環保報告
ENVIRONMENTAL REPORT
2003









香港特別行政區政府　　土木工程署

Civil Engineering Department
The Government of the HKSAR

鳴謝 Acknowledgement

本署蒙明報允許，得以在報告刊載該報在二零零三年十月十一日有關城門河改善工程的一則報導，謹此向明報致謝。

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DIRECTOR'S MESSAGE

The Civil Engineering Department of the Hong Kong Special Administrative Region Government aims at meeting Hong Kong's needs for the highest standards and quality services in slope safety, port development and land formation. We are committed to enhancing and improving our technology and services to fulfil our responsibilities to both the community and the environment.

We recognise that this will require partnership, fostered through clear communication channels, along with increased awareness and support from all sectors of the community and Government. Since 2000, we have been publishing our Environmental Reports annually. The Reports set out the department's activities which have significant impacts on the environment and our efforts to reduce such impacts. We are encouraged by the positive feedback we have received on our efforts.

Despite the difficult time Hong Kong went through in 2003 with the SARS crisis and other challenges, we have not relented in asserting our environmental commitment. We have continued our momentum in improving our services and contributing to the sustainable development of Hong Kong. In July 2003, we extended the duties and responsibilities of our Departmental Safety Adviser to cover waste management, environmental protection and, in the long run, environmental management on construction sites, in addition to construction health and safety. The objective is to enhance the communication on, and management of environmental performance of contractors on construction sites so that the established framework for the safety management system and the Pay for Safety Scheme can be extended to environmental protection.

I am pleased to present our 2003 Environmental Report to you, which includes updates on our on-going activities as well as new projects for improving the environment. We hope that this report will continue to communicate our commitment. Your comments and suggestions on the report are most welcome.

T K Tsao
Director of Civil Engineering
June 2004

We are aware that in providing essential services to support the development of Hong Kong, our activities affect the environment. We take care to protect the environment, and enhance it whenever possible. All our work is carried out according to our Environmental Goal and Policy.

ENVIRONMENTAL GOAL

Our goal is to fulfil our responsibilities towards the environment from project inception to completion and beyond, in order to minimise pollution, conserve resources and protect the environment.

ENVIRONMENTAL POLICY

We in the Civil Engineering Department (CED) are committed to fulfilling our responsibilities towards the environment through -

1. Incorporating environmental considerations into our planning, design, management, construction and maintenance activities by -

   - planning and designing works for efficient use of resources and energy;
   - adopting pollution prevention and clean technologies whenever and wherever feasible; and
   - carrying out and supervising construction activities to minimise environmental impacts.

2. Promoting reduction, reuse, recycling and management of by-products of construction activities, so as to minimise impacts on natural habitats and ecosystems.

3. Implementing the principles of reduction, reuse and recycling in the consumption of resources in our various offices.

4. Improving environmental perfomance by enhancing our level of technology and regularly reviewing our environmental objectives and targets.

5. Complying with legal and other environmental norms and pursuing, where feasible, environmental standards beyond those that are required.

6. Raising environmental awareness of our staff and communicating our Department's Environmental Policy to our consultants, contractors, the engineering profession and the community at large.

OVERALL VIEW OF OUR OPERATIONS

CIVIL ENGINEERING DEPARTMENT

CIVIL ENGINEERING OFFICE

GEOTECHNICAL ENGINEERING OFFICE

SPECIAL DUTIES OFFICE

Providing services in

Port Development

Slope Safety

Land Formation

All our work has effect on the environment

Improvement projects

- Cleaning up river bed
- Land remediation
- Landscape projects
- Adopting eco-friendly materials in design and construction

Construction works

- Reclamation
- Land formation
- Dredging
- Quarrying
- Slope works

Best use of resources and energy

- Management of construction and demolition materials
- Good office practices
- Materials testing
- Site management

MANAGEMENT OF CONSTRUCTION AND DEMOLITION MATERIALS

Quarrying

Demolition

Sand Dredging

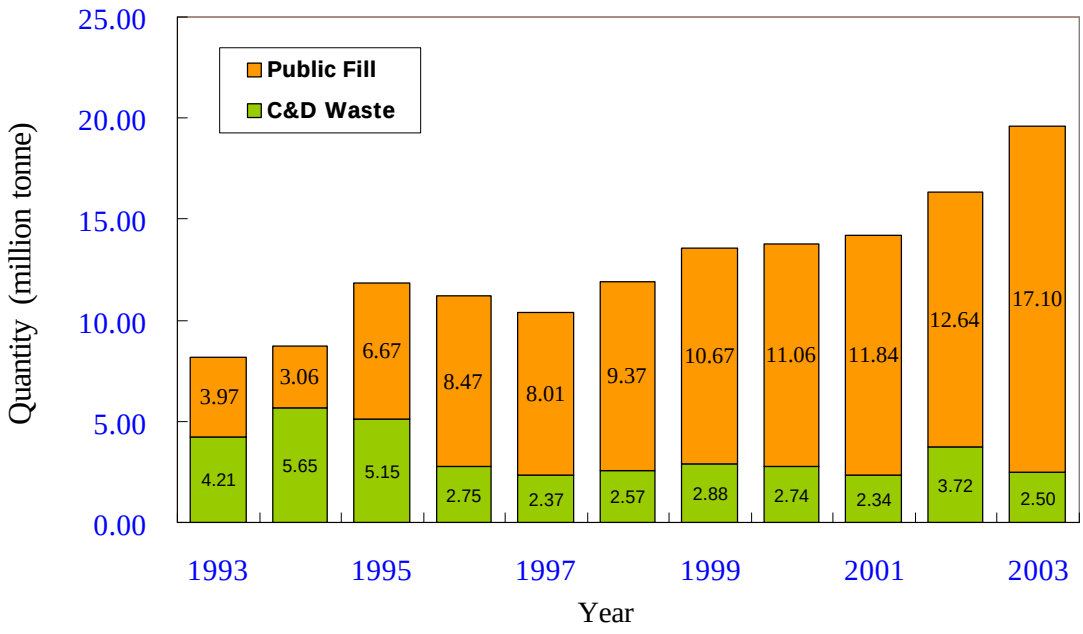
Crushing and Sorting Yard

Land Formation

New Development

Public Fill Management

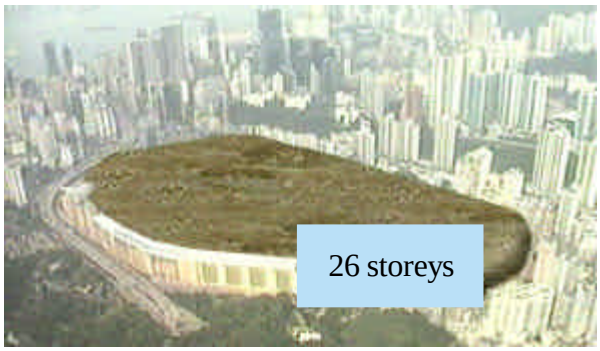
The pace of development in Hong Kong is fast. In 2003, the local construction activities generated about 19.6 million tonnes of construction and demolition (C&D) materials. These C&D materials are a mixture of inert materials and waste arising from construction, excavation, renovation and roadworks. The useful inert materials, comprising rock, concrete, asphalt, rubble, bricks, stones and earth are called "public fill" and are suitable for reuse in public filling areas, such as reclamation sites. Some of them can be recycled for use in construction works. The C&D waste materials, such as bamboo, plastic, timber and packing are often mixed and contaminated. They are not suitable for reuse in reclamation works or recycling as construction materials and have to be disposed of at landfills. Based on a survey in 2003, about 83% of the C&D materials produced locally are inert materials. The information can be viewed at our website at *http://www.ced.gov.hk/eng/services/services_f.htm*.



Annual generation of C&D materials in Hong Kong

Strategy

C&D materials are voluminous and take up a lot of space if they are disposed of at landfills. If current trends continue, we shall use up all our existing precious landfill space within four to six years. To ensure that our development is sustainable for future generations, a concerted effort is required to avoid and reduce the generation of C&D materials at source. This requires sorting them to extract useful materials for reuse, before disposing of the waste materials at landfills. For projects generating surplus virgin rock materials from formation works, we encourage the delivery of these good virgin materials to quarries for processing into rock products or reuse in seawall construction in reclamation projects.



Do you know?

19.6 million tonnes of C&D materials would fill the Happy Valley racecourse to a height of 26 storeys. If there is no reclamation to accommodate these materials, where can they go ?

Reduce and Avoid by Waste Management Plan

For CED projects, we encourage our contractors to reduce and avoid the generation of C&D materials by implementing a Waste Management Plan. Through the implementation of the Waste Management Plan, the C&D materials are pre-sorted at source to facilitate reuse/recycling.

Reuse in Reclamation

We encourage reuse of the inert C&D materials in reclamation projects to form land. As the Secretariat of the Public Fill Committee, we manage public filling facilities for collecting and reusing as much as possible the C&D materials generated in Hong Kong each day. The public filling facilities include reclamation, barging points as transfer stations and stockpiling areas. We act also as the Secretariat of the Marine Fill Committee and liaise with the Public Fill Committee for the optimum use of public fill in reclamation projects in Hong Kong. By the end of 2002, we have reached an acute stage with insufficient reclamation projects to accommodate public fill. We have to temporarily stockpile the public fill in the two fill banks for later reuse.

Tseung Kwan O reclamation

West Kowloon Reclamation Stage 2

Management of Public Filling Facilities

In 2003, CED maintained adequate public filling facilities to serve the construction industry for the proper accommodation of inert C&D materials. Strategic barging points were operated at Quarry Bay and Sai Ying Pun to collect and deliver the inert C&D materials by barges from Hong Kong Island to the reclamation in Tuen Mun Area 38. We also operated a barging point at Kai Tak to collect and deliver the inert C&D materials by barges from designated public works projects to the fill bank in Tseung Kwan O. By doing so, we have minimised additional traffic on the road network. At the same time, we have reduced the waste from fuel energy, air pollution from burning of diesel fuel and noise from truck movements. Locations of these facilities can be found at our website at http://www.ced.gov.hk/eng/services/services_f.htm.

