



Highways Department

ENVIRONMENTAL REPORT | 2005



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Director's Message



I am delighted to present our third Environmental Report. This report summarizes our efforts to mitigate all environmental impact in our work in the year 2005.

We have strived to enhance our performance in the protection and improvement of the environment through our Environmental Management System which had been upgraded to ISO 14001:2004 in 2005.

We continued to conduct research on the use of recycled pavement materials and on the noise reducing properties of pavement materials. By adopting new technology to reduce electricity consumption for public lighting and other highway installations, we aim to achieve energy savings in a sustained way.

We contributed to provide greening to our congested urban area and to improve the streetscape through various means.

I hope you will find this report interesting.

A handwritten signature in black ink, appearing to read 'Mak Chai-kwong'.

MAK Chai-kwong
Director of Highways
July 2006



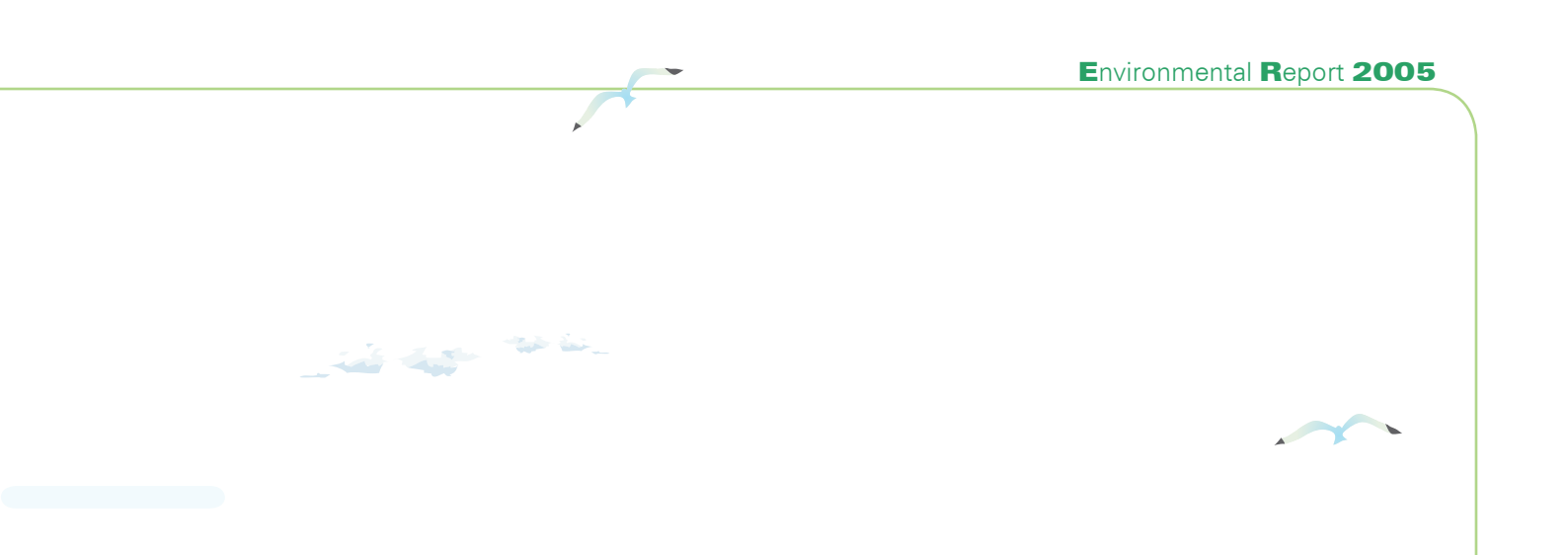
Introduction

Highways Department is responsible for developing and upkeeping the road network as well as planning for, and monitoring of railway development in the Hong Kong SAR. We have a staff establishment of over 400 professionals and some 1,530 other staff in different grades. We maintain about 1,955km of roads and 12,500 roadside slopes.

Our policy on environmental protection has been integrated into our Department's Management Policy. Under the Environmental Management System, we place emphasis on the environmental considerations of our work. In achieving our goals, we act on the Policy by:

- ☀ **identifying environmental aspects in all stages of our work, controlling their impacts and preventing pollution as far as practicable;**
- ☀ **monitoring the performance of our contractors to ensure good quality of works and prevention or mitigation of potential environmental impacts arising from our projects;**
- ☀ **complying with relevant legal and other requirements; and**
- ☀ **using resources efficiently and minimizing waste arising from our projects.**





The following are environmental related work or mitigation measures carried out in 2005 by the Department or in its associated projects:

- ecological impact mitigation;
- investigating the wider use of recycled construction materials in road pavement;
- developing a durable type of low noise surfacing material;
- energy saving measures for public lighting;
- noise barrier retrofitting programme;
- thematic planting and greening in urban areas;
- renovation of footbridges and covered walkways; and
- streetscape enhancement including replacement of street name plates.

The content of the report is grouped under 5 main headings:

- Environmental Management;
- Research and Technology;
- Greening and Streetscape Enhancement;
- Green Office Management; and
- Achievement of Environmental Objectives and Targets.





Environmental Management

Highways Department is committed to protecting the environment as far as practicable in its work. With our Environmental Management System, we systematically identify and evaluate impacts our work may have on the environment. We ensure that all our activities are conducted in an environmentally responsible manner.



New Certification of Environmental Management System (EMS) to ISO 14001:2004

The Department successfully upgraded in November 2005 its Environmental Management System (EMS) from that certified to ISO 14001:1996 in December 2003 to the latest requirements of ISO 14001:2004.

