



# Dimensions of a Sustainable Future



[繁體](#) [簡體](#) [English](#)

[Contact us](#) [Feedback](#) [Sitemap](#)

- [about the report](#)
- [director's message](#)
- [profile](#)
- [vision and values](#)
- [GRI content index](#)
- [our priorities](#)
- [sustainability in practice](#)
- [economic performance](#)
- [environmental performance](#)
- [social performance](#)
- [key statistics](#)
- [the way forward](#)
- [verification statement](#)

## Sustainability Report 2005



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[about the report](#)
[director's message](#)
[profile](#)
[vision and values](#)
[GRI content index](#)
[our priorities](#)
[sustainability in practice](#)
[economic performance](#)
[environmental performance](#)
[social performance](#)
[key statistics](#)
[the way forward](#)
[verification statement](#)

## About the Report

### Scope of the Report

This report describes the sustainability performance of Architectural Services Department, the Government of the Hong Kong Special Administrative Region, for calendar year 2004. This is the second annual Sustainability Report.

Data are presented as absolute figures and, for priority issues, normalised into comparable terms where appropriate and practical. Quantitative data are presented for all our six branches, excluding data from contractors and suppliers, unless otherwise stated. Qualitative information covers all our direct activities unless otherwise stated. Financial data is recorded according to financial year ended 31 March 2005. All monetary values are in Hong Kong dollars.

The Global Reporting Initiative (GRI) Guidelines 2002 and the sector supplement for Public Agencies published in March 2005 were used during the development of the report. A GRI Content Index is provided to facilitate referencing.




[about the report](#)
[director's message](#)
[profile](#)
[vision and values](#)
[GRI content index](#)
[our priorities](#)
[sustainability in practice](#)
[economic performance](#)
[environmental performance](#)
[social performance](#)
[key statistics](#)
[the way forward](#)
[verification statement](#)

## Director's Message

Dear Readers,

Welcome to our Sustainability Report 2005. Since publishing our first Environment Report in 1998, we have made great strides in sustainable construction. Indeed, sustainability has become a core principle in the operations of Architectural Services Department.

This year we include a section on "Our Priorities" to highlight areas of particular value to us. They are Stakeholder Engagement, Supply Chain Management and Energy Use. We have expanded our coverage on these issues to facilitate stakeholder discussions, enhance operational transparency and strengthen our accountability to the public.

Our activities are closely knitted to public concern. In 2004, we implemented a series of measures to combat the worrying rise of mosquito breeding in construction sites. We continue to re-engineer our department to reflect better our integrated approach in sustainable development.

Our efforts have not gone unnoticed. We are honoured to receive the Best Developer Award, a territory-wide event organised by industry associations; and a number of our projects won recognition at the Hong Kong Institute of Architects Annual Awards 2004. You can read about our awarded projects in "Sustainability in



## Practice - Case Studies"

I am happy to report that we have met most of our quality environmental, health and safety targets last year. But we anticipate a challenging future as we juggle environmentally sound solutions, stakeholders' rising expectations and limited financial resources. Please let us know your views via the Feedback Form provided.

This report has been prepared in accordance with the 2002 GRI Guidelines. It represents a balanced and reasonable presentation of our organisation's economic, environmental and social performance.

I am most delighted to announce that our Sustainability Report 2005 is the first Public Agency report world wide to achieve full "in accordance" with Global Reporting Initiative Guidelines 2002, as confirmed by GRI on 21 Dec. 2005.

A handwritten signature in black ink, reading "Yue Chi Hang". The signature is written in a cursive style with a large, decorative initial "Y".

Yue Chi Hang, JP  
Director of Architectural Services

[back to top](#)

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[繁體](#)   [簡體](#)   [English](#)  
[Contact us](#)   [Feedback](#)   [Sitemap](#)

- [about the report](#)
- [director's message](#)
- [profile](#)**
- [vision and values](#)
- [GRI content index](#)
- [our priorities](#)
- [sustainability in practice](#)
- [economic performance](#)
- [environmental performance](#)
- [social performance](#)
- [key statistics](#)
- [the way forward](#)
- [verification statement](#)

| [Organisational Profile](#) | [Governance Structure](#) |

## Profile

### Programmes of Services

The Architectural Services Department has three main programmes of services:

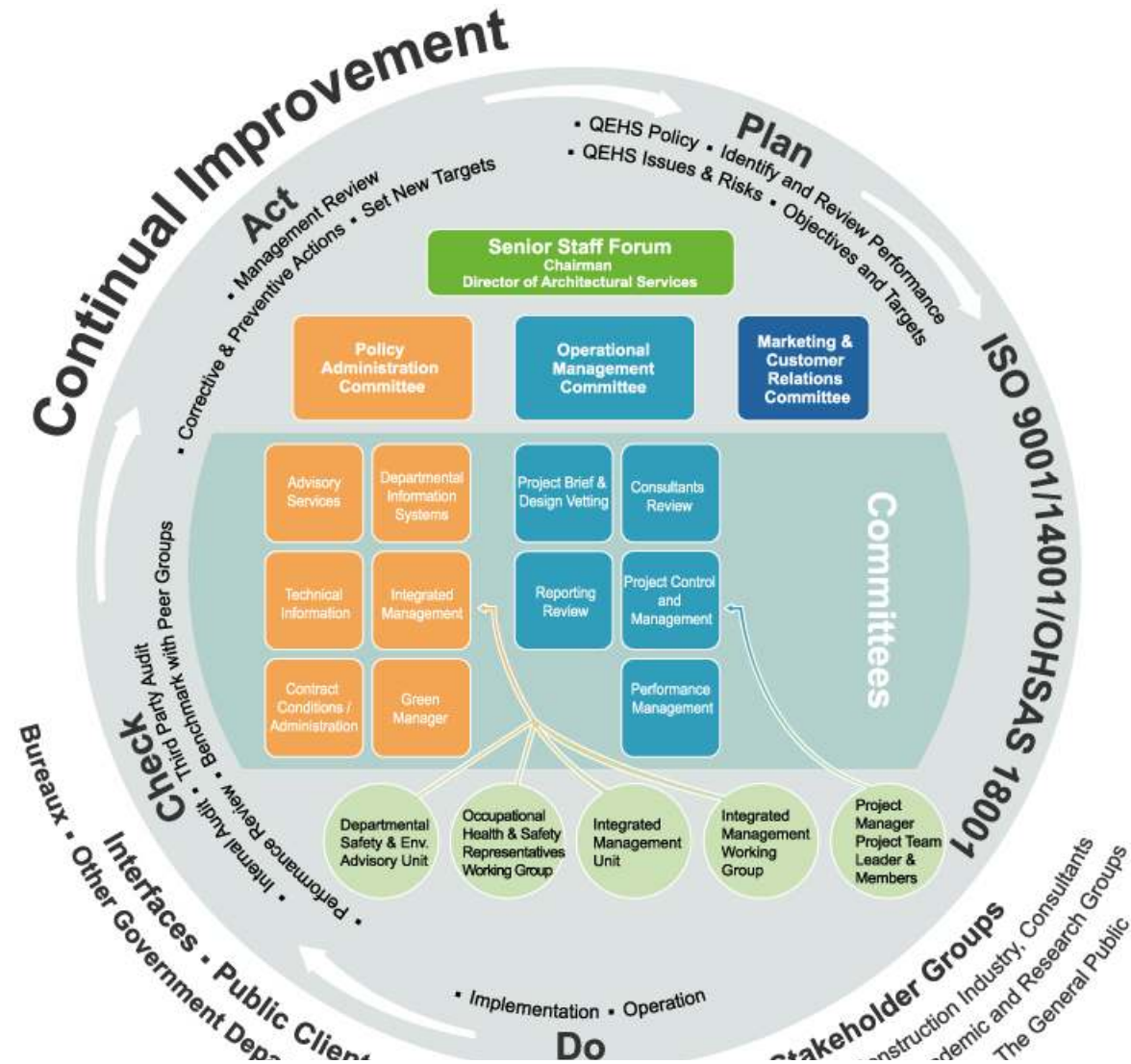
- **Monitoring and advisory services** To provide technical advice to the Government and quasi-government organisations and to oversee sub-vented and joint venture projects
- **Facilities development** To provide efficient, cost-effective and timely architectural and project management services for the design and construction of government buildings, except for public housing
- **Facilities upkeep** To provide efficient and cost-effective project management services for the maintenance and refurbishment of buildings and facilities

### Organisational Profile



The organisational profile is effective as of March 2005.

Governance Structure



To ensure our Integrated Management System is properly maintained in accordance with our established policies and the requirements of ISO9001, ISO14001 and OHSAS18001, the Integrated Management Committee under the directives of the Senior Staff Forum and Policy Administration Committee, is responsible for reviewing the results of our internal and external audits, client feedback, progress of corrective/preventive actions on non-conformity, quality environmental health and safety objectives and target achievements, new targets proposed for the coming year, and resources required for implementing the action arisen from the review.

[back to top](#)

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繁體 簡體 English  
Contact us Feedback Sitemap

- [about the report](#)
- [director's message](#)
- [profile](#)
- [vision and values](#)
- [GRI content index](#)
- [our priorities](#)
- [sustainability in practice](#)
- [economic performance](#)
- [environmental performance](#)
- [social performance](#)
- [key statistics](#)
- [the way forward](#)
- [verification statement](#)

| [Vision, Mission, Core Values](#) | [Quality Environmental, Health and Safety Policy](#) |

## Vision & Values

### [Vision, Mission, Core Values](#)

#### [Our vision](#)

To maintain our position as the leading practice for procuring and maintaining community facilities

#### [Our mission](#)

To provide services in a professional manner

#### [Our core values](#)

- Cost and time efficient project delivery;
- High professional quality standards; and
- Responsible practices and sound quality environmental, health and safety performance

#### [Quality, Environmental, Health & Safety Policy](#)

[To plan, design, procure, maintain property and advise professionally](#)

The Architectural Services Department is committed to:



- Fulfil the agreed requirements of our Clients to the highest professional standards;
- Deliver our services in an environmentally responsible manner by implementing conservation of energy, preventing pollution and reducing the consumption of natural resources;
- Manage our health and safety risks to ensure a safe and healthy environment for our staff, our contractors and other people who may be affected by our work;
- Comply with all relevant legislations and other requirements, and wherever practicable, to achieve standards beyond those that are legally required.
- Provide adequate resources and training to all staff and provide appropriate training to persons working for or on behalf of ArchSD, to continually improve our quality, environmental, health and safety performance and effectiveness; and
- Promote our principles of quality, environmental sustainability, health and safety to our partners in work, the construction industry and the general public.