Barging point at Quarry Bay

Temporary Fill Banks

In order to accommodate the mismatch in construction programmes for those projects generating C&D materials and the reclamation projects, we have operated two fill banks, one in Tseung Kwan O Area 137 since October 2002 and the other in Tuen Mun Area 38 since June 2003 as a buffer for temporary storage of inert C&D materials for later beneficial reuse. These two fill banks have a total storage capacity of 18 million tonnes. Up to the end of 2003, the total remaining capacity of the two fill banks is estimated to be about 9 million tonnes.

Tseung Kwan O fill bank

Processing of Surplus Rock by Quarries

Instead of disposing the surplus good quality rock derived from site formation projects in the public filling facilities, we have arranged to deliver them to our quarries at Lam Tei and Shek O for processing into different rock products for use in concrete and asphalt production since late 2002. These site formation projects include Jordan Valley Development Project and road improvement projects such as the Route-8 Contract. Up to the end of 2003, about 1.0 million tonnes of rock have been processed. It is estimated that an additional 8 million tonnes of rock will be delivered to our quarries in the next two years.

Marine Fill Management

Marine sand in Hong Kong is a valuable fill material and we need to optimise its use. Marine sand can be extracted from marine borrow areas for beneficial use in reclamation projects where full use of public fill is not possible. Marine sand can be delivered to reclamation sites and deposited by rainbowing or through floating pipelines. To minimise adverse impact on the environment, comprehensive environmental monitoring is required during sand dredging.

In order to maximise the utilization of marine fill sources including marine sand, we have established a Fill Management Database that provides up-to-date information on the demand for fill and disposal needs of surplus materials from major civil engineering projects. This database assists project offices, consultants and contractors in searching for fill resources and maximising the beneficial reuse of surplus materials. The database can be viewed in our website at *http://www.ced.gov.hk/eng/services/services_f.htm*.

Marine Disposal of Sediments

Soft and compressible sediments cover much of the seabed and the bottom of some rivers in Hong Kong. When these materials are to be dredged under engineering projects, it is government's policy to leave such sediments in place as far as practicable in order to avoid the impact of dredging and their disposal on the environment. As the Secretariat of the Marine Fill Committee, we do not encourage dredging in reclamation projects. Projects that demonstrated minimised sediment dredging in 2003 include Penny's Bay Reclamation Stage 2. However, dredging is sometimes unavoidable for harbour maintenance and some drainage improvement projects. As the dredged sediments are soft and compressible, they are not suitable to be used for reclamation and are disposed of in the sea. These marine disposal activities may affect seawater quality and marine habitats. We carefully select disposal sites, assess potential impacts due to disposal and implement any necessary mitigation measures. We also arrange the seabed pits left by marine sand dredging to be backfilled with dredged material, to help restore the seabed and surrounding habitats.

Since mid 2000, we have been undertaking centralised environmental monitoring at designated disposal sites for uncontaminated sediment. Our monitoring adopts the international standard for marine environmental protection stipulated in the London Convention to which China is a signatory. The monitoring results identify no adverse trend in the water quality due to disposal activities.

Moreover, seabed ecological surveys have revealed no significant impact on the benthic communities in the vicinity of the disposal areas. In fact, recolonisation of disused disposal areas by benthic organisms from the surrounding seabed has been reported soon after completion of disposal activities.

Water quality monitoring

Sorting benthic organisms

Collection of fishery resources data by demersal trawling

Sediments in some parts of the seabed and rivers are contaminated. These contaminated sediments are disposed of in special seabed pits at East Sha Chau. To minimise the environmental impact, we manage the disposal operations at the East Sha Chau area round-the-clock. We arrange for capping of the mud pits by a thick layer of clean material when deposited sediments reach the design level, to provide isolation of contaminated mud from the benthic environment. Regular environmental monitoring is also carried out of the chemistry and toxicity of the marine sediment, water quality and biota of both benthic and demersal fisheries in the East Sha Chau area. Results of environmental monitoring since 1992 have identified no adverse effects on the water quality and marine life in the vicinity of the pits.

Biological testing in laboratory

Using Excavated Inert C&D Materials as Capping for Contaminated Mud Disposal Pits

In order to maximise the utilization of inert C&D materials, we are exploring the use of soft excavated inert C&D materials as capping materials for contaminated mud disposal pits. A field trial commenced in October 2003. If this is successful, this can accommodate about 6.3 million tonnes of soft excavated inert C&D materials.

East Sha Chau management office

Use of Public Fill in Seawall Foundations

In view of the shortfall in public filling capacity in Hong Kong, we have studied the feasibility of using public fill in lieu of marine sand for the foundation core of seawalls and breakwaters. Starting from the end of 2002 a pilot test has been carried out in Tsing Yi to study the field performance of public fill for this purpose.

In this pilot test, public fill is used for the foundation core in a portion of the sloping seawall at the North Tsing Yi Reclamation Works. Geotechnical monitoring instruments have been installed within the seawall foundation to measure the in-situ performance of the public fill at regular intervals. Laboratory tests are currently being carried out to further confirm the geotechnical properties of public fill. The study will be completed by the end of 2004.

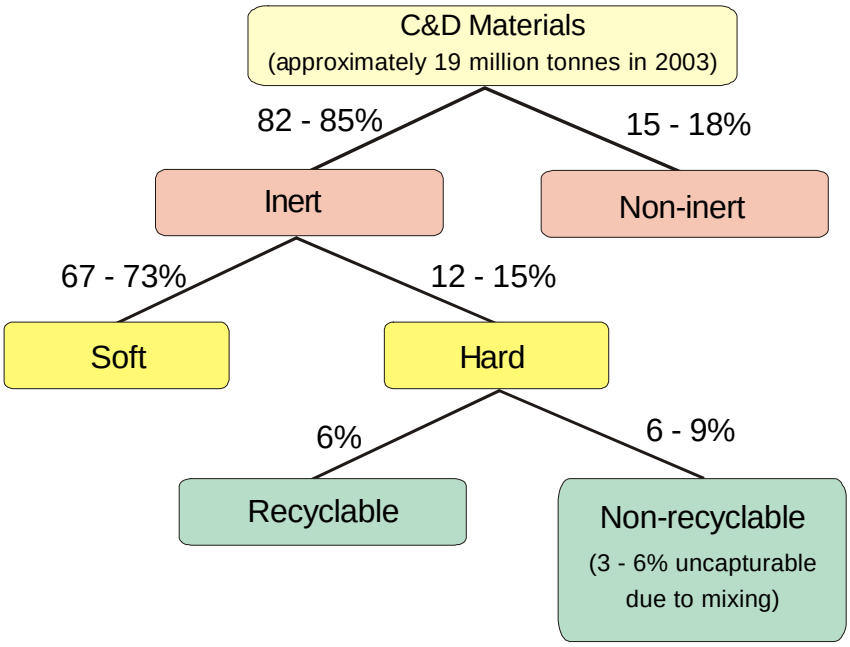
Arrangement of working platform for geotechnical monitoring instrumentation

Installation of the geotechnical monitoring instrumentation

Recycled Aggregates

Why we need to recycle C&D materials

Hard inert C&D materials, such as crushed concrete and rock from demolition works contain over 95% of natural rock materials. After separating out non-recyclable hard C&D materials such as tiles and bricks by pre-sorting, they can be processed into recycled aggregates and rock materials to replace virgin aggregates and rockfill for use in construction. At present, about 50% of the rock products, including aggregates used in construction, which supplement rock obtained from local quarries, are imported. In less than a decade, most of the local quarries will be exhausted and the construction industry would have to rely heavily on imports. The use of recycled aggregates will not only help reserve limited public fill capacity and reduce the consumption of precious landfill space, but also reduce reliance on the importation of virgin aggregates, reduce damage to the natural landscape due to quarrying activities and contribute to more sustainable construction in the future.



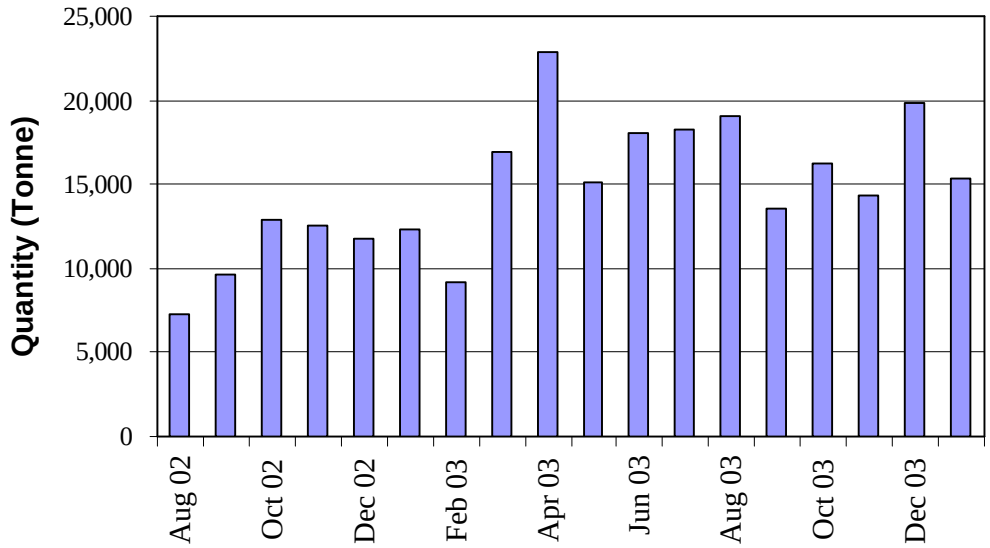
Composition of C&D materials (Based on survey in 2003)

Pilot C&D materials recycling facility in Tuen Mun Area 38

Recycling of C&D materials

We are establishing both short and long-term recycling facilities, at strategic locations for the construction industry. In July 2002, we set up a pilot C&D materials recycling facility in Tuen Mun Area 38 to supply recycled aggregates for use in public works projects and research and development projects. Up to the end of 2003, this facility has supplied about 250,000 tonnes of recycled aggregates for use in over 70 public works projects.

We have planned to establish a medium-term recycling facility at the old Kai Tak airport in late 2004/ early 2005 to maintain the continuous supply of recycled aggregates after the completion of the historical commissioning of the pilot recycling facility in Tuen Mun. We have also reserved sites at Tseung Kwan O and Tuen Mun for building new facilities to sustain the long-term development of the recycling industry in Hong Kong.



