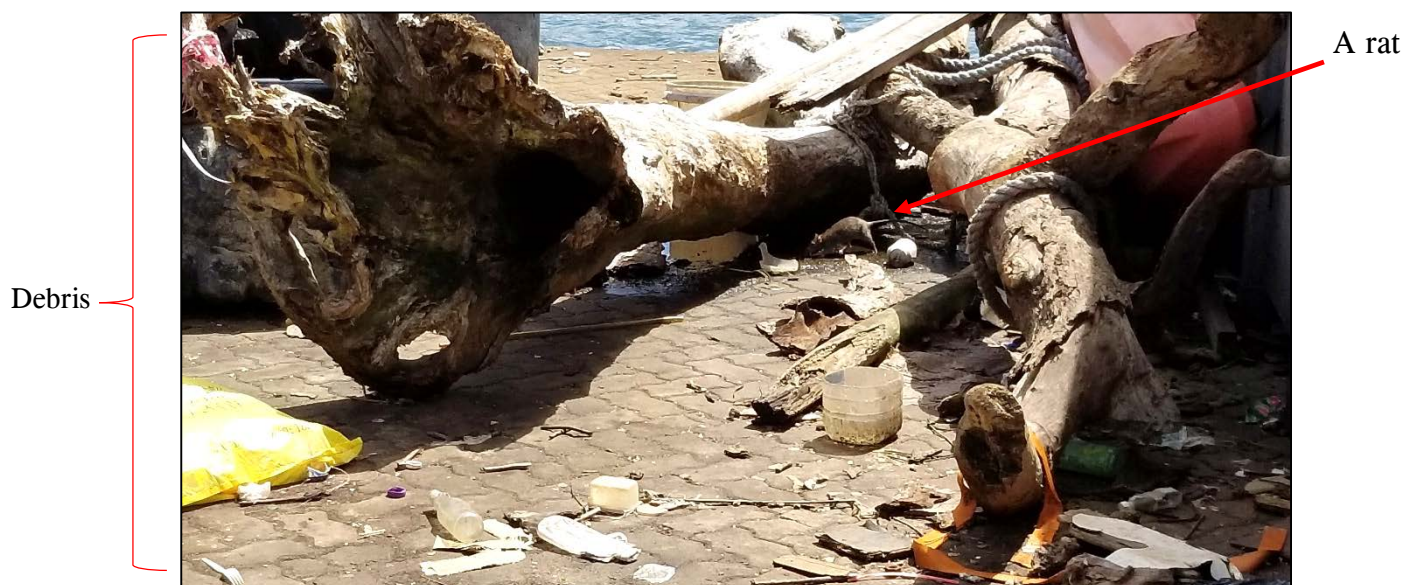
MRCP in Cha Kwo Ling not in a tidy and clean condition



Source: Photograph taken by Audit staff on 14 August 2020

Photograph 18

MRCP in Cha Kwo Ling not in a tidy and clean condition



Source: Photograph taken by Audit staff on 14 August 2020

3.25 *Operation of MRCP in Cha Kwo Ling.* In September 2020, MD informed Audit that:

- (a) the container (see para. 3.24(b)(iii)), which was used for general storage, was removed from the MRCP in Cha Kwo Ling on 14 September 2020;
- (b) the MRCP in Cha Kwo Ling was still in operation for transferring marine refuse collected from the eastern waters of Hong Kong. However, the contractor advised that trespassing in the site (i.e. for fishing activities) was common and the lock of the gate was found damaged frequently; and
- (c) MD would step up monitoring of the contractor's management of the MRCP in Cha Kwo Ling and post warning notices to warn off trespassers.