Yue Chi Hang, JP  
Director of Architectural Services

[back to top](#)

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[繁體](#)
[簡體](#)
[English](#)  
[Contact us](#)
[Feedback](#)
[Sitemap](#)

- [about the report](#)
- [director's message](#)
- [profile](#)
- [vision and values](#)
- [GRI content index](#)
- [our priorities](#)
- [sustainability in practice](#)
- [economic performance](#)
- [environmental performance](#)
- [social performance](#)
- [key statistics](#)
- [the way forward](#)
- [verification statement](#)

[Profile](#) | [Governance Structure & Management Systems](#) | [Economic Performance](#) | [Social Performance](#) | [Environmental Performance](#)

## GRI Content Index

● Reported ▲ Not Reported

GRI Element	ArchSD Sustainability Report 2005	Explanation for Omissions	Remarks
<b>Vision &amp; Strategy</b>			
1.1 <a href="#">CSR Vision and strategy</a>	●		
1.2 <a href="#">Statement from our Director</a>	●		
<b>Profile</b>			
2.1 <a href="#">Name of reporting organisation</a>	●		
2.2 <a href="#">Major products and services</a>	●		
2.3 <a href="#">Operational structure</a>	●		
2.4 <a href="#">Subsidiaries</a>	▲	No subsidiaries	
2.5 <a href="#">Countries of operation</a>	●		
2.6 <a href="#">Nature of ownership</a>	●		Part of Hong Kong Government
2.7 <a href="#">Nature of markets served</a>	●		
2.8 <a href="#">Scale of the reporting organisation</a>	●		
2.9 <a href="#">Stakeholders</a>	●		

<a href="#">2.10 Contact persons</a>	●		
<a href="#">2.11 Reporting period</a>	●		
<a href="#">2.12 Date of previous reports</a>	●		
<a href="#">2.13 Boundaries of report</a>	●		
<a href="#">2.14 Significant changes in size</a>	▲	No significant changes	
<a href="#">2.15 Basis for reporting on jv</a>	▲	No joint ventures	
<a href="#">2.16 Re-statements of information</a>	●		CO <sub>2</sub> emissions
<a href="#">2.17 Decisions not to apply GRI principles</a>	▲	GRI Guidelines adopted	
<a href="#">2.18 Definitions used in accounting for environmental costs</a>	●		
<a href="#">2.19 Significant changes in measurement methods</a>	●		Total area of Photovoltaic panels completed.
<a href="#">2.20 Policies and practices on accuracy, completeness, and reliability</a>	●		Conducted a gap analysis on completeness of report
<a href="#">2.21 Policy on independent assurance</a>	●		
<a href="#">2.22 Obtaining of additional information</a>	●		
<a href="#">PA1 Relationship with other government authorities</a>	●		
<b>Governance Structure &amp; Management Systems</b>			
<a href="#">3.1 Governance structure of ArchSD</a>	●		
<a href="#">3.2 Independent, non-executive directors</a>	▲	No directorships	
<a href="#">3.3 Process for determining the expertise board members need</a>	▲	No directorships	
<a href="#">3.4 Risk and opportunity management process</a>		Adopt risk management techniques of	

	▲	Environment, Transport and Works Bureau.	
<b>3.5</b> Executive compensation and goal achievement	▲	No executive compensation	
<b>3.6</b> <a href="#">Corporate Social Responsibility (CSR) organisational structure</a>	●		
<b>3.7</b> <a href="#">Mission, values, code of conduct, policies</a>	●		
<b>3.8</b> <a href="#">Mechanisms for stakeholders to provide recommendations to board of directors</a>	●		
<b>3.9</b> <a href="#">Identification and selection of major stakeholders</a>	●		
<b>3.10</b> <a href="#">Approaches to stakeholder consultation</a>	●		
<b>3.11</b> <a href="#">Information generated by stakeholder consultation</a>	●		
<b>3.12</b> <a href="#">Use of information from stakeholder engagements</a>	●		
<b>3.13</b> The precautionary principle	▲	Our operations do not constitute to serious or irreversible damage	
<b>3.14</b> External CSR charters endorsed by ArchSD	▲	Follow the charters endorsed by the Council for Sustainable Development	
<b>3.15</b> <a href="#">Memberships in industry associations</a>	●		
<b>3.16</b> <a href="#">Policies for managing upstream and downstream impacts</a>	●		
<b>3.17</b> <a href="#">Approach to managing indirect impacts</a>	●		









3.18 Changes in operations	▲	No changes in operations	
3.19 Programmes pertaining to sustainability <a href="#">Economic</a> <a href="#">Environmental</a> <a href="#">Social</a>	●		
3.20 Certification pertaining to economic, environmental, and social management systems	●		
PA2 Definition of sustainable development adopted by ArchSD	●		
PA3 Identify aspects of sustainable development policies adopted	●		
PA4 Identify the goals of sustainable development	●		
PA5 Process where the aspects and goals were set <a href="#">Economic</a> <a href="#">Environmental</a> <a href="#">Social</a>	●		
PA6 Monitoring of each goal <a href="#">Economic</a> <a href="#">Environmental</a> <a href="#">Social</a>	●		
PA7 Role of stakeholders in PA6 <a href="#">Economic</a> <a href="#">Environmental</a> <a href="#">Social</a>	●		
<b>Economic Performance</b>			
EC1 Net sales	▲	No sales activities	
EC2 Geographic breakdown of markets	▲	Covers Hong Kong	
EC3 Cost of all goods purchased	●		As part of departmental expense
EC4 Contracts paid in accordance with agreed terms	●		
EC5 Total payroll & benefits	●		

<b>EC6</b> Distributions to providers of capital	▲	No debt	
<b>EC7</b> Retained earnings	▲	No retained earnings	
<b>EC8</b> Total sum of all taxes paid	▲	No taxes paid as a Government department	
<b>EC9</b> Subsidies received	▲	No subsidies	
<b>EC10</b> <a href="#">Donations to community etc.</a>	●		
<b>PA8</b> <a href="#">Gross expenditure by type of payment</a>	●		
<b>PA9</b> <a href="#">Gross expenditure by financial</a>	●		
<b>PA10</b> <a href="#">Capital expenditure by financial classification</a>	●		
<b>PA11</b> <a href="#">Procurement policy regarding sustainable development</a>	●		
<b>PA12</b> <a href="#">Sustainability criteria applied to financial commitments</a>	●		
<b>PA13</b> Linkage between procurement policy and public priorities	▲	Procurement based on central government policies	Sustainable Procurement
<b>PA14</b> <a href="#">Percentage of value of goods purchased with green labels</a>	●		
<b>Environmental Performance</b>			
<b>EN1</b> <a href="#">Total material use other than water</a>	●		
<b>EN2</b> <a href="#">Wastes from external sources</a>	●		
<b>EN3</b> <a href="#">Direct energy use by primary source</a>	●		
<b>EN4</b> Indirect energy use	▲	No measurement mechanism in place.	Calculate embodied energy of structures in

			ArchSD projects.
<b>EN5</b> Total water use	▲	No water meter as no need to pay for water use	
<b>EN6</b> Biodiversity-rich habitats	▲	No measurement mechanism in place as our operations have relatively minor impact on biodiversity.	
<b>EN7</b> Impacts on biodiversity	▲	Our operations have no significant impact in Hong Kong	
<b>EN8</b> <a href="#">Greenhouse gas emissions (CO<sub>2</sub>)</a>	●		
<b>EN9</b> <a href="#">Ozone-depleting substances</a>	▲	We do not use any ozone-depleting substances in our refrigerants and fire extinguishing agents	
<b>EN10</b> NO <sub>x</sub> , SO <sub>x</sub> , other air emissions	▲	No measurement mechanism in place except at crematoriums	
<b>EN11</b> <a href="#">Total amount of waste</a>	●		Covered Construction & Demolition waste
<b>EN12</b> Significant discharges to water	▲	No measurement mechanism in place but monitored in site environment checklist.	
<b>EN13</b> Spills of chemicals, oils and fuels	▲	No measurement mechanism in place but included in site environment checklist	
<b>EN14</b> <a href="#">Significant</a>			



<a href="#">environmental impacts of products and services</a>	●		
<b>EN15</b> Percentage of the weight of products sold that is reclaimable after the products' useful life	▲	No products sold	
<b>EN16</b> <a href="#">Incidents and fines</a>	●		
<b>Social Performance</b>			
<b>LA1</b> <a href="#">Workforce</a>	●		
<b>LA2</b> <a href="#">Net employment creation</a>	▲	No measurement mechanism in place but we follow central Government' s directives.	
<b>LA3</b> Employees represented by unions	▲	Most employees are independently represented in internal committees	
<b>LA4</b> Policy for employee negotiation in connection to restructuring	▲	Most employees are independently represented in internal committees	
<b>LA5</b> <a href="#">Occupational accidents and diseases</a>	●		
<b>LA6</b> Joint health and safety committees <a href="#">Profile Social</a>	●		As part of Integrated Management System
<b>LA7</b> <a href="#">Injury, lost day, absentee rates</a>	●		
<b>LA8</b> Policies, programmes on HIV/AIDS	▲	Following the requirements of Civil Services Bureau	
<b>LA9</b> <a href="#">Average hours of training per year</a>	●		
<b>LA10</b> Equal opportunity		Following the	

policies		requirements of Equal Opportunities Commission	
<a href="#">LA11 Composition of senior management</a>			Overall gender ratio reported. Aiming to report senior management diversity ratio in future reports
<b>HR1</b> Human rights policies		Following the requirements of Hong Kong Human Rights Commission	
<b>HR2</b> Consideration of HR impacts		Following the requirements of Hong Kong Human Rights Commission	
<a href="#">HR3 Policies and procedures to address HR performance within the supply chain</a>			
<b>HR4</b> Anti-discrimination policy		Following the local ordinances (eg sex discrimination ordinance, disability discrimination ordinance, family status discrimination ordinance)	
<b>HR5</b> Freedom of association policy		Following the requirements of Civil Services Bureau	
<b>HR6</b> Policy on child labour		Following the law of Hong Kong (i.e. Chapter 57B - Employment of Children)	

