

ENVIRONMENTAL REPORT 2012



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Director's Message

It is my pleasure to present to you our Environmental Report 2012 which summarises the efforts we have made to achieve environmental objectives in the past year and introduces our environmental targets and initiatives for 2013.

In this report, you will see our efforts in evaluating the impact on the environment at all stages of our road projects, giving due consideration to environmental related issues when carrying out our works. Examples of such efforts include the special noise mitigation measures in Tuen Mun Road Town Centre Section Project in order to reduce the noise nuisance generated from construction activities to the residences, shops and schools adjacent to the construction site which would otherwise be adversely affected. Similarly, various environmentally-friendly measures, such as the adoption of an enhanced construction method, installation of water recycling system and provision of green roof at site office to reduce solar load, have been implemented in the construction of South Island Line (East) which effectively alleviated noise impacts and conserved water and electricity. In addition, the highway landscape beautified by the seasonal array of floral and foliage colours exemplified our efforts in upkeeping a safe, pleasant and green road network in Hong Kong.

We uphold the Government's policy of developing the environmentally-friendly railway system as the backbone for mass public transportation. Our aim is to plan and implement the railway system to world-class standards. Construction of the West Island Line, the Hong Kong section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link, the Kwun Tong Line Extension and the South Island Line (East) were in full swing in 2012. The Shatin to Central Link commenced construction in mid-2012. To map out the long-term development of our railway system that will meet future transport demand, we commissioned a consultancy study to review and update the "Railway Development Strategy 2000". The Stage 1 Public Engagement exercise was completed in 2012 and the study will be completed in 2013.

In our pursuit of excellence in environmental management of our works, we conducted studies and adopted suitable environmentally-friendly technologies, including hot-in-place recycling by thermal patcher, paving blocks with recycled glass, synthetic gully / channel gratings and recycled asphalt pavements. In 2012, we applied these techniques more extensively in our road maintenance contracts and received positive and encouraging feedback.

We cannot improve our services to the public without engagement with internal and external stakeholders. Internally, we organised training courses and green activities, and provided green advice to staff with a view to heightening staff awareness in environmental management. Externally, we co-organised seminar on safety, health and environmental protection with our business partners. We encouraged our contractors to organise and participate in environmental promotional activities, such as the Hong Kong Awards for Environmental Excellence. We have also engaged the community to enhance our services by publicising details of our projects to the public and soliciting their opinion through various means.

We are pleased to conclude that most of our environmental targets for 2012 were met satisfactorily and our efforts were recognised. We are most honoured to have received five Outstanding Environmental Management and Performance Awards, six Considerate Contractors Site Awards and also the "Grand Award for Design Excellence (Landscape Display)" in the Hong Kong Flower Show 2012. Yet we will not become complacent with these achievements and will continue to make our best endeavours to reach new heights in environmental management.

Looking ahead, we will continue to explore every opportunity to contribute to a sustainable environment. With the concerted efforts of my colleagues, we strive to pave a green way towards the future and make our community a better place to live in.



A handwritten signature in blue ink, consisting of stylized, cursive letters that appear to read 'K.K. Lau'.

K.K. LAU
Director of Highways
31 October 2013

Department Profile

The Highways Department is responsible for:

- implementation of highway projects in the Public Works Programme;
- maintenance of public roads, including road furniture, road drainage and roadside slopes, and co-ordination and control of utility openings on public roads;
- planning, monitoring and coordinating various activities associated with implementation of new railway projects;
- providing design input for road lighting, highway structures, roadside slope upgrading and landscape features associated with capital works projects and maintenance works;
- inspecting the safety provision on highway construction sites;
- researching into new materials, techniques and standards; and
- providing engineering, quantity surveying and landscaping technical services.

The Headquarters of the Highways Department are located in Ho Man Tin Government Offices (HMTGO), with sub-offices in North Point Government Offices, Cheung Sha Wan Government Offices, Cheung Sha Wan Plaza, Skyline Tower and Nan Fung Commercial Centre in Kowloon Bay. We have an establishment of about 480 professional staff and about 1,620 technical/common and general grades staff. We maintain about 2,090 km of roads and some 13,150 roadside slopes within the territory. The total operating expenditure for the financial year 2012/13 is HK\$2,349 million.

Vision and Mission

Our Vision

To develop and upkeep the road network as well as to plan and implement railway development to world-class standards.

Our Mission

In order to enhance the long term prosperity and improve the living standards of the community, we are committed to:

- expanding and improving the road network to meet the growth and change in transport needs, and development requirements;
- maintaining the integrity of the road network;
- providing high quality technical support for the planning, design, construction and maintenance of the road network; and
- implementing and updating the Railway Development Strategy.



Environmental Goal

Our environmental goal is to accomplish public works efficiently and with due regard to the environment.

Management Policy

We maintain a Quality Management System to meet the requirements of the International Standards ISO 9001 and ISO 14001. We incorporate quality and environmental considerations at all stages of our work in developing and up-keeping the road network as well as planning and implementing the railway system. In so doing, we are committed to:

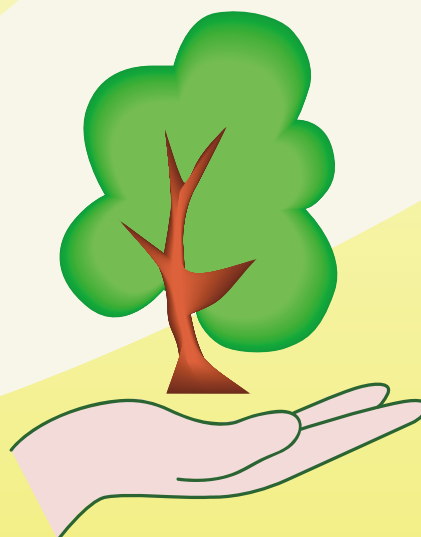
- delivering high quality services to our community;
- identifying and controlling the environmental aspects at all stages of our work, using resources efficiently, minimising waste and preventing pollution as far as practicable;
- monitoring the performance of our contractors to ensure good quality of works and to prevent or mitigate potential environmental impacts arising from our projects;
- complying with relevant legal and other requirements; and
- sustainable construction with due consideration to balancing environmental, social and economic needs.

We improve our services through regular review of our Quality Management System, its Management Objectives and Targets, and through identification of opportunities for continual improvement.

About this Report

This report covers the period from 1 January 2012 to 31 December 2012. It shows the environmental awareness of our work and efforts in supporting the Clean Air Charter, environmental management, research and technology and stakeholder's engagement. Also included in this report are our environmental awards received in 2012, our achievement of environmental objectives and targets for 2012, and environmental targets for 2013.

To reduce paper consumption, this report is published in CD-Rom format and uploaded to our web site.



