Marine Department Environmental Report 2012

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(A) Director's Message

The Marine Department (MD) is responsible for maritime and navigational safety matters within the waters of Hong Kong. MD pledges its full support to marine pollution prevention as 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, an Associate Member of the International Maritime Organization, is obliged to ensure that all ships within Hong Kong waters comply with all applicable international standards with regard to marine pollution prevention.

In 2012, MD continued to make strides to promote an environmentally responsible management and contribute to a greener environment by pursuing environmentally friendly operations. One of the achievements was the enhancement on the use of electronic submission of applications via the MD's Electronic Business System (Phase 2) which had been launched since April 2008. In 2012, we had implemented three new services, namely the online Notification of Dangerous Goods Movement, the electronic Application for Free Pratique for River Trade Vessels for submission to the Department of Health and the electronic Application for the Port Facilities and Light Dues Incentive Scheme. To highlight, the last initiative represents a collaborative effort between MD and the Environmental Protection Department (EPD), which provides incentive for the shipping agents and the shipmasters of registered ocean-going vessels to switch to cleaner low-sulphur fuel with a view to reducing marine emission. Furthermore, we have identified a number of business areas for transformation into e-services, such as the development of an e-Payment Portal and the electronic application for Multiple Entry and Clearance for High Speed Passenger Crafts. We shall endeavour to identify other scopes for e-service to ensure a wider use of electronic communications to help save the environment.

Another notable achievement was the reduction in electricity consumption of 2012 by 2.7% when compared to that of the previous year and is the lowest consumption since 2002. This reflects that the various measures taken by the Department with an ultimate goal to reduce electricity consumption of MD have come to fruition.

To show MD's support for the Clean Air Charter and our commitment to improve the air quality, we have continued to make sustainable efforts in reducing the emission of the government fleet and monitoring closely the

exhaust gas emitted from the vessels.

MD had also actively participated in the 2012 Hong Kong Awards for Environmental Excellence organized by the Environmental Campaign Committee and the EPD to demonstrate the best practice and commitment to our environmental protection.

I am pleased to see many of our green initiatives have achieved good results and are well received by our staff and the marine industry. I take this opportunity to thank my staff members for their efforts in 2012. MD undertakes to continue working hand in hand with the community to support the clean-air initiatives and also a greener Hong Kong.

Francis H. P. LIU, JP
Director of Marine

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(B) Responsibilities and Organizational Structure

In this report, we will focus on the key areas we worked in 2012 to help improve the environment and the direct environmental impact of our day-to-day departmental activities.

This report is primarily intended for Hong Kong citizens, our various business partners, other government departments, our own staff and other local and international maritime organizations.

Overview of the Department

MD, headed by the Director of Marine, is responsible for all navigational matters in Hong Kong and the safety standards of all classes and types of vessels. Our mission is "We are one in promoting excellence in marine services".

Staffed by well-qualified and experienced professional and technical officers, we provide a wide spectrum of services which can be broadly classified into five areas, each of which is headed by an Assistant Director:

- Government Fleet
- Multi-lateral Policy
- Planning and Services
- Port Control
- Shipping

The Administration Branch in the Department's Headquarters provides administrative support services, human resource management, and finance and accounting support to the operational divisions.

Our Headquarters are located at Harbour Building, 38 Pier Road, Central. Other major venues include the Government Dockyard at Stonecutters Island, the Hong Kong-Macau Ferry Terminal (HKMFT) at Sheung Wan, the China Ferry Terminal (CFT) at Tsim Sha Tsui and six Public Cargo Working Areas in scattered locations.

Green Management Structure

To promote an environmentally responsible management and enhance green management practice in MD, the Departmental Secretary and the Executive Officer (Committee and General) have been appointed as the Green Manager and the Green Executive respectively.

For all environmental protection matters at a divisional level, the respective Assistant Directors formulate their own 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 take up the role of coordinator in related matters. For example, these representatives will co-ordinate and prepare divisional inputs for compiling the annual departmental Environmental Report.

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(C) Environmental Goal

To promote excellence in marine services, we are committed to ensuring that our services and operations are conducted in an environmentally friendly and responsible manner conducive to a cleaner port of Hong Kong.

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(D) Work Focuses

Our environmental work focuses on the following areas:

(i) ensuring effective control on movement of dangerous goods in Hong Kong waters;

(ii) improving our refuse collection and scavenging services;

(iii) maintaining a world class maritime oil pollution plan to combat oil spills;

(iv) stepping up prosecutions against offences of marine littering and pollution;

(v) recommending environmentally friendly seawall designs with wave-absorbing capability in the relevant development projects;

(vi) implementing international conventions on marine pollution prevention and enforcing relevant environmental legislation on vessels;

(vii) employing effective management systems to achieve energy savings for operations at the Department's ferry terminals, public cargo working areas and the Government Dockyard;

(viii) adopting environmentally friendly and efficient designs for facilities and work processes in the Government Dockyard;

(ix) observing the Government's Green Management Policy in our own workplaces to ensure efficient use of natural resources and energy;

(x) recommending a proper Marine Traffic Impact Assessment be conducted for every major 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 Hong Kong waters but also bring long-term benefit to the environment;

(xi) implementing plans and measures that are relevant to our operations for fulfilling the commitments under the Clean Air Charter; and

(xii) promoting the awareness of the importance of indoor air quality (IAQ) by continuing the participation of the IAQ Certification Scheme.