		Regulations)	
<b>HR 7</b> Policy on forced labour	▲	Following the law of (i.e. Chapter 57C - Employment of Young Persons (Industry) Regulations)	
<b>SO1</b> <a href="#">Policies to manage impact on communities</a>	●		
<b>SO2</b> Policies to address bribery and corruption	▲	Following the guidelines of Civil Services Bureau	
<b>SO3</b> Policies for managing lobbying	▲	Following the requirements of Civil Services Bureau (e.g. CSB Circular No. 2/2004 - “Conflict of Interest” & CSB Circular No. 15/2002 “Acceptance of advantages offered to an officer in his private capacity” )	
<b>PR1</b> <a href="#">Policy for preserving customer health and safety</a>	●		
<b>PR2</b> Policy related to product information	▲	Our product is buildings	
<b>PR3</b> Policy on consumer privacy	▲	Following the requirements of Civil Services Bureau (e.g. CSB Circular No. 13 of 2002 “Personal Data (Privacy) Ordinance - Guidelines for Users of Employment-Related Personal Data in the Civil	

		Service” )	
New Indicator for Public Agency Assessment of efficiency and effectiveness of services <a href="#">Economic</a> <a href="#">Environmental</a> <a href="#">Social</a>			

[back to top](#)

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[about the report](#)
[director's message](#)
[profile](#)
[vision and values](#)
[GRI content index](#)

### our priorities

[Stakeholder Engagement](#)
[Green Supply Chain  
Management](#)
[Energy Use](#)
[sustainability in  
practice](#)
[economic  
performance](#)
[environmental  
performance](#)
[social performance](#)
[key statistics](#)
[the way forward](#)
[verification statement](#)

## Our Priorities

From the many economic, environmental and social issues that we confront, we have identified stakeholder engagement, supply chain management and energy use as our prioritised issues. We chose these three issues because they represent areas of concern where we have a substantial influence in their operations, and which have a great impact on our community.




[about the report](#)
[director's message](#)
[profile](#)
[vision and values](#)
[GRI content index](#)
**our priorities**
**Stakeholder Engagement**
[Green Supply Chain  
Management](#)  
[Energy Use](#)
**sustainability in  
practice**
**economic  
performance**
**environmental  
performance**
**social performance**
**key statistics**
**the way forward**
**verification statement**
[| Client Satisfaction Survey](#) | [Engaging International Associations](#) | [Universal Accessibility](#) |

## Stakeholder Engagement

Our stakeholders have rising expectations about us as a purveyor of public services and an impartial government department. We welcome the views of our stakeholders and incorporate their feedback into our operations in order to improve our quality of services.

Our stakeholders include:

- Government and related public organisations
- Legislators
- Construction and industry partners
- Suppliers, consultants, and contractors
- Academic and research groups
- Public buildings users, including physically challenged groups
- Environmental groups
- Public
- International interested parties

Primarily, the aim of the Sustainability Report is to report our performance and address stakeholders' concerns. We would like to invite you to complete our Feedback Form to let us know your views on our Sustainability Report 2005. If you want to obtain further information regarding our work, please contact us by email to [sbse/im@archsd.gov.hk](mailto:sbse/im@archsd.gov.hk) or by fax to 25960361.

As a Government Department, we are accountable to the public at large



and value their input to our services. We engage with our stakeholders through regular Client Satisfaction Surveys and through our participation with external committees and international associations. An example of our engagement work is our study on integrating universal accessibility into our buildings.

### Client Satisfaction Survey

Since 2002, we have been collecting feedback from our clients. The Client Satisfaction Survey is conducted regularly to ascertain our clients' level of satisfaction with the quality of our products and services.

Sustainability is a recurrent theme weaved through the survey, including questions on aesthetics, conscientious use of buildings materials and recycled resources, energy conservation as well as the greening of internal and external environment. The surveyed clients usually include a representative of the end-users (e.g. the school principal of a newly built school), and representatives from the client government (e.g. an Education and Manpower Bureau official).

We have carried out a total of 12 surveys in 2004. We have achieved an average of 80% rating, indicating clients are 'very satisfied' with our projects. All the feedback is reverted back to our Project Directors concerned for future improvements.

### Engaging International Associations

To keep ourselves abreast of international development in construction, we have been a member of the International Council for Research and innovation in Building and Construction (CIB) since 1994. It is an international network offering a cross-disciplinary platform for collaboration to improve the built environment. We also participate in their Working Commission W100 on Environmental Assessment of Buildings. CIB has established an "Agenda 21 for Sustainable Construction in Developing Countries", which placed it in the top rank of international organisations

addressing sustainability issues.

### Universal Accessibility

In the spirit of equal opportunities, we aim to facilitate universal access to buildings and open spaces for people with different abilities. To gauge our stakeholders' opinion, we carried out a comprehensive study on the issue of universal accessibility.

The study represents an example of how stakeholders help us become better designer. During our engagement process, we carried out a comprehensive user feedback survey of one public building and one open space project, met with user groups to review accessibility requirements and user needs, and interviewed occupational therapists and architect specialists to ascertain the feasibility of various designs.

We are honoured that our research document titled "Universal Accessibility - Best Practices and Guidelines" is awarded "Special Architectural Award - Architectural Research" at The Hong Kong Institute of Architects Annual Awards 2004. The Guidelines focus on access strategy, internal and external circulations, sanitary facilities, signage, way-finding, furniture, fittings, maintenance and review.

[back to top](#)

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[about the report](#)
[director's message](#)
[profile](#)
[vision and values](#)
[GRI content index](#)
[our priorities](#)
[Stakeholder Engagement](#)
[Green Supply Chain  
Management](#)
[Energy Use](#)
[sustainability in  
practice](#)
[economic  
performance](#)
[environmental  
performance](#)
[social performance](#)
[key statistics](#)
[the way forward](#)
[verification statement](#)

| [Sustainability in Government Tenders](#) | [Sustainable Procurement](#) |  
 | [Monitoring and Evaluation of Supply Chain](#) | [Green Contractor Award](#) |

## Green Supply Chain Management

We invite our working partners, such as our consultants and contractors, to tender for public works contracts. Our consultants include architects, landscape architects, buildings services engineers, structural engineers, building surveyors and quantity surveyors. Our contractors assist us in 31 categories of services including building, land piling, electrical and mechanical work etc.

The activities of our working partners have a high impact on the environment and our stakeholders. For every stage of a building's life-cycle - from the building's conception, design, construction, and maintenance to demolition, we strive to minimise the inconvenience caused to the affected neighbourhoods. Our responsibility stems from the fact that we have a controlling influence over their operations, because we hold our partners accountable through the tendering process and in monitoring and evaluating their performance to meet our high standard.

## Sustainability in Government Tenders

We encourage our project teams and consultants' designers to exploit the unique opportunity for each project to develop sustainable designs. We vet the blueprints against a list of



environmental design features incorporated in our tender conditions, which play a part in influencing the tender outcome. Our environmental design checklist looks at:

- Sustainable planning - Optimal use of natural resources (e.g. potential access to solar energy, seasonal sunpath, prevailing wind and rainfall); reduce land take impact; restore existing buildings;
- Ecological impact - preservation of existing key features, cultural heritage, local wildlife, trees and landscape; restoration of degraded habitat; erosion control measures; use of native species in landscaping design;
- Enhancement of the physical environment - landscaping to improve micro-climate e.g. roof/terrace/sky gardens, choice of ground surfaces;
- Energy conservation - integration of architectural design to enhance energy efficiency; building orientation; building envelope design (e.g. sunshades, glazing); overall thermal transfer value; renewable energy; energy efficient equipment; educational facilities to promote awareness of occupants (e.g. energy consumption display panel);
- Visual impact - compatibility with cultural and heritage values; compatibility with surrounding;
- Noise impact - noise attenuation through building envelope design, noise barriers, noise mitigation measures etc.
- Natural ventilation, good indoor air quality - specify materials/products with low volatile organic compound emission; air treatment and filtration;
- Illumination and visual access - maximise use of daylight, minimise light pollution, visual privacy from exterior.
- Water conservation - use of grey water; water saving fittings;
- Waste water discharge - special treatment before discharge; surface runoff reduction;
- Design waste management - space allocation for waste disposal, sorting and storage;

- Construction waste management - use of prefabrication system; re-usable formwork (e.g. metal, fibreglass); incorporate waste management considerations in design and construction stages;
- Material use & specification - materials with low embodied energy; use of timber from sustainable source; use of local materials; ease of materials for recovery/disassembly;
- Functionality - adaptability to changing tenant requirement; and
- Operations and maintenance - metering and monitoring of performance.

Submitting the lowest bid is not always a surefire way to win a contract. Once we take the externalities into account, such as the environmental pollution costs not reflected in financial transactions, the balance often tips in favour of more expensive designs, with greater potential for sustainable features. In assessing consultants' technical proposals, eco-design and innovative features take up about 5% of weighting.