Chapter 3

Clean Air Charter

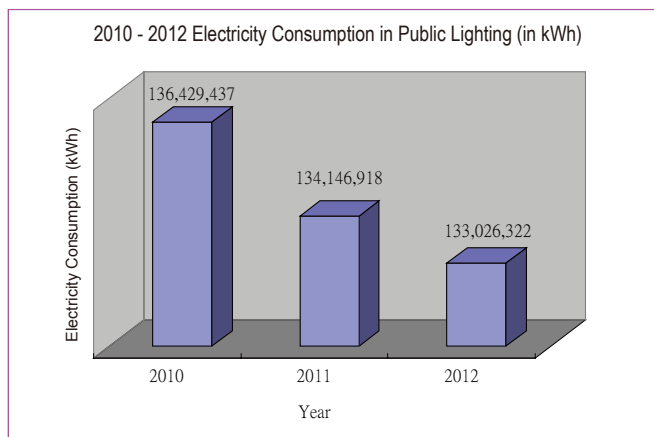
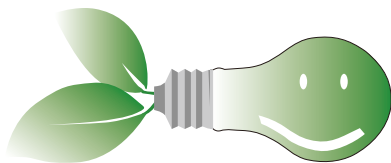
The Government has signed the Clean Air Charter launched by the Hong Kong General Chamber of Commerce and the Business Coalition. The Highways Department is committed to improving air quality by adopting energy saving and emission reducing measures for implementation of the Charter.

Energy Saving Measures

In our operations, most of the energy is consumed in public lighting and office activities. To take forward our commitments under the Charter, we have implemented energy saving measures in order to help reduce the emission of pollutant from energy generation.

Energy Saving in Public Lighting

The territory-wide public lighting electricity consumption decreased to 133,026,322 kWh in 2012, being 1,120,596 kWh (0.8%) less than the consumption in 2011. The corresponding reduction in indirect emission was 2,140 kg of sulphur dioxide (SO₂), 1,300 kg of nitrogen dioxide (NO_x) and 67 kg of respirable suspended particulates (RSP).



Continuous electricity reduction in public lighting from 2010 to 2012

We are looking for further enhancement opportunities through conducting trials on the uses of:

- ◆ Non-illuminated Retro-reflective Traffic Bollards;
- ◆ Ceramic Discharge Metal Halide (CDM) lamps; and
- ◆ LED lanterns for low and medium intensity road lights and LED light tubes.

Various trials of the above energy saving measures are expected to complete progressively in the coming year.



Road lighting

Energy Saving in Office

The electricity consumption in some of our offices in 2012 are presented below.

Offices of Highways Department with individual electricity metre installed	Electricity	
	(kWh)	(%)
Ho Man Tin Government Offices (HMTGO)	1,088,903	48
Nan Fung Commercial Centre	615,275	27
Cheung Sha Wan Plaza	277,264	12
Skyline Tower	290,401	13
TOTAL	2,271,843	100

The following measures have been promulgated to enhance energy saving in offices:

- ◆ Appoint Energy Wardens in every office/division to monitor the usage of light and to keep the lumination level to the acceptable minimum level.
- ◆ Review the lumination level arising from the change of room use.
- ◆ Maintain air-conditioning not lower than 25.5°C in hot seasons.
- ◆ Switch off lights during lunch and when staff are away for long hours.
- ◆ Switch off computer equipment and electric appliances when not in use.
- ◆ Encourage the use of staircase for inter-floor traffic.
- ◆ Monitor the electricity consumption of different floors by individual meters installed on each floor of HMTGO.

Emission Reducing Measures

Environmentally-friendly Vehicle

We have been striving to reduce air emission of vehicles through the use of environmentally-friendly vehicles and promulgation of internal guidelines to remind motor drivers of the green driving habits. In 2012, we replaced one of our medium saloon cars by an electric car. We have also adopted environmentally-friendly contract vehicles approved by the Environmental Protection Department (EPD) extensively in our term contracts. Furthermore, procurement of this type of car for all saloon type contract vehicles have been made as a requirement for all new major works contracts commenced from 2011.



Carbon Audit



Two carbon audits were conducted for HMTGO by the Building Management Office (BMO) in 2012 to monitor the effectiveness of Green House Gas reduction efforts. The relevant data are being studied by the BMO.

Indoor Air Quality Certification

The indoor air quality of HMTGO has fully complied with the Good Class of the Indoor Air Quality Objectives since 2003.



Chapter 4

Environmental Management

Highways Department adopts an Environmental Management System accredited to ISO 14001 standard since 2003. The system supports our environmental management on different aspects such as highway project management, railway project management, and landscape management as well as office management.

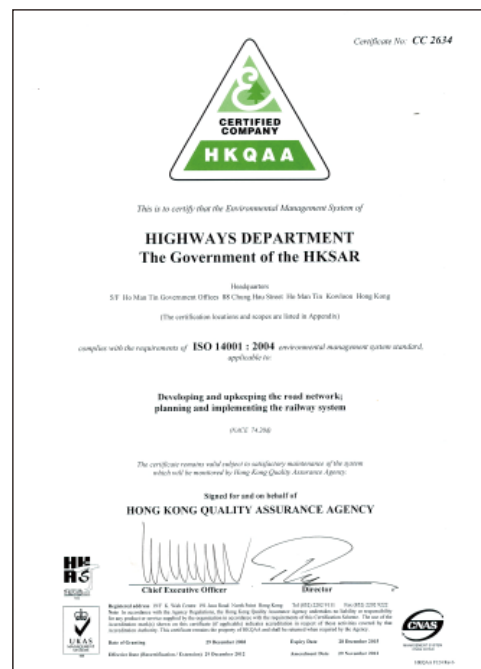
Environmental Management System

Highways Department implements the Environmental Management System (EMS) which is certified in full compliance with the requirements of ISO 14001:2004. Under the EMS, the environmental performance and the compliance with the environmental requirements including various legislations are regularly checked and monitored.



ISO 14001 : 2004
Certificate No. : CC2634

ISO 14001 EMS Accredited Logo



Certificate of ISO 14001:2004 EMS

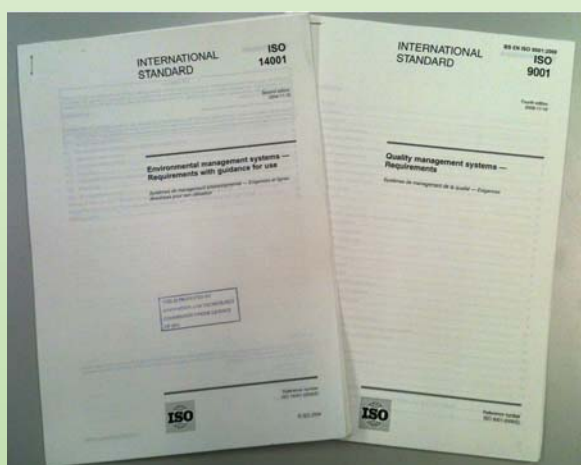
For the purposes of implementing and maintaining the EMS, the Department is divided into four Office Groups according to the main function of its offices. Each Office Group is led by a Management Representative (MR) with the assistance of Deputy Management Representatives (DMR) and Assistant Management Representatives (AMR) in the daily operation of EMS.