Monthly production of recycled aggregates

Promotion

We know that there is currently only a small market for recycled aggregates in Hong Kong and limited local experience in their use. In order to overcome conservatism and reluctance towards the use of recycled aggregates, we have actively conducted tests and promoted their use. We have collaborated with the other Government departments, academics and concrete producers to explore the wider use of recycled aggregates in both public and private sectors of the construction industry.

The pilot plant also served as a learning centre on recycling. Up to the end of 2003, we received 608 visitors from 50 parties, including students and academics from the universities, professionals from various professional institutions, government departments, contractors and estate developers.

For further information on recycling of C&D materials, please visit our website at *http://www.ced.gov.hk/eng/services/recycling/recycling_f/htm*.

RECLAMATION AND LAND FORMATION

Reclamation

Reclamation is the forming of land by filling the sea. We undertake reclamation projects; examples include Penny's Bay Reclamation, Yam O Reclamation, Tseung Kwan O Area 137, Tuen Mun Area 38 and Pak Shek Kok.

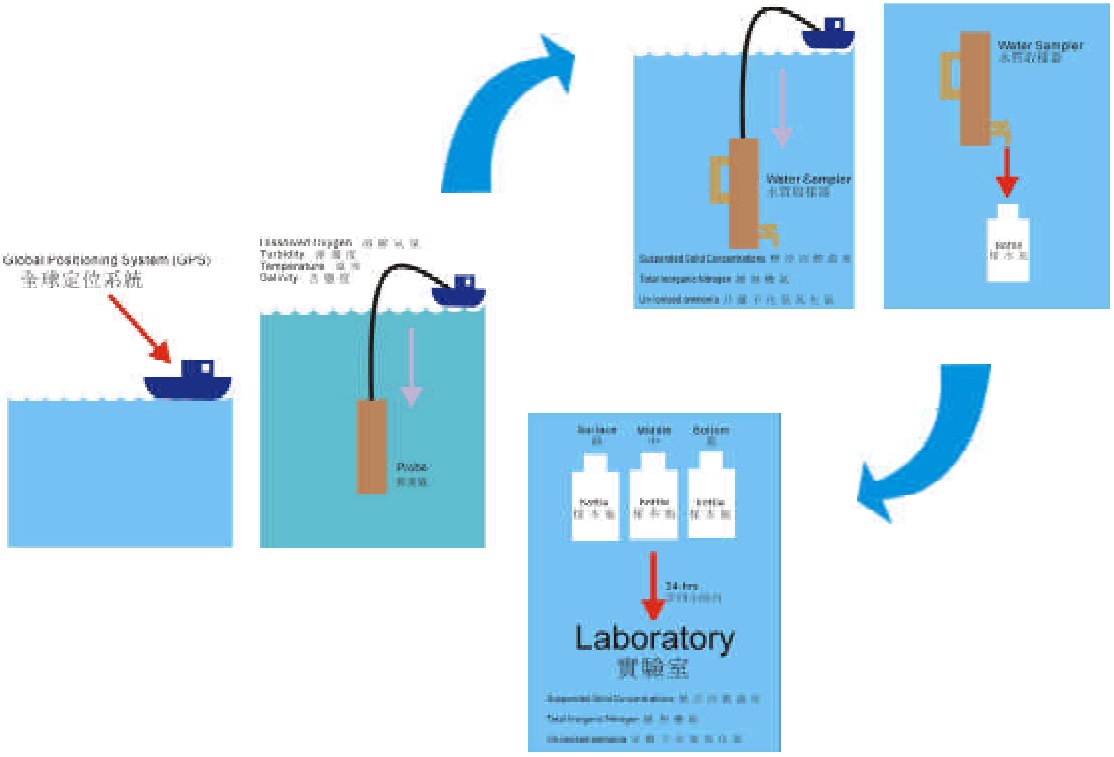
Placing fill in a reclamation area may affect the water quality of the adjacent sea. The potential impacts are fully assessed by comprehensive environmental studies and minimised by implementing mitigation measures. For example, seawalls are constructed progressively in advance of the reclamation to ensure that they extend beyond the area of filling to prevent dispersion of soil particles in the seawater. A silt curtain (screen) to minimise the impact of dredging and filling on the water quality has been used in the Penny's Bay Reclamation project with effective results.

General view of Penny's Bay Reclamation site

Apart from water quality, a comprehensive Environmental Monitoring and Audit (EM&A) programme has been developed in Penny's Bay Development for ensuring compliance with the mitigation measures specified for noise, dust, waste management, terrestrial and marine ecology, cultural heritage, landscape and visual impact.

We monitor the environmental effects of reclamation works closely with the assistance of independent environmental consultants. In addition, we have set up an independent Environmental Project Office (ENPO) to oversee and address the cumulative environmental impacts arising from the concurrent construction activities of the various contracts for the developments in Penny's Bay and Northeast Lantau. ENPO serves to comprehensively coordinate the environmental audit and remedial actions for the concurrent construction activities.

For water quality monitoring, the method of water sampling and in situ measurement of relevant parameters are shown graphically as follows -



The monitoring programme includes regular measurement of the concentration of suspended solids, dissolved oxygen, turbidity and Tributyl Tin (TBT). Among these parameters, the principal measurement for control is suspended solids. Mitigation methods have been implemented to reduce the impact of the whole project and to contain any high concentration of suspended solids close to the works. This has been achieved by the use of a silt curtain and a rock bund. Mitigation of loss of fines to the water column during filling has been achieved through the use of containment bunds and working behind silt curtains/rock bund.

Land Formation

We undertake site formation projects to provide land for housing (public and private), schools, government/ institutional facilities and open space, together with the associated infrastructure and services required. As with reclamation projects, the potential environmental impacts of these projects are monitored to determine the mitigation measures necessary to minimise the effects during both the construction and operational stages. These include potential effects of noise, dust, and the generation of waste, as well as the cultural heritage and landscape and visual impacts of the projects. Environmental Monitoring and Audit (EM&A)Programmes and Waste Management Plans are drawn up to monitor continually the projects.

In certain cases, special measures are implemented to deal with the impact on the environment of land formation projects. An example is the site formation project at Choi Wan Road and Jordan Valley, which is situated in a busy urban area. A challenging task was to devise a method for the transportation of about 9 million m^3 of excavated material to the designated disposal point at the former Kai Tak Airport, with minimum impact to the road network and the environment. This has been successfully accomplished by the provision of a 1.6 km long conveyor belt system through the busy urban area.

Greening of the culvert constructed under a land formation project in Fanling

A primary objective during the design and construction of the conveyor belt system was to minimise the impacts on nearby residents, schools, traffic and heritage buildings. Major social and environmental benefits have been achieved by using this system rather than road transport, as there is no traffic impact, and greenhouse gas emissions associated with burning of fossil fuels have been avoided. The conveyor belt system is computer controlled, fully enclosed and sound insulated, and is equipped with dust collectors resulting in minimal noise and air impacts on adjacent sensitive receivers. In addition, given the large volume of materials being conveyed, there are significant cost savings when compared with the alternative of truck haulage.

Site formation at Choi Wan Road and Jordan Valley - Conveyor Belt System

SLOPE WORKS

Commitments and Impacts

There are some 57,000 sizeable registered man-made slopes in Hong Kong, 70% of which are maintained by government departments, whilst private owners maintain the remaining 30%.

The Government remains committed to upgrading the stability of 250 sub-standard man-made slopes under its charge each year and to undertaking appropriate landscaping work on these slopes to improve their appearance. We recognise that our work has an impact on the environment. It consumes natural and manufactured resources; it causes pollution during construction, such as noise and dust; and it affects visual amenities, natural habitats and ecosystems. On the other hand, this work is necessary to reduce landslip risk and thereby to safeguard the public. Consequently, we strive to minimise the environmental impact of our work without compromising public safety. We do this through our continuous improvement initiatives, which include -

- evaluating the likely impacts during the design stage, with a view to prevention or mitigation;
- improving our environmental performance through the use of alternative materials, work methods and new technology, and
- working with our contractors and supervisory staff, to ensure that they are aware of and comply with legal and other environmental norms and, where possible, pursue higher standards than those required.

LPM Works - Environmental Practice

We have recently completed a study on the environmental practice in relation to slope works under the Landslip Preventive Measures (LPM) programme. The study revealed that, over the past 5 years, our contractors have become increasingly aware of the potential environmental impacts associated with their work and have implemented measures to mitigate these impacts. Also, the Government has added specific environmental clauses into contract documents for pollution control, site cleanliness and waste management and has introduced payment to contractors for implementation of environmental control measures.

Our LPM contracts now contain elements of environmental planning, training, operation control and monitoring associated with an ISO 14001 environmental management system. These elements help ensure that our contractors are aware of their environmental responsibilities for a project and comply with the contractual requirements. However, we found that the effectiveness of the existing provisions are limited and improvements can be made to address the key areas of environmental policy, planning, implementation and operation, monitoring and auditing, corrective action and management review.

We are planning to enhance our environmental contract specifications by addressing some of the areas we have identified as needing improvement. The new requirements are scheduled for trial in LPM contracts to be awarded in late 2004.

New Technology – Rubbersoil™

During 2003, with the support of our contractor and the assistance of the Hong Kong University of Science and Technology, we constructed our first "Rubbersoil" slope under the LPM programme at Shau Kei Wan. Rubbersoil was used to upgrade the stability of the slope by replacing the soil that originally formed the slope.

- "Rubbersoil" is a recycled material made from cement, fly ash, elastic binder and rubber bits made from waste rubber tyres. It is lightweight and porous and possesses good strength, stiffness and dynamic properties.

- When compared with conventional soil, "Rubbersoil" is -
  - less than half the weight of compacted soil and consequently the loads and shear forces within a "Rubbersoil" mass are smaller than those in an equivalent soil slope
  - stronger than soil and this permits construction of steeper slopes
  - very porous, which allows water to drain freely and eliminates problems with the build up of water pressures that can occur in soil slopes.

By using "Rubbersoil", we hope to help promote the use of recycled materials and thus reduce some of the problems associated with the disposal of old tyres in Hong Kong's landfill sites.