3.26 *Lifting appliances in MRCPs.* Except for the MRCP in Tuen Mun, the other three MRCPs are each equipped with a lifting appliance for unloading marine refuse from the contractor's vessels. While the lifting appliance in the MRCP in Cha Kwo Ling remained unrepaired up to 14 August 2020 (see para. 3.24(b)(ii)), Audit noted that the lifting appliance in the MRCP in Ap Lei Chau had been out of order since October 2017 (i.e. the commencement of the contract for the whole of Hong Kong waters) (Note 29) and MD had planned to complete the procurement procedures for its replacement by June 2020. However, according to MD, due to the impact of the COVID-19 outbreak, the relevant procurement procedure has been delayed.

3.27 In Audit's view, MD needs to take appropriate follow-up actions on the issues with the contractor (see paras. 3.24 and 3.25) and step up the monitoring of the management of the MRCPs with a view to ensuring that the performance of the contractor is up to the standards specified in the contracts. Audit considers that MD needs to review the need for the lifting appliances in the MRCPs in Cha Kwo Ling and Ap Lei Chau, and expedite the repair/replacement as appropriate.

Note 29: According to MD, the contractor had been using the vessels' lifting equipment to unload marine refuse to containers in the MRCP in Ap Lei Chau.

Audit recommendations

- 3.28 **Audit has *recommended* that the Director of Marine should:**
- (a) **take appropriate follow-up actions on the issues identified in paragraphs 3.24 and 3.25 with the contractor, and step up the monitoring of the management of the MRCs with a view to ensuring that the performance of the contractor is up to the standards specified in the contracts; and**
 - (b) **review the need for the lifting appliances in the MRCs in Cha Kwo Ling and Ap Lei Chau, and expedite the repair/replacement as appropriate.**

Response from the Government

3.29 The Director of Marine agrees with the audit recommendations. She has said that MD will:

- (a) step up the monitoring of the contractor's management of MRCs; and
- (b) liaise with the relevant department to expedite the repair/replacement of the lifting appliances in the MRCs.

PART 4: OTHER RELATED ISSUES

4.1 This PART examines other issues relating to the tackling of marine refuse, focusing on:

- (a) enforcement against marine littering (paras. 4.2 to 4.10);
- (b) dissemination of information on website (paras. 4.11 to 4.15); and
- (c) new initiatives in tackling marine refuse (paras. 4.16 to 4.22).

Enforcement against marine littering

4.2 MD is one of the departments responsible for taking enforcement actions against marine littering (Note 30). The relevant Ordinances are the Fixed Penalty (Public Cleanliness and Obstruction) Ordinance and the Summary Offences Ordinance (see para. 1.7(c)).

4.3 The Pollution Control Unit conducts daily cleanliness patrols in Hong Kong waters to inspect the cleanliness condition of various zones of Hong Kong waters, monitor the contractor's performance, and conduct enforcement actions against marine littering. Special operations at marine littering black spots (e.g. promenades and typhoon shelters) are also conducted regularly.

4.4 Audit noted that from 2015 to 2019, MD on average took enforcement actions on 15 marine littering cases annually (ranging from 13 to 17 per annum) (see Table 9).

Note 30: *Other law enforcement departments relating to marine littering are the Leisure and Cultural Services Department, the Agriculture, Fisheries and Conservation Department, and the Food and Environmental Hygiene Department.*

Table 9

Statistics on MD's enforcement against marine littering
(2015 to 2019)

Year	Number of cases			Amount of fines collected (\$)		
	Fixed Penalty Notice (a)	Summons (b)	Total (c) = (a) + (b)	Fixed Penalty Notice (d)	Summons (e)	Total (f) = (d) + (e)
2015	12	1	13	18,000	2,500	20,500
2016	15	—	15	22,500	—	22,500
2017	15	—	15	22,500	—	22,500
2018	15	1	16	22,500	1,500	24,000
2019	17	—	17	25,500	—	25,500

Source: Audit analysis of MD records

Need to consider arranging more anti-marine littering operations by officers in plain clothes to take enforcement actions