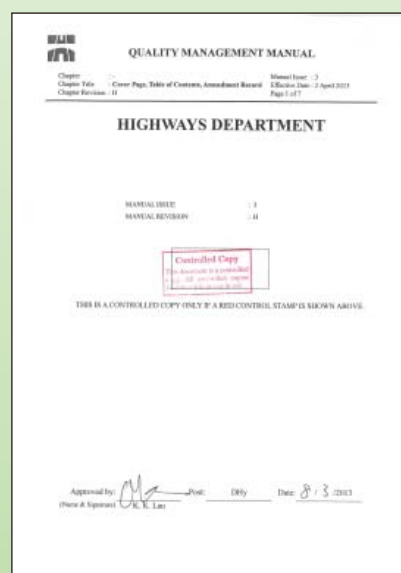
Four Office Groups

* Office Group 3 comprises Major Works Project Management Office and Hong Kong-Zhuhai-Macao Bridge Hong Kong Project Management Office

To suit the operations of Highways Department, the requirements in ISO standards have been transformed and specified in different internal management system documents such as the Quality Management Manual, Operation Procedures and Works Instructions. All staff members of Highways Department can make use of these documents to implement the EMS accordingly. These documents are reviewed and revised regularly to cope with the changes in the work requirements.



ISO Standards

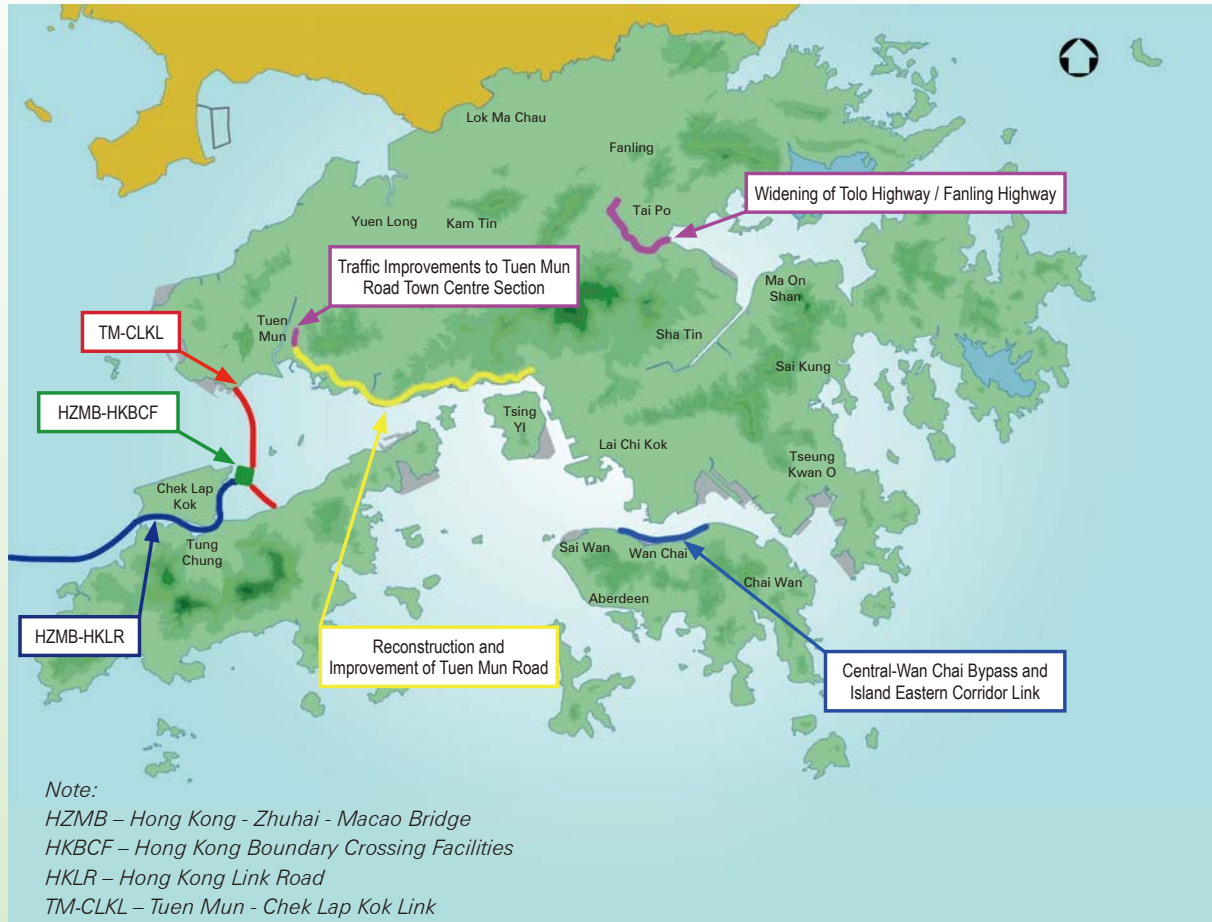


Quality Management Manual

In addition, both External and Internal Management System Audit to the EMS are organized annually to monitor the overall performance of different offices/regions/divisions/units in the department with respect to the compliance of relevant environmental standards and procedures. The audit results are presented in the Departmental Quality Management Committee and Office Quality Management Committee meetings for review by the senior management.

Environmental Management in Highway Project

Highways projects are implemented by the Works Division, the Major Works Project Management Office (MWPMO) and the Hong Kong – Zhuhai – Macao Bridge Hong Kong Project Management Office (HZMB-HKPMO) of Highways Department. Some of the major highway projects under construction are shown in the diagram below.



Alignments/locations of major highway projects

In order to prevent or mitigate potential environmental impact arising from the construction, we monitor the environmental performance of our contractor through the following measures under the respective contract:

- ◆ Regular environmental walks jointly conducted by the contractor and the Engineer's Representative
- ◆ Regular inspection and monitoring by the Environmental Team and the Independent Environmental Checker required for designated projects under the Environmental Impact Assessment Ordinance
- ◆ Monthly Site Safety and Environmental Management Committee Meeting chaired by the Engineer's Representative
- ◆ Regular Environmental Inspection by our project officers

In addition to typical environmental measures, special measures have also been adopted to cater for challenges faced by different projects.

Typical Environmental Measures taken in Construction Site

Dust Control



Automated water sprinkler at haul road

Noise Mitigation



Drilling rigs covered by tarpaulin sheets

Wastewater Management



On-site wastewater treatment facility

Sustainable Energy



Solar Panel



Wind Turbine

Waste Management



Recycle Bins

Tree Preservation and Greening



Fenced off retained tree before transplant



Slope greening

Special Environmental Measures for Tuen Mun Road Town Centre Section Project

The Project “Traffic Improvements to Tuen Mun Road Town Centre Section (TMRTCS)” is to meet the anticipated traffic growth in the Northwest New Territories and from the cross-border activities.