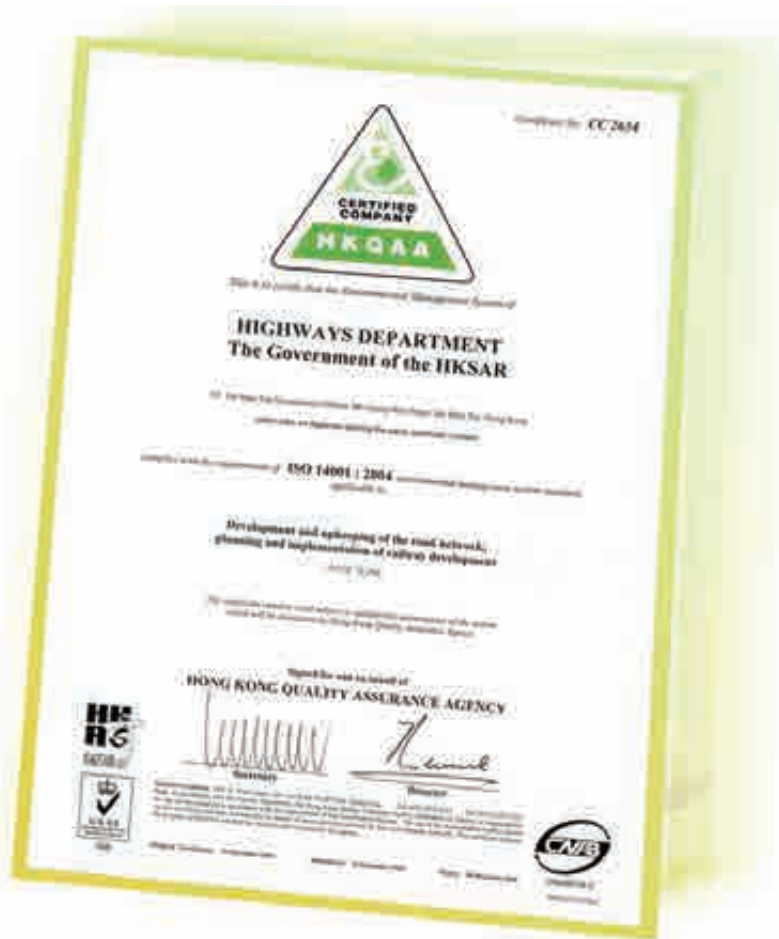
In 2004, the International Organization of Standards (ISO) and International Accreditation Forum required all holders of EMS certification to upgrade their own EMS to conform to the new ISO 14001:2004 standard. Accordingly, we commissioned Hong Kong Productivity Council (HKPC) in February 2005 to assist us to carry out a System Review and Upgrading.

To minimize interruption to our office operations, we invited HKQAA to conduct the conversion assessment together with the regular surveillance audit in August 2005.

System Review and Upgrading

We conducted a comprehensive system review on the EMS in early 2005 and found that new features including evaluation of compliance with environment-related requirements, publication of reports about environmental elements, additional items on management

review, and some other requirements should be incorporated into the EMS documents. Subsequent to the review, the Quality Management Manual, the Operation Procedures and the Work Instruction were updated in May 2005 to become effective on 1 June 2005.

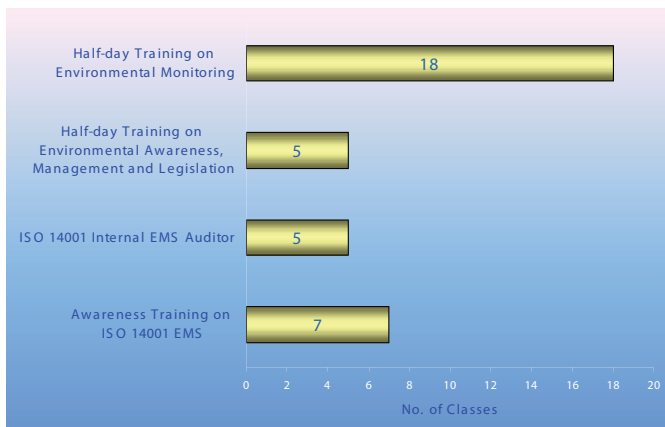


Conversion Assessment of EMS

HKQAA appointed as the certification body visited the Department in mid-August 2005. With support and concerted efforts of our colleagues, we successfully passed the Conversion Assessment.

Training

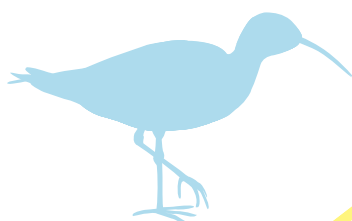
To promulgate the upgraded requirements, we provided the following training to our staff:



Benefits of Implementing the EMS

Since the implementation of EMS in the Department in late 2003, we have seen the following benefits:

1. We have a tool to systematically identify and evaluate significant environmental aspects of our work, thus enable us to control and minimize their impacts.
2. We have established our environmental policy on environmental protection, pollution prevention and efficient use of natural resources. This provides us means to influence our business partners, such as contractors and consultants, on these aspects.
3. We have in place a system to evaluate and monitor our contractors' environmental performance.
4. The EMS has become a driving force for us to think of new initiatives to save energy, and to reduce waste, as we have to update our objectives and targets to ensure continual environmental improvement.
5. The EMS has enhanced the environmental consciousness and sense of environmental protection of our staff.





Birds in an enhanced fishpond

Ecological Impact Mitigation Measures of Projects

Sheung Shui to Lok Ma Chau Spur Line

The Sheung Shui to Lok Ma Chau Spur Line is being built for the cross-boundary passengers and the Lok Ma Chau (LMC) Terminus is located in the ecological sensitive area on the south side of Sham Chun River. The impacts on the fishponds, including direct habitat loss and disturbance to the water birds have been studied and are compensated by enhancement of 30 hectares of fishponds. The enhancement measures include enlarging small fishponds; reprofiling of fishpond bunds to provide shallow sloping margins to increase feeding opportunities; and manipulating fish stocking, feeding/fertilising regime and drain-down to optimise food availability for birds. In addition, 5 hectares of marsh area and 5 hectares of reed bed are created to provide more habitat diversity and to clean the effluent of the LMC Terminus.

The fishpond enhancement works are nearly completed, with ecological monitoring and active fishpond management on-going. The enhanced fishponds have successfully restored the bird habitat in the area. This is evident by the large number of water birds including Black-faced Spoonbill, Great Cormorant, Great Egret and Grey Heron spotted in the enhanced fishponds during the past winter.