Greening Techniques and Vegetation Species on Slopes

As part of our continuous improvement initiatives for enhancing slope appearance, we have undertaken a study to assess the perfomance of slope "greening" techniques and to identify vegetation species that can successfully establish and regenerate on steep man-made slopes. Also, in collaboration with the Kadoorie Farm and Botanic Garden, we have carried out a planting trial of selected native shrub species on steep man-made slopes.

For the assessment of greening techniques, we evaluated the perfomance of various proprietary products on 100 slopes. The greening techniques can be broadly divided into two groups: Group 1 covers techniques that are applied on slopes with a hard surface cover, and Group 2 covers those used directly on a soil slope surface.

Examples of both Groups 1 and 2 techniques are shown in the photographs below. The assessment was based on the success of vegetation growth on the slopes and the engineering performance of the system.

Results of the assessment show that most of the Group 1 greening techniques can provide vegetation cover shortly after application. The techniques, however, tend only to support small plants - grass and creepers - not woody species of trees and shrubs. Also, since the techniques have only been used for a few years in Hong Kong, their ability to sustain vegetation in the long term has not been fully established. In terms of engineering perfomance, we observed signs of deterioration of the planting stratum on some slopes, but improvements in the application of these techniques were identified as part of the study.

For Group 2 techniques, most of the slopes had good overall vegetation cover with diverse plant species including grass and woody plants. Minor areas of surface erosion were seen on some steep slopes. For slopes where a steel wire mesh was used with non-degradable erosion control mats, surface erosion was better controlled.

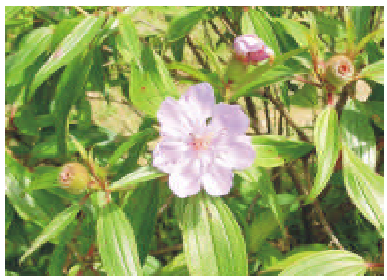
An example of the use of a Group 1 technique/product - Geofibre

An example of the use of a Group 2 technique/product - Coir

We have surveyed 20 well-vegetated, man-made cut slopes completed for at least 3 years, with gradients over 40°, to identify vegetation species that can successfully establish and regenerate on steep man-made slopes. The species identified are mostly trees or shrubs, which generally exhibit strong pioneering characteristics required for natural invasion. In the planting trial of native shrubs, we also found that seedlings of all the species planted have been growing satisfactorily. Based on these findings and experience gained from natural hillside afforestation projects by others, we have compiled a list of native vegetation species for general use in greening slopes. These species are proven to be successful and reliable as planned vegetation on slopes and are generally easy to produce in nurseries in large quantities. Examples of the species on the list are shown in the photographs below. The list helps promote the use of more native species in greening slopes, enhancing species diversity, natural succession and thus sustainability of the slope vegetation cover.

Ardisia crenata
(Hilo holly)

Mallotus paniculatus
(Turn-in-the-wind)



Melastoma sanquineum
(Blood-red melastoma)

Examples of successful native vegetation species for greening slopes

Promoting Slope Greening

In response to the community's demand for a better environment, we have organised a Best Landscaped Slope Awards jointly with the Professional Green Building Council, the Hong Kong Association of Property Management Companies and the Hong Kong Institute of Landscape Architects. The aim of the award is to increase public awareness and interest in providing landscape treatment to slopes and to encourage owners to participate in beautifying their slopes. We hope that this initiative will help create a safer, greener and better living environment for the people of Hong Kong.

The community's response to the award scheme was overwhelming. There were 55 entries involving 90 slopes. About half were private slopes and the others were government slopes. The Assessment Panel comprised seven members including prominent environmentalists: Professor Jim Chi-yung of Department of Geography of the University of Hong Kong, Dr Rebecca Lee Lok-sze (Founder of China Polar Museum Foundation), Mrs Ng Fong Siu-mei (Director of Friends of the Earth), and the representatives of the four organisers.

Champion slope at Lung Tak Court, Stanley

1st runner-up slope at
Sau Mau Ping Estate III

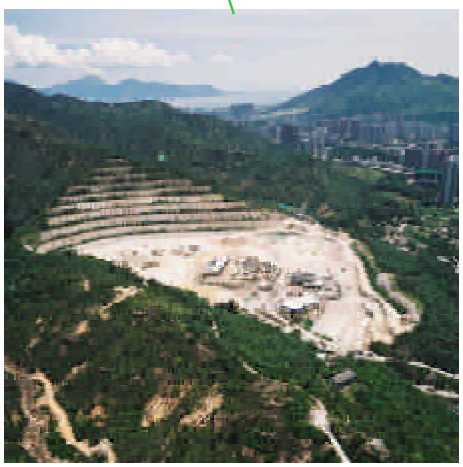
Co-2nd runner-up slope at 127 Repulse Bay Road

Co-2nd runner-up slope at Hong Kong International School at Tai Tam Road

QUARRYING

Currently, we manage three quarry contracts in Hong Kong. These quarries are located at Shek O, Lam Tei and Anderson Road as shown in the following plan.

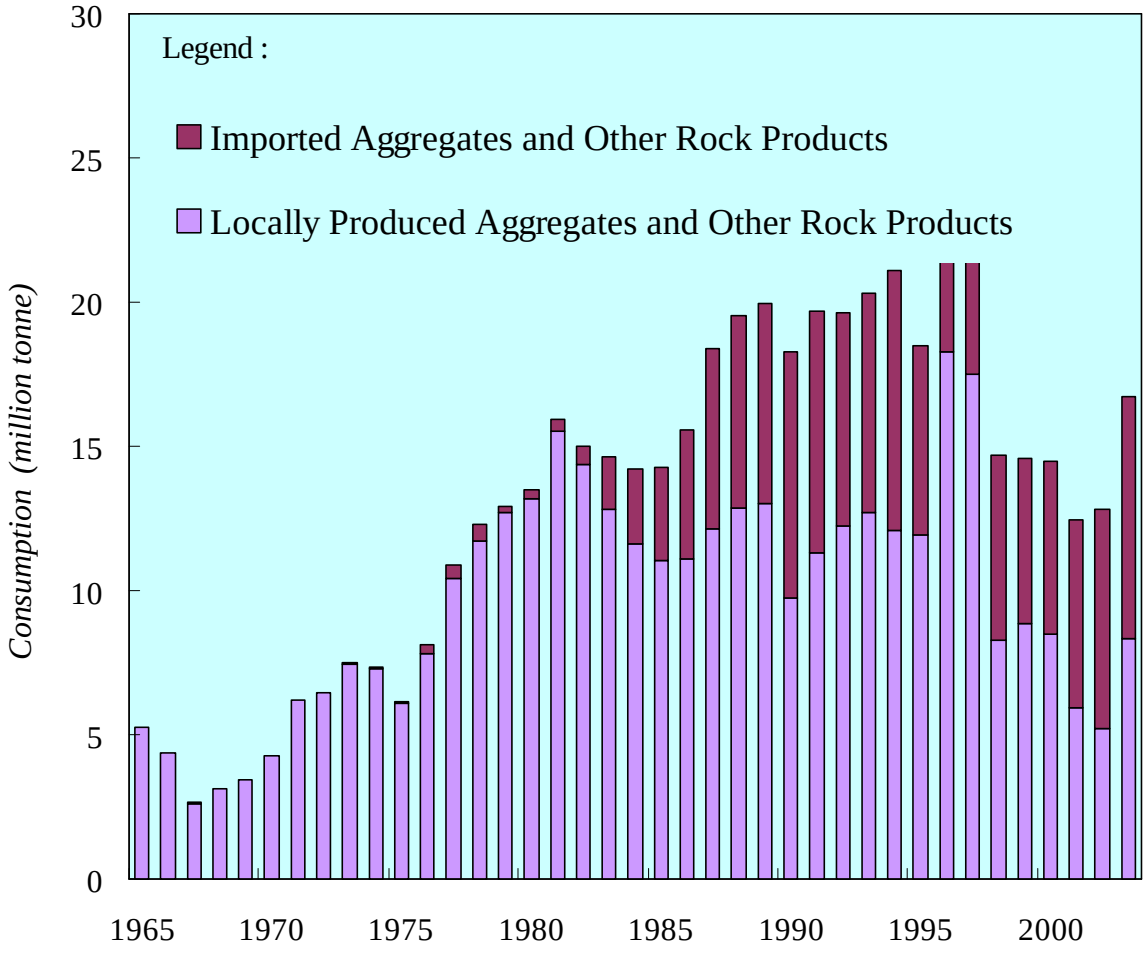
Anderson Road quarry



Lam Tei quarry

Shek O quarry

The three local quarries together produced 5.4 million tonnes of aggregates and other rock products, accounting for about 34% of the demands from the construction and building industries. Although the use of imported aggregates continues to increase as shown in the following chart, there was a slight increase in the quantity of aggregates and other rock products produced from local quarries and site formation projects.



Composition of locally produced and imported aggregates and other rock products consumed in Hong Kong

The quarry contracts were designed to rehabitate the sites to the pre-approved final landforms, which would then be planted with trees, shrubs, climbers and hydroseeded with the final objective of blending the worked areas back into the wider landscape. The progress of works and the achievements at each of the quarries are summarised below.

Anderson Road Quarry

The rehabilitation works at Anderson Road Quarry were progressing satisfactorily from the west of the site to the east and on the down-slope of the quarry face. The first bench of the rock slope (about 20m in height and 640m in length) at the upper part of the quarry face was formed. In October 2003, the Operator of the Anderson Road Quarry was awarded the "Environmental Performance Award" in the 2003

Rehabilitation of Anderson Road quarry

Hong Kong Awards for Industry for the environmental achievements in rehabitating quarry sites into natural-looking landforms. Up to the end of 2003, about 127,000 m^2 of slope area have been greened.

Lam Tei Quarry

The rehabilitation work at Lam Tei Quarry involves the formation of a new landform consisting of several benches of rock slopes, about 15m in height with gradient varying from 60° to 70°. The final landform will be vegetated to blend in with the surrounding natural environment. Up to the end of 2003, over 90,000 m^2 of slope area have been greened.