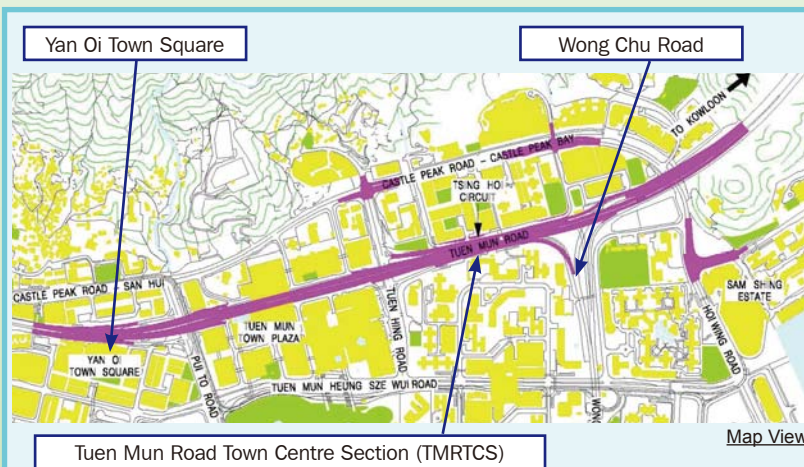
The project comprises:

- widening of approximately 1.5km long Tuen Mun Road (TMR) between Yan Oi Town Square and Wong Chu Road from a dual 2-lane carriageway to a dual 3-lane carriageway,
- resurfacing of existing section of TMRTCS,
- construction of a 450m long single-lane flyover,
- reconstruction of four existing footbridges, and
- construction of noise barriers/enclosures together with installation of vertical greening and roof greening on these noise barriers/enclosures, etc.

The construction work commenced in February 2010 and is anticipated to be completed by the early 2014.



Heavily populated residences, shops and schools adjacent to the project area



Tuen Mun Town Centre



On Ting Estate

Noise Sensitive Receivers (NSR) along the site

The project is a designated project under Scheme 2 of the Environmental Impact Assessment Ordinance, in which an Environmental Impact Assessment (EIA) study was required to be conducted on the project. The EIA study completed in 2008 revealed that the construction site was subject to severe site constraints, i.e. being adjacent to heavily populated residences, shops and schools as well as the requirement to maintain existing traffic lanes during daytime on TMR, etc. Noise nuisance generated from the construction activities is one of the paramount environmental issues to be addressed. As such, good site practice and management to address the noise impact of construction site activities on nearby Noise Sensitive Receivers (NSR) are significant aspects of the project.

Site Practice

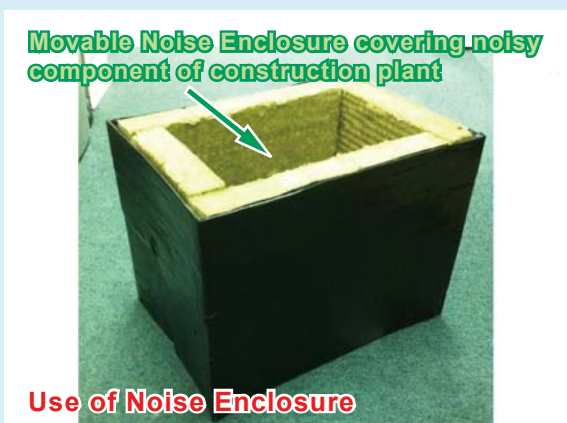
The good site practice includes the following:

- ◆ Only well-maintained construction plant should be operated on-site and all construction plant should be serviced regularly during the construction period;
- ◆ Machines and plant that may be in intermittent use should be shut down between work periods or throttled down to a minimum as necessary;
- ◆ Plant known to emit noise strongly in one direction should be orientated to direct noise away from the NSR;
- ◆ Mobile plant should be sited as far away from NSR as possible; and
- ◆ Material stockpiles and other temporary structures should be effectively utilized to screen noise from on-site construction activities.

Construction Management

From the construction management perspective, noise mitigation measures have been implemented to reduce noise to the acceptable construction noise limit to avoid causing noise nuisance to nearby NSR during construction stage.

The following are some examples of these noise mitigation measures:



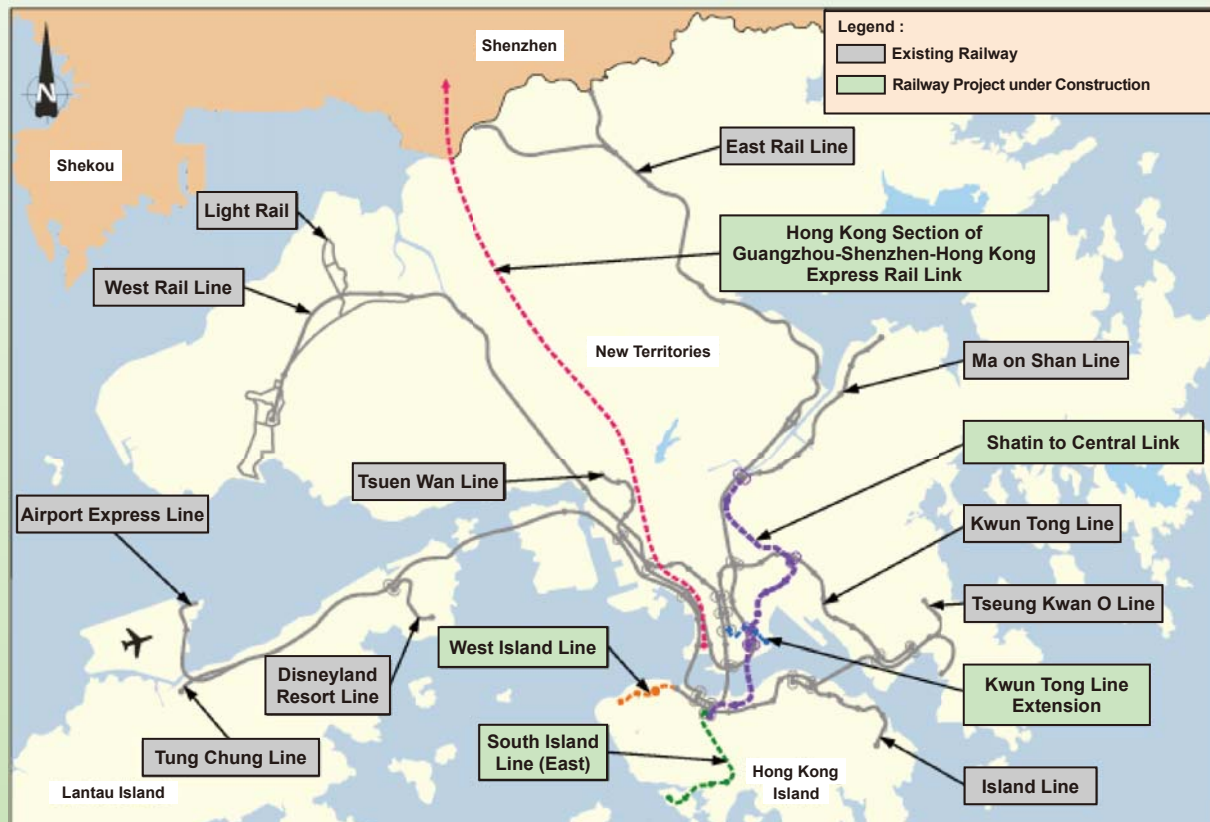
Development of Environmentally-friendly Railway System

Railway is a safe, efficient and environmentally-friendly mass transportation carrier. The Government policy places emphasis on railway development as the backbone of public transport. Highways Department adheres to this policy and aims at planning and implementing the railway system to world-class standard.

Overview of Railway Development

The "Railway Development Strategy 2000" published in 2000 provided a blueprint for the next phase of railway development which included a number of new railway schemes to meet Hong Kong's increasing transport needs in a sustainable manner. Less reliance on road-based transport will alleviate the pressure on transport systems, reduce overall tailpipe emission from vehicles and, in turn, lessen the impact on the environment.