Enhanced fishponds on the south side of Lok Ma Chau Terminus



Enhanced fishponds for the Spur Line and public transport interchange

Reconstruction of Causeway Bay Flyover and Associated Widening of Victoria Park Road

Two Champion trees within the site area have been properly protected and maintained during the construction stage.



Protection and maintenance of two champion trees within the site area





EIA Knowledge Transfer Platform

In delivering a new road or railway project, it is necessary to undertake an environmental impact assessment (EIA) to identify impacts that the project may have on the environment and to devise proper control and monitoring measures. We have to ensure that in the course of executing all our works, we will comply with the requirements in the Technical Memorandum under the Environmental Impact Assessment Ordinance (EIAO).

To capture good practices and environmental protection knowledge gained in HyD's approved EIAs since EIAO's implementation in 1998, the Department commissioned an environmental consultant in November 2004 to undertake the design and production of an EIA Knowledge Transfer Platform. Three road development projects with unique EIA experiences, namely Improvement to Tung Chung Road between Lung Tseng Tau and

Cheung Sha, Deep Bay Link and Hong Kong - Shenzhen Western Corridor (HK-SWC), were selected for inclusion into the Platform.

The Platform with an e-sharing forum provides useful tips for colleagues to tackle and minimize environmental problems which may arise in future projects. The use of real case examples would benefit HyD staff in experience build-up. The visual presentation of actual environmental performance of mitigation measures in HK-SWC is persuasive, and will set a precedent for other projects. To facilitate knowledge and experience sharing among colleagues, the Platform was uploaded to the departmental intranet in September 2005.



Roadshows in shopping malls on the HK-SWC project to reach more people during public consultation.

Research and Technology

We have been developing technologies to reduce waste generation and noise impacts.

Recycled Pavement Materials

To prevent the accumulation of construction and demolition (C&D) waste material, Highways Department has proactively researched into ways to reuse and recycle the C&D material generated. We continued in the year to investigate the use of recycled aggregates for road sub-base and the wider use of asphalt reclaimed from road maintenance milling works.

Use of C&D Material as Sub-base

In 2005, we continued to monitor the performance of the pavement with sub-base constructed with recycled aggregates at Fo Tan Road using Falling Weight Deflectometer tests. Site investigation was carried out to investigate any self-cementing effect of the sub-base constructed with recycled aggregates in the footpath and carriageway. The performance of the footpath and carriageway laid with sub-base constructed with recycled aggregates has been found generally satisfactory. However, as cementing effect was observed at locations where pure recycled aggregates had been used, the monitoring programme was extended in order to further monitor if reflective cracking would occur due to the cementing effect of the sub-base.

Reclaimed Asphalt Pavement

With a view to further using reclaimed asphalt pavement (RAP) in addition to its existing use as road base material, we collaborated with the Hong Kong Polytechnic University to evaluate the use of RAP in the wearing course and the base course of our roads and the study was completed in December 2005. The findings in the research project indicated that the performances of virgin and recycled asphalt mixes are comparable. We have recommended the use of recycled asphalt mixes (up to 15% of RAP) in all public works contract and expect that more RAP can then be recycled.

Low Noise Surfacing

In Hong Kong, roads are mostly built with concrete or asphalt pavement. On high speed roads, friction course is usually laid as surfacing material for providing better skid resistance. The friction course is also able to reduce noise generated from contacts of vehicle tyres with the road surfaces. However, the performance in this aspect at low speed roads is not certain. Trial on friction course at selected low speed roads are therefore being carried out with a view to reducing traffic noise impact. Up to end 2005, we have completed resurfacing 22 low speed road sections with friction course.

The friction course on low speed roads will require more frequent maintenance due to earlier deterioration of this surfacing material under heavy, slow moving traffic. To enhance the durability of the friction course material, we have collaborated with the Hong Kong Polytechnic University under a study to develop a more durable type of surfacing material. Based on the result of the Study, we promulgated the use of the new material by

incorporating it into the maintenance term contracts in 2005. The asphalt suppliers are now able to produce the new materials. With a view to assessing the result on prolonging the noise reduction performance of low noise surfacing, we are carrying out trial laying of the new materials in various thickness and maximum nominal aggregate sizes at Shatin. Traffic noise at the road sections will be monitored for a period of two years in order to assess the noise reduction performance of the materials.

Low noise surfacing at Shek Kip Mei Street



Low noise surfacing at Chui Tin Street, Shatin





Energy Saving for Public Lighting

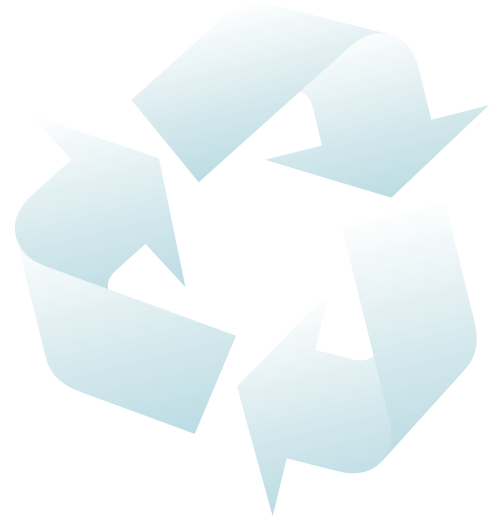
In view of the significant electricity consumption of the Public Lighting System on public roads, bridges, underpasses, footbridges, subways and public transport interchanges, we regularly review, investigate and explore the use of new technology and products with a view to reducing electricity consumption.

In 2005, we have replaced some 3,000 nos. of lamps and lanterns with lower wattage but more efficient lamps and lanterns. The annual saving of electricity consumption is about 380,000 kWh. We also replaced 10,935 electromagnetic ballasts in footbridges and subways by electronic ballasts, to save energy.

Noise Barrier Retrofitting Programme

In 2000, the Administration introduced a new policy to address excessive noise impact of existing traffic on residents. Under the policy, engineering solutions, by way of retrofitting of barriers and enclosures, and resurfacing with low noise material, were considered for selected road sections.