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(E) Environmental Performance in 2012

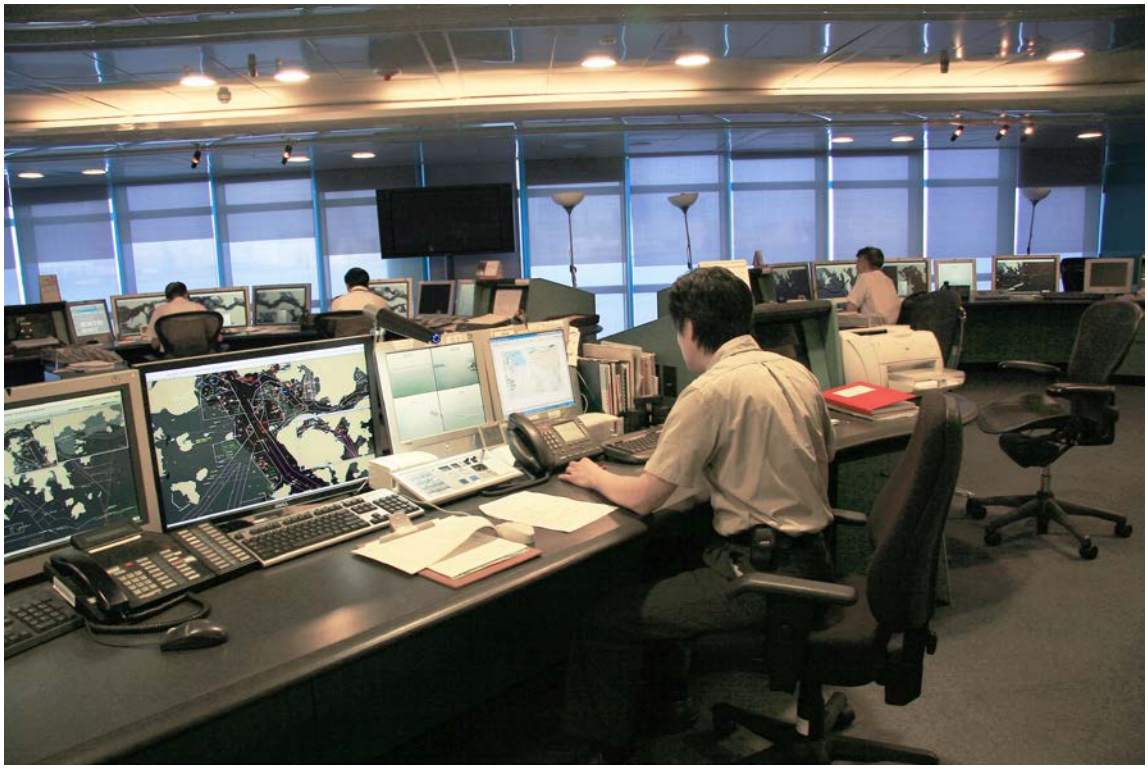
The measures and performance relevant to environmental protection in 2012 are as follows:

(a) Proactive Port Control

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. The services are provided by our Vessel Traffic Centre (VTC), which monitors the movement of vessels within Hong Kong waters round the clock through an advance vessel traffic surveillance system. It provides real-time traffic monitoring by displaying traffic images on an electronic chart display (ECDIS) system. It enables full assessment on the overall traffic situation in the area so that appropriate navigational information or advice can be given to

navigators to assist onboard decision in taking timely and substantial actions to avoid collision or grounding. In Kwai Chung Container Terminal Basin, the busy vessel traffic is closely monitored by a marine traffic control station, which further enhances the efficiency of marine traffic management.



The Vessel Traffic Centre located inside the Hong Kong- Macau Ferry Terminal

Harbour Patrol

MD officers perform patrol duty onboard 25 patrol launches to ensure that vessels navigating in Hong Kong waters are in compliance with marine legislation including marine littering. Patrol officers regularly take prosecution actions against littering offenders. In 2012, we issued a total of 3 Fixed Penalty Notices to persons who had committed the offence of marine littering.

MD officers frequently inspect tankers and oil barges to ensure that they station or operate at designated areas. During inspections, our officers would advise the operators to strictly follow the code of practice and make sure no illegal transfer or discharge of oil would

take place in Hong Kong waters. Under the Shipping and Port Control Ordinance (Cap. 313) and the Merchant Shipping (Local Vessels) Ordinance (Cap. 548), the owner and master/coxswain of the vessel or any person who discharges oil from a vessel commits an offence.

In addition, our officers keep a close surveillance for any dilapidated vessels or wrecks during their normal patrol to prevent any possible release of harmful substances, such as lubrication/fuel oil residue in dilapidated vessels or wrecks, which would cause damage to the environment. In 2012, 118 dilapidated vessels and wrecks were removed for proper disposal.