### Sustainable Procurement

We follow the General Specification for Building (2003 Edition), which laid down a comprehensive list of procurement conditions. The conditions are mandatory, unless with approval from the architect. They also have a determining impact on the tender outcome. The 2003 edition was rewritten and updated with sustainability as the key objective. The main provisions are:

- Restriction of use of hardwood;
- Use of timber from certified sustainable forests;
- Use of low VOC paint;
- Use of recycled aggregate in concrete; and
- Use of environmentally friendly carpet.



EPD - approved biological sewage treatment plant was deployed and checked regularly



Regular noise assessment at a school neighbouring construction site



Waste paper was collected for recycling



Dust control during rock breaking using water sprinklers

### Monitoring and Evaluation of Supply Chain

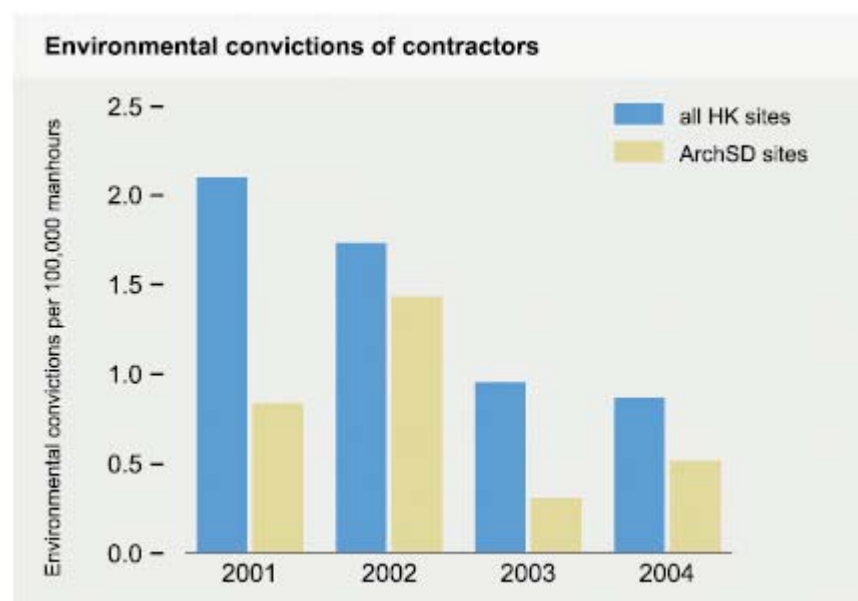
An important aspect of our supply chain management is monitoring and evaluation of our contractors and consultants who are subject to quarterly review once the tender is awarded.

Environmental pollution control is one of the determining criteria in the review, covering water, noise, air and waste pollution as well as compliance with the trip ticket system to control construction and demolition waste. A trip ticket system requires contractors to obtain a permit before they could dump

construction and demolition waste in designated landfills, and encourages waste sorting and recycling.

In the event of unsatisfactory performance, the consultants and contractors' performance reports will be taken into account affecting their chances of winning future contracts. Suppliers with serious non-compliance (i.e. two consecutive poor reviews) will be temporarily suspended from bidding future projects. Our contractor performance reports show that a majority of our contractors (over 90%) performed satisfactorily in 2004.

The level of environmental convictions of contractors on our Department's construction sites is consistently lower than that of the Hong Kong average. This is due to our efforts to raise the environmental standard of the supply chain in the tendering process, and our training to raise the contractors' environmental awareness.



## Green Contractor Award

The purpose of the award scheme is to encourage contractors to achieve a higher standard of environmental performance on construction sites. The award assessment goes beyond legislative and license requirements and looks at contractor endeavours in mitigating water, noise, air pollution; handling of chemical and dangerous goods, construction and demolition waste; as well as adoption of green management initiatives such as energy saving and recycling measures.

For 2004, we are happy to present the winners. They were:

Gold Award      Gammon Construction Limited

Project: Fire Station with Ambulance Depot and Police Post at Penny's Bay, Lantau



Fire Station before handover (Gold Award).



A view of the external area of the

building - the site was kept clean at all times

Silver Award Paul Y.- ITC General Contractors Limited  
  
Project: Two 36-Classroom Primary Schools at Eastern Harbour Crossing Site, Yau Tong



A model of the two Yau Tong schools (Silver Award)



Perimeter screen was provided higher than working level for better dust screening

Bronze Awards Shui On Construction Company Limited  
  
Project: Castle Peak Hospital Redevelopment Phase II Stage 2 at Tsing Chung Koon Road,



Tuen Mun

Completed hospital project (Bronze Award)



Matrix scaffolding was used to reduce the use of bamboo

Hip Hing Construction Company Limited

Project: Design and Construction of New Territories South Regional Police Headquarters and Operational Base at Tsuen Wan



Completed Tsuen Wan Police Headquarters building (Bronze Award)





Building under construction and the  
environment protected

[back to top](#)

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[about the report](#)
[director's message](#)
[profile](#)
[vision and values](#)
[GRI content index](#)
[our priorities](#)
[Stakeholder Engagement](#)
[Green Supply Chain  
Management](#)
[Energy Use](#)
[sustainability in  
practice](#)
[economic  
performance](#)
[environmental  
performance](#)
[social performance](#)
[key statistics](#)
[the way forward](#)
[verification statement](#)

| [Energy Conservation in Daily Operations](#) |  
 | [Design and Construct Energy Efficient Government Facilities](#) | [Renewable Energy](#) |

## Energy Use

Energy use is a main environmental aspect in the performance of buildings. At the Architectural Services Department, we set an exemplary example for the construction industry in minimising energy use in the buildings that we build.

Lighting and air-conditioning, which account for approximately 70% of total energy usage in commercial buildings, provide the most obvious area for savings. In our design, we continue to adopt the use of energy-efficient devices such as variable speed drive for motor equipment, high-efficiency chillers, heat recovery chillers, thermal wheel, cooling towers, energy-saving T5 fluorescent tubes and electronic ballast, motion sensors and photo cells to achieve our goal of energy conservation and efficiency. Altogether our investment in this regard amounted to \$119 million last year, against a total project sum in of \$8.2 billion.

### Energy Conservation in Daily Operations

We actively seek opportunities to enhance energy saving and conservation in our office areas, which consist of 10 storeys of the Queensway Government Offices, the APB Centre in Tokwawan and two leased commercial buildings in Wanchai and Kwun Tong. We have set up an energy audit team to assess the effectiveness of the green measures implemented, and identify more appropriate initiatives to save energy. Some of the progress we made in 2004 is listed below.



### Energy Conservation in Daily Operations

Objectives	Targets	Measurement	Achievement in 2004
Save energy for operation of lighting, office equipment & fan coil units in meeting rooms and office areas	Reduce electricity consumption by 20% after lighting retrofitting	Measured in terms of kWh and percentage reduction	Achieved
	Reduce electricity consumption (kWh/ m <sup>2</sup> ) by 3% at APB Centre compared to base year 2002	Measured in terms of kWh/m <sup>2</sup> and percentage reduction	Achieved. Consumption for 2004 was 241kWh/m <sup>2</sup> , a 8% reduction from base year

### Design and Construct Energy Efficient Government Facilities

Raising the bar of building energy efficient buildings, we have established a stringent overall thermal transfer value (OTTV) of not more than 23W/m<sup>2</sup>, compared to 30W/m<sup>2</sup> of the statutory requirement. OTTV is a yardstick used to measure how well a building is in terms of solar heat gain and thermal conductance. We also recommended a target of 18W/m<sup>2</sup> OTTV for building design in order to reduce the overall heat gain or loss from the building structure to the environment. Our long-term targets achievement in energy is listed below.

### Design Energy Efficient Government Facilities

Objectives	Targets	Measurement	Achievement in 2004
Energy	Achieve OTTV	Measured in	100% of projects

conservation	of not more than 23W/ m <sup>2</sup> for 92% of all new projects with air-conditioning, and not more than 18W/ m <sup>2</sup> OTTV for 30% of projects	terms of number and percentage of projects.	achieved OTTV less than 23W/ m <sup>2</sup> , 70% of projects with less than 18W/ m <sup>2</sup>
Improve energy efficiency of new installations	Use water-cooled heat rejection system for central air-conditioning in not less than 70% of new projects	Measured in terms of number of projects	77.8% (7 out of 9 projects) used the system
	Use occupancy sensor for air-conditioning and lighting in not less than 80% of new projects	Measured in terms of number of projects	93.8% (15 out of 16 projects) used occupancy sensors
	In not less than 70% of new projects, the efficiency of driving motors for lift and escalator should not be less than the benchmark 85%	Measured in terms of number of projects	93.3% (14 out of 15 projects) met the benchmark
Use energy saving lighting fittings in maintenance	Achieve at least 20% energy efficiency	Measured in terms of kWh and percentage reduction	Improvement in energy efficiency is 23.14%

and refurbishment projects			
----------------------------------	--	--	--

According to our estimation, the annual savings in electricity cost and CO<sub>2</sub> emissions avoided in completed projects due to the application of energy saving initiatives are shown below. The normalised ratio (showing CO<sub>2</sub> avoided per unit of contract value) demonstrates that our emission has been largely constant since 2002.

#### Savings due to Energy Efficient Initiatives

Year	Avoided CO <sub>2</sub> Emissions in ,000 Tonnes	Saving in HK\$ in million	Contract Value (\$ billion)	CO <sub>2</sub> Normalised Ratio (by Contract Value) [1]
2002	48	85	5.40	8.89
2003	62	108	7.00	8.86
2004	68	119	8.20	8.29

Note: The CO<sub>2</sub> conversion used is 1MWh = 0.57297 tonne (from China Light & Power)

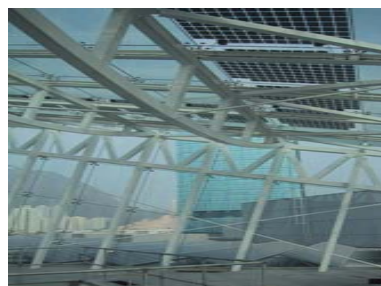
Note: The CO<sub>2</sub> figures for year 2000 - 2003 are restated to conform to the recently-available CLP factor used for 2004.