4.5 Audit noted that at the meetings of the then Inter-departmental Working Group on Clean Shorelines (Note 31) held in May 2016 and January 2017, the Chairman noted that no littering act had been observed during MD's anti-marine littering operations conducted in early morning targeting seafood hawkers at the Aberdeen promenade since April 2016 and asked whether cooperation from the hawkers was observed instead. MD said that only officers in uniform could take enforcement actions. As officers in uniform might have alerted the hawkers, MD had

Note 31: *Chaired by the Permanent Secretary for the Environment, the Working Group was set up in November 2012 to enhance the collaboration among relevant government departments to address marine refuse problem. In January 2018, the Working Group was revamped and renamed as Inter-departmental Working Group on Marine Environmental Management with two task forces set up under it.*

arranged officers in plain clothes to spot for littering acts in the vicinity and referred to officers in uniform for action. Taking into consideration that the Food and Environmental Hygiene Department had authorised some dedicated officers to take enforcement actions in plain clothes, the Chairman invited MD to consider similar arrangement in future enforcement operations with a view to increasing the deterrent effect.

4.6 In August 2020, MD informed Audit that:

- (a) according to the legal advice obtained from the Department of Justice in May 2017, MD officers could all along take enforcement actions in plain clothes and no separate authorisation was needed; and
- (b) of the 17 marine littering cases in 2019 (see Table 9), enforcement actions of 3 (18%) were taken by officers in plain clothes.

Audit noted that of the 280 anti-marine littering operations conducted by MD in 2019, 270 (96%) were conducted during the daily cleanliness patrols when MD's officers should be in uniform. While the annual statistics on MD's enforcement against marine littering remained steady (ranging from 13 to 17 cases in the period from 2015 to 2019), with a view to increasing the deterrent effect, MD needs to consider arranging more anti-marine littering operations by officers in plain clothes to take enforcement actions.

Need to take into consideration the source activities of marine refuse in planning enforcement operations

4.7 According to the Marine Refuse Study (see para. 1.4) commissioned by EPD in March 2013 and released in April 2015, shoreline and recreational activities and ocean/waterway activities are the two major source activities of marine refuse and contributed about 89% of marine refuse in Hong Kong (see Table 10).

Table 10

**Percentage of marine refuse due to human activities
(April 2013 to March 2014)**

Type of activity	Examples of marine refuse	Percentage of marine refuse		
		Floating refuse (%)	Shoreline refuse (%)	Total (%)
Shoreline and recreational activities	Beverage cans/bottles, food wrappers, cutlery	50.4	22.3	72.7
Ocean/waterway activities	Lube oil bottles, fishing nets, buoys	13.3	2.9	16.2
Smoking-related activities	Cigarette butts, lighters	3.9	0.4	4.3
Dumping activities	Paint tins, rubber tyres, bricks	2.3	1.1	3.4
Medical/personal hygiene uses	Cotton buds, diapers	3.1	0.3	3.4
Total		73.0	27.0	100.0

88.9%

Source: Audit analysis of the Marine Refuse Study Report released in April 2015

4.8 In view of the high percentage of marine refuse resulting from shorelines and recreational activities, Audit considers that in planning its enforcement operations, MD should take into consideration the source activities of marine refuse. Also, as 23 (70%) of the 33 (16+17) marine littering cases (see Table 9 in para. 4.4) with enforcement actions taken by MD in 2018 and 2019 involved the littering of cigarette butts, MD needs to step up publicity campaign to curb illegal littering of cigarette butts into waters and shorelines.

Audit recommendations

- 4.9 **Audit has *recommended* that the Director of Marine should:**
- (a) **consider arranging more anti-marine littering operations by officers in plain clothes to take enforcement actions;**
 - (b) **take into consideration the source activities of marine refuse in planning enforcement operations; and**
 - (c) **step up publicity campaign to curb illegal littering of cigarette butts into waters and shorelines.**

Response from the Government

4.10 The Director of Marine agrees with the audit recommendations. She has said that MD will take follow-up actions accordingly.