Smoke Emission Control

In 2012, our officers launched a series of operations around Hong Kong waters to monitor smoke emission from vessels. The smoke emission is measured by the shade levels of the Ringelmann Chart. A total of 2 advisory letters and 4 warning letters were issued to the owners and masters/coxswains according to the shade level of smoke their vessels emitted. They were required to take remedial actions in order to improve the vessels' smoke emission.

For effective enforcement on the smoke emissions by vessels, MD, with the support of the Transport and Housing Bureau (THB), consulted the Local Vessels Advisory Committee and the Port Operations Committee in February 2013 on a proposal to legislate an objective measure of dark smoke emission. Under the proposal, a smoke emission as dark as or darker than Ringelmann Chart "Shade 2" for 3 minutes is an offence. Both committees supported the proposal. THB would consult the LegCo Panel on Economic Development before June 2013 with a view to completing the legislative procedures in early 2014.

In addition, we widely dispatched educational leaflets to the floating community to promote the importance of proper engine maintenance in reducing smoke emission.

Dangerous Goods Control

The carriage of dangerous goods at sea is governed by the Dangerous Goods (Shipping) Regulations (Cap. 295C) and the Merchant Shipping (Safety) (Dangerous Goods and Marine Pollutants) Regulation (Cap. 413H). The Dangerous Goods Unit carries out random inspections to vessels conveying dangerous goods in Hong Kong waters. In 2012, a total of 394 vessels were inspected and 2 vessels were prosecuted/fined for having contravened the relevant dangerous goods legislations.

Fireworks (Class 1 dangerous goods) are delivered on a bi-weekly basis to the Hong Kong Disneyland by sea. Our staff regularly carry out inspections to the vessels undertaking such delivery to ensure the safety of the vessels and the personnel involved as well as to preserve the marine environment.

(b) Efficient Marine Refuse Cleansing Services

Floating refuse, significant volume of which originated from land source, is difficult to clear because it drifts with current and wind. MD is determined to keep the harbour clean by engaging effective and efficient marine refuse cleansing services.

MD adopts performance-based contract for the scavenging of floating refuse and collection of refuse from ocean-going ships and local vessels to ensure the effectiveness and efficiency of the marine cleansing services. In 2012, the total marine refuse collected amounted to 15,347 tonnes. Other than the daily marine refuse cleansing operation, MD also launched publicity campaigns and law enforcement actions with a view to reducing/eliminating marine refuse at source. In 2012, MD's Pollution Control Unit (PCU) made some 45 visits to local vessels to publicise "keeping Hong Kong waters clean", issued 2 Fixed Penalty Notices to persons who committed offence in marine littering and prosecuted a coxswain of local vessel for dumping refuse into the sea.

To maintain a good level of cleanliness of Hong Kong waters, MD will

continue to, in collaboration with other government departments and private organisations, carry out promotional activities to enhance public awareness. MD will also continue to support cleansing efforts of other departments by participating in cleaning operations along foreshores and in littoral areas.

(c) Preparedness in Dealing with Oil Spills

Hong Kong waters are susceptible to oil spill damage, owing to its closeness to congested waterways. Oil spills can play havoc on our maritime environment and economy. Oil spills from ships can be easily washed ashore causing irreparable environmental damage. In this regard, we have developed an effective Maritime Oil Spill Response Plan to co-ordinate both the public and the private resources and talents to tackle oil pollution incidents in Hong Kong waters. The Pollution Control Unit (PCU) of the Department is on 24-hour standby and its target is to respond on site within two hours of reported oil spillage inside harbour limits. In 2012, the PCU responded to 136 alleged oil sighting reports. 55 reports were confirmed with oil found and cleansing actions were taken and the pledge was 100% achieved.

Staff members to be tasked to the control of marine oil spills are trained and regularly refreshed to the International Maritime Organization oil spill response standards and competency levels. In addition to providing regular oil pollution training to the staff, MD holds a large-scale oil pollution combating exercise every year to exercise the on-the-field coordination of efforts from government departments and the oil industry under the Marine Oil Spill Response Plan.

MD held the 2012 annual oil spill response field exercise (code name oilex 2012) at Ha Mei Wan, west of Lamma Island. The exercise tested the readiness and preparedness of concerned government departments and oil companies in combating oil spills and validated individuals and teams of their key functions, knowledge, skills and capabilities.

Annual Anti-Oil Pollution Exercise 2012

(d) Cleansing of Marine Hazardous and Noxious Substances Spillage

A marine hazardous and noxious substance (HNS) is defined as any substance other than oil which, if introduced into the marine environment, is likely to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

The Protocol on Preparedness, Response and Co-operation to Pollution Incidents by Hazardous and Noxious Substances, 2000 (OPRC-HNS Protocol) was extended to Hong Kong on 6 December 2012. As required by the Protocol, a contingency plan, known as the Maritime Hazardous and Noxious Substances Spill Response Plan (MHNSSRP) for handling maritime HNS spill incidents in the Hong Kong waters has been developed. Under the plan, the MD PCU will be responsible for cleaning up the floating residue of the spilt HNS after it has been confirmed to be safe for handling.