So far, we have identified 36 existing road sections (including 6 flyover sections) for which preliminary investigation has shown that retrofitting works are technically feasible. Of these 36 road sections, retrofitting works for the Fanling Highway sections near Choi Yuen Estate and Fanling Centre have been substantially completed. We estimate that

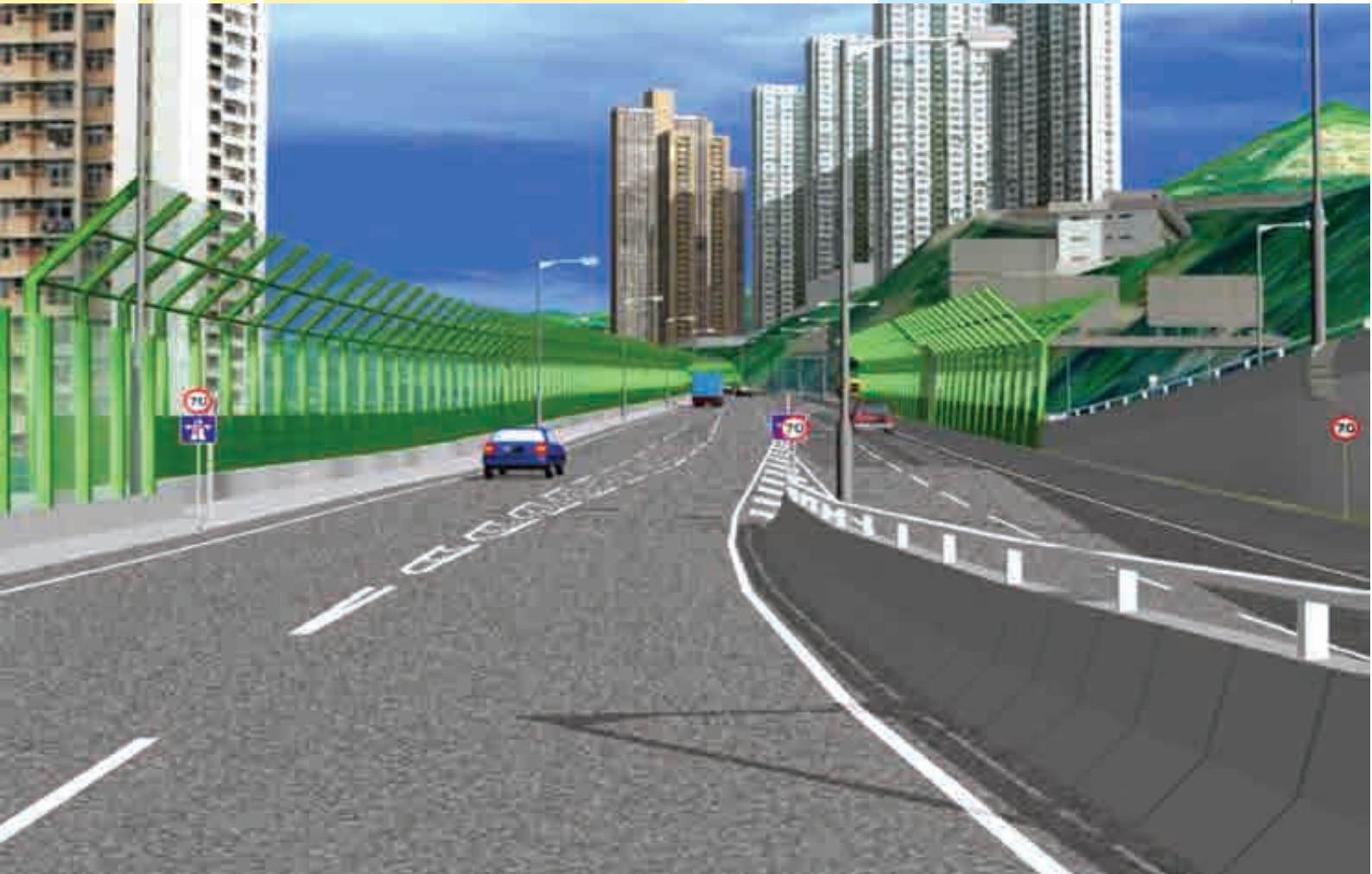
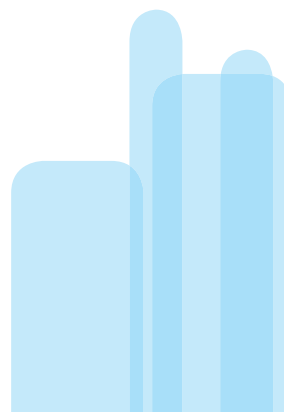
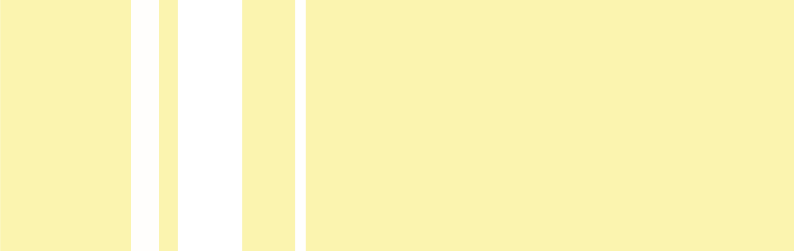


about 2,000 dwellings have benefited from the retrofitting of noise barriers at these two road sections where the traffic noise at their facades are reduced by up to 10 dB(A). In 2005, we started the preliminary design for proposed retrofitting works at Tseung Kwan O Road near Tsui Ping (South) Estate and Tsing Tsuen Bridge and target to commence the construction works by end 2007.

To enhance public awareness and understanding of the projects, we prepared computer animations and show the “drive-through” and “fly-through” views of noise barrier proposals at Tseung Kwan O Road near Tsui Ping (South) Estate during a District Council meeting in 2005. This facilitated the public’s realization of the actual aesthetic view of noise barrier proposals at an early stage and encouraged them to participate in the process to formulate an acceptable design.