<sup>1</sup>The normalised ratio is calculated by this formulae: Avoided carbon emissions/Contract Value x 10<sup>6</sup>

#### Renewable Energy

The use of renewable energy, particularly solar panels, is becoming a feature of many of our buildings. As the normalised ratio in the table below

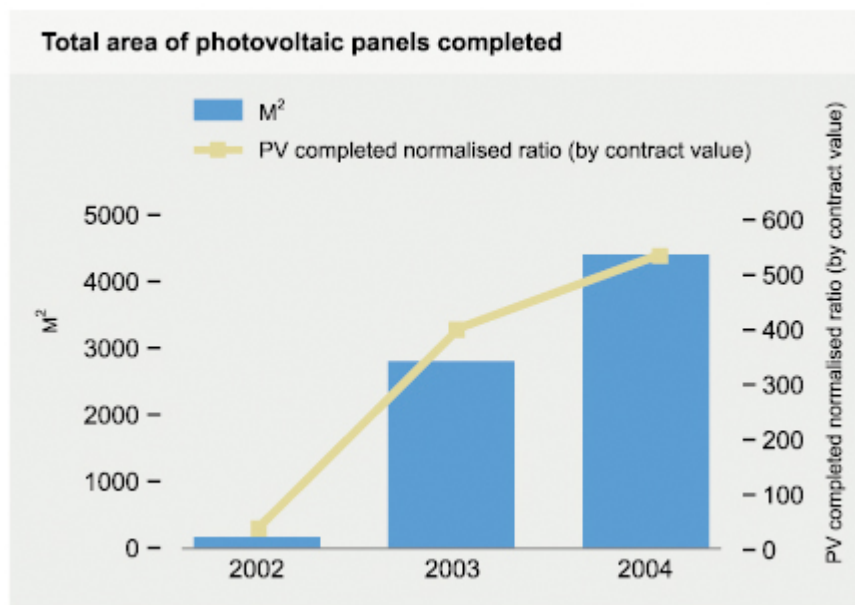
testifies (which shows changes in PV use per unit of contract value), we have completed considerably more PV panels over the years. This is consistent with the Government's first sustainable development strategy, which aims to generate one to two percent of Hong Kong's electricity supply by renewable energy by 2012.



Building-integrated PV & PV Panels at EMSD Headquarter



PV panels at EMSD Headquarter roof top



Note: Since 2002, the method of compiling PV figure has been revised to

reporting PV panels completed, as opposed to reporting PV panels under design or construction in previous reports.

[back to top](#)

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- [about the report](#)
- [director's message](#)
- [profile](#)
- [vision and values](#)
- [GRI content index](#)
- [our priorities](#)
- [sustainability in practice](#)
- [Case study 1](#)
- [Case study 2](#)
- [Case study 3](#)
- [Case study 4](#)
- [economic performance](#)
- [environmental performance](#)
- [social performance](#)
- [key statistics](#)
- [the way forward](#)
- [verification statement](#)

| Open Space in Mouse Island, Tuen Mun | Police Dog Unit and Force Search Unit, Sha Ling |  
 | Margaret Trench Red Cross School, Ngau Chi Wan |

## Sustainability in Practice - Case Studies



### Case study 1 New Electrical and Mechanical Services Department Headquarters

The project involves the conversion of the former Hong Kong Air Cargo Terminal 2 building to house the new EMSD Headquarters and Depot, which saves a large amount of energy and building materials in the construction of an otherwise new building. The design theme evolves around the sustainable use of energy and space. The inauguration of the building has attracted much media interest, focusing on the \$16 million investment on the photovoltaic (PV) roof. It won the Hong Kong Institute of Architects Merit Award 2004.

Special features include:



### **Architectural Design**

- Sustainable architecture, which focuses on the sustainable use of energy and space, is the design theme of the building. The existing external walls of the main elevations are converted into environmental facades, with ventilated double-layered curtain walls for the office floors (6/F & 7/F) and metal sun shades for the workshop floors (G/F to 5/F). An aluminium arch frame and perforated panels over the new Entrance Hall unify the different elements of the 190m long main facade. The new Viewing Gallery on the roof is designed as a glass crystal on top of the new cantilevered metal roof. Together with the new skylights, sunpipes and roof gardens, natural light is brought into the heart of a deep-plan building. The new Entrance Hall and Library on G/F is glazed with full storey-height clear and low-iron translucent white glass respectively. Linear pattern of various materials is adopted as a theme in both the external and internal finishes of the building. Bright colours and supergraphics are used in the interior spaces to enliven the overall environment. Informal social hubs for staff are provided at various appropriate areas for staff interaction and relaxation.

### **Renewable Energy**

- The project boasts to have the biggest PV rooftop, generating electricity to supplement the power input for the air-conditioning system. The 2,300 PV panels have a generating capacity of 350 kW, sufficient for consumption by 90 families for a year. Solar energy constitutes three to four percent of the Headquarters' energy consumption. Apart from producing electricity, the system will achieve a reduction of CO<sub>2</sub> emissions, amounting to 210 to 280 tonnes per annum. All panels face south and inclined at 22 degrees to the ground to achieve maximum operating efficiency and ease of maintenance.

### **Energy Conservation and Efficiency**

- Ventilated double layered curtain walls, deep canopies and sun shades to control solar gain;
- Motion and daylight sensors to control artificial lighting;
- Ammonia chillers of zero GWP - The global warming potential (GWP i.e. the relative effect of a greenhouse gas on global warming) of common refrigerants is 1,250, but the GWP for ammonia is zero. Moreover, the use of ammonia reduces the damage to the ozone layer significantly. The coefficient of performance for cooling of ammonia is higher than that of common refrigerants, therefore ammonia chillers are both environmentally friendly and highly energy efficient; and
- The use of ice storage system enables the air-conditioning chillers to run at their highest energy efficiency point. The installed capacity of the air-conditioning plant will be reduced by operating them during the off-peak period. This ice storage system produces slurry ice during off-peak period and melts them in the peak period of electricity demand, making it possible to reduce electricity use, as well as the capacity of generators and transformers.

#### **Others**

- Grey water recycling for toilet flushing;
- Green roof gardens provide thermal insulation, a pleasant environment and social hubs for the staff; and
- An education path built to introduce to the public the renewable energy features of the building.



## Case study 2

### Open space in Mouse Island, Tuen Mun

The design of the open space at Mouse Island, formerly a fishing village and an island before reclamation, preserves the existing vegetation and hill, and recreate the local landmarks - a Chinese junk and a lighthouse. The design integrates the existing vegetation and topography with recreational facilities. At each step of the design process, consideration was given to the appropriate location of the existing and the added, and between both the visual and the functional features. Recreational facilities are therefore strategically located on flat land surrounding the hill, leaving the natural vegetation largely undisturbed.

Of particular interest in this project is the innovative use of recycled waste as the building blocks of the park, setting the standard of lifecycle design in the future. It won a certificate of merit in Sustainable Design Award 2004, an annual award we give to outstanding projects.

#### Special Features Include:

- Used scrap tires, plastic wastes and recycled concrete aggregates in large quantities with wide application ranging from the building of shelters, corridor, junk body and walkway, to boundary fencing, playground equipment and safety matting;

- Used recycled plastic which is composite of non-toxic substances such as PP, PE and PET; yet it is more durable than wood, resistant to crack, rotting and is insect proof; has high flexibility in forming desired shapes and curves in different colours;
- A total of 180 tonnes of plastic wastes (equivalent to 5.15 millions of 500ml plastic bottles) and 60 tonnes of scrap tires (equivalent to 6,000 tires) were consumed and saved from landfill; and
- Products can be recycled again at end of life.



### Case study 3

#### Police Dog Unit and Force Search Unit, Sha Ling

The low-rise buildings blend in with the site's topography, assimilating into the contours of the landscape, which acts as sun shades and sound insulator. It is particularly worth mentioning the integration of the social aspects of this sustainable design by respecting the end-users' needs (i.e. the police trainers and the dogs) and provision of a comfortable environment with the least disturbance to neighbours. It won a certificate of merit in Sustainable Design Award 2004, organised by the Architectural Services Department.

The Project comprises a two-storey administration and veterinary block,

five dog kennel blocks, internal and external training areas, and a three-storey training and barrack block. Special features include:

#### **Sustainable Planning**

- Vegetation used as visual and noise barrier at dog kennels;
- Disturbance to topographical contours was kept to the minimum, and the buildings are set back from the access road to reduce their visual impact to the existing one-storey village houses nearby; and
- Colour and texture of external wall, roof and floor finishes match the natural surrounding.

**Material Selection** - Pre-cast, prefabricated and reused materials are used to reduce construction work and hence construction waste on site:

- Pre-cast concrete units form the underground rescue tunnel for Force Search Unit;
- Fibre glass-reinforced plastic mesh panels form the tracks of the dog exercise pen;
- Steel structure and aluminium roof panels at dog kennel blocks;
- Prefabricated air duct for air-conditioning system; and
- Water pipes from Water Services Department reused as tunnels for dogs' training.

#### **Water Saving Devices**

- Electronic valve control flushing for urinals.

#### **Energy Conservation and Renewable Energy**

- Centralised chilled water plant for air-conditioning can save 20% running cost compared with individual units;

- Heat pump and heat reclaimed from air via total energy heat wheel saves over 15% of running cost;
- A total of 20 photovoltaic panels of 1.2m x 1.2m in size are installed as skylight at Block 3 dog kennel generates around 2kW electricity for pre-heating the hot water;
- Photovoltaic panels also block a portion of direct sunlight into the dog kennel, hence reduce the air-conditioning capacity indirectly; and
- Use of photo and occupancy sensor to control lighting and air-conditioning usage in unoccupied office/lobby.