Rehabilitation of Lam Tei quarry

Shek O Quarry

The rehabilitation work at Shek O Quarry involves the formation of a new Shek O Road and the creation of a new landform to blend in with the natural landscape of Cape D'Aguilar Peninsula. Slopes are planted with exotic and native trees to establish a natural self-sustaining system and suitable habitats for birds, mammals and insects. Up to the end of 2003, over 160,000 m^2 of slope area have been greened.

Rehabilitation of Shek O quarry

LANDSCAPE WORKS OF THE INFRASTRUCTURE FOR PENNY'S BAY DEVELOPMENT

The Government reached an agreement with the Walt Disney Company in December 1999 to build Hong Kong Disneyland in Penny's Bay, Lantau Island. We are currently implementing the mega-scale Penny's Bay project for the construction of the infrastructure for Hong Kong Disneyland. The Penny's Bay Development landscape design is unique in scope, importance and complexity, and is unprecedented in the infrastructure works in the territory. Special attention has been given to the conservation of the existing vegetation and native species and the enhancement of hillside vegetation cover by afforestation. Up to the end of 2003, over 1 million plants have been planted to green up the hillsides and landscape berms.

Conservation and Transplanting of Existing Trees

To conserve the trees with high amenity and ecological value, tree surveys have been carried out prior to the commencement of the works to identify those trees which would be retained or transplanted. Trees are kept intact on site as far as possible. One of the big trees transplanted is a *Ficus rumphii* with a height of 8 m and a spread of over 20 m.

Ficus rumphii during transplanting

Conservation and Transplanting of Native Species

There are a number of rare/restricted/protected native plants within the boundary of the Penny's Bay Development such as *Fimbristylis acuminata*, *Fimbristylis complanata*, *Fuirena ciliaris*, *Nepenthes mirabilis*. While they are conserved on site as far as possible, due to the site formation works, some were transplanted to a river course in the Tai Tam Country Park with a suitable wetland environment re-created for this purpose.

Compensatory Woodland Planting

To enhance the ecological value and to blend in with the surrounding existing shrubland, extensive compensatory planting has been completed, covering around 9 hectares of woodland planting. 73% of the trees and over 90% of the understorey are native species.

Native trees used in woodland planting

Tai O Boat Anchorage

CED is the client department for the Tai O Boat Anchorage project. The project comprises the construction of a sheltered boat anchorage for small boats/fishing vessels, site formation and associated engineering works for a mangrove replanting area and restoration of a historic seawall. The project commenced in February 2003 for completion by mid 2005.

General view of the site

Formation of Mangrove Habitat

The mangrove restoration will create a habitat within an area which was previously used for salt pans and reworked as fish ponds in 1966. A total of 7 hectares of inter-tidal area will be formed for the planting of more extensive and diversified species of mangroves.

General view of the mangrove planting area

The mangrove area will provide diverse habitats, breeding sites and feeding grounds for a large variety of wildlife, maintain and enhance biodiversity, attract water birds and animals (especially benthic organisms), supply food and feed for fisheries and aquaculture, and protect and stabilise shorelines from erosion. In addition, it will serve as a conservation, education, scientific research and recreational area for locals, visitors and tourists.

A tidal zone will be formed in stages for planting the mangroves starting in early January 2004 for completion by August 2004. Uncontaminated dredged materials on site will be used as filling materials which will be delivered by pump and crane to minimise environmental disturbance, in particular, to the existing mangroves. These works will be subject to regular water quality monitoring and ecological surveys by a specialist. Temporary tidal exchanges will also be provided to maintain the existing tidal flush for the habitat.

Restoration of the Historic Seawall

One of the key aspects of the project is to rebuild a historic seawall as a tourist attraction. The new seawall will be a reinforced concrete structure sitting on bored piles which will incorporate the original features of the historic seawall, including profile and granite stone facing. Parapets and paving will be traditional types to match with the historic theme of the wall.

General condition of the historic seawall

Trial facing panel of seawall using existing facing stones

The original granite stones will be salvaged for reuse as facing stones to provide an old, authentic appearance to the restored seawall. Since not all the stones were suitable for reuse, a source was identified to supplement the shortfall. The sourced stones together with the originals will be cast into precast concrete segments for future fabrication.

In order to detemine the final outlook of the seawall, trial panels have been made for inspection prior to fabrication. Piling works for the seawall commenced in November 2003.

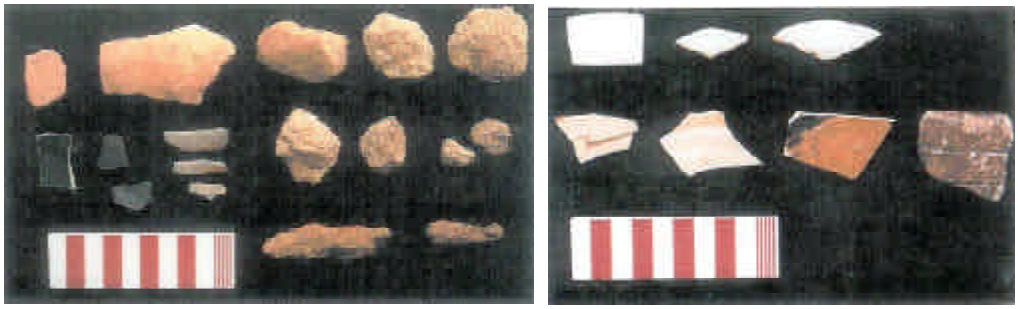
Heritage Investigation Assessment in Kong Sin Wan Tsuen, Pokfulam

CED is undertaking a site formation project in Kong Sin Wan Tsuen. The site consists of a long narrow valley that was originally fronted by a sandy beach. This area is believed to be an original landform with prehistoric archaeological potential. As a result, the Antiquities and Monuments Office (AMO) of the Leisure and Cultural Services Department confirmed that a Heritage Impact Assessment (HIA) for Kong Sin Wan Tsuen should be undertaken when ascertaining the feasibility of the project.

Archaeological site at Kong Sin Wan Tsuen

We entrusted the HIA study to the AMO. The study was divided into two phases. The first phase of the study comprised a preliminary heritage investigation (PHI) which included a survey of archaeological sites and built heritage. Field surveys and library research were carried out to identify items of historical and archaeological interest within the project area. The archaeological potential of the area was investigated by systemic field-walking, augering and a series of test pits. The survey of built heritage fully assessed the historical, cultural and architectural value of the identified built heritage, as well as cultural landscape. The PHI was completed in December 2001 and archaeological materials dated to the Tang Dynasty (618 A.D. - 907 A.D.) were found.

In order to preserve the valuable cultural remains, the second phase of the study, including rescue excavation and further investigation, was carried out in 2003 before the commencement of the construction works. An ancient kiln structure dated to the Tang Dynasty was discovered in the rescue excavation and AMO decided to preserve it in-situ. A mass concrete protective structure was built to surround the kiln structure to prevent damage from subsequent construction activities.



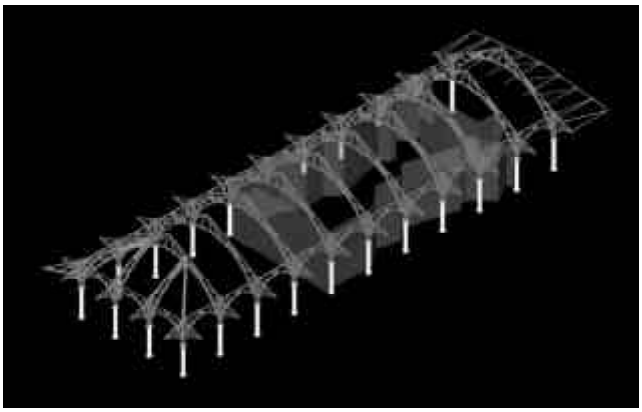
Remains found at Kong Sin Wan Tsuen

Use of 3-D Laser Scanning in the Restoration of the Historic Blake Pier Cover

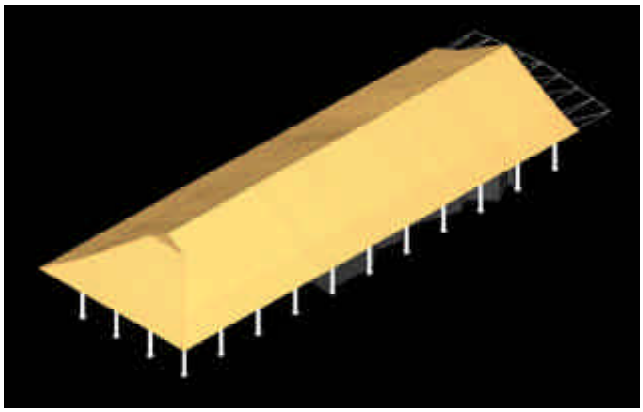
The century old cover of the demolished Blake Pier, currently situated in Morse Park, will be relocated and reused for a new pier in Stanley Bay. This new pier together with the adjacent "Murray House" will be a distinct

landmark for tourists on southern Hong Kong Island. We made use of a 3-D laser scanner to capture the spatial information of the old pier cover and created 3-D models for validating and visualizing the natural effects of the various design proposals. These highly accurate 3-D models are definitely invaluable tools for the restoration of the pier cover.

Relocated Blake Pier at Morse Park



3-D digital model showing articulation of the pier cover



3-D digital model of the complete pier cover

Animation of the re-constructed Blake Pier at Stanley Bay

LAND REMEDIATION PROJECTS

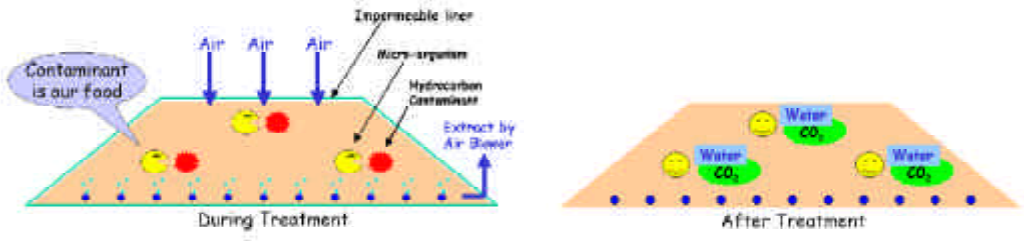
Soil Remediation Works in North Tsing Yi

This project comprises the construction of a 530 m seawall, reclamation of 3.8 hectares and on-site soil remediation of about 90,000 m^3 of contaminated soil from a former shipyard area in North Tsing Yi. The project commenced in February 2002 and is scheduled to be completed in mid 2006. The land formed will be developed for building community facilities.