In view of the similarities in technologies and methodologies for marine HNS spill cleansing and marine oil pollution cleansing, the marine HNS spill cleansing service contract is bundled with the marine oil pollution cleansing service contract.

In November 2012, MD and EPD jointly organised the first joint annual maritime HNS spillage response exercise, code named “HNS EXERCISE 2012”, which aimed to reaffirm the maritime HNS spill response readiness of the Government departments under the Maritime HNS Spill Response Plan and to test the Government departments’ response in combating HNS spill. The exercise hypothesised a scenario of chemical, styrene leaking from a chemical tanker at the coastal waters near Tuen Mun. Response parties including MD, EPD, Fire Services Department, Government Laboratory, Hong Kong Police Force, and MD’s contractor have participated in the exercise.

Annual HNS Spillage Response Exercise 2012

(e) International Conventions and Local Legislation

MD represents the Hong Kong Special Administrative Region (HKSAR) at the International Maritime Organization (IMO), a United Nation specialized 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 MARPOL 73/78 (The International Convention on the Prevention of Pollution from Ships 1973 as modified by the Protocol of 1978 thereto), which is the principal international convention to prevent or minimize pollution to the environment due to ship operations. The Convention has six Annexes aiming to address pollution to the environment in respect of (i) oil; (ii) noxious liquid substances; (iii) packaged form harmful substances; (iv) sewage; (v) garbage and (vi)air pollution from ship. All the Annexes are applicable to Hong Kong ships wherever they are and to all ships whilst they are in Hong Kong waters. MD keeps reviewing the local legislation related to the MARPOL Convention to ensure that it can keep abreast of the latest international requirements.

The International Convention on the Control of Harmful Anti-fouling Systems on Ships has come into force globally since 17 September 2008. This Convention prohibits the use of harmful organotins in anti-fouling paints on ships and establishes a mechanism to prevent the potential future use of other harmful substances in anti-fouling systems. At present, the use of organotin-based paints is already put under tight control in Hong Kong but local legislation is being prepared to enforce this new Convention for application in the HKSAR. MD has also participated in the development work at the IMO concerning the formulation of the following new Conventions:

- International Convention for the Control and Management of Ships' Ballast Water and Sediments – The Convention aims to prevent the potentially devastating effects of the spread of harmful aquatic organisms carried by ships' ballast water; and

- The Hong Kong International Convention for the Safe and Environmentally Sound Recycling of Ships – The Convention aims at ensuring that ships, when being recycled after reaching the end of their operational lives, do not pose any unnecessary risk to human health and safety or to the environment.

Port State Control

The Port State Control (PSC) Section carries out inspections on about 15% of foreign ocean going ships entering Hong Kong waters each year under our commitment with the Tokyo Memorandum of Understanding.

The PSC inspections help to prevent sub-standard ships from proceeding to sea by securing their compliance with the relevant convention provisions in safeguarding the safety of crew, passengers and ships, and prevention of pollution.

In 2012, 743 foreign ocean going ships entering Hong Kong waters were inspected, out of which 33 deficiencies related to pollution prevention were found and 23 ships were detained due to serious contraventions with the MARPOL requirements.

(f) Green Initiatives at Terminals, Public Cargo Working Areas and Lighthouses

Terminals

Various measures have been introduced at the HKMFT and the CFT to ensure conservation of energy, such as replacement of the compact fluorescent lamp to LED down lights; installation of three stainless steel glazed doors at the entrances of some escalators at the CFT to minimize cool air leakage; and replacement of the deteriorated/ inefficient components of the air-conditioning systems in the two terminals.

Escalators and travellators at the CFT have been installed with motion sensors in order to save energy. However, the feasibility study for installation of motion sensors at escalators and travellators at the MFT concluded that it was not viable due to site constraints and equipment

design.

To reduce paper consumption, computer network system of the CFT had adopted a Network Attached Storage (NAS) device in early 2012 for sharing documents among readers by Cloud Computing environment.

The indoor temperature of both terminals are set at 25.5°C and closely monitored in compliance with Government's green policy. To better maintain the indoor temperature, the main glass doors at the pier deck of the MFT and 2 glass-doors at the entrance to the escalators leading to outside areas of the CFT have been fitted with auto closing device to keep them closed while not in use.

Public Cargo Working Areas (PCWAs)

To lower power consumption, floodlights at PCWAs have been adjusted and reduced to suit actual needs during and beyond operating hours. E-communication has been encouraged and enhanced by introducing the use of Lotus Notes in all PCWAs.

Lighthouses

The power supply of Wong Ma Kok Light Beacon had been successfully converted from mains electricity to solar power in 2012. To continue with the green initiative, more Aids to Navigation such as Waglan Fog Horn would be converted to solar power in the coming years.

(g) Going Green at Government Dockyard

The Government Fleet Division (GFD) is responsible for the overall management of government vessels. The GFD's main activities include operating its fleet, providing marine transport services for MD's other offices and other government departments, performing new vessels procurement and maintenance of government vessels. The Government Dockyard (GD) at Stonecutters Island is the GFD's operational base mainly for its own fleet as well as the maintenance base of all government vessels. The projected expenditure on the management of the government fleet in 2012/13 is about $410 million.