Eight new railway lines, or extensions of existing lines, were commissioned between 2002 and 2009. The West Island Line, the Hong Kong section of the Guangzhou-Shenzhen-Hong Kong Express Rail Link, the Kwun Tong Line Extension and the South Island Line (East) were in full swing under construction in 2012. The Shatin to Central Link also commenced construction in mid-2012.



Alignment of railway lines

The Railway Development Office of Highways Department commissioned a consultancy study in March 2011 to review and update the "Railway Development Strategy 2000". This study would review and update the railway development plan taking account of the latest development of the community and changes in planning factors to meet the transport demands for railways up to 2031. The stage 1 public engagement of the study was completed in July 2012. It is anticipated to complete the study in 2013.

Environmentally-friendly Measures for Construction of South Island Line (East)

The South Island Line (East) is a medium-capacity railway connecting the Southern District of Hong Kong to the existing network at Admiralty with a distance of approximately 7 km. A train stabling and maintenance depot will be located in Wong Chuk Hang. Construction of the South Island Line (East) commenced in 2011 for completion expected in 2015.

The construction of the Wong Chuk Hang Depot and South Horizon End Plant Building requires the removal of over 50,000 cubic metres of rock. An enhanced construction method using open blast has been adopted instead of the traditional mechanical breaking method. As a result, the construction noise impacts have been reduced in both noise levels and duration.



Alignment of South Island Line (East)



Open blasting for construction of Wong Chuk Hang Depot and South Horizon End Plant Building

Apart from the construction method, environmentally-friendly measures have also been implemented in works area along the railway route. Water recycling system has been installed at the Nam Fung Tunnel Portal construction site to conserve and reuse the wastewater generated from the works. Green roof made of natural grass has been installed at the site office adjacent to the Ocean Park Station. This provided a green rest area and has reduced the solar load on the building which reduced the air conditioning need in the hot season.



Construction run-offs treatment and reuse at Nam Fung Tunnel Portal



Green roof provided for Ocean Park Station site office

Colourful Highways Experience

Ever since Highways Department started to maintain vegetation on SIMAR* slopes along all public roads under our management in 2004, it has been our mission to provide a safe, pleasant and green road network to the general public of Hong Kong. Apart from upkeeping our slope and highway vegetation in a safe and tidy condition, Highways Department also aims to enhance the visual and environmental quality of our slope and vegetation. Mostly native species have been selected for planting for their visual interest, attractiveness to wildlife and the creation of a visually pleasing highway landscape with seasonal effect. The following photographs highlight our highway landscape in different seasons with an array of floral and foliage colours.

* Slopes identified in Systematic Identification of Maintenance Responsibility of Slopes in the Territory (SIMAR) project.

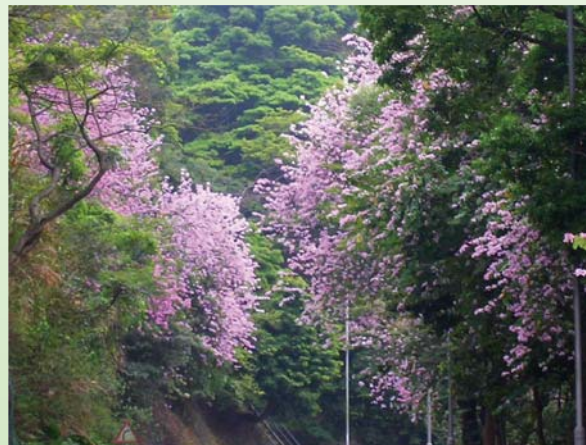
Pink in Early Spring



Location: Lai King Hill Road



Bauhinia variegata (Camel's Foot Tree)



Location: Route Twisk



Flowering Period: January – March
Location: Route Twisk, Tsuen Wan

Orange in Summer



Species name: *Delonix Regia* (Flame of the Forest)
Flowering Period: June - July
Location: Ping Ha Road, Yuen Long

Red in Autumn



Species name: *Sapium sebiferum*
(Chinese Tallow Tree)
Location: Tam Kon Shan Rd, Kwai Tsing



Species name: *Liquidambar formosana*
(Chinese Sweet Gum)
Location: Hilltop Road, Tsuen Wan



Species name: *Rhus succedanea*
(Wax Tree)
Location: Route Twisk, Tsuen Wan

Yellow/Golden in Winter



Species name: *Celtis sinensis* (Chinese Hackberry)
Golden Colour Period: December - February
Location: Route Twisk, Yuen Long section



Species name: *Litsea cubeba* (Fragrant Litsea)
Flowering Period: December - February
Location: Route Twisk, Tsuen Wan section

Green Office Management

In support of the Government's drive to save natural resources, we are committed to making every endeavor to make our green office management a greater success. In addition to energy saving as mentioned in Chapter 3, we have been making our best effort to save other resources.

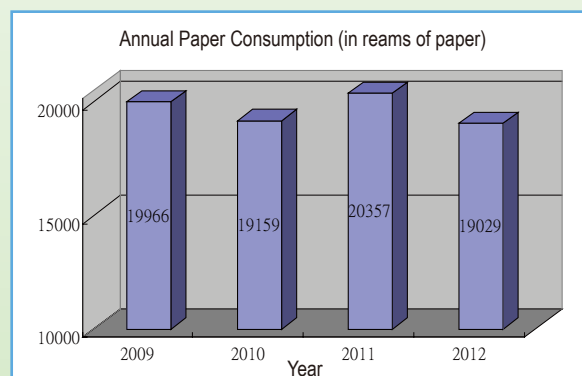
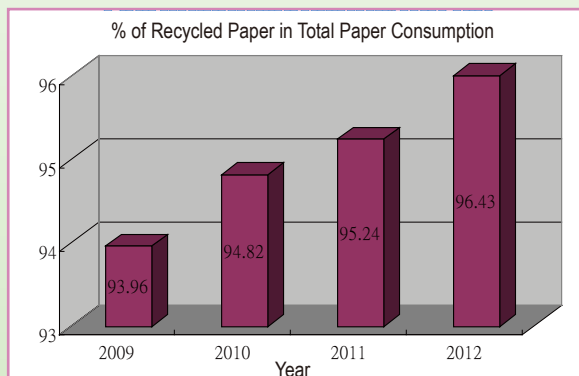
Resources Saving

Paper Saving

To align with the green office initiative, we have promulgated and would continue with the following measures to minimise paper consumption:

- ◆ Use both sides of paper for printing and photocopying.
- ◆ Use the blank side of used paper for drafting/photocopying for internal document/correspondence/fax document.
- ◆ Use electronic means extensively for communication (for instance, use electronic files and keep the use of hard copies to the minimum).
- ◆ Reuse envelopes and file covers.
- ◆ Encourage the use of recycled paper.

In 2012, we consumed 19,029 reams of paper (representing a saving of 6.52% of that of 2011) of which 96.43% were recycled paper.