The soil from the vacated shipyard is contaminated with heavy metals and petroleum hydrocarbon such as oils, paints and other organic compounds. We use biopile to treat soil contaminated with petroleum hydrocarbon and cement solidification methods to treat those contaminated with heavy metals. Both methods are proven to be effective for this project.

During the biopile operation, we stockpile the contaminated soil to form a number of soil mounds with an average size of 100m (L) x 50m (W) x 3m (H). We supply air into the soil mass to enhance the biodegradation of the petroleum hydrocarbons. Micro-organisms inside the soil will "digest" the contaminants and transform them into harmless substances like water and carbon dioxide.

The biopile (shown green) soil treatment at North Tsing Yi

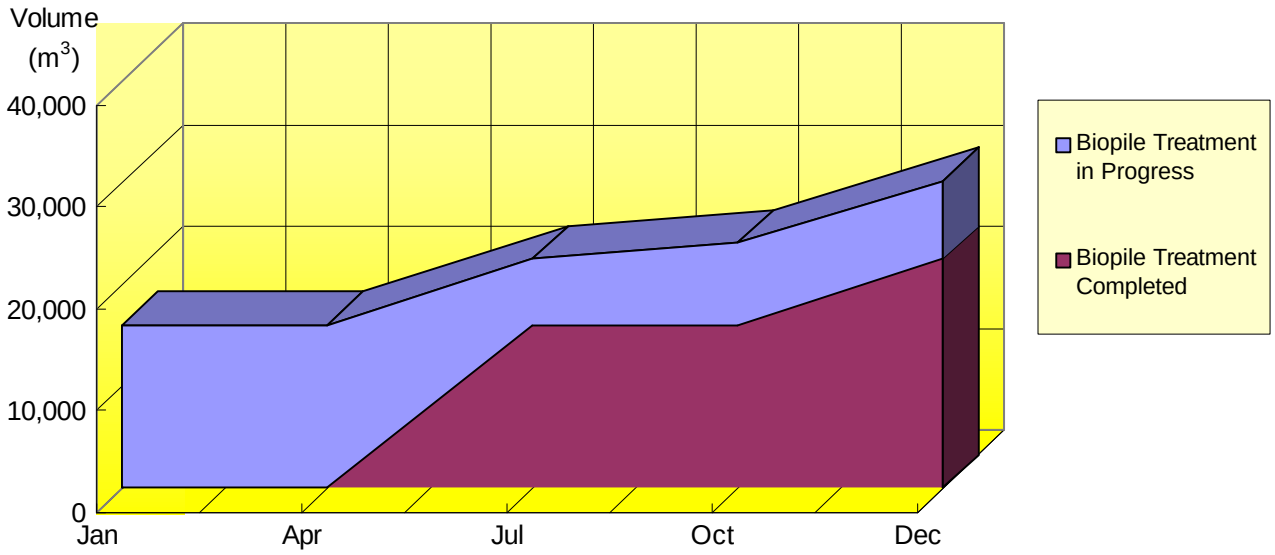


Treating contaminated soil at North Tsing Yi by biopile method

After the biopile treatment, we mix the soil with cement and water to bind the heavy metals inside the soil mass. The treated soil will be re-used on site as fill for land formation.

A general view of the cement solidification plant

The first two biopiles have been formed, treated and removed. The treatment of the third and fourth biopiles and the construction of the fifth biopile are in progress. In 2003, we treated a total of 22,480 m^3 of contaminated soil using the biopile method and 12,700 m^3 of biopile-treated soil using the cement stabilisation method. In general, the progress of the soil remediation work is satisfactory.



Progress of biopile soil treatment in 2003

During the implementation of the remediation work, we have adopted a number of environmental mitigation measures to reduce the impact on the public. In addition to providing additional watering vehicles and a showering pipeline along the haul road, we have covered all the soil mounds with tarpaulin to suppress the generation of dust.

We held frequent discussions with nearby schools to minimise any adverse noise impact. We have modified the sequence of construction activities to lower the construction noise level during school examination periods and use noise-reducing equipment like silence hammers in driving sheet piles. In addition, we have enhanced communication with the schools by arranging a presentation for the students and teachers on our soil remediation work.

During the presentation, many students expressed interest in the "green mountain" on site. Do you know what it is ?

(Answer: Biopile)

Demolition and Decontamination Works at the Proposed Kenndy Town Comprehensive Development Area Site

The Kennedy Town incinerator ceased to operate in 1997. Its site is to be cleared for future development in the Kennedy Town Comprehensive Development Area, which covers also the former Government Abattoir and various other redundant buildings. Demolition of these buildings is considered necessary in order to allow flexibility with regard to future use.

As the decommissioning of incinerators is classified as a "Designated Project" under the Environmental Impact Assessment Ordinance (EIAO), an Environmental Impact Assessment (EIA) was undertaken. The contaminants found and the proposed methods of treatment are as follows -

- Asbestos - treat in accordance with the Code of Practice "Safety and Health at Work with Asbestos'.
- Heavy Metals – excavation, immobilisation by mixing with cement and returned to the ground.

- Hydrocarbons - mixing with cement if necessary and disposed of in landfills.

- Dioxins - immobilisation by mixing with cement, placing in polythene lined sealed steel drums and disposal at designated areas in landfills.

The EIA Report was approved under the EIAO in April 2002. The detailed design of the demolition and decontamination works commenced in mid 2002 and is still underway.

Land Remediation Works for Decommissioning of Cheoy Lee Shipyard at Penny's Bay

The former Cheoy Lee Shipyard is located on the north and eastern shores of Penny's Bay with a site area of about 19 hectares. The site is required for the construction of the necessary infrastructure to support the Hong Kong Disneyland Development. We completed an EIA study of the site in December 2001 based on extensive site investigation. The study recommended a comprehensive remediation plan entailing the removal, treatment and disposal of contaminants in an environmentally acceptable manner and meeting the international standards.

The decommissioning works started in October 2002. Progress of the works is as follows -

On-site decontamination

About 60,000 m^3 soils contaminated with metals only were treated by cement solidification within the site in early 2003. The treated soils were re-used on site.

Off-site decontamination

Excavation and transportation of soils contaminated with dioxins and metals/total petroleum hydrocarbons (TPH) /semi-volatile organic compounds (SVOCs)/metals only were also completed safely in early 2003 following the implementation of stringent precautionary measures stipulated in the Environmental Permit.

Thermal desorption of dioxin-contaminated soil

Thermal desorption was adopted for treating soils contaminated with dioxins and metals, followed by stabilisation using cement. These cement stabilised soils are suitable for use as public filling materials. The thermal desorption plant was shipped to To Kau Wan from the USA in early 2003. As part of the requirements to obtain an operation license under the Waste Disposal Ordinance, the thermal desorption plant underwent a series of commissioning tests before EPD issued the license in July 2003. Thereafter, the plant commenced full operation. Up to the end of 2003, the treatment of dioxin-contaminated soils was about 60% complete. It is expected that the thermal desorption treatment will be completed in mid 2004.

The residues generated from thermal desorption would contain trace quantities of dioxins and had to be transported to Tsing Yi Chemical Waste Treatment Centre for incineration. Such residues are in solid form, non-volatile, insoluble in water and not flammable. All necessary precautionary measures imposed in the Environmental Permit would also be implemented for the transportation and the incineration. A trial incineration of a small quantity of residues would be carried out, and the performance report submitted to EPD for approval. No transportation and incineration of the remaining residues would be allowed before EPD's approval.

An Independent Expert Assessor was employed to verify the effectiveness of the transportation and incineration. He has been collecting baseline air samples in the Tsing Yi areas before incineration of the residues. He would also take air samples during the incineration to check any effect on the environment during the incineration.

Kwai Tsing District Council has been kept informed of the progress of the works and would be fully briefed before actual transportation and incineration of the residues.

Biopiling of soil contaminated with TPH/SVOCs/metals

Formation of the biopile was completed in mid 2003. The biopiling progress is progressing smoothly and is expected to be completed in mid 2004. As the soil is also contaminated with metals, the soil treated by biopiling has to be stabilised using cement. The cement stabilised soil will become suitable for use as public filling materials.

Cheoy Lee Shipyard site during remediation works (as in 2002)

OTHER ENVIRONMENTAL IMPROVEMENT PROJECTS

Replacement of Timber Fenders by Rubber and Plastic Fenders

In the past, it has been standard practice to provide timber fenders at public landing facilities. The timber fenders serve as rubbing strips to protect the vessels and the structures against damage arising from the berthing and mooring operations. However, the continued use of timber fenders is considered environmentally unfriendly because tropical hardwood is not produced from a sustainable source. In order to minimise the use of hardwood, since 2001 we have conducted studies and implemented trials to replace the existing timber fenders by alternative materials, such as rubber and plastic. Large-scale fender upgrading works have been implemented since 2002 after the satisfactory performance of the trials. A summary of upgraded public landing facilities is appended below -