In 2012, the government fleet was made up of 807 government vessels of different classes, types and sizes.

Going green is the on-going commitment of the GFD. Over the years, many initiatives have been developed and adopted for the operations of the GD. They appear in the yards, in the offices, to its people, on new ships and in maintenance operations.

Green Workplace

With a view to preserving the ecological environment in the GD basin, the following environmental measures have been implemented in the GD in 2012:

(i) Replacement of lighting by LED energy saving lights at Crew Building (Block F) and pontoons in the GD Basin;

(ii) Installation of proximity switches for lighting at less visited areas at Workshop Building (Block B) to reduce electricity consumption;

(iii) Installation of food waste decomposer for canteen to reduce volume of food waste disposal;

Food Waste Digestion Machine in Canteen

(iv) Installation of solar water heating system at Crew Building (Block F)

Solar Water Heating System at Crew Building

(v) Recovery of useful parts and components from engines and equipment pending for disposal; and

(vi) Generated chemical wastes including engine coolant and fluorescent lamps were collected and handled by licensed collectors for proper treatment.

Green Fleet

(i) Green New Vessels with Environmentally Friendly Engines

New vessels procured by the Government New Construction Section (GNC) are equipped with marine diesel engines in compliance with the IMO's Tier II regulation representing a 20% reduction in NOx compared to the Tier I regulation. In addition, GNC endeavors to further reduce NOx by exploring the possibility of introducing advanced emission-control technology such as Selective Catalytic Reduction (SCR)and to prepare for the more stringent Tier III requirement that the IMO will implement in 2016. The IMO's Tier III

requirement represents approximately an 80% reduction in NOx from Tier I and applies to vessels in Emission Control Area (ECA).

Since 2012, GNC will only accept outboard engines with Three Stars Rating (or higher). The Three Stars label means an outboard engine meeting the California's Air Recourses Board 2008 exhaust emission standards, that is, 65% fewer emissions than the existing One Star engines.

In addition, GFD's new vessel will be designed to avoid the engine running at low load during her stay alongside or for maintenance purpose. The power for lighting and ventilation can be supplied through the shore electric power and/or solar cells even when the generator is stopped so that no harmful gases or substances will be generated.

(ii) Existing Vessels

Since 2002, our crew have been advised to operate GFD's vessels at safe economic speed in accordance with the manufacturer's recommendation while en-route to routine operational duties. GFD's vessels running at such speed can considerably reduce the fuel oil consumption and emission.

In order to reduce the emission of both sulphur dioxide and the carbon dioxide and support the waste recycling industry, five government vessels have been participating in the EPD's pilot scheme of using B5 biodiesel since April 2012.

(h) E-Communication with Customers

Phase 2 of the Electronic Business System (eBS) has been launched since 28 April 2008 to provide a total e-business solution for port formalities documents and public services. The eBS not only saves the shipping community's resources and operating costs for preparing paper applications and submitting them in person, but also contributes to paper saving and therefore a greener environment. To further enhance the use of electronic submission of applications, we had

implemented three new e-services, including the online Notification of Dangerous Goods Movement, the electronic Application for Free Pratique for River Trade Vessels for submission to the Department of Health as well as the electronic Application for the Port Facilities and Light Dues Incentive Scheme in 2012. Another two new services about the development of an e-Payment Portal and the electronic application for Multiple Entry and Clearance for High Speed Passenger Crafts had been identified in 2012 for transformation into e-services. Business areas that have the potential of transforming into an e-service within the eBS framework would continue to be identified.

(i) In-house Green Programmes

We are committed to the Government's Green Management Policy in our daily operations at the offices to ensure efficient use of natural resources and energy. We follow and advocate the principle of "Reduce, Reuse, Recycle and Replace" in the consumption of materials.

E-Notices and Circulars

In 2012, MD continued to reap the benefits of the Wide Area Network by disseminating information among staff members through the Departmental Portal, Intranet and departmental website and minimizing the circulation of hard copies. With the aid of the advanced email systems, email has become the primary means of communication in MD’s daily operation.

Green IT

In order to adopt a green computing strategy, MD had established an environmentally friendly IT workplace leverage on the Cloud Computing infrastructure in 2009. By utilizing clusters of blade servers and virtualization technology, more than 50 physical servers and applications supporting 23 backend systems and IT infrastructure had been transformed, resided and then run within a Cloud Computing environment by December 2012. Following the setting up of the Cloud Computing platform, the number of physical servers

has been greatly reduced, thereby reducing the office space for accommodating the servers and decreasing the electricity consumption and heat dissipation.

