# Marine Department
## Environmental Report 2018

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The Marine Department (MD) is responsible for maritime and navigational safety matters within the waters of Hong Kong. MD pledges its full support to prevention of marine pollution since marine environmental protection is important not only in its own right but also in enhancing Hong Kong’s role as one of the major ports in the world.

Hong Kong, as an Associate Member of the International Maritime Organization, is obliged to ensure that all ships within the waters of Hong Kong comply with all applicable international standards with regard to prevention of marine pollution.

MD promotes an environmentally responsible management and contributes to a greener environment by pursuing environmental-friendly operations. The amendments to the Merchant Shipping (Control of Pollution by Noxious Liquid Substance in Bulk) Regulation (Cap. 413B) came into effect in 2018. The amended regulation reflects the latest international requirements in relation to the discharge and washings of tanks, documents, construction and equipment, and surveys and related matters on oil/chemical tankers that carry noxious liquid substance in bulk.

In the third generation of MD’s Electronic Business System (eBS), we have migrated the site to a more modern and mobile-friendly layout. A new online service was implemented to allow authorised surveyors to submit survey-related reports by means of e-submission. We shall endeavour to identify more scope for e-services to ensure a wider use of electronic communications to help save the environment.

This Environmental Report covers the environmental performance of MD in 2018 and sets out our environmental targets for 2019.
To promote an environmentally responsible management and enhance green management practice in MD, Departmental Secretary and Executive Officer (General and Committee) have been appointed as the Departmental Green Manager and the Departmental Green Executive respectively.

For all environmental protection matters at Divisional level (namely, the Planning and Services & Port Control Divisions, the Shipping & Multi-lateral Policy Divisions and the Government Fleet Division), the Assistant Directors of Marine formulate respective green objectives, targets and measures based on the nature of their business. Divisional Environmental Protection representatives at the senior professional level have been appointed to co-ordinate and take forward the green measures.

(a) **Our Environmental Goals**

“We are One in Promoting Excellence in Marine Services.” MD is committed to ensuring that our services and operations are conducted in an environmental-friendly and responsible manner conducive to a cleaner port of Hong Kong.

(b) **Our Environmental Work Focuses**

(i) To ensure effective control on movement of dangerous goods in the waters of Hong Kong;

(ii) To improve our marine refuse collection and scavenging services;

(iii) To maintain a world-class maritime oil pollution plan to combat oil spills;

(iv) To take prosecution actions against offences of marine littering and pollution;
(v) To implement international conventions on prevention of marine pollution and enforce relevant environmental legislation on vessels;

(vi) To employ effective management systems to achieve energy saving for operations at MD's ferry terminals, public cargo working areas and Government Dockyard;

(vii) To adopt environmental-friendly and efficient designs for facilities and work processes at Government Dockyard;

(viii) To observe the Government's green management policy in our own workplaces to ensure efficient use of natural resources and energy;

(ix) To recommend environmental-friendly seawall designs with wave-absorbing capability in the relevant development projects;

(x) To recommend conducting a proper Marine Traffic Impact Assessment for every major marine-related development project to adequately address all potential marine impacts at each stage of the project implementation. This will not only ensure marine traffic safety in the waters of Hong Kong, but also bring long-term benefit to the environment;

(xi) To implement plans and measures that are relevant to our operations for fulfilling the commitments to improve the air quality; and

(xii) To promote the awareness of the importance of indoor air quality (IAQ) by participating in the IAQ Certification Scheme continuously.
(a) Vessel Traffic Services (VTS)

One of the objectives of the Hong Kong Vessel Traffic Services is to protect the marine environment from being polluted by oil or chemicals as a result of marine accidents. Established in accordance with international requirements, the VTS system disseminates navigational information and advice to vessels to facilitate safe arrivals and departures. 14 radars are employed in the system to provide very high-frequency radio network among the waters of Hong Kong. For energy saving, all magnetron-based radars were replaced by solid-state based radars by 2018 that utilised a lower transmission power technology.

(b) Harbour Patrol

To ensure that all the vessels navigating in Hong Kong comply with our marine legislation, MD officers perform patrol duty on board 29 patrol launches. Patrol officers will take prosecution actions against marine littering offenders. During inspections of tankers and oil barges, our officers advise the operators to strictly follow the code of practice and make sure that no illegal transfer or discharge of oil would take place in the waters of Hong Kong. Our officers also closely monitor dilapidated vessels or wrecks to
prevent any possible release of marine pollutants, such as lubricant or fuel oil residue in dilapidated vessels or wrecks. In 2018, 589 dilapidated vessels and wrecks as compared with 66 in 2017 were removed for proper disposal. The surge was mainly due to the passage of Super Typhoon Mangkhut in September 2018.