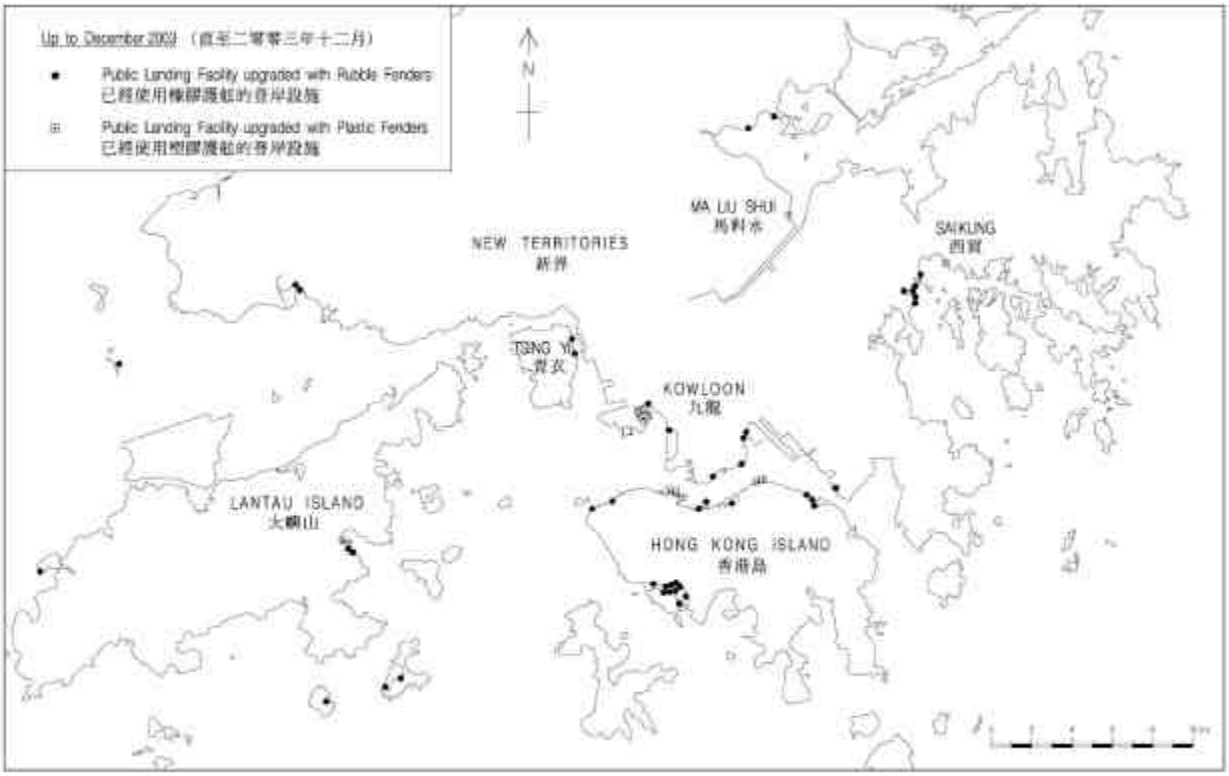
Type / Year	Upgraded Land Facilities (No.)		
	Franchised and Licensed Ferry Piers (Reinforced Concrete Structure)	Public and Government Piers (Reinforced Concrete Stucture)	Public Landing (Solid Seawall)
2002	4	5	19
2003	2	4	25
2004	2 + 3*	6 + 2*	18 + 7*

* under planning

In 2003, we installed rubber fenders at 25 landings and plastic fenders at 6 piers. We will upgrade the fenders at 38 public landing facilities in 2004, including Aberdeen Praya Road Landing, Kowloon Public Pier and Hung Hom (South) Ferry Pier. For the remaining landing facilities, we will gradually replace the timber fenders in a few years' time. The locations of upgraded public landing facilities are shown below -

Tsing Yi fire boat landing

Mui Wo landing No. 2



Visual Appearance of Public Piers

Public piers are assets to the society. Their main function is to provide a means for boarding and alighting of passengers. Many of them are strategically located in tourist areas. As part of our efforts in maintaining all public marine structures and facilities in the territory, we undertake the reconstruction of dilapidated piers, which were built in the early 1950s and 1960s. They are located in outlying islands or the countryside, which are very attractive areas for recreation and tourism. Apart from operational requirements, environmental considerations are becoming more important in the planning and design of pier reconstruction projects.

Green visual appearance comes with an environmental-friendly design. Natural materials such as stone veneer and other man-made materials having a natural appearance such as ceramic tiles and colour concrete are applied when forming surface finishes to the replacement piers. The adjacent photo shows the application of imprinted colour concrete with different granite patterns at Peng Chau Public Pier, which gives a strong impression of a natural environment.

Application of imprinted colour concrete with different granite patterns at Peng Chau Public Pier

The provision of skylight or fabric roof cover systems to replacement piers will also help improve the environment. Apart from providing a shelter for pier users, the skylight or fabric roof cover transmits natural sunlight, makes the environment more open and helps reduce the electricity consumption of pier lighting. To blend in with the surrounding environment and the special characteristic of the local community, special design of roof materials, colours and structural forms are adopted.

Timber pitched roof cover system at Kat O Chau Public Pier

Enhancement of Shing Mun River

Following the success in completing the first stage of river sediments under the Stage 1 Project in early 2003, we commenced the Stage 2 Contract work in May 2003, which marked another milestone in the improvement scheme for the Shing Mun River.

So far the most noticeable improvements have been the removal of odour and increase of fish species, which have been widely reported by the media. The improved river conditions can be seen not only in daytime, but also at night.


2003-10-11 要聞 A2

魚蝦蟹36種 臭味大腸桿菌大減99%

除污見效 城門河重生

今 昔

魚或含重金屬 環團勸勿吃

Media coverage of the Shing Mun River improvement project (Source: Ming Pao)

Floating debris has been a nuisance for years. With the recent installation of floating booms, debris are trapped and effectively removed. There are three floating booms altogether, including one near the Central Park. Staff of the Food and Environmental Hygiene Department like the booms, so do the egrets.

Adjacent to the Lion Bridge, we have constructed no-fines concrete apron slabs. The slabs will promote growth of moss which will subsequently form a nursery ground for fishes. A stone monument stands quietly beside the Hong Kong Heritage Museum. It is sculptured with the layout of ten viewing platforms as well as a Chinese poem. Come and see if you can understand what the poem says about the scenic environment.

At the upstream end, opposite to Man Lai Court, we

Beauty of Shing Mun River at night

Floating booms

have transformed a 200m run of “cold” concrete embankment into a potentially “ warmer” slope. A special engineering product named “grasscrete” was used. On the top of the slope, we erected railing of typically Chinese design, harmonizing with those of the nearby Museum.

We strive to restore the river to an environment of unprecedented beauty.

Slabs promoting the growth of moss

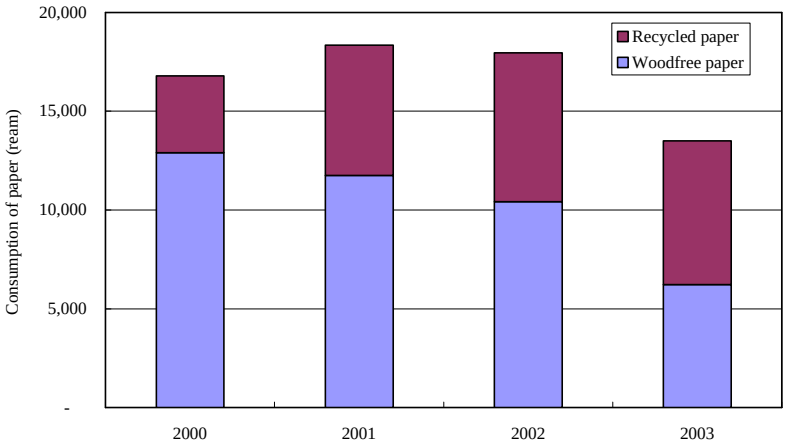
A stone monument beside the Hong Kong Heritage Museum by Shing Mun River

Railings with typical Chinese design erected by the river

IN-HOUSE ACTIVITIES

CED has about 1600 staff. We understand the importance of promoting staff's awareness of environmental issues.

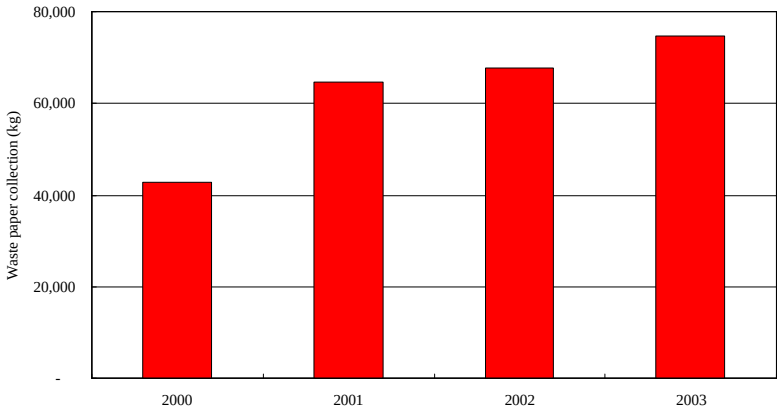
We appoint green managers to develop and promote environmental-friendly office practices. We continue to promote internal and external communication and dissemination/collection of information through increased use of electronic means. Guidelines on energy conservation, minimisation of paper usage, and collection of waste paper for recycling have been put in place to assist staff in conserving resources. Use of green products such as recycled paper and stationery items (e.g. correction fluids) as well as rechargeable batteries is implemented wherever appropriate. Green purchasing is promoted wherever applicable (e.g. requiring our contractors to use recycled materials in packaging and to incorporate trade-in options).