Paper and Energy Savings

Reduction of paper and energy consumption continued to be two of the key green measures monitored by the Green Housekeeping Working Group. In 2012, with the implementation of various energy saving measures, we succeeded in reducing the electricity consumption by 2.7% when compared to that of the previous year. In addition, to further reduce paper consumption due to printing of meeting documents, MD has implemented the paperless meeting solution with the use of tablets since 2011. However, the consumption of A4 paper has increased by 2.8% when compared with 2011 due to the increased activities of MD. One of the main contributing factors was the vessel collision accident off Lamma Island in October 2012 which had triggered additional workload causing more paper use. Detailed paper and energy consumption figures for the period between 2002 and 2011 are provided at **Annexes I** and **II**.

Use of Recycled Paper

We continued to appeal to our staff to use more recycled paper instead of virgin paper. In 2012, nearly 97% of the A4 paper used by MD was recycled paper when compared to 95% in 2011.

Disposal of Empty Toners/Inkjet Cartridges for Printers

All empty toners and inkjet cartridges of computer printers are now collected for re-cycling through public auctions. A total of 1,034 empty toners and cartridges had been collected for re-cycling in 2012.

E-Christmas Card

MD has been sending out electronic greeting cards since 2001 to reduce paper consumption.

Source Separation Scheme

MD's Headquarters at Harbour Building had joined the Source Separation Scheme organized by the Building Management Office in early 2008 to allow paper wastes, plastic bottles and aluminum cans

to be collected separately at source.

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(F) Performance under Clean Air Charter

The HKSAR Government endorsed the Clean Air Charter (the Charter) in 2006, an initiative led by the business sector aiming to engage the whole community to improve air quality. As a signatory, the Government is committed to implementing appropriate measures to control, monitor and report air emissions from all sources, including vehicles and vessels, and to reduce energy consumption related to its activities. MD, which is responsible for providing government fleet services for other government departments, has taken various initiatives to achieve the targets regarding vessels emission under the Charter. Hereunder is a summary on the actions we had taken in 2012.

(a) Management Commitments and Environmental Targets

The Government Fleet and Dockyard Environment Management System Committee (GFDEMSC) was set up in July 2007 to establish, manage and implement green measures to reduce air emission, in particular from the government-operated vessels.

With an aim to reducing air emission, the following objectives and targets were set and annually reviewed by GFDEMSC:

- reduce the total electricity consumption in the offices by 5% or more from 2009-10 to 2013-14 (using 2007-08 as the baseline);
- maintain good indoor air quality in the offices and working environment;
- procure more environmentally friendly vessels when placing orders for new vessels or replacement of existing vessels;

- use ultra low sulphur fuel for vessels/vehicles available in the market. It is the Government's policy since 2001 to use ultra low sulphur diesel fuel oil for all its vessels with a view to reducing the sulphur dioxide emission in the engine exhaust;
- replace older engines on existing vessels by environmentally friendly models; and
- ensure that the GD and government fleet operations and facilities meet the international emission standard and all legal requirements in Hong Kong by adopting the prevailing best practice.

(b) Achievements in 2012

The GD and government fleet operations had observed and complied with all the applicable local and international ordinances/regulations related to emissions and waste reduction.

In 2012, the following achievements had been accomplished:-

- procurement policy had been set to phase out diesel main engines and generator engines (over 130kW) of pre-Marpol Annex VI requirements installed on government vessels and replace with Marpol compliance types in phases.
- for the 33 government vessels under our purview, about 1,863,065 litres of ultra-low sulphur diesel and 73,872 litres of unleaded ultra-low sulphur petrol had been consumed. The corresponding emissions of NO_x, RSP and SO_2 were about96,108, 8,844 and 165kg respectively for 2012;
- the total amount of electricity consumed by different MD workplaces was 21.7 GWh which was about 2.7% less than the electricity consumed in 2011 due to the implementation of various energy saving measures. The corresponding indirect emission of SO_2, NO_x and RSP were 9,114, 13,888 and 651kg respectively;
- the GD's Administration Building (Block A) continued to be

classified as “Good Class” under the Indoor Air Quality Certification Scheme;

- the overhauled engines (over 130kW) had been tested on full load on the upgraded dynamometer and the new flue gas analyzer to ensure that their exhaust emission was within the acceptable limits;
- the work for the installation of solar water heating panels in the Crew Building had been completed. The project was to reduce electricity consumption;
- with an aim of mitigating noise pollution and exhaust emission from on board generators, an additional shore power connection had been installed to allow a total of 7 government vessels switching to use shore power when staying at GD’s lay-by berths;
- the programme of replacement of lighting by LED energy saving lights had been extended to the Crew Building (Block F) and the pontoons in the GD basin;
- proximity switches had been installed for lighting at less visited areas at Workshop Building (Block B) to reduce electricity consumption;
- food waste digestion machine had been installed in canteen to reduce volume of food waste disposal;
- useful parts and components from engines and equipment pending for disposal were recovered as spare parts for further usage;
- chemical wastes generated including engine coolant and fluorescent lamps had been collected and handled separately by licensed collectors for treatment; and
- timer switches had been installed to reduce air conditioners operating hours in crew changing room during non-occupancy period.
- MD had actively participated in the 2012 Hong Kong Awards for Environmental Excellence organized by the Environmental Campaign Committee along the EPD to demonstrate the best

practice and commitment to our environmental protection.