Dissemination of information on website

Need to ensure accuracy of information provided on website

4.11 The “Clean Shorelines” website, which is maintained by EPD, is a dedicated platform for interaction with local community and the public for releasing information about the Government’s initiatives and measures in tackling shoreline refuse. Information available on the website includes shorelines clean-up events organised by the Government and other non-governmental organisations, and the clean-up arrangements and promotional measures undertaken by relevant departments.

4.12 Audit noted that the information relating to MD’s marine refuse cleansing work on the website was not entirely accurate. On the website, MD’s illustration of level of cleanliness was included and it was stated that:

- (a) the contractor shall maintain the service areas at or above the “Satisfactory” level between 8:00 a.m. and 6:00 p.m.; and

Other related issues

- (b) if the sea cleanliness falls below the “Satisfactory” level, the “Satisfactory” level shall be re-established within the specified time.

However, according to the performance standards required by MD’s contracts, the contractor should maintain the service areas at “Good” level (i.e. one level higher than the “Satisfactory” level) (see para. 1.16) and take follow-up actions if the sea cleanliness falls below the “Good” level.

4.13 In early September 2020, Audit informed MD and EPD that according to MD’s contracts, the level of cleanliness should be maintained at “Good” level, instead of “Satisfactory” level. In late September 2020, EPD informed Audit that:

- (a) the spotted discrepancy was only a minor one, and had been instantly corrected, while the information of the entire “Clean Shorelines” website remained accurate and up-to-date; and
- (b) there had been continuous efforts made to ensure the accuracy of the website contents.

As the “Clean Shorelines” website is a platform for interaction with local community and the public, it is essential to ensure that the information on the website is accurate. With a view to ensuring that the information relating to MD’s marine refuse cleansing work provided on the website is accurate and up-to-date, Audit considers that MD should regularly review the website information, and inform EPD of any update required.

Audit recommendation

4.14 **Audit has *recommended* that the Director of Marine should regularly review the information provided on the “Clean Shorelines” website with a view to ensuring that the information relating to MD’s marine refuse cleansing work provided on the website is accurate and up-to-date.**

Response from the Government

4.15 The Director of Marine agrees with the audit recommendation. She has said that MD will take follow-up actions accordingly.

New initiatives in tackling marine refuse

Need to expedite completion of the trial run of floating booms

4.16 Floating booms (also known as containment booms) (see Photograph 19 for an example) are floating barriers designed to contain and control pollutants, such as debris, trash and plastic rubbish, from spreading in the ocean, rivers and streams.

Photograph 19

Use of floating booms in combating oil spills



Source: MD records

4.17 Audit noted that in May 2019, MD informed the Legislative Council that a trial run of floating booms was planned to commence in 2019-20, which would tackle

Other related issues

the issue of marine refuse by intercepting floating refuse, in waters causing no obstruction to vessel traffic. However, up to August 2020, Audit noted that MD had not yet commenced the trial run. According to MD:

- (a) two sets of floating booms procured had been delivered in April and May 2020, and a trial on the containment of sudden and massive surge of floating refuse had been conducted in the Government Dockyard in June 2020; and
- (b) it would conduct the trial run by placing the floating booms at spots prone to influx of marine refuse after:
 - (i) obtaining EPD's view on suitable locations which would not affect the navigational safety; and
 - (ii) engaging local stakeholders for the trial placement of floating booms.

4.18 Audit noted that with suitable enhancement, floating booms may be an effective means to tackle marine refuse, including small-sized plastics or microplastics (Note 32) which cannot be easily detected and collected by the contractor's vessels (see para. 4.19(a)). In this connection, Audit considers that MD needs to expedite completion of the trial run of floating booms to tackle marine refuse as soon as practicable.