(c) Dark Smoke Emission Control

It is an offence for any vessel in the waters of Hong Kong to emit dark smoke which is as dark as, or darker than, Ringelmann Chart “Shade 2” for three minutes or more continuously at any one time. In 2018, one vessel was prosecuted for contravention of the marine legislation on dark smoke emission.

Educational leaflets with the Ringelmann Chart have been despatched to ship operators. Publicity campaigns have also been conducted to promote the importance of proper engine maintenance in reducing dark smoke emission.

(d) Dangerous Goods Control

The Dangerous Goods Unit carries out random inspections to vessels conveying dangerous goods in the waters of Hong Kong. In 2018, a total of 539 vessels were inspected and one vessel was prosecuted.
D | Efficient Marine Refuse Cleansing Services

Floating refuse is difficult to clear because it drifts with current and wind. MD is determined to keep the harbour clean through effective and efficient marine refuse cleansing services.

MD’s cleansing contractor has provided a fleet of about 80 vessels of various types to clean up floating refuse in the waters of Hong Kong on a daily basis (including Sundays and public holidays). The contractor also provides domestic refuse collection service to vessels in designated anchorages, berths and typhoon shelters.

Currently, refuse collection boats are stationed in major typhoon shelters including Kwun Tong, Sam Ka Tsuen, Aberdeen, Shau Kei Wan, Causeway Bay, To Kwa Wan, Yau Ma Tei, Tuen Mun, Sai Kung, Cheung Chau and Shuen Wan for collecting refuse from vessels at those typhoon shelters at least once a day.

In 2018, the total marine refuse collected amounted to 16,084 tonnes, including 11,534 tonnes of floating refuse; 2,449 tonnes of refuse from ships; and 2,101 tonnes of refuse from locally-licensed and river trade vessels. The total collected amount in 2018 was roughly similar to 16,045 tonnes of marine refuse collected in 2017. The marine cleansing contract has been renewed since 2017 with the addition of a foreshore cleansing team to strengthen the work of foreshore refuse cleansing. In 2018, more manpower and additional resource of a patrol launch have been allocated to MD to enhance the inspection of cleanliness at sea.
"We are one in keeping our harbour clean"

In 2018, the Pollution Control Unit conducted 327 visits to local vessels, mariculture zones, marine works sites, yacht clubs and wholesale fish markets to publicise keeping the waters of Hong Kong clean and issued 16 Fixed Penalty Notices to those who committed the offence in marine littering.

In 2018, MD continued to take part in the District-led Actions Scheme to address the environmental hygiene issue of different districts. MD has conducted special scavenging operations in collaboration with other government departments to improve marine hygiene conditions of Aberdeen Typhoon Shelter and the foreshore waters of Tai Po and Outlying Islands. Moreover, MD, as a member of the Interdepartmental Working Group on Marine Environmental Management and its two Task Forces (namely, Task Force on Marine Refuse and Task Force on Emergency Response to Marine Environmental Incidents), will continue to enhance the Government’s efforts in marine environmental management, including the work on tackling marine refuse problem and strengthening its capability and preparedness on emergency response to marine environmental incidents.
The waters of Hong Kong are susceptible to oil spills owing to its closeness to congested waterways. MD has developed a Marine Oil Spill Response Plan to tackle oil pollution incidents. The Pollution Control Unit is on 24-hour standby and responds in situ within two hours for reported oil spillage inside harbour limits. Periodical patrols and inspections on vessels engaged in re-fuelling or transferring fuels have been carried out to remind coxswains to take precautionary measures for oil spillage. In 2018, the Pollution Control Unit responded to 136 alleged oil sighting reports, 45 of which were confirmed with oil and cleansing actions were taken subsequently.

In July 2018, an oil spill incident occurred on board a Hong Kong registered container ship during a bunkering operation in the United Arab Emirates. About 200 litres of oil seeped through cracks on the shell plate of a heavy fuel oil tank into the harbour waters. The cracks were probably caused by the high impact forces of tugs during berthing at one or more of her previous ports of calls. MD subsequently promulgated a Hong Kong Merchant Shipping Information Note (HKMSIN) to draw the attention of shipowners, ship managers, ship operators, masters and officers to the lesson learnt from this incident. In gist, to avoid damage to the ship’s hull by tugs during berthing, the master should inform the pilot the location and strength of the tug pushing points. All officers and crew should follow the ship’s bunkering operation procedures strictly, especially when taking soundings of fuel oil tanks.