"Fly-through" view of proposed noise barriers at Tseung Kwan O Road near Tsui Ping Estate and Hing Tin Estate



"Drive-through" view of proposed noise barriers at Tseung Kwan O Road near Tsui Ping Estate and Hing Tin Estate



Greening and Streetscape Enhancement

We have been providing greening and improving our streetscape to give pedestrians better walking environment.



Greening Our Environment

It is always difficult to find space in the urban area for planting due to space restriction and congested underground utilities. In order to promote greening in these areas, we work with Transport Department to widen footpath, to provide space, and introduce the use of portable planters and planter boxes mounted on railings where such installation would not interfere pedestrian flow and sight line.

Thematic Planting at Hung Hom

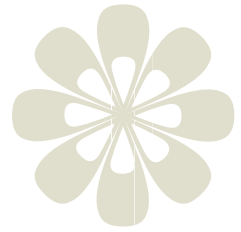
We implemented a thematic planting scheme in Hung Hom on a footbridge across the toll plaza of the Cross Harbour Tunnel. The scheme included planting outside the footbridge railings. We installed the planter boxes while a private company funded, and carried out planting and maintenance. The planting works were completed in May 2005.



Before
Yee Wo Street
Footbridge.



After
Colourful shrub planting attached
to railings



Thematic Planting in Wan Chai

We identified some locations along Gloucester Road that lacked vegetation or were not adequately vegetated. The enhancement works included provision of fixed and portable planters and plants.

Greening Works in Causeway Bay

In collaboration with Civil Engineering Development Department, we initiated work to maximise greening opportunities in Causeway Bay. Since space for planting was very limited, every possible area for greening had been investigated. This included locations along crowded pedestrian footpaths, and space for attachment to footbridges and the central medians between the tramway and roads. In the end, we were successful in identifying locations to accommodate some 2,000 plants in the congested Yee Wo Street.



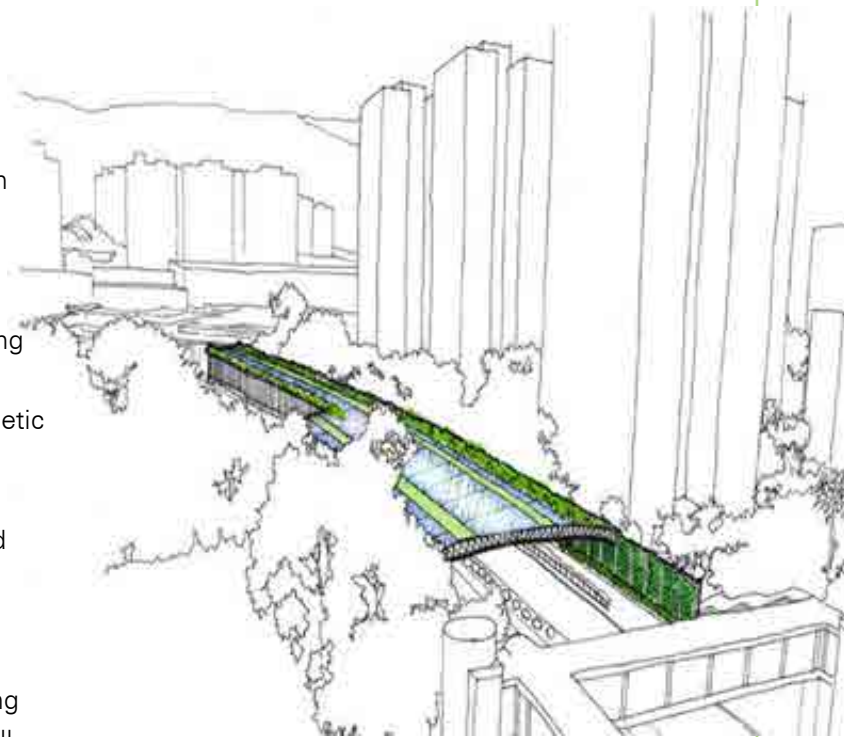
Before
near Tram Station
(Pennington Street)



After
Utilising pockets of space for
greening

Greening and Aesthetic Design of Noise Barriers

Noise barriers and enclosures are often installed to protect roadside residents from traffic noise. Whilst they mitigate noise impacts, they may bring about another environmental impact – visual impact. To address the issue on visual impact arising from noise barriers, Highways Department initiated a study on the greening and aesthetic design of noise barriers. The study aimed for a search on noise barrier greening and aesthetic design practices, both locally and in overseas countries, with examples from completed projects. Some good greening and aesthetic design principles that could be further developed for application in Hong Kong conditions were formulated. Trials will be carried out on future noise barriers and enclosures projects.



Community Planting

To promote community participation, we have continued in the year to hold Community Plantings. In connection with the Sai Sha Road widening construction, a Community Planting was held in the morning on 17 April 2005 at the newly constructed planter fronting the Lee On Community Hall. About 90 nearby residents from Lee On Estate and Kam Lung Court participated in the activity. During the activity, the local residents were given the opportunity to plant some trees and shrubs after a briefing session on planting techniques given by the specialist subcontractor.



Renovation of Footbridges and Covered Walkways

Renovation of footbridges and covered walkways built for some time has now been included into Highways Department's general structures maintenance works to uphold their functions as well as improving the streetscape.

Footbridges and Elevated Walkways in Central and Wan Chai

In addition to renovation of the structural finishes, we have added planter boxes along the O'Brien Road Footbridge in Wan Chai and the Elevated Walkway in Central. All together, 278 planter boxes have been installed along the two footbridges. Each planter box can hold 5 nos. of pot plants. Different plants are cultivated in the two districts. Allamanda cathartica (軟枝黃蟬) and Asparagus (天冬草) are planted in Wan Chai while Scindapsus Aureus (黃金葛) and Bougainvillea Glabra (勒杜鵑) are grown in Central. After half year of establishment, the plants are in very satisfactory condition and the goal of introducing more greening on these pedestrian routes with large flow is achieved.