Need to keep in view the development of innovation and technology in tackling marine refuse

4.19 Audit notes that in recent years, there have been a number of projects adopting innovation and technology in tackling marine refuse. For example:

Note 32: *Microplastics found in the aquatic environment may have different identities and origins. They include microbeads arising from industrial production (e.g. as additives in personal care and cosmetic products) and fragments from degradation of plastic products and waste. While plastics are highly durable, they are difficult to decompose naturally and the process is also lengthy. With the popularisation of plastic materials, how to handle waste plastics to minimise their impact to the environment and ecology has become an important global issue.*

- (a) an overseas non-profit environmental organisation has been conducting a project to scoop plastic debris from ocean by using long floating booms with a skirt hung beneath the booms. According to the organisation, the combination of natural forces (i.e. wind, waves and current) and a sea anchor create a drag, which makes the device move consistently slower than the plastic, while allowing the plastic to be captured. There were media reports that the device was able to capture marine refuse including discarded fishing nets and microplastics; and
- (b) a Hong Kong enterprise has been conducting a project which uses an artificial intelligence-driven robotic system to automatically collect plastic waste in water. The robotic system comprises floating trash baskets with cameras, solar-powered motors, on-board computers and a networking system. According to media reports, the enterprise has been running pilot trials of the system and would launch it on a commercial scale.

4.20 With a view to enhancing effectiveness and efficiency in tackling marine refuse, MD should keep in view the development of innovation and technology.

Audit recommendations

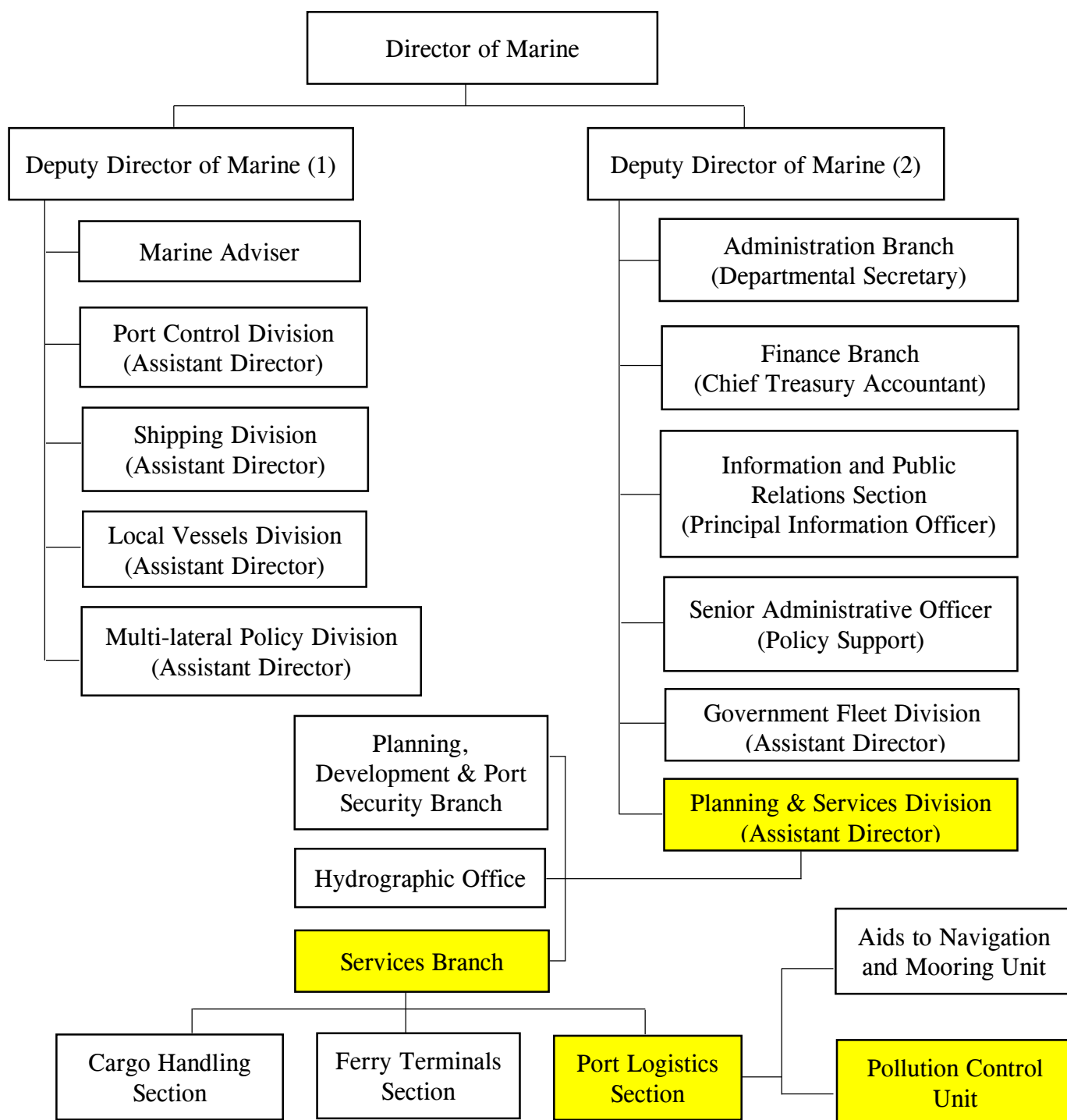
4.21 **Audit has *recommended* that the Director of Marine should:**