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Cleansing of Marine Hazardous and Noxious Substances Spillage

Two annual marine pollution response joint exercises co-ordinated by MD and EPD, code-named Oilex 2018 and the Maritime Hazardous and Noxious Substances (HNS) Exercise 2018, were held simultaneously in November 2018 off Pearl Island to test local responses in the event of pollution caused by spillage of oil and HNS in the waters of Hong Kong.

The exercise hypothesised a scenario of a flammable chemical, acetone leaking from containers fallen into the sea off Siu Lam. Combating the simulated HNS spill, the response teams sprayed seawater on the sea surface to expedite dilution of the acetone solution and removed the damaged containers out of the sea to Chemical Waste Treatment Centre for further disposal actions. The joint annual maritime HNS spillage response exercise reaffirmed the alertness and readiness of the Government departments under the Maritime HNS Spill Response Plan.
MD represents the Hong Kong Special Administrative Region at the International Maritime Organization (IMO), a United Nations specialised agency responsible for safety and security of international shipping as well as prevention of pollution of the environment from ships. The HKSAR is committed to implementing the International Convention for the Prevention of Pollution from Ships (known as the MARPOL Convention) including the investigation into any accidental discharge of pollutants into the sea by vessels.

In July 2018, the amendments to the Merchant Shipping (Control of Pollution by Noxious Liquid Substance in Bulk) Regulation (Cap. 413B) came into effect. The amended regulation reflects the latest requirements of MARPOL Annex II in relation to the discharge and washings of tanks, documents, construction and equipment, and surveys and related matters on oil/chemical tankers that carry noxious liquid substance in bulk.

To implement the International Convention on the Control of Harmful Anti-fouling Systems on Ships (known as the AFS Convention) which prohibits the use of harmful organotin compounds (i.e. chemical compounds of tin, hydrocarbon and other substituents) in anti-fouling paints on ships, a subsidiary legislation entitled the Merchant Shipping (Control of Harmful Anti-fouling Systems on Ships) Regulation (Cap. 413N) came into operation in January 2017.
The Port State Control inspections check whether the vessels comply with the relevant convention provisions with respect to issues of marine safety and environmental protection. In 2018, 716 inspections on foreign ocean-going vessels were conducted in the waters of Hong Kong, 12 detentions of which were made due to serious contraventions with the MARPOL requirements.

H | Green Initiatives at Terminals, Public Cargo Working Areas and Lighthouses

(a) Ferry Terminals

In order to reduce energy consumption at Hong Kong-Macau Ferry Terminal (MFT) and China Ferry Terminal (CFT), a total of nine travellators fitted with motion sensors were installed.

Moreover, the first phase of the replacement project of sea water cooled chiller plant of the air-conditioning systems in MFT was completed in 2018.

To economise the use of air-conditioning, the indoor temperature of terminals is set at 25.5°C in line with the Government’s green policy. In addition, fluorescent tubes installed in the terminals are being replaced by LED lights progressively to minimise energy consumption.

(b) Public Cargo Working Areas (PCWAs)

The indoor temperature of Administration Building at all six PCWAs is set at 25.5°C in line with the Government’s green policy.

(c) Aids to Navigation

Over 90% of the aids to navigation on various bridges and piers have been changed to be fitted with longer life-span LED lanterns which will consume less electrical power.
To save energy, five light-beacons were replaced by longer life-span LED lanterns in 2018.

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I | Going Green at Government Dockyard

The Government Dockyard on Stonecutters Island is the operational and maintenance base of all government vessels. Going green is an on-going commitment of the Government Dockyard. The following environmental measures were implemented at the Government Dockyard in 2018:

✧ 358 waste lead batteries and 1,724 used toner cartridges were collected for recycling;

✧ Installing digital energy meters for monitoring energy consumption of newly installed plant equipment such as central air-conditioning chiller plant, portable air compressors, and mechanical ventilation system;

✧ Reducing unnecessary lamps and fluorescent tubes;

✧ Replacing inefficient split-type air conditioning units and window air conditioning units with energy efficiency inverter type with Grade 1 energy label by stages;