Before painting



After painting



Painting of Footbridge across San Wan Road and Lung Sum Avenue, Sheung Shui

The renovation work with application of protective paints on the concrete and steel surfaces will improve the durability and the appearance of the structures. The colour of paints is chosen to match with the natural colour of the materials, with some enlivening patterns.



Before renovation



After renovation

Central Elevated Walkway



Before renovation



After renovation

O'Brien Road Footbridge



Old street name plate

Under the Sheung Wan Streetscape Enhancement project, we conducted a trial for another enhanced design of street name plates for use in special areas. Black or brown-red enhanced street nameplates have been purposely designed to suit the paving colours. In order to reduce the number of supporting posts, we made use of cantilevered and double-sided plates (in one plate or two plates) mounted onto a stylish tapered aluminium post or a circular steel post.

Environmentally Friendly Street Furniture

New Street Name Plates

The territory-wide replacement of existing street name plates with the new design inscribed with building numbers and direction arrows had been completed in 2005.

For new or additional street name plates, we have adopted one-post support instead of two-post support, and where possible, multi-sign post to house both street name plates and traffic signs.



Theme street name plate



New street name plate

To promote the concept of 'theme streets', we also designed theme street nameplates for such streets to highlight the special themes, such as 'Ginseng & Bird's Nest Street', 'Herbal Medicine Street' and 'Dried Seafood Street'.



A row of recycled plastic bollards & chains in SOHO



Close up detail of recycled plastic bollard

Recycled Plastic Bollards and Retractable Bollards

Traditionally, the use of wood and metal street furniture to enhance the overall design of the streetscape was often seen as the only option available. Through recent technological advances, the use of waste materials to produce street furniture has become a viable alternative with an added advantage of helping to improve the environment. Bollards made from recycled plastic are one such example. The benefits of using recycled plastic are many. It can easily be procured locally, and unlike metal or wood, is virtually maintenance free. Moreover, the use of the recycled plastic bollard is an example of environmental awareness in action and can promote the recycling industry in Hong Kong.

We had completed a pilot scheme in the year to test the use of recycled plastic bollards in the streetscape upgrading work in the SOHO area. Working with local manufacturers, the bollard is specifically designed for Hong Kong and utilizes plastic waste.

The Department is also investigating ways to reduce construction waste arising from demolition of concrete footings, attributable to repeated removal and installation of railings for the purpose of crowd control.

In some locations, such as outside Victoria Park in Causeway Bay, the railings need to

be frequently removed and reinstated. In conjunction with a local university, we started to look into designs of retractable bollards. Essentially, the retractable bollard is a bollard, which when not in use, is housed underground in a compartment, thereby saving the removal and disposal of the concrete footings each time.

Paving Blocks at Tourist Attractions

Pavement around Hammer Hill Road Park and Chi Lin Nunnery

Background

As a result of SARS occurred in early 2003, the number of tourists visiting Hong Kong had gone down drastically in 2003/04. Concerned departments under the Tourism Task Force started to plan for upgrading various facilities in tourism spots, with a view to increasing their attractions. Highways Department implemented enhancement works in various tourism spots, including upgrading the existing concrete footpaths with various types of paving to minimise reinstatement waste and to enhance serviceability as well as aesthetics.

Works outside Chi Lin Nunnery

Chi Lin Nunnery (CLN) was considered as one of the tourism spots and we reconstructed the old concrete paver footway around CLN using clay paving blocks at Fung Tak Road and



General view at Chi Lin Drive



General view at Fung Tak Road

Chi Lin Drive. The footway was the access leading to CLN from MTR Station and was reconstructed using 100x200x50mm clay paving blocks in basket-weave bounding randomly in ratio of 3:1 (dark grey and grey).

Works around Hammer Hill Road Park

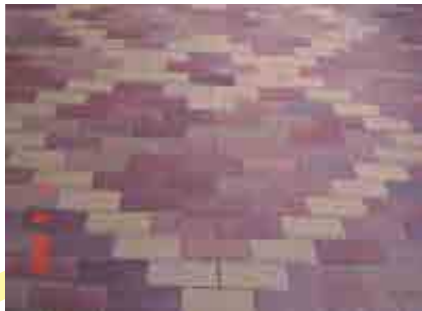
The Hammer Hill Road Park (HHP) located next to CLN would be developed to a classical Tang-dynasty style garden and become a hot spot of tourism upon completion in mid 2006. It was proposed to reconstruct the dilapidated concrete paver footway there using 270x50x80mm high quality clay paving blocks laid in a modified classical Tang-dynasty style and to replace a number of existing roadside trees with tree species of high ecological value for enhancing the streetscape around the HHP. The works commenced in April 2005 and would be completed in 2006.



Sheung Wan Streetscape Enhancement

The Sheung Wan area is an area rich in history and tourist attractions. The area is also well known for the agglomerations of different traditional trades such as herbal medicine, ginseng, bird's nest, dried seafood and antiques along some famous theme streets (主題街).

By late 2002, Urban Renewal Authority (URA) conducted a workshop with the Central and Western District Council, local residents/trade groups, professionals and academics to collect public views for the revitalization of the Sheung Wan district including the creation of a piazza near Western Market for providing a leisure open space for activities held by local communities. Meanwhile, the Home Affairs Department (HAD) also proposed to promote local community economy and tourism by advocating the concept of 'theme streets' in the area so as to promote traditional Chinese trades. To cater for all these themes, we jointly organized with HAD and URA to launch the Sheung Wan Streetscape Enhancement project by trying some newly designed streetscape features. The project integrated the above themes based on the 'hub and spokes' concept, with the Western Market and the piazza as the 'hub', later known as the Sheung Wan Fong, and other theme streets as the 'spokes'.



Accent paving patterns

Special paving patterns outside the Western Market



Bronze plaque engraved with "Western Market" logo

Special Paving Patterns

As Des Voeux Road Central is a major business link in Central, we reconstructed the existing plain concrete footpaths, mostly in poor or fair conditions, with quality paving blocks and replaced the railings with enhanced style.