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(G) Environmental Targets for 2013

To make our service and workplace environmentally friendly and responsible as well as to protect the natural resources of the world, we **will**:

- continue to strive our best to prevent and fight against all forms of marine pollution, such as marine refuse, oil spill, smoke emission etc.;
- continue to encourage our staff and appeal for their greater support for adopting more green measures and participating more in green activities initiated by MD or the community;
- continue to convert more Aids to Navigation to solar power;
- continue to identify business areas to be transformed into an e-service under the eBS;
- continue to explore new means and pay particular attention to a wider use of electronic measures to minimize the usage of paper and energy;
- continue to work closely with the Electrical and Mechanical Services Department and the EPD in implementing more energy-saving projects to reduce electricity consumption and identifying renewable/alternative energy;
- identify more areas in the GD for the installation of proximity switches for lightings at less visited areas in the GD; and

- install photovoltaic cell to charge up batteries for vessels with an aim to increasing the use of renewable energy.

Furthermore, to fulfill our commitments under the Clean Air Charter, we **will**:

- install green roof at Aids to Navigation Building (Block E) in the GD to improve the air quality and reduce the heat island effect;

- explore the feasibility to install more shore power supplies for lay-by vessels to reduce emissions from on board generators;

- continue to implement energy saving measures with an aim to reducing energy consumption by 0.5% or more in the GD;

- continue to replace main and auxiliary diesel engines (over 130 kW) of pre-Marpol Annex VI requirements installed on government vessels by compliance types;

- continue to test the overhauled main and auxiliary diesel engines (over 130 kW) installed on government vessels and delivered after 2001 to ensure that their exhaust emission is within the acceptable limits;

- install photovoltaic system to generate electricity for the lighting of the lighters in the GD;

- continue to encourage user departments to use solar energy for their new government vessels where possible;

- continue to review vessels' operational profile and urge all user departments to operate at the optimal conditions as far as practicable to reduce fuel consumption;

- continue to work with EPD on the feasibility of using bio-fuel in the

government vessels;

- appeal to bidders who bid for government new shipbuilding projects to propose selective catalytic reduction (SCR) emission control if applicable in order to remove NOx gases and reduce CO from the engine exhaust; and

- appeal to bidders who bid for government new shipbuilding projects to propose hybrid propulsion systems if applicable.

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(H) Information and Suggestions

We encourage knowledge and experience sharing with the relevant stakeholders and aim to raise awareness on environmental issues. If you have any enquiries or suggestions, please write to our Green Manager (Departmental Secretary) at Marine Department, 22/F, Harbour Building, 38 Pier Road, Hong Kong. You may also get in touch with us by e-mail at mdenquiry@mardep.gov.hk or by fax on 2541 7194.