✧ Replacing inefficient central air-conditioning chillers with more energy efficient chillers fitted with environmental-friendly refrigerant R410A at Block J;

✧ Replacing the instantaneous water heater with more energy efficient type with the European Union energy label A;
✧ Installing electronic timers for switching off office photocopying machines, bottled water dispensers and lights in display cabinets during non-office hours;

✧ Installing venetian window blinds;

✧ Recovery of useful parts and components from engines and equipment pending for disposal;

✧ Collection of generated chemical wastes, including lubricating oils, filters, batteries, fluoroprotein foam and fluorescent lamps, by licensed collectors;

✧ Installation of a bilge water collection facility for storage of wastewater pumped out of vessels;

✧ Installation of mechanical ventilation system which is fitted with variable speed drives at warehouse. Energy saving can be achieved by adjusting fans speed to control air flow at cold and hot weather;
- Replacing the existing street lamps near warehouse by energy efficient LED lamps;

- Replacing the existing lamp fittings with energy saving LED lamps at staircases at Block A. Motion sensors were installed along staircases to further reduce electricity consumption;

- Display of plants in offices; and

- “Save Energy” stickers to lights switches are affixed to remind staff to switch lights off when not in use.
Green Fleet

(i) Green New Vessels with Environmental-Friendly Engines

Marine diesel engines installed on new vessels procured by MD will comply with the latest IMO’s regulation in reducing nitrogen oxides (NOx) emission.

To follow the Government’s green procurement policy, diesel main engines (over 130kW) of pre-MARPOL Annex VI requirements on government vessels have been replaced with the most recent MARPOL compliance types by phases.

In addition, MD’s new vessels will incorporate the use of hybrid power system, diesel-electric propulsion system, shore electric power and/or solar cells for lighting and ventilation so as to eliminate emission by the vessel’s own generator during the vessel’s standby.

(ii) Existing Vessels

Since 2002, MD crew have been advised to operate vessels at economically safe speed in accordance with the engine manufacturer’s recommendation. Up to 2018, nine MD vessels and all police diesel-driven vessels have joined the scheme of using B5 biodiesel in order to reduce emission of sulphur dioxide (SO2) and carbon dioxide (CO2).
J | Green Housekeeping

We are committed to the Government's green management policy and advocate the principle of 4Rs – "Reuse, Reduce, Recycle and Replace". For instance, disposable paper cups have been replaced by reusable cups when hosting meetings. Our colleagues are also encouraged to bring their own cups to meetings. To advocate good green practice, no bottled water is distributed by our pantry service.

In addition, to minimise the use of disposable tableware and cultivate the habit of using reusable tableware, MD Headquarters has encouraged the catering operators in the Government Dockyard Canteen, Tuen Mun Public Cargo Working Area Canteen and New Yaumatei Public Cargo working Area Canteen to cease distributing plastic straws and poly-foam food containers to customers.

(a) Recyclable Materials Collection Campaign

MD’s Headquarters at Harbour Building has joined the Recyclable Materials Collection Campaign organised by the Building Management Office since early 2008 to allow paper waste, plastic bottles and aluminium cans to be collected separately at the source.
(b) Green Information Technology (IT)

By utilising clusters of blade servers and virtualisation technology, 74 physical servers and applications supporting 38 backend systems and IT infrastructure have been transformed, resided and run within a Cloud Computing environment by December 2018.

As a total e-business solution for port formalities documents and public services, Electronic Business System (eBS) continuously evolved to save paper and travelling cost. In the current third generation, we have migrated the site to a more modern and mobile-friendly layout. An online service to check the status of Certificate of Registry was implemented to facilitate port state control. Another new online service was also implemented to allow authorised surveyors to submit survey-related reports by means of e-submission.

(c) E-Notices, Circulars and E-cards

In 2018, MD continued to disseminate information through the departmental intranet and departmental website to minimise the circulation of hard copies and consumption of paper. Electronic greeting cards have been sent out since 2001.

(d) Paper Saving

In 2018, MD consumed 10,660 reams of A4 recycled paper, which registered an increase of 4% (i.e. 425 reams) when compared with 2017. Detailed figures of paper consumption for the period between 2008 and 2018 are at Annex I.

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2 No virgin paper (also known as woodfree paper) was consumed in 2018.
We endeavour to consume less paper and will closely monitor the situation. To reinforce staff awareness, guidelines on green management have been re-circulated to all staff at regular intervals. Looking ahead, an electronic filing system (known as Electronic Record-keeping System) will be rolled out with a view to reducing paper consumption.