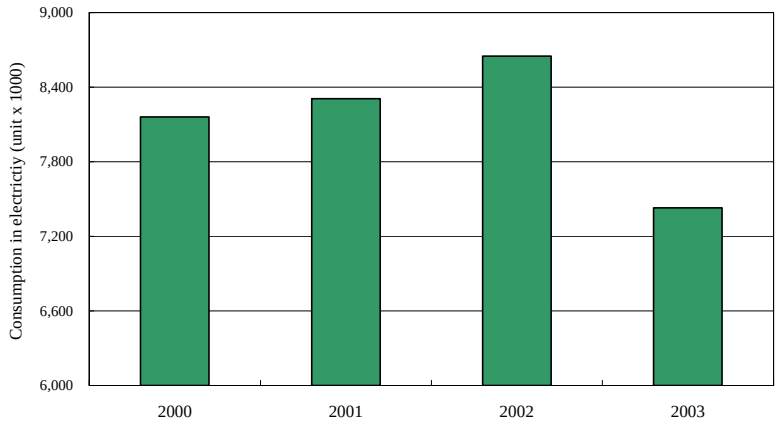
Consumption of paper in CED

We continue to carry out routine maintenance and improvement of our office facilities to reduce the impact on the environment due to their deterioration. We have continued our energy saving programme, including –

- Switching to energy saving electronic ballast when replacing light panels in our office refurbishment works
- Installing infrared sensors in meeting rooms to control the switching on/off of lights and air-conditioning



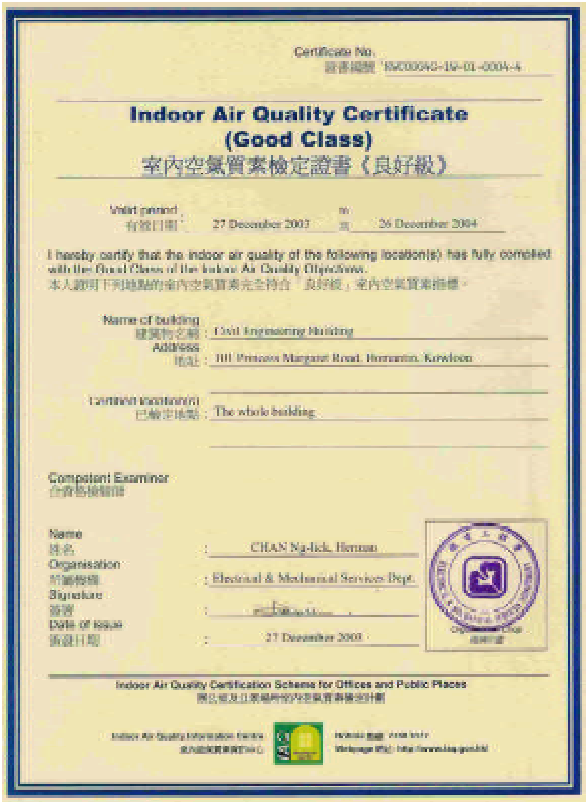
Waste paper collection in CE Building



Consumption of electricity in CE Building

- Installing timers at selected filing areas and parts of the carpark to control the switching on/off of lights.

To fight against SARS and provide a hygienic working environment, enhanced cleaning programmes were adopted in our offices. Cleaning of air ducts was carried out with an Indoor Air Quality Test conducted to monitor the air quality of our offices. In December 2003, Civil Engineering Building and the Public Works Central Laboratories Building were awarded "Good Class" status under the "Indoor Air Quality" Certification Scheme of the EPD.



Certificate No.

Indoor Air Quality Certificate
(Good Class)
室內空氣質素檢定證書（良好級）

Valid period :
有效日期 : 27 December 2003 至 26 December 2004

I hereby certify that the indoor air quality of the following location(s) has fully complied with the Good Class of the Indoor Air Quality Objectives.
本人證明下列地點的室內空氣質素完全符合「良好級」室內空氣質素指標。

Name of building 建築物名稱 : Civil Engineering Building
Address 地址 : 101 Princess Margaret Road, Homantin, Kowloon
Certified section(s) 已檢定地點 : The whole building

Competent Examiner
合資格檢驗師

Name 姓名 : CHAN Ng-lok, Herman
Organisation 所屬機構 : Electrical & Mechanical Services Dept.
Signature 簽署 :
Date of issue 簽發日期 : 27 December 2003

Indoor Air Quality Certification Scheme for Offices and Public Places
辦公室及公眾場所空氣質素檢定計劃

Since 1995, we have adopted the Smoke-Free Workplace Policy and CE Building is a smoke-free building. Smoking is also prohibited in all CED departmental vehicles.

To promote a cleaner environment, all our drivers have adopted the practice of switching off their vehicle's engine while waiting, to reduce the emission of exhaust fumes.

In 2003, we organised various activities to promote staff's environmental awareness, including –

- A "Spring Clean" and a "Keep your Office Clean and Tidy Contest" at the start of the year to promote a comfortable and hygienic working environment

Spring clean

- Participation in the Forest Adoption Project, in which staff participated twice yearly to nurture and take care of the trees in a plot of land assigned to CED in the Sai Kung Country Park

- A signature campaign among staff in support of the Conservancy Association's appeal to "Stop Eating Wild Animals"

- Supporting the World Wildlife Fund Hong Kong Raffle sales

- Participation in the Community Chest "Green Day"

- An ecological and recreational visit to the outlying islands for staff to appreciate the natural beauty of Hong Kong

SUMMARY OF OBJECTIVES AND TARGETS

Targets in 2003	Achievements in 2003	Targets in 2004
Objective: Increase the beneficial use of public fill and reduce disposal of construction and demolition materials		
Establish temporary fill banks in Tseung Kwan O Area 137 and Tuen Mun Area 38	Target met	Continue the fill bank operation through 2004
Carry out pilot test in North Tsing Yi reclamation to study the field perfomance of using public fill in lieu of marine sand for the foundation core of seawalls	Target met	Confirm the feasibility of using public fill bank in lieu of marine sand for the foundation core of seawalls and breakwaters Commence using inert C&D materials as capping material for mud pits
Objective: Maintain the effectiveness of mud disposal facility		
Continue environmental monitoring to achieve no adverse trend in the monitoring results	Target met	Continue environmental monitoring to achieve no adverse trend in the monitoring results
Objective: Enhance the appearance of all man-made slopes		
Initiate a best landscape slope award for private and government slopes in Hong Kong	Target met	Landscape all the slopes upgraded under the LPM Programme Develop an extended plant selection matrix for use on man-made slopes
Objective: Rehabilitate all inactive quarry areas		
Rehabilitate 60,000 m^2 of quarry area	61,500 m^2 of quarry area rehabilitated	Rehabilitate 21,000 m^2 of quarry area
Objective: Reduce the environmental impacts of reclamation projects		
Continue environmental monitoring for all new reclamation projects	Target met	Continue environmental monitoring for all new reclamation projects
Objective: Apply the "Bioremediation" technology		
Commence the Stage 2 environmental improvement works for bioremediation and dredging of contaminated sediments in Shing Mun River	Target met	Substantially complete the engineering works under the Stage 2 environmental improvement works

AWARDS AND PUBLICATIONS RELATED TO ENVIRONMENTAL MATTERS

Awards

A mathematical modelling study was carried out to study the behaviour of the sediment plume as a result of the sand dredging operation at the East Lamma Channel Marine Borrow Area. The study provided information on the planning of dredging works. In 2003, the paper "Application of Mathematical Modelling for Environmental Assessment of Sand Dredging", which presented the findings of the modelling study at the First Chinese International Dredging Congress and Exhibition held by China Dredging Association in Shanghai, was awarded the best paper on environmental protection.

The operator of the Anderson Road Quarry was awarded the "Environmental Performance Award" in the 2003 Hong Kong Awards for Industry organised by the Business Environment Council for the environmental achievements from restoring quarry sites into natural-looking landforms.

Papers

In 2003, the following papers on engineering/works topics, in which environmental issues were addressed were published or presented at conferences -

	Title of Paper	Conference/Publication in which the paper was presented/published
1.	Development in Recycling of Construction and Demolition Materials	Journal on Modern Urban Research Urban Research Society of Nanjing January 2003 People's Republic of China
2.	Production and Application of Recycled Aggregates	HKIE Green Building Seminar 24 Februay 2003 Hong Kong
3.	香港採石場的修復工程 (Quarry Rehabilitation Works in Hong Kong)	全國岩土與工程學術大會 August 2003 Beijing, People's Republic of China

4.	A Comprehensive Solution to the Decommissioning of Former Cheoy Lee Shipyard, Penny's Bay, Hong Kong	International Conference on Pollution in the Metropolitan and Urban Eviornment (POLMET 2003) 3-5 November 2003 Hong Kong
5.	Sustainable and Cost Effective Material Conveyor System - Site Formation Works for Jordan Valley Development, Hong Kong	
6.	Use of Solar Power Irrigation System for Watering Vegetation on Man-made Slopes	
7.	Application of Mathematical Modelling for Enviornmental Assessment of Sand Dredging	The First Chinese International Dredging Congress and Exhibition 26-29 November 2003 Shanghai , People's Republic of China
8.	Penny's Bay Reclamation for Hong Kong International Theme Park Development	
9.	Dredging in Shing Mun River, Hong Kong	
10.	Recycling of Construction and Demolition Materials in Hong Kong	The Second Symposium on Sustainable Development of Guangdong, Hong Kong and Macau 15-17 December 2003 Hong Kong
11.	A Case Study on Decontamination of the Former Cheoy Lee Shipyard, Penny's Bay, Hong Kong	
12.	Greening of Quarry Slopes in Hong Kong	International Conference on Slope Engineering December 2003 Hong Kong

ENQUIRIES AND FEEDBACK

This report and other information on the activities of CED can be found at our homepage on the Internet (address: ***http://www.ced.gov.hk***) and also in the Civil Engineering Library located at our Departmental Headquarters in Homantin. A feedback card is attached to this report and also provided on our homepage. Any enquiries and feedback can be sent to the Director of Civil Engineering, Civil Engineering Department at **101 Princess Margaret Road, Homantin, Kowloon, Hong Kong** or to our e-mail address at ***ceinfo@ced.gov.hk***.

Enquiries can also be made by contacting the officer responsible for a specific area -

Activities	Officer	Tel. No. (852-)	E-mail Address
Environmental goal and policy	Assistant Director (Headquarters) ***Mr T N Cheng***	2762 5002	*adhq_dir@ced.gov.hk*
Public filling and recycled aggregates	Chief Engineer/Port Works ***Mr C Y Chan***	2762 5555	*ce_pwd@ced.gov.hk*
Marine dredging and disposal of sediments	*same as above*		
Slope works	Chief Geotechnical Engineer/Design ***Mr T C F Chan***	2762 5444	*cge_des@ced.gov.hk*
Quarrying	Chief Geotechnical Engineer/Mines and Quarries ***Mr S H Tse***	2716 8640	*mqd@ced.gov.hk*
Reclamation and land formation	Chief Engineer/Development ***Mr W Y Tang***	2762 5620	*ce_ded@ced.gov.hk*
Penny's Bay development	Chief Engineer/Special Duties (Co-ordination) ***Mr M T Wong***	2762 5511	*ce_sdc@ced.gov.hk*
Projects to improve the environment	Chief Engineer/Technical Services ***Mr N P Tong***	2762 5630	*ce_tsd@ced.gov.hk*
In-house activities	Departmental Secretary ***Mr P H C Lau***	2762 5088	*ds_adm@ced.gov.hk*