#### **Indoor Air Quality**

- UV filter, bio-oxygen generator, and efficient filters are provided for air treatment.

#### **Operation and Maintenance**

- Exhaust louvres with silencer are located at rear part of the building;
- Organic fertiliser and organic pesticides are used, and organic waste from the lawn is recycled and reused.



#### **Case study 4** **Margaret Trench Red Cross School, Ngau Chi Wan**

The school is an integrated primary and secondary school specifically designed for the physically-handicapped students, serving approximately 100 students.

The project demonstrates our close collaboration with our stakeholders. The end-users of the facility are physically-handicapped students. We worked with the Education and Manpower Bureau and the School Board to achieve a user-friendly design. For convenience of access, classrooms and learning facilities are located on the ground and first floor. Common areas such as staircases and corridors are installed with ramps and handrails for access by wheelchair users. Extra-large elevators can carry three wheelchair users and three additional persons. Push buttons are incorporated to allow automatic opening and closing of doors.

We are happy that the project gained recognition in the profession. The school has been awarded the Special Architectural Award of Accessibility at Hong Kong Institute of Architects Annual Awards 2004, and a certificate of merit at Sustainable Design Award 2004, organised by the Architectural Services Department.

Some special features include:

#### **Maximise Existing Site Potential**

- Deposition of building blocks to maximise daylight and prevailing wind throughout the year;
- Visual corridor along east-west axis;
- Circular block at west enjoy open view; and
- Use of methane gas protection layer to allow development on landfill site

#### **Harmony with Surrounding Environment**

- Low-rise development to match surrounding landscape;
- Building services at roof concealed by semi-transparent roof to merge with surrounding slopes.

#### **Use of Material & Equipment**

- Use of CFC-free refrigerant, energy efficient lamp and daylight sensor to save energy; and
- All system to reclaim waste energy from exhaust air

#### **Reduction of Construction Waste**

- Use of prefabricated material such as metal roof, sunscreen and air duct; and
- Modular design to reduce waste.

[back to top](#)















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[about the report](#)
[director's message](#)
[profile](#)
[vision and values](#)
[GRI content index](#)
[our priorities](#)
[sustainability in practice](#)
[economic performance](#)
[environmental performance](#)
[social performance](#)
[key statistics](#)
[the way forward](#)
[verification statement](#)
[Sustainability Criteria for Financial Commitments](#) | [Long-term Targets Achievement](#) |

## Economic Performance

### Our Role in the Economy

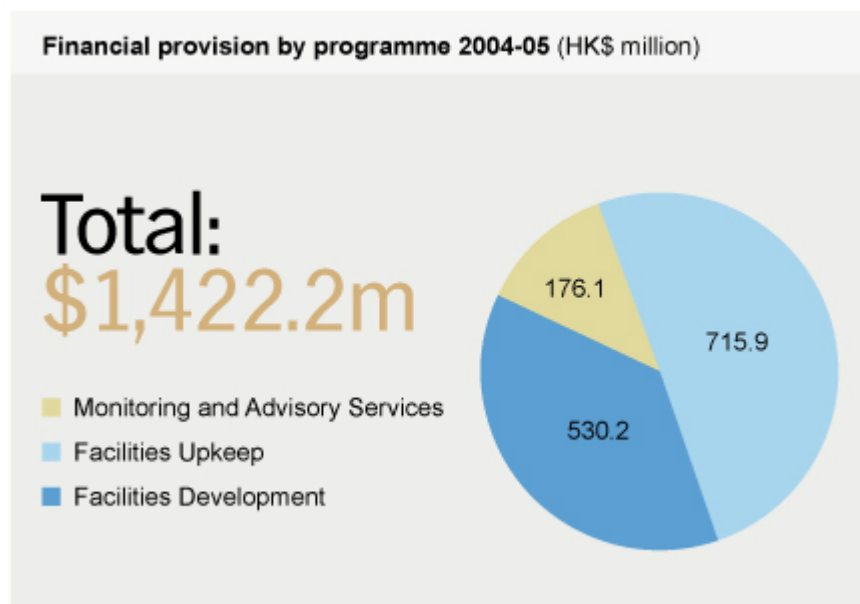
The economic dimension of our sustainability concerns our role as a responsible government department in the use of public fund and in the context of the Hong Kong economy, especially under the fiscal deficit. We have made concerted efforts to reduce expenditure. In 2004/05, we successfully reduced the expenditure to HK\$1422.2 million, down 2.1% from the previous financial year. The expenditure breakdown and financial provision listed below show details of the flow of public funds, government building projects and advisory services. Comprehensive coverage of our economic performance is included in our Controlling Officer Report which is available from the Estimates in the Government of the Hong Kong Special Administrative Region website at [www.budget.gov.hk](http://www.budget.gov.hk).

### Departmental Expenditure 2004-2005

	2004-2005 Revised (\$ million)
Personal salaries and allowances	872.64
Personnel related expenses	0.81
Departmental expenses	68.69
Other charges	480.06
Total	1422.2

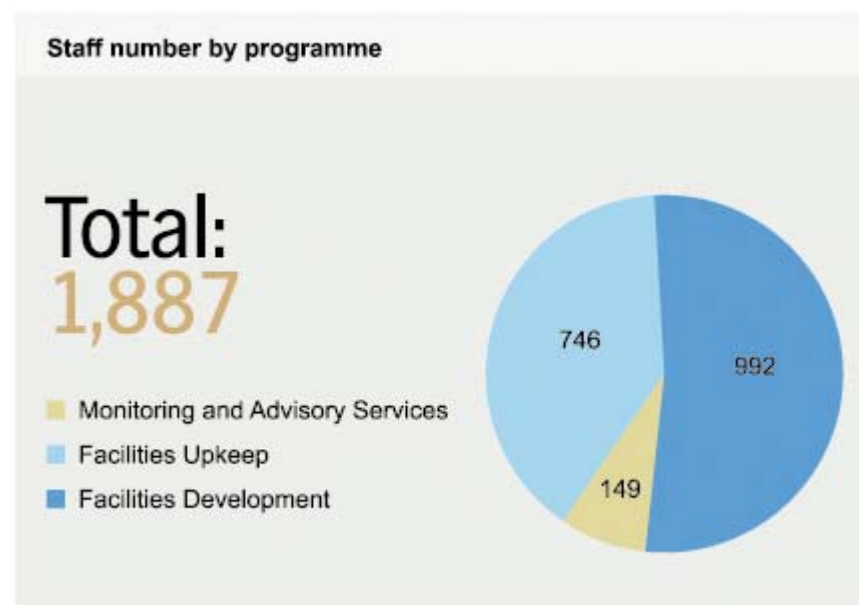


Financial Provision by Programme 2004-05 (HK\$ million)



Staff Number by Programme





Our male to female staff ratio is 1:0.3 as at end of 2004.

#### Changes in Staff Size of Department

	No. of Staff as at March 31 each year
2003	2037
2004	1981
2005	1887

#### Sustainability Criteria for Financial Commitments

In our legislative filings for public money, we seek to demonstrate the sustainability criteria in our financial commitments to the Legislative Council. These criteria include the possible provision of public consultation before commencement of public works, community issues, and

environmental implications such as the implementation of a waste management plan for construction and demolition waste, mitigating measures in the event of environmental impacts, as well as the potential for job creation.

For the year 2004, we have issued a total of 21 consultancies and created 43 consultancy positions. The actual expenditure on building projects undertaken or monitored by the department was \$12.99 billion, with a further expenditure of \$2.42 billion on routine maintenance and minor alteration works.

### Long-term Targets Achievement

#### Long-term Targets Achievement - Economic Dimension

Objectives	Targets	Measurement	Achievement in 2004
Improve quality of project delivery	Ensure timely delivery of at least 80% of capital works projects	Measured in terms of % of projects that have been completed on schedule	95.5% (42 out of 44 projects) of capital works projects completed on time.
	Ensure the expenditure on Public Works Programme (PWP) does not exceed 5% underspending and 10% overspending of the corresponding provisions in the Printed Estimates.	Measured if the prescribed % of under-spending or over-spending is met	Achieved. Actual cumulative expenditure for PWP met the target.
	Achieve Satisfied level	Measured in terms of % of	100% (12 out of 12) projects

	or above on the overall performance in Client Satisfaction Survey for 90% of completed projects	projects	achieved Satisfied Level
	Harness the resources of the private sector through outsourcing of public projects	Measured in terms of % value of capital works outsourced to private sector	62.4% value of capital works outsourced, compared with 59% last year

[back to top](#)

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[about the report](#)[director's message](#)[profile](#)[vision and values](#)[GRI content index](#)[our priorities](#)[sustainability in practice](#)[economic performance](#)[environmental performance](#)[social performance](#)[key statistics](#)[the way forward](#)[verification statement](#)

| [Environmental Assessment of Buildings](#) | [Environmental Awareness Promotion](#) |  
 | [Resource for Environmental Protection](#) | [Long-term Targets Achievement](#) |

## Environmental Performance

### [Energy Use](#)

### [Greening Our Supply Chain](#)

### Construction & Demolition Waste

The reduction of C&D waste continues to be a key concern of the Department. The requirements for "waste management plan" and the implementation of the trip-ticket system are specified in the contract documents and site works are closely monitored by our supervisory staff. In the design stage, we specify the use of system formwork, steel formwork and prefabrication to minimise C&D waste generation.

Through the trip-ticket system, in which C&D waste cannot be dumped at



Cover is provided to dump truck before leaving the site, after checking of trip ticket



designated fill sites without proper record, it enables better monitoring against illegal dumping. The outcome: Zero cases of unauthorised dumping involving our Department's projects in 2004, compared to two cases reported in 2003.