(e) **Energy Saving**

In 2018, MD consumed 21,366,900 kWh of energy, which registered a slight increase of 0.5% (i.e. 116,639 kWh) when compared with 2017. Detailed figures of energy consumption for the period between 2008 and 2018 are at Annex II.

MD has participated in energy saving projects with a view to reducing energy consumption. In addition, energy wardens have been appointed since 2005 to conduct green housekeeping inspections and energy saving checks on a bi-monthly basis. In addition, Divisional Executive Officers have been tasked to perform regular checks on the completed inspection reports conducted by the energy wardens.

(f) **Water Saving**

Stickers were placed in prominent places such as pantries and washrooms to remind colleagues to reduce water consumption.

(g) **Reducing fuel consumption**

Our drivers continued to comply with the requirement to switch off idling engines and observe eco-driving practices.
(h) Carbon audit

In accordance with Environment Bureau Circular Memorandum No. 1/2017 on “Carbon Management in Government Buildings” which came into effect in April 2017, bureaux and departments are required to conduct annual carbon audits for their buildings with annual electricity consumption over 500,000 kWh.

Carbon audits were carried out at Macau Ferry Terminal, China Ferry Terminal and Government Dockyard. The greenhouse gas emissions were 8,552, 3,064, and 2,750 tonnes of CO$_2$ or equivalent respectively for Financial Year 2017-18.

(i) Green Tips in “Scuttle Butt”

“Ten Housekeeping Green Tips” have been regularly circulated to staff via internal emails. Green tips and news about environmental conservation are also publicised in our staff newsletter, “Scuttle Butt”, on a quarterly basis.

(j) Earth Hour 2018

We support “Earth Hour 2018” organised by World Wide Fund for Nature by relaying the event information to all staff to encourage their participation at home by turning off non-essential lighting on 24 March 2018.
K | Good Indoor Air Quality

MD has joined the Indoor Air Quality (IAQ) Certification Scheme launched by EPD to promote and commend good IAQ management practice. The following premises have been classified as “Good Class under the IAQ Certification Scheme:

✧ MD Headquarters (Harbour Building)
✧ Government Dockyard’s Administration Building (Block A)
✧ Harbour Patrol Section Main Building and its Annex Building.

L | Environmental Targets for 2019

To sustain our accomplishments on environmental work, we shall continue to:

✧ do our best to prevent and fight against all forms of marine pollution, such as marine refuse, oil spills, smoke emission, etc.;

✧ encourage our staff and appeal for their support for adopting green measures and participating in green activities;

✧ convert more aids to navigation to longer life-span LED lanterns;

✧ identify business areas to be transformed into an e-service under eBS;

✧ explore new means and pay particular attention to a wider use of electronic measures to minimise the usage of paper and energy;

✧ work closely with EMSD and EPD in implementing more energy-saving projects to reduce electricity consumption and identifying renewable / alternative energy;
replace those aged air-conditioning systems by adoption of the energy-saving type chillers and variable refrigerant volume (VRV) systems to reduce electricity consumption; and

identify more areas in Government Dockyard which can use energy-saving lighting to reduce electricity consumption and explore the possibility for installing solar panels in available spaces to gain green energy in Government Dockyard.

Furthermore, to fulfil our commitments under the Clean Air Charter, we shall continue to:

- implement energy saving measures with a view to reducing energy consumption in Government Dockyard and ferry terminals;
- replace main and auxiliary diesel engines (over 130 kW) of pre-MARPOL Annex VI requirements installed on government vessels by the most recent compliance types;
- encourage user departments to adopt more solar energy for their new government vessels where possible;
- review vessels’ operational profile and urge all user departments to operate at the optimal conditions as far as practicable to reduce fuel consumption;
- work with EPD on using biofuel in government vessels; and
- explore with user departments who bid for government new shipbuilding projects to adopt hybrid propulsion systems, if applicable.
M | Information and Suggestions

We encourage knowledge and experience sharing with the relevant stakeholders on environmental issues. You are welcome to give us your views and suggestions by the following means –

Address: Marine Department Headquarters, 22/F, Harbour Building, 38 Pier Road, Central, Hong Kong.

Tel: 2542 3711
Fax: 2541 7194
E-mail: mdenquiry@mardep.gov.hk
Annex I

A4 Paper Consumption - MD Offices

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Annex II

Electricity Consumption - MD Offices

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