In order to promote a sense of harmonic connection between the Western Market and neighbouring streets, we made use of the architectural style and colour scheme of Western Market to form several paving patterns for the pavement nearby. Moreover, to further highlight the historical Western Market, special paving blocks inserted with a bronze plaque of Western Market were placed at the centre of some paving patterns.

To link with the 'hub' area, paving patterns in the 'theme streets' (as the 'spokes') were designed with accent patterns to accentuate the characteristic of Chinese traditional trades.





Footpath in Des Voeux Road Central reconstructed with quality paving blocks

The Piazza and the 'Compass'

The piazza including the special 'Compass' motif has been created by reconfiguring a previous sitting out area located at the junction of Morrison Street and Wing Lok Street. The special 'Compass' motif condenses into a spot the special characteristic of Sheung Wan – a place where east meets west. Its outer ring also serves as a direction guide pointing the way to sites of historical significance such as the Ladder Street and the Upper Lascar Row (摩羅上街), the Western Market (西港城), the Man Mo Temple (文武廟) and the Hong Kong Museum of Medical Science (醫學博物館).



The 'Compass' motif



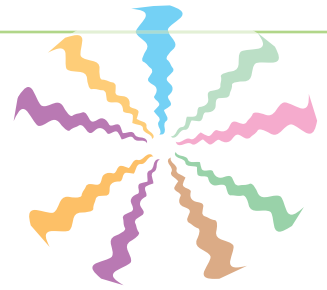
The piazza provides a convergent and an open area for local community/District Council to hold cultural activities/street events such as Sheung Wan Promenade



Green Office Management

To sustain a green office environment, we have followed the 3-R principles “Reduce, Reuse and Recycle” in our day-to-day office management.





The Highways Department Green Committee was first formed in 1994 to develop, implement and monitor green office practices. We endeavor to sustain a green office environment and adopt various green measures in housekeeping to economize the use of natural resources. The main features of the green measures are summarised as follows:

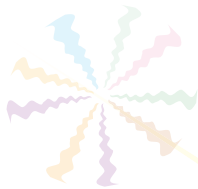


Paper Saving

- Minimize photocopying paper consumption
- Use both sides of paper for printing and photocopying
- Use blank side of used paper for drafting/photocopying for internal reference
- Use electronic means extensively for communication, including the sending of electronic files instead of hard copies
- Reuse envelopes and file covers
- Increase the use of recycle paper

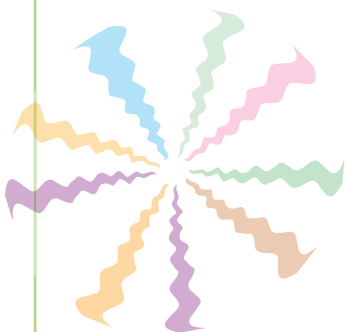
Energy Saving

- Appoint Energy Wardens in every Office / Division to monitor lighting
- Maintain air-conditioning not lower than 25.5 °C in summer
- Switch off lights during lunch or when away for long hours
- Switch off computer equipment and electric appliances not in use
- Use of energy efficient fluorescent tubes for lighting
- Review lighting level arising from change of room use
- Monitor electricity consumption
- Encourage use of staircase for interfloor traffic
- Use timer water taps in toilets

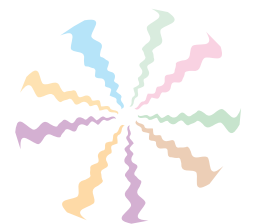
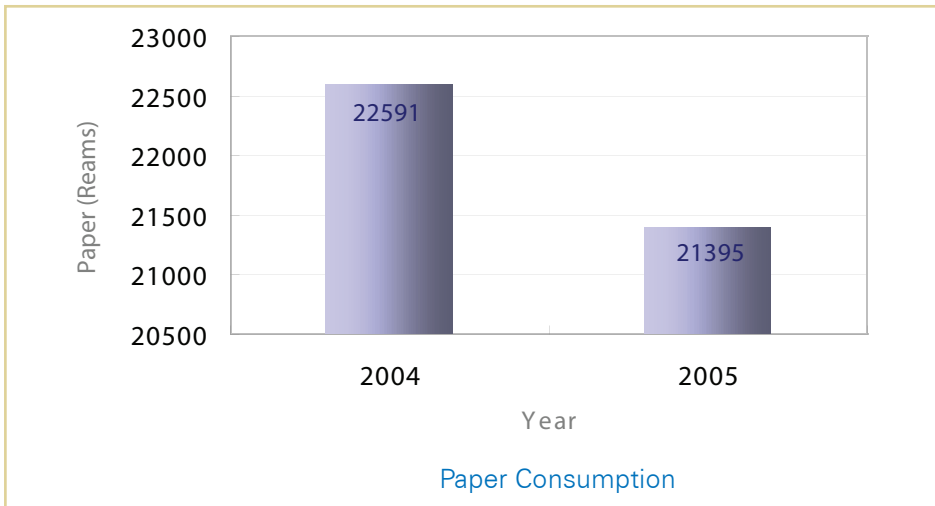


Waste Collection for Recycling

- Put up green boxes to collect reusable envelopes and papers for reuse
- Collect computer printer toner and ink cartridges for refill and recycling
- Put up recycling boxes to collect paper and used CD for recycling

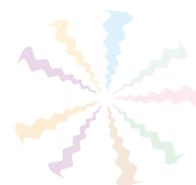


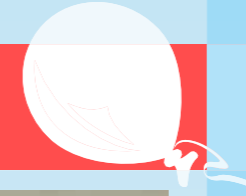
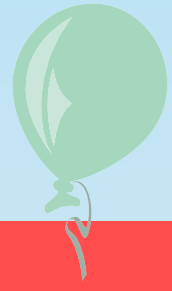
With the concerted efforts of our staff, the Department achieved a saving of 5.29% in paper consumption in 2005 when compared with 2004 and a reduction of 31.32% in waste paper production in 2005 when compared with 2004.