Waste Recycling

We encourage collection of waste with recycle value by taking the following measures over the years:

- ◆ Put up green boxes to collect reusable envelopes and papers.
- ◆ Collect computer printer toners and ink cartridges for refilling and recycling.
- ◆ Put up recycling boxes to collect used paper, CDs, plastic bottles, aluminum cans and rechargeable batteries for recycling.



3-colour recycle box



Battery recycle box

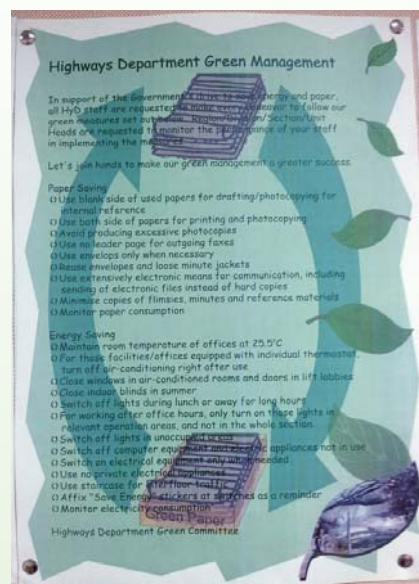
Promotion of Staff Awareness

We have adopted various measures to arouse environmental awareness of staff and to engage them in maintaining a green office:

- ◆ Re-circulate environmentally related departmental guidelines regularly through e-mail and the intranet.
- ◆ Display posters to promote economical use of resources and green housekeeping measures.
- ◆ Invite staff to put forward suggestions on green management such as through the Staff Suggestions Scheme.
- ◆ Extend the green office concepts to daily life through activities such as donation of scarves organised by the Highways Department Recreation and Sports Committee.



Donation of scarves



Display poster of green housekeeping measures

Auditing

Annual Environmental Audit

We conduct annual environmental audits in all 15 offices located in different premises with a view to maintaining the impetus of green measures in housekeeping. The objectives of conducting annual environmental audits are:

- (i) to assess compliance with the green housekeeping guidelines;
- (ii) to identify non-compliance and recommend remedial actions;
- (iii) to promote good environmental management; and
- (iv) to increase staff awareness of green management and occupational safety and health initiatives.

Our offices have been making continuous efforts to comply with the green housekeeping guidelines. We have also taken the opportunity to share among the offices the green management best practices.

Energy Audit

To upkeep our effort in energy saving, an Energy Audit for HMTGO had been conducted by the Government Property Agency (GPA) which identified three energy management opportunities. In 2012, we completed the replacement of the T8 fluorescent lighting fittings with T5 ones in areas which had not been covered yet. In addition, we worked together with GPA and the Architectural Services Department to take forward the other two identified energy management opportunities, being:

- (i) the installation of motion sensors in carparking areas so that lighting would be switched off when no motion is detected; and
- (ii) the replacement of the existing fluorescent lighting fixtures by dual lights fixtures completed with motion sensors in staircases.

Chapter 5

Research and Technology

Highways Department continues to focus researches on environmentally-friendly technologies, such as incorporating recycled materials into our road pavements and street furniture, as well as reducing noise generation from works.

Hot-in-place Recycling by Thermal Patcher

Thermal patcher is a truck-mounted plant for heating up and softening the existing asphalt in defective area using infra-red radiation. The softened asphalt is then compacted with additional virgin asphalt to create a seamless reinstatement. Its application has been stipulated in all of our road maintenance contracts since 2009 for minor asphalt pavement repairs up to 2.5m².

In 2011, the use of hot-in-place recycling in a larger scale was introduced in our road maintenance contracts for resurfacing works of area up to 100m² on road sections. This method recycles the existing asphalt, which significantly reduces the generation of waste and the use of new asphalt as compared with the conventional resurfacing method. It also generates less construction noise from the works.

In view of its comparatively higher cost than the traditional method, its application is mainly for repairing deteriorated pavements of area less than 100m² on road sections subject to stringent geometric, traffic and/or noise constraints. With its satisfactory performance in conducting road preservation works, this technology was also included in our road maintenance contracts that commenced in April 2012.



Thermal Patcher in operation

Paving Blocks with Recycled Glass

With the success in the site trials and the support of the Development Bureau and Environment Bureau, the use of concrete paving blocks with 20% to 25% recycled glass cullet by weight of the total aggregates have been specified in road maintenance contracts. The performance of concrete paving blocks with recycled glass is satisfactory and is similar to that of the conventional concrete paving blocks. This requirement in using recycled glass in concrete paving blocks in our road maintenance contracts will continue.



Paving Blocks with Recycled Glass

Synthetic Gully/Channel Grating

The synthetic gully grating is composed of recycled materials and its manufacturing process does not induce air pollution. The use of synthetic gully grating has been incorporated into the road maintenance contracts commenced in April 2011 and afterwards as an alternative option to traditional cast iron grating, while its long term durability will continue to be observed. Since April 2012, synthetic channel grating composed of recycled materials has also been incorporated into our road maintenance contracts as an alternative option to traditional cast iron grating.



Synthetic Gully/Channel Grating

Recycled Asphalt Pavement

Highways Department has stipulated the mandatory use of 10% to 15% Recycled Asphalt Pavement (RAP) in bituminous materials in road maintenance contracts since 2008. Since then, further research studies and site trials on using higher RAP contents have been conducted. With the positive results, the RAP amount in wearing course and base course have been increased to the range of 20% to 30% in three road maintenance contracts commenced in 2012 and afterwards. This mandatory use of RAP in our road maintenance contracts will continue.



Recycled Asphalt Pavement

Chapter 6

Stakeholders Engagement

Highways Department always strives for improvement on services through engagement with internal and external stakeholders, such as our staff, the industry and the community.

Our Staff

Green Training

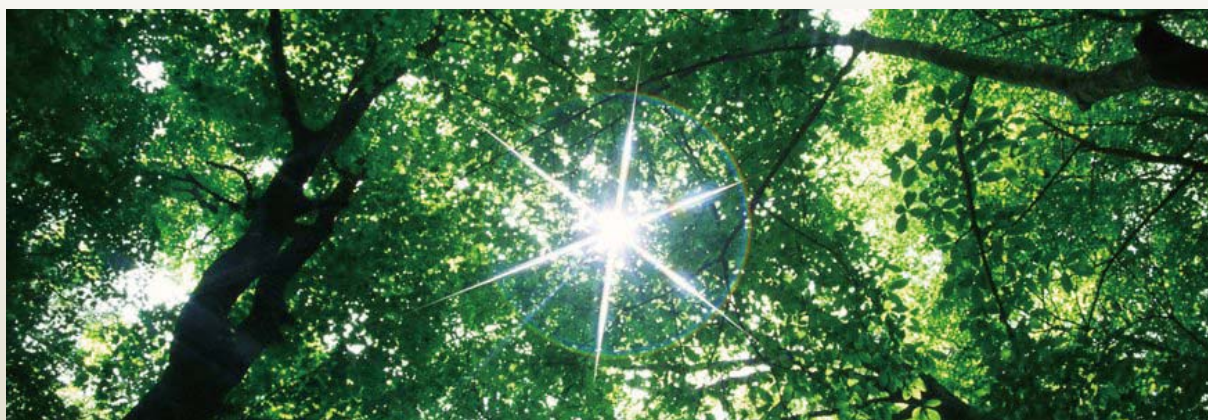
In 2012, Highways Department organized various training courses to acquaint our staff members with sufficient environmental knowledge for handling their duties.