- (a) **expedite completion of the trial run of floating booms to tackle marine refuse as soon as practicable; and**
- (b) **keep in view the development of innovation and technology in tackling marine refuse.**

Response from the Government

4.22 The Director of Marine agrees with the audit recommendations. She has said that MD will take follow-up actions accordingly.

**Marine Department:
Organisation chart (extract)
(31 August 2020)**



Legend: Division/Branch/Section/Unit responsible for collection and removal of marine refuse

Source: MD records

List of the 43 priority areas for floating refuse scavenging services

Harbour East	
1	Causeway Bay Typhoon Shelter
2	To Kwa Wan water front and To Kwa Wan Typhoon Shelter
3	Kwun Tong Typhoon Shelter
4	Wan Chai (off Convention Centre)
5	Sam Ka Tsuen Typhoon Shelter
6	Shau Kei Wan Typhoon Shelter
7	Shau Kei Wan to North Point
8	North Point (between Oil Street and Healthy Street East, underneath the Island Eastern Corridor)
9	Chai Wan and Heng Fa Villa
10	Chai Wan Public Cargo Working Area
11	Junk Bay
Sai Kung and Tai Po	
12	Sai Kung Harbour and Hebe Haven
13	Sha Tin Hoi and Pak Shek Kok
14	Shuen Wan Typhoon Shelter
15	Po Toi O and Clear Water Bay
16	Tolo Harbour
17	Starling Inlet (Sha Tau Kok Hoi)
Hong Kong South	
18	Aberdeen Typhoon Shelter
19	Tin Wan
20	Cyberport
21	Stanley Bay
22	Deep Water Bay
23	Repulse Bay

Appendix B
 (Cont'd)
 (para. 1.13(a) refers)

Harbour West	
24	Central (between Wan Chai and Macau Ferry Terminal)
25	Tsim Sha Tsui East water front
26	China Ferry Terminal and Yau Ma Tei
27	New Yau Ma Tei Typhoon Shelter
28	Cheung Sha Wan
Kowloon West	
29	Rambler Channel Typhoon Shelter and Tsuen Wan
30	Ma Wan, Ting Kau, and Sham Tseng
31	Beaches along Castle Peak Road
32	Tuen Mun Immigration Anchorage and Butterfly Beach
33	Tuen Mun River Trade Terminal and its vicinity
34	Tuen Mun Typhoon Shelter
35	Urmston Road
36	Deep Bay
Outlying Islands	
37	Cheung Chau and Peng Chau
38	Sok Kwu Wan
39	Hung Shing Ye Wan and Yung Shu Wan
40	Disneyland Park
41	Discovery Bay
42	North of Chek Lap Kok
43	Tai O