To maintain impetus of green measures in housekeeping, we conduct annual environmental audits in all the 14 offices located in different premises. The objectives of conducting the annual environmental audits are:

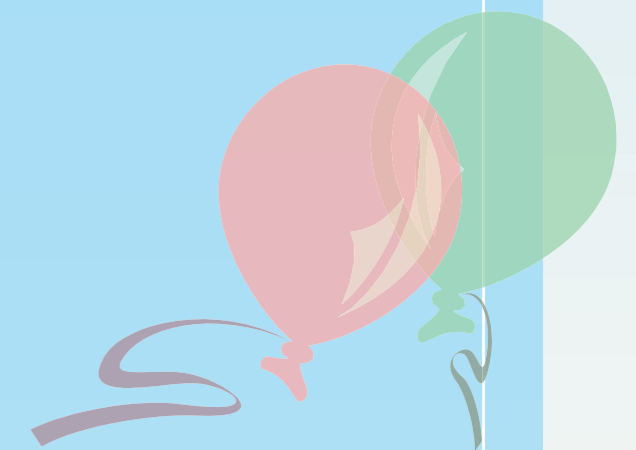
- (i) to assess compliance with the green housekeeping guidelines;
- (ii) to identify non-compliances and recommend remedial actions;
- (iii) to promote good environmental management; and
- (iv) to increase staff awareness of green management and occupational safety and health initiatives.





Awards

We endeavor to integrate environmental considerations into the design and construction phases of the infrastructures.

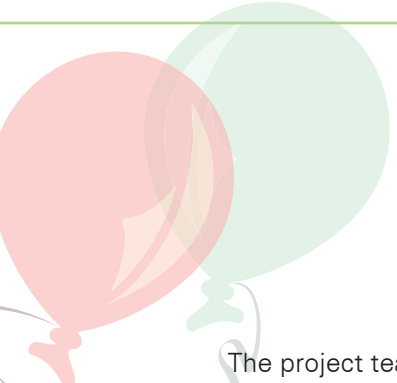




2005 Environmental Paper Award - The Champion

Participation of the 2005 Environmental Paper Award has provided us with valuable experience. This Award is jointly organized by HKIE Environmental Division and Hong Kong Construction Association (HKCA) aiming at encouraging awareness of environmentally sound infrastructure/development projects and recognizing engineers' effort for which relevant environmental issues have been fully considered and properly addressed during design and construction phases. We have selected the Hong Kong - Shenzhen Western Corridor (HK-SWC) project as our submission in view of the challenging nature of the project.





The project team had taken proactive approach by early consultation with Green Groups as well as other stakeholders in order to take their concerns into account during the detailed design stage. We had maximized typical span spacing and embedded pile caps for non-navigation spans into the seabed in order to abate adverse impacts on water quality. Besides, we had incorporated extensive construction mitigation measures into the Contract, such as the provision of a 9m wide and 1.8km long temporary access bridge, cofferdam, silt curtain, closed grab, etc., to protect the ecologically valuable mudflat along the coastline.

With partnering of the Contractor during the construction stage and close liaison with Mainland Government to deal with cross-boundary environmental issues, the Project has successfully demonstrated that, despite a tight implementation programme, an infrastructure development could harmonize with an ecologically important environment and the local communities.

With close collaboration between the Consultant and the project team, we finally won the Champion Prize of the award amongst other high quality competitors.



Achievement of Environmental Objectives & Targets

Looking Ahead

We recognize the importance of sustainable development and have been striving for continual improvement in the efficient use of resources by setting objectives and targets to improve our environmental performance.

Achievement of Environmental Objectives & Targets

We have made satisfactory progress in meeting our objectives and targets set for 2005. The achievements are summarized as follows:

Objectives	Targets	Achievement (as at end of December 2005)
Continuous replacement of obsolete lanterns with a view to saving energy	To replace 1,300 obsolete lanterns by modern lanterns of lower lamp wattage	3,000 obsolete lanterns were replaced
Continuous replacement of electromagnetic ballasts with a view to saving energy	To replace 9,000 electromagnetic ballasts by electronic ballasts at footbridges and subways	10,935 electromagnetic ballasts were replaced
Increase recycled paper consumption in the Department	To increase the consumption rate of recycled paper from 58% in 2004 to 70% in 2005	85.28% of photocopying papers consumed were recycled papers
Incorporation of Reclaimed Asphalt Pavement (RAP) in producing wearing course and base course materials	In collaboration with a local tertiary institute, complete the evaluation of using RAP in the wearing course and base course materials with a view to increasing the usage of RAP	The research program was completed. Specifications for incorporating a maximum of 15% RAP into wearing course and base course materials were inserted in term contracts that would commence in 2006
Waste reduction	To incorporate additional environmental requirements into Specifications of the capital works contracts in 2005	Additional environmental-related specification clauses were prepared and incorporated in one works contract commencing in 2005 as trial

Looking Ahead

With the encouraging results achieved in 2005, we look forward to more research initiatives and greening measures in 2006 in the protection of the environment.

Objectives	Targets
Replacement of electromagnetic ballasts with a view to reducing energy consumption	To replace 1,000 electromagnetic ballasts by electronic ballasts for road lighting
Increase recycled paper consumption in the Department	To increase the consumption rate of recycled paper from 85% (achievement in 2005) to 88%
Greening measures for the relevant sections of the General Specification for Civil Engineering Works (GS)	To provide CEDD with specification clauses and follow-up advice on environmental protection measures for incorporation into the relevant sections of GS
To enhance landscape features of major highway projects	To plant 95,000 trees and 330,000 shrubs in the vicinity of major highway projects
Waste management (Castle Peak Road Improvement Project)	To reuse & recycle the existing wave wall blocks for new seawall construction and foreshore reinstatement respectively To recycle the suitable excavated materials for backfilling works at abutments/retaining walls

We will endeavour to do our best to achieve the above targets, and hope that this publication will provide you with a glimpse into our efforts of environmental protection in various ways. If you have any comments or suggestions on our work, please send us your views through our homepage on the Internet (address: <http://www.hyd.gov.hk>). We welcome your valuable feedback.