Waste paper is collected and delivered to recycler



Systematic sorting for re-use or recycling of construction materials

### Environmental Assessment of Buildings

We promote holistic environmental design and conduct environmental assessment of our buildings to ensure we adhere to recognised standards. One of the tools we used is the scheme by the Hong Kong Building Environmental Assessment Method (HK-BEAM) which promotes environmentally friendly design, construction and management for buildings.

In 2004, ten of our projects were assessed. Eight were given an "Excellent" rating, the highest available, and two were given a "Very Good" rating. Our buildings rated "Excellent" are listed below.

## ArchSD Buildings with HK BEAM Excellent Rating

Project/ Building	Type of HK- BEAM Assessment	Project Completion Date	Remarks
Cheung Sha Wan Government Offices	Existing Office	18 Oct 1999	Excellent
Shatin Government Offices	New Office	16 Dec 2001	Excellent
Science Park - Building 6	New Office	30 Jun 2004	Excellent
Science Park - Building 7 and 8	New Office	22 Apr 2004	Excellent
Science Park - Building 9	New Office	31 Jul 2004	Excellent
Science Park - Building 5	New Office	26 Mar 04	Excellent
Science Park - Building 4a and 4b	New Office	26 Mar 04	Excellent
Wan Chai Police Headquarters, Phase III	New Office	30 Apr 2004	Excellent

## Environmental Awareness Promotion

We engage with our working partners, other government departments and the general public to raise their environmental awareness. Our activities in 2004 include:

- Experience sharing - Two government seminars on "Mosquito Control on Construction Sites" and "Managing Site Safety & Environmental Protection" attended by 570 people; and a presentation at the Hong

Kong Institution of Engineers Seminar on "Enhancement of Housekeeping in Building Sites"

- Preparation and completion of 20 papers in 2004 for local, regional and international events related to sustainable development. A selected list is in the table below.



A site meeting with contractor reporting on safety and environmental matters



Regular safety briefing to workers on site



A contractor's team won five awards on Construction Safety Day (9 December 2004)



Environmental bulletin board for contractor's site staff

List of Papers Completed in 2004

Paper Topic	Presented in Conference/ Seminar/	Date of Submissions

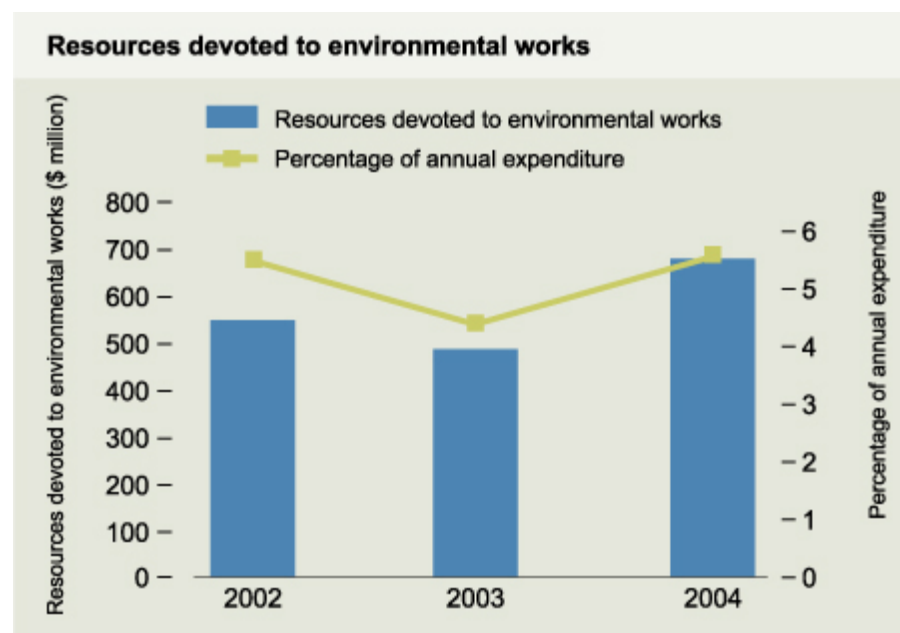
	<b>Workshops</b>	
Sustainable Consideration in the Design of Slope Works	2004 Hong Kong Institution of Engineers "Recent Advances in Geotechnical Engineering in Hong Kong" (14 May 2004)	May 2004
General Development and Implementation of Sustainable Building Design in ArchSD	1 <sup>st</sup> Hong Kong-Shanghai Symposium for Sustainable Building in Shanghai (21 to 22 May 2004)	May 2004
The key to enterprise management - Towards sustainability reporting	Year 2004 Conference on Development of Construction, Real Estate and Professional Services in Dalian(16 to 17 Aug 2004)	June 2004
A sustainable design solution of building services installations for public health laboratory centre	Chartered Institution of Building Services Engineers Hong Kong Branch 25 <sup>th</sup> Anniversary Proceedings	September 2004
Conservation of Architectural Heritage: the Macau and Hong Kong Experience	11 <sup>th</sup> Asian Congress of Architects in Macau (30 Nov 2004)	Published November 2004

#### Resources for Environmental Protection



A considerable portion of our project expenditure is devoted to environmental protection. For environmental accounting purposes, we define work in the following areas as environmental costs: Air and water pollution control, noise mitigation measures, waste water treatment and disposal, asbestos abatement works, environmental review and impact assessment for projects, resources spent for environment-related works, maintenance of environmental management system in accordance with ISO14001 and housekeeping activities. We strive to provide the public with a sustainable built environment and will continue to invest steadily in environmentally sound solutions for our projects.

#### Resources devoted to environmental works (2002-04)



#### Resources devoted to environmental works (2004)

---

Activities	Value (\$ million)
Air and water pollution control, noise mitigation measures, waste water treatment and disposal, and asbestos abatement works	443.2
Environmental review and impact assessment for projects	0.7
Resources spent for environmental related works	225.9
Maintaining an Environmental Management System in accordance with ISO14001 and housekeeping activities	5.5
TOTAL	675.3

#### Long-term Targets Achievement

#### Long-Term Targets Achievement - Environmental Dimension

Objectives	Targets	Measurement	Achievement in 2004
Water conservation	Install water-saving devices in 40% of sanitary appliances in new buildings	Measured in terms of no. and % of fittings with water-saving devices	2612 out of 4266 (61.2%) of sanitary fittings with water saving devices
Improve indoor air quality	Use low VOC paint for internal office and habitable areas in new projects	Measured in terms of no. and % of projects	15 out of 15 (100%)
Improve air quality of the city	Use ultra low sulphur content light	Measured in terms of no. of projects	6 out of 6 (100%)

	diesel fuel for emergency generator in not less than 40% of new projects		
Promote use of recycled materials	Use recycled structural materials such as recycled aggregates	Measured in terms of quantity of concrete using recycled material per \$ million in contract value	3.1m <sup>3</sup> /\$m concrete and 0.35m <sup>3</sup> /\$m hardcore used recycled aggregate
	Increase percentage of purchased recycled A3 & A4 paper to 20% of total purchased paper	Measured in terms of % purchased recycled A3 & A4 paper compared with total purchased paper	22.2% of the total purchased paper is recycled.
Promote environmental awareness	Organise/ participate in functions to publicise our environmental achievements	Measured in terms of no. of functions	34 functions



Shelter was provided during dusty operation



Spraying of insecticide - a pest control measure



Clearing site office drainage system - an anti-mosquito measure



Dust control with water during breaking of demolished concrete panel

[back to top](#)

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[繁體](#)
[簡體](#)
[English](#)
[Contact us](#)
[Feedback](#)
[Sitemap](#)
[about the report](#)
[director's message](#)
[profile](#)
[vision and values](#)
[GRI content index](#)
[our priorities](#)
[sustainability in  
practice](#)
[economic  
performance](#)
[environmental  
performance](#)
[social performance](#)
[key statistics](#)
[the way forward](#)
[verification statement](#)

[Occupational Health and Safety](#) | [Employee Training](#) | [Mosquito Control](#) | [Community Work](#) | [Social Achievements](#) | [Considerate Contractors Site Award Scheme 2004](#) | [Quality Building Award 2004](#) | [Safe Driving Award 2004](#) | [Best Developer Award](#) | [Indoor Air Quality](#) | [Long-term Targets Achievement](#) |

## Social Performance

### [Stakeholder Engagement](#)

### [Construction Site Safety](#)

As a department engaged in construction activities with an extensive network of contractors, site safety is one of our prime concerns. We promote site safety awareness by conducting in-house safety workshops for contractors, consultants and site supervisory staff. Seven workshops were organised in 2004 with an attendance of 390 people.

Our efforts are rewarded by a site safety record consistently lower than that of the whole Hong Kong Construction Industry (HKCI) in non-fatal and fatal accident rate, and are recognised by winning two awards in the Considerate Contractors Site Award Scheme 2004, organised by the Environment, Transport and Works Bureau. We are determined to keep up the good work and strengthen control on site safety.

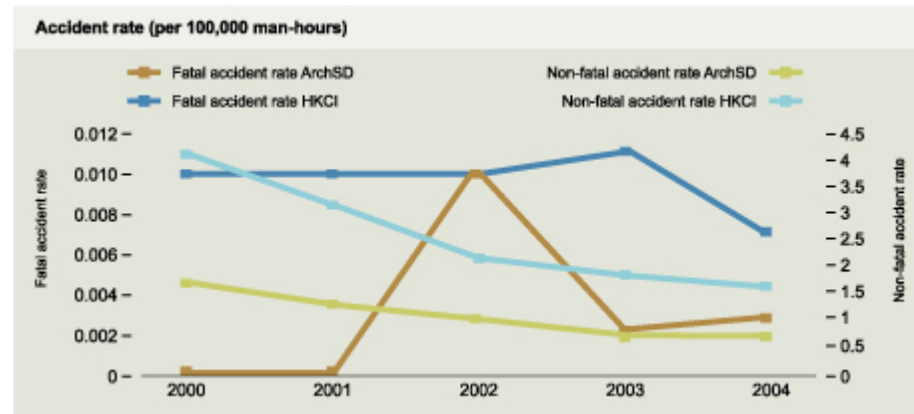




Safety promotional posters are displayed at site entrance



A safe working stool for fabricating steel cage



### Occupational Health & Safety

As a responsible employer, we have the obligation to provide a safe and health environment for our employees, people working for us and people who may be affected by our work, and comply with the relevant legislations.