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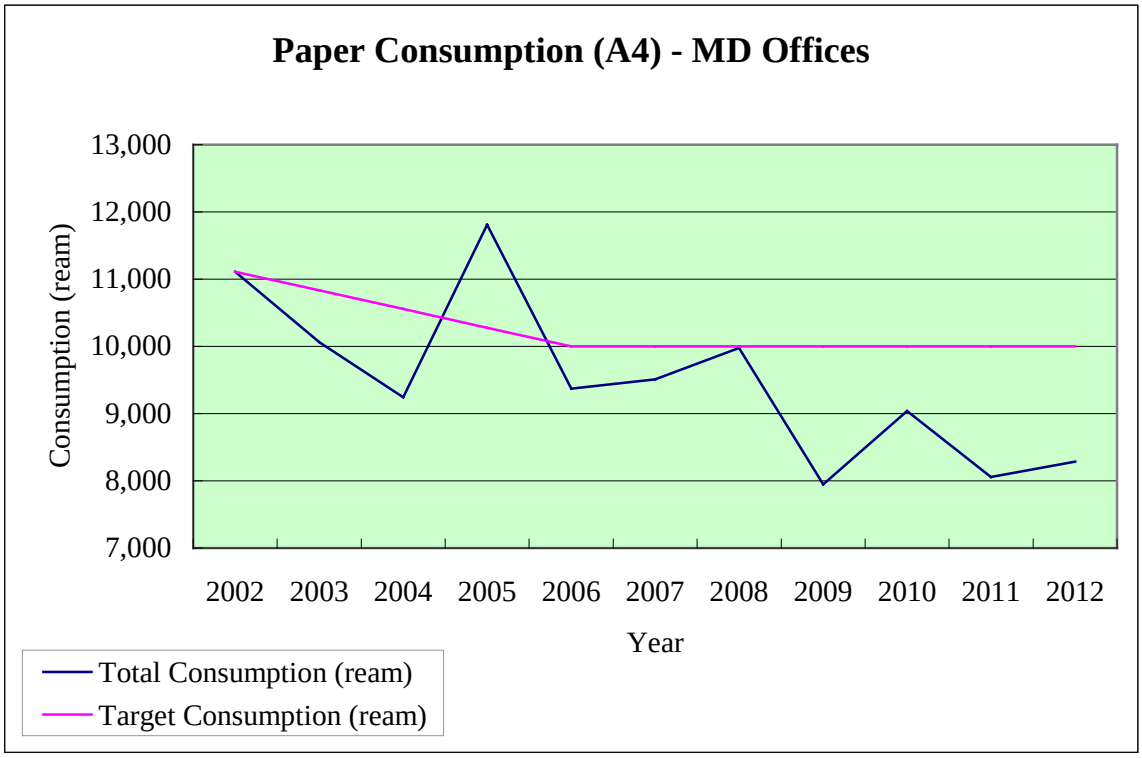
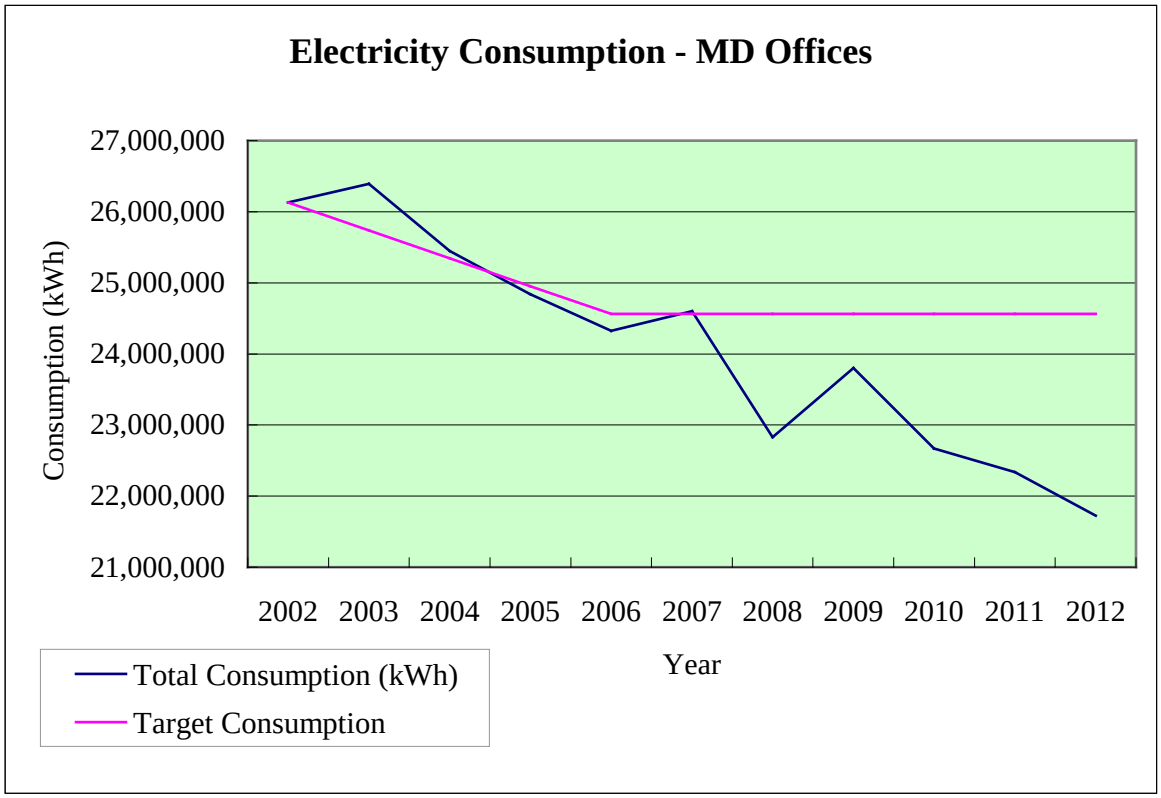
Annex I



Year	Total Consumption (ream)	Target Consumption (ream)	Target	+/- % (compared to 2002)
2002	11,110	11,110	-	-
2003	10,062	10,832	-2.5%	-9.4%
2004	9,242	10,555	-5.0%	-16.8%
2005	11,809	10,277	-7.5%	6.3%
2006	9,371	9,999	-10.0%	-15.7%
2007	9,511	9,999	-10.0%	-14.4%
2008	9,975	9,999	-10.0%	-10.2%
2009	7,947	9,999	-10.0%	-28.5%
2010	9,038	9,999	-10.0%	-18.6%
2011	8,056	9,999	-10.0%	-27.5%
2012	8,285	9,999	-10.0%	-25.4%

Annex II



Year	Total Consumption (kWh)	Target Consumption (kWh)	Target	+/- % (compared to 2002)
2002	26,129,757	26,129,757	-	-
2003	26,389,731	25,737,811	-1.5%	1.0%
2004	25,445,750	25,345,864	-3.0%	-2.6%
2005	24,839,533	24,953,918	-4.5%	-4.9%
2006	24,326,296	24,561,972	-6.0%	-6.9%
2007	24,599,278	24,561,972	-6.0%	-5.9%
2008	22,829,650	24,561,972	-6.0%	-12.6%
2009	23,800,719	24,561,972	-6.0%	-8.9%
2010	22,671,480	24,561,972	-6.0%	-13.2%
2011	22,336,616	24,561,972	-6.0%	-14.5%
2012	21,723,773	24,561,972	-6.0%	-16.9%