Source: MD records

Illustration of level of cleanliness for open sea and typhoon shelters

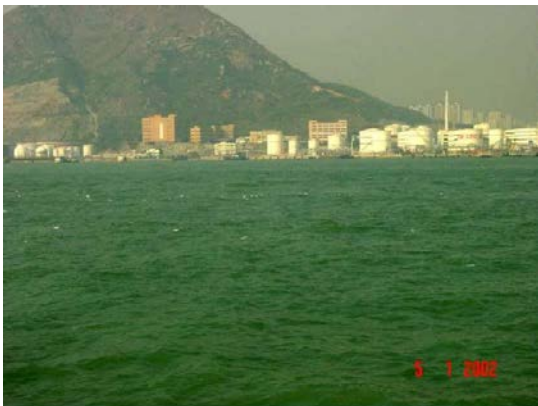
(a) Open sea



Good



Satisfactory



Fair



Unsatisfactory



Poor

Appendix C
(Cont'd)
(para. 1.16 refers)

(b) Typhoon shelters



Good



Satisfactory



Fair



Unsatisfactory



Poor

Source: MD records

Appendix D
(para. 2.4(a), Table 3 in
para. 2.4(a) and
Appendix E refer)

**Refuse disposal at landfills and refuse transfer stations
by Vehicles 1 and 2 analysed by waste type
(2012 to 2019)**

Year	Quantity of refuse disposed of at landfills/refuse transfer stations					
	Municipal solid waste		Construction waste		Total	
	Vehicle 1 (a) (Tonnes)	Vehicle 2 (b) (Tonnes)	Vehicle 1 (c) (Tonnes)	Vehicle 2 (d) (Tonnes)	Vehicle 1 (e) = (a) + (c) (Tonnes)	Vehicle 2 (f) = (b) + (d) (Tonnes)
2012	2,886.5 (100.0%)	201.2 (3.8%)	0.0 (0.0%)	5,070.8 (96.2%)	2,886.5 (100.0%)	5,272.0 (100.0%)
2013	3,113.1 (100.0%)	588.6 (9.4%)	0.0 (0.0%)	5,700.6 (90.6%)	3,113.1 (100.0%)	6,289.2 (100.0%)
2014	3,172.9 (100.0%)	733.7 (10.1%)	0.0 (0.0%)	6,525.9 (89.9%)	3,172.9 (100.0%)	7,259.6 (100.0%)
2015	2,869.6 (100.0%)	271.2 (5.2%)	0.0 (0.0%)	4,969.9 (94.8%)	2,869.6 (100.0%)	5,241.1 (100.0%)
2016	2,909.2 (100.0%)	5.1 (3.0%)	0.0 (0.0%)	165.7 (97.0%)	2,909.2 (100.0%)	170.8 (100.0%)
2017	2,932.6 (92.9%)	0.0 (0.0%)	225.5 (7.1%)	0.0 (0.0%)	3,158.1 (100.0%)	0.0 (0.0%)
2018	2,801.9 (83.6%)	0.0 (0.0%)	550.0 (16.4%)	0.0 (0.0%)	3,351.9 (100.0%)	0.0 (0.0%)
2019	2,627.5 (96.2%)	0.0 (0.0%)	104.9 (3.8%)	0.0 (0.0%)	2,732.4 (100.0%)	0.0 (0.0%)
Overall	23,313.3 (96.4%)	1,799.8 (7.4%)	880.4 (3.6%)	22,432.9 (92.6%)	24,193.7 (100.0%)	24,232.7 (100.0%)
<div> <div>25,113.1</div> <div>23,313.3</div> <div>48,426.4</div> </div>						

Source: Audit analysis of EPD and MD records

Appendix D

(Cont'd)

(para. 2.4(a), Table 3 in
para. 2.4(a) and
Appendix E refer)

Remarks:

- (a) *As reported by the drivers of Vehicles 1 and 2 at the weighbridges before entering landfills and refuse transfer stations, a significant proportion of refuse disposed of at landfills was construction waste and there was no construction waste delivered to refuse transfer stations. From 2012 to 2019, of the 48,426.4 tonnes of refuse disposed of, 23,313.3 tonnes (48.1%) was reported by the drivers as construction waste and 25,113.1 tonnes (51.9%) was reported by the drivers as municipal solid waste (e.g. domestic waste, commercial waste or industrial waste) (see Notes 18 and 19 to para. 2.4(a)).*
- (b) *While only Vehicle 1 was deployed by the contractor for transporting marine refuse to disposal sites since October 2017, Vehicle 2 was mainly used for transporting construction waste from 2012 to 2016, and not deployed for transportation of refuse from 2017 to 2019. According to MD, there was no contract requirement that vehicles stated in tender submissions must be exclusively used for performing services under MD's contracts.*

Appendix E
(Table 3 in
para. 2.4(a) refers)

**Disposal of municipal solid waste at landfills and refuse transfer stations
by the contractor analysed by location
(2012 to 2019)**

Year	Quantity of municipal solid waste disposed of								
	At landfills						At		Total
	South East		North East		West		refuse transfer		
	New Territories		New Territories		New Territories		stations		
	Vehicle 1 (Tonnes)	Vehicle 2 (Tonnes)	Vehicle 1 (Tonnes)	Vehicle 2 (Tonnes)	Vehicle 1 (Tonnes)	Vehicle 2 (Tonnes)	Vehicle 1 (Tonnes)	Vehicle 2 (Tonnes)	(Tonnes)
2012	2,659.6	54.1	—	8.2	17.5	—	209.4	138.9	3,087.7
2013	2,767.1	276.1	—	27.0	31.6	—	314.4	285.5	3,701.7
2014	2,856.9	672.5	—	—	19.9	—	296.1	61.2	3,906.6
2015	2,547.7	265.6	2.3	—	12.7	—	306.9	5.6	3,140.8
2016	35.4	—	—	—	—	—	2,873.8	5.1	2,914.3
2017	—	—	—	—	9.2	—	2,923.4	—	2,932.6
2018	—	—	—	—	192.5	—	2,609.4	—	2,801.9
2019	—	—	58.9	—	357.4	—	2,211.2	—	2,627.5
Total	10,866.7	1,268.3	61.2	35.2	640.8	—	11,744.6	496.3	25,113.1

Source: Audit analysis of EPD and MD records

Remarks:

- (a) According to MD, the disposal of construction waste of 880.4 tonnes and 22,432.9 tonnes by Vehicles 1 and 2 respectively from 2012 to 2019 (see Appendix D) was not related to MD's contracts.
- (b) With effect from 6 January 2016, the South East New Territories Landfill has only received construction waste (see para. 2.9). Prior to 1 January 2016, the contractor had transported most of the floating refuse and domestic refuse collected to the South East New Territories Landfill for disposal (see para. 2.10(a)).
- (c) Since October 2017, the daily transportation of marine refuse had been sub-contracted to the sub-contractor using Vehicle 1 (see para. 2.19).
- (d) According to MD: (i) Vehicle 1 was the main vehicle used for transporting marine refuse from 2012 to 2019; (ii) from 2012 to 2016, Vehicle 2 served as a backup vehicle and was only used for transporting marine refuse under rare circumstances (not more than two times a month), and the quantity of municipal solid waste disposed of during the period might contain marine refuse collected under MD's contract and other refuse collected outside MD's contract. Further breakdown on the figures is not available; and (iii) from 2017 to 2019, Vehicle 2 was not deployed for the collection and transportation of marine refuse.

Acronyms and abbreviations

Audit	Audit Commission
COR	Controlling Officer's Report
EPD	Environmental Protection Department
MD	Marine Department
MRCPs	Marine refuse collection points