Course Name	Date
ISO14001:2004 EMS Internal Auditor Training	July 2012
Awareness Course for ISO9001 QMS & ISO14001 EMS	Sep & Oct 2012
Environmental Monitoring / Measurement Procedures & Environmental Requirements for Professional Staff	Oct 2012
Environmental Monitoring / Measurement Procedures and Environmental Requirements for Technical Staff	Oct & Nov 2012



Green Activity

The Recreation and Sports Committee (HyD RSC) of Highways Department organized green activities such as outing and hiking for staff to enjoy the environment.



Green activities organized by HyD RSC

Green Advice

To increase staff awareness on outdoor air quality, we issued reminders to our staff when the Air Pollution Index for General Station forecasted by the Environmental Protection Department reached a "very high" level. A set of precautionary measures for front-line staff and their supervisors was also attached to the reminders.



The Industry

Our Partner

To enhance our staff's knowledge on environmental management measures, we continued to co-organize the Joint Safety, Health and Environmental Seminar 2012 with CLP Power Hong Kong Limited, Civil Engineering and Development Department and Environmental Protection Department. One of the aim of the seminar was to enhance the knowledge of environmental management measures for the professional and technical staff.



Joint Safety, Health and Environmental Seminar 2012

Our Contractor

In 2012, Highways Department continued to encourage contractors to organize and participate in various environmental promotion activities. The most significant one was the Hong Kong Awards for Environmental Excellence (HKAEE) which was organized by the Environmental Campaign Committee in conjunction with the Environmental Protection Department and other organizations. While our contractors were encouraged to adopt green management and green innovations, HKAEE benchmarked their commitment towards environmental excellence.

Moreover, our contractors were also encouraged to apply for Environmental Labels and Sectoral Awards under HKAEE. The Environmental Labels, consisting of Wastewi\$e and Energywi\$e Labels, were issued to demonstrate that the contractors had effectively adopted measures to reduce the amount of waste generated and save energy within their establishments respectively, and to recognize the waste reduction and energy saving effort of the contractors. The Sectoral Awards encouraged the contractors to adopt green management; benchmarked their commitments towards best practices within construction industry; and acknowledged their efforts of leading the construction industry. The awards obtained by our contractors in 2012 are tabulated below.

Hong Kong Awards for Environmental Excellence	
Wastewi\$e	HyD Contract No.
Excellence	HY/2008/09, HY/2009/15, HY/2009/19, HY/2009/03, HY/2007/10, 08/HY/2008
Good	HY/2009/18, HY/2007/09
Energywi\$e	HyD Contract No.
Good	HY/2008/09, HY/2009/18
Sectoral Award	HyD Contract No.
Merit	HY/2008/09, HY/2009/15
Bronze	HY/2009/08, HY/2009/18

HKAEE's awards to HyD's contracts in 2012

The Community

Furthermore, Highways Department continued to publicize the project details to the public, explain the justification of the projects, compare different design options, and collect public's opinion for continuous improvement through various means.

Roving Exhibition



Roving Exhibition of Widening of Tolo Highway project at Kam Shek New Village, Tai Po

Public Consultation



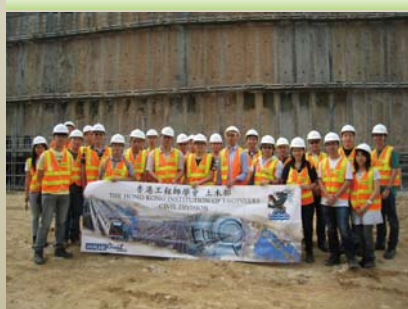
Railway Development Office commissioned the Stage 1 Public Engagement exercise to review and update the Railway Development Strategy 2000

Communication with Local Representatives



Report of planting works progress to the Greening Working Group of District Council

Site Visit



Site visit of Hong Kong Institution of Engineers to Widening of Tolo Highway project

Designated Website



Central-Wan Chai Bypass project website

Project Newsletter



Newsletter of Widening of Tolo Highway project

Public Forum



Public forums of Public Engagement exercise organized by Railway Development Office

Education Activities



School visit by project team introducing the project background and its environmental benefit



Reception to visit by primary school students

Chapter 7

Environmental Performance

Highways Department set clear objectives and targets in our environmental management plan every year. We are pleased to conclude that most of our targets for 2012 were satisfactorily met. With this encouragement, we look forward to more research initiatives and green measures in 2013 for the protection of the environment.



Awards

Hong Kong Flower Show 2012



In order to commemorate the establishment of Highways Department for 25 years since 1986, "Road" was used as the design theme for our floral display in Hong Kong Flower Show 2012. There were two main pathways in our display. One of them, in the form of a vehicular road, had display panels of major road works projects at different intervals to demonstrate the role and contribution of Highways Department. The other pathway, in the form of a meandering railway track, resembles the continuous development of railway networks in Hong Kong.

Commonly used road works materials, such as water barriers, traffic cones, pre-cast concrete footings, etc., form the basic building blocks of the display. Most of these materials could be reused after the Show to signify environmental protection awareness. Through design and decoration, these materials became bold, interesting and unique design elements of the display; and HyD was honoured to receive the 'Grand Award for Design Excellence (Landscape Display)'.

Outstanding Environmental Management and Performance Award (OEMPA) and Considerate Contractors Site Award (CCSA)

Development Bureau organized the Considerate Contractors Site Awards (CCSA) Scheme to recognize construction sites with good site safety and environmental performance and considerate attitude towards the neighborhood and the public. In 2012, our construction sites received six CCSA and five OEMPA awards, including two Gold and two Silver Prizes from CCSA – New Works Contracts & CCSA - Repair, Maintenance, Alteration and Addition (RMAA) Contracts, and one Gold and one Bronze Prizes from OEMPA.

Contract No.	Contract Title	Prize
New Works		
HY/2009/18	Central - Wan Chai Bypass - Central Interchange	CCSA Gold and OEMPA Gold
HY/2009/15	Central - Wan Chai Bypass - Tunnel (Causeway Bay Typhoon Shelter Section)	CCSA Silver and OEMPA Bronze
HY/2007/10	Reconstruction and Improvement of Tuen Mun Road – Tai Lam Section	CCSA Silver and OEMPA Merit
HY/2008/12	Bus-Bus Interchanges on Tuen Mun Road	CCSA Merit and OEMPA Merit
Repair, Maintenance, Alteration and Addition (RMAA) Works		
20/HY/2004	Highways Department Term Management Contract (Maintenance of High Speed Roads in New Territories East and Hong Kong Island 2005-2013)	CCSA Gold
01/HY/2009	Management, Operation, Installation and Maintenance of the Public Lighting System in Hong Kong Island and Lamma Island (2009 - 2013)	CCSA Bronze and OEMPA Merit



Display board for Contract number 20/HY/2004 "Highways Department Term Management Contract (Maintenance of High Speed Roads in New Territories East and Hong Kong Island 2005-2013)", winner of CCSA(RMAA Works) Gold Prize



Display board for Contract number HY/2009/18 "Central-Wan Chai Bypass – Central Interchange", winner of CCSA (New Works) and OEMPA Gold Prizes

Environmental Objectives and Targets

Achievement in 2012

Objectives	Target	Achievement
Reducing the energy consumption in public lighting	To install 2,000 electronic ballasts for road lighting territory wise	Target mostly achieved; 1983 nos. of electronic ballasts were installed in 2012.
Saving 5% electricity consumption in HMTGO by 2014 (Comparing with the baseline electricity consumption in 2009)	As the target for 2011 has not been achieved, we shall continue to work with the GPA and the ASD for: (a) Installing 10 sets of motion sensors in carparking area; and (b) Replacing 60 nos. of fluorescent lighting by dual lighting fittings with motion sensors in staircases.	Resources are being sought from the GPA and the ASD. The installation works are targeted to be carried out in 2013.
Adopting measures in water conservation	To continue installing dual-flush toilets, automatic low flow water taps and sensor type urinals in the toilets of HMTGO	Due to the completion of term contract of the ASD, the toilet refurbishment works were suspended in 2012. The next toilet refurbishment works are scheduled to commence in 2013.
Improving indoor air quality	To continue upkeeping the indoor air quality at or above the level of "Good Class" in HMTGO	Target achieved: Air measurement was conducted by the Electrical and Mechanical Services Department in 2012. HMTGO was awarded the Indoor Air Quality Certificate (Good Class).
Carrying out carbon audit for tracking the effectiveness of Green House Gas (GHG) reduction	To continue carrying out carbon audit twice per year for tracking the effectiveness of GHG reduction	Target achieved: Two carbon audits were arranged by the Building Management Office of HMTGO in 2012.
Encouraging the use of recycled paper in the Department	To raise the percentage usage of recycled paper from 95% to 96% of the total consumption	Target achieved: 19,029 reams of paper were consumed in 2012 of which 18,349 reams (96.43%) were recycled paper.
Setting target in reducing photocopying paper consumption	To maintain the consumption of photocopying paper at a level not exceeding the consumption level of 2011	Target achieved: 19,029 reams of paper were consumed in 2012. Comparing with 20,357 reams of paper consumed in 2011, a saving of 6.52% in paper consumption was achieved.
Promoting the wider use of recycled materials	(a) To introduce the use of reclaimed asphalt pavement (RAP) in bituminous pavement construction in more contracts progressively; and (b) to introduce the use of synthetic channel grating consisting of non-metallic recycled materials in the new road maintenance contracts	(a) Target achieved: Use of RAP has been specified in one new road maintenance contract scheduled to be commenced in April 2013; and (b) Target achieved: Synthetic channel grating has been included in road maintenance contracts since 2012.
Planting trees and shrubs	To plant 156,000 trees/shrubs in capital works contracts	Target achieved: 218,978 trees/shrubs have been planted.
Adopting site office equipment with energy saving label	To use site office equipment with energy saving labels in all new major works contracts	Target achieved: All 5 new major works contracts tendered in 2012 have adopted energy saving site office equipment.
Procuring environmentally friendly contract vehicle	To procure environmentally-friendly private car model approved by EPD for saloon type contract vehicle in each of the new major works contracts	Target achieved: All 5 new major works contracts tendered in 2012 have procured environmentally friendly contract vehicles.
Reducing dust emission	To include a particular specification clause for dust suppression in all new major works contracts	Target achieved: All 5 new major works contracts tendered in 2012 have included the dust suppression particular specification.
Adopting energy efficient features and renewable energy technologies	(a) To adopt energy efficient features and renewable energy technologies in all capital works projects of MWPMO and HZMB-HKPMO with consultancy agreement tendered during the calendar year of 2012; and (b) to conduct carbon audit to assess the carbon footprint of the road projects of MWPMO and HZMB-HKPMO during feasibility and design stages with a view to providing recommendations for appropriate compensatory / mitigation measures.	Target achieved: All 5 new consultancy agreements tendered in 2012 have included relevant requirements for the consultants to produce a separate study report on both items.
Green Roof and Green Wall at the Engineer's Site Office	To include a particular specification clause for construction of Green Roof and Green Wall at the Engineer's Site Office which is exposed in sunlight in selected major works contracts of MWPMO and HZMB-HKPMO tendered during the calendar year of 2012.	Target achieved: 3 new major works contracts tendered in 2012 have been selected to include relevant particular specification clause for construction of green wall and green roof.

Looking Ahead for 2013

Objectives	Target
Reducing the energy consumption in public lighting	To install dimmers for the lighting system at footbridges
Saving 5% electricity consumption in HMTGO by 2014 (Comparing with the baseline electricity consumption in 2009)	As the target for 2012 has not been achieved, we shall continue to work with the GPA and the ASD for: (a) Installing 10 sets of motion sensors in carparking area; and (b) Replacing 60 nos. of fluorescent lighting by dual lighting fittings with motion sensors in staircases.
Adopting measures in water conservation	To continue installing dual-flush toilets, automatic low flow water taps and sensor type urinals in the toilets of HMTGO when they are refurbished.
Improving indoor air quality	To continue upkeeping the indoor air quality at or above the level of "Good Class" in HMTGO
Carrying out carbon audit for tracking the effectiveness of Green House Gas (GHG) reduction	To continue carrying out carbon audit twice per year for tracking the effectiveness of GHG reduction
Encouraging the use of recycled paper in the Department	To maintain the percentage usage of recycled paper not less than 96% of the total consumption
Setting target in reducing photocopying paper consumption	To maintain the consumption of photocopying paper at a level not exceeding the consumption level of 2012
Promoting the wider use of recycled materials	To introduce the use of the following construction materials/methods in more maintenance contracts progressively: (a) Reclaimed Asphalt Pavement in bituminous pavement construction; and (b) Thermal Patcher for appropriate scale resurfacing.
Planting trees and shrubs	To plant 200,000 trees/shrubs in capital works contracts
Adopting site office equipment with energy saving label	To use site office equipment with energy saving labels in all new major works contracts
Procuring environmentally-friendly contract vehicle	To procure environmentally-friendly private car model approved by EPD for saloon type contract vehicle in each of the new major works contracts
Reducing dust emission	To include a particular specification clause for dust suppression in all new major works contracts
Adopting energy efficient features and renewable energy technologies	(a) To adopt energy efficient features and renewable energy technologies; and (b) to conduct carbon audit to assess the carbon footprint of the road projects (with a view to providing recommendations for appropriate compensatory / mitigation measures) in the appropriate consultancy agreements for capital works projects of MWPMO and HZMB-HKPMO tendered during the calendar year of 2013.
Green Roof and Green Wall at the Engineer's Site Office	To include a particular specification clause for construction of Green Roof and Green Wall at the Engineer's Site Office which is exposed in sunlight in major works contracts of MWPMO and HZMB-HKPMO tendered during the calendar year of 2013.

Hoping that this report could provide you with a glimpse of our dedication and efforts in environmental protection. Should you have any comment to our work, please share with us your views through our homepage on the Internet (address: <http://www.hyd.gov.hk>). Thank you for reading this publication.

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