To raise our awareness and knowledge in this area, we arranged our staff to attend various courses by the Occupational Safety and Health Council (OSHC) and the Construction Industry Training Authority (CITA) on occupational safety and health. We also participated in workshops and seminars provided by OSHC, CITA and the Labour Department. Altogether 976 attendants registered at these events.



A morning gathering of workers - exercise and safety briefing

As part of our restructuring to establish the integrated management system, we are in the process of implementing the requirements of OHSAS 18001 (Occupational Health and Safety Assessment Series). This will bring us in line with internationally recognised standard in occupational health and safety.



A fire and chemical spill drill for the site workers



A site assembly to promote safety and environmental awareness



Automatic water spraying system for dust control



A site with excavation commenced



A contractor's site meeting briefing workers on the use of chemicals

### Employee Training

As a responsible employer, we have provided trainings to the appropriate staff. In 2004, 1293 attendees from different staff levels were sent to a total of 237 courses.

#### Total Training Hours per Employee Category (2004)

Employee Category	Number of Attendees	Total Number of Training Hours
Directorate	30	900
Professional	629	5156
Site Staff	506	1488
Technical Grade	103	492
General Grade	25	148

### Mosquito Control

We were concerned with the issue of mosquito breeding in 2004, especially the aedes



albopictus mosquitoes, responsible for carrying diseases like dengue fever. To address this, we implemented four strategies to control mosquito breeding on our sites. These include preparing the sample tool-box talks on dengue fever to educate the workers via the contractors, conducting weekly independent audit on sites, arranging a checklist as a reference in our intranet to combat mosquito breeding on site, and providing updated information to alert our project staff.

Our audit checklist includes:

- Display of posters regarding anti-mosquito breeding;
- Control of stagnant water;
- Condition of wet areas (eg cleanliness and hygienic of toilets, washing facilities and shower rooms);
- General cleanliness and tidiness of site/office/public area (eg free from littering; no unused equipment and temporary works lying around; no over-accumulation of waste; designated containers for



Clearing site drainage system to ensure free flow of water - an anti-mosquito measure



Daily cleaning of covered walkway surrounding the site



Expansion foam was applied to bamboo nodes to prevent accumulation of stagnant water

- collection of refuse; office accommodation with air-conditioning and free from mosquito bite);
- Storage of construction materials; and
- Provision of facilities (eg enough rubbish bins and collection container; mosquito killing device and insect repellent, etc).

### Community Work

As a token of our support to society, our voluntary service team has offered services of different nature to the community. Our team of volunteers have helped the elderly in beautifying their homes through minor repairs and interior renovation of public housing units. The elderly deeply appreciated our hard work. Our other activities also include organising a birthday party for the disabled, a series of housewarming visits to elderly homes and rehabilitation centres, festival parties for the disabled, and giving Cantonese opera singing performances.

Apart from giving blood donations, our staff are eager participants in various fundraising activities such as Community Chest Skip Lunch Day and Dress Casual Day, TrailWalker and the Standard



Walkathon on the Peak



Hong Kong Marathon

Chartered Hong Kong Marathon 2004.  
The Architectural Services Department  
and our colleagues have raised a total of  
\$103,180 in 2004. In addition, the  
Department collected \$138,035  
donations for the relief of tsunami victims  
in southern Asia.



ArchSD Volunteer Service Team  
received souvenirs from Fong Shu  
Chuen Day Care Centre



ArchSD Volunteer Service Team  
and student helpers after  
renovation work for an elderly  
home



Birthday party for the disabled at  
Aberdeen Rehabilitation Centre at  
Tung Wah Group of Hospitals



Carnival talent show



A house warming visit to the elderly centre



Blood donation

### Community Work

<b>Community work</b>	
Total no. of voluntary work hours carried out by our staff	1360 hours
No. of staff participated in voluntary service	41 out of 1887 total no. of staff
No. of staff received CE' s commendation for voluntary service	1
No. of staff participated in blood donation activities organised by Red Cross	More than 100

### Social Achievements

#### Community Work Award

Our colleagues have always been active in helping the community outside of work and receive a number of appreciations in 2004. In December 2004, the Social Welfare Department granted a Gold Award for Voluntary Service to our volunteer service team in appreciation of their contribution

of 1360 hours of voluntary service to the community in 2004. In July, our colleague Leung Kam-wa, an active Civil Aid Service volunteer, was awarded the Chief Executive's Commendation for Community Service. In September, welfare organisation Fong Shu Chuen Day Care Centre presented our voluntary service team with a souvenir to mark our contributions. The Hong Kong Red Cross and the Community Chest also presented us with certificates of appreciation in recognition of our donations.

#### [Considerate Contractors Site Award Scheme 2004](#)

The Scheme is organised annually by the Environment, Transport and Works Bureau. In 2004, three of our public works projects won the Considerate Contractors Site Awards. Participants were judged on their site management performance, environmental consciousness, safety, and consideration to neighbourhood and passers-by. In addition, two of our projects won Merit Certificates on Outstanding Waste Management Performance. This category looked at innovativeness and effectiveness of our waste management strategies.

#### [Quality Building Award 2004](#)

An encouraging recognition for our work comes in the form of the Quality Building Award 2004. The Public Health Laboratory Centre and the Sai Ying Pun Community Centre won two Certificates of Merit in the competition. The mission of the Award is to give public recognition to building projects that are constructed under collaborative team spirit over the past two years.

#### [Safe Driving Award 2004](#)

Four of our outstanding motor drivers won the Safe Driving Award 2004. The Award was organised by the Government Logistics Department. To be qualified for the 2004 Award, any one of the 2500 motor drivers, special drivers and chauffeurs in the Civil Service should have good

service records and be free of any blame-worthy accident in the last 10 years. Congratulations to them indeed!

### Best Developer Award

We are pleased that our endeavour in providing the best to our stakeholders is rewarded with recognition. We are happy to announce that we won the Best Developer Award on the Construction Safety Day, which is a territory-wide event jointly organised by 14 organisations, including the Occupational Health and Safety Council, Labour Department, Environment, Transport and Works Bureau, Hong Kong Housing Authority, Buildings Department, the Provisional Construction Industry Co-ordination Board and other trade associations. The award was a due recognition of our efforts in bringing about effective and useful management systems and practical procedures to enforce the health and safety practices at work sites. All these efforts pay off as we are recognised by the organisations as well as our partners at work.

### Indoor Air Quality

Caring for the health and well-being of the occupants in our buildings is part and parcel of our social responsibilities. We seek to achieve good indoor air quality by:

- segregating contaminated area from clean area through innovative architectural design;
- selecting low VOC emission building materials;
- providing adequate fresh air and ventilation for air exchange;
- allowing sufficient time for treated air to dilute contaminants in buildings before occupation;
- eliminating contaminants such as bacteria, fungi, particulates by filtration;
- eliminating microbiological contaminants by micro-organism suppression devices; and
- eliminating odour by absorption or oxidation, such as chemical

water scrubber, bio-oxygen generator.

We have further invested in the pursuit of satisfactory indoor air quality by procuring more IAQ measuring instruments. In 2004, upon the request of the client, we have issued three "Good Class" IAQ Certificates. Besides this, we require our contractors to conduct IAQ measurements to verify the effectiveness of the mechanical ventilation and air-conditioning installations in controlling indoor air quality.

### Long-term Targets Achievement

#### Long-Term Targets Achievement - Social Dimension

Objectives	Targets	Measurement	Achievement in 2004
Improve occupational health & safety	Reduce site accident rate to less than 36 accidents per 1000 workers per year in ArchSD sites	Measured in terms of accident per 1,000 workers	23 accidents per 1,000 workers
	Organise training for staff	Measured in terms of no. of training	7 in-house trainings, 3 open presentations and external workshops attended with 976 staff attendants
	Organise training for contractors/subcontractors	Measured in terms of no. of training	3 workshops arranged, attended by 214 contractors staff
Promote staff learning	Implement e-learning	Measured by no. of e-learning programmes/packages	2 meetings organised. 3 packages uploaded.

		uploaded to intranet	
Manage staff turnover	Ensure strength of the department is maintained at a level of at least 95% of its establishment	Measured in terms of fillable vacancies over establishment of the department	1.84%

[back to top](#)

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[繁體](#)   [簡體](#)   [English](#)  
[Contact us](#)   [Feedback](#)   [Sitemap](#)

- [about the report](#)
- [director's message](#)
- [profile](#)
- [vision and values](#)
- [GRI content index](#)
- [our priorities](#)
- [sustainability in practice](#)
- [economic performance](#)
- [environmental performance](#)
- [social performance](#)
- [key statistics](#)
- [the way forward](#)
- [verification statement](#)

## Key Statistics

Energy	Units	2004	2003	2002
Electricity consumed (QGO and APB Centre) [1]	kWh/m <sup>2</sup>	277.5	285.6	291.3
CO <sub>2</sub> equivalent to electricity consumption (QGO and APB Centre)	Tonnes	3655	3762	3810
Building with OTTV less than 23W/m <sup>2</sup>	% of total no. of projects	100% of 10	100% of 14	97% of 30
Building with OTTV less than 18W/m <sup>2</sup>	% of total no. of projects	70% of 10	36% of 14	63% of 30
Energy saved due to energy efficient installations	GWh	119	108	85
Equivalent monetary savings	HK\$ million	119	108	85

Non-ozone Depleting Substances	Units	2004	2003	2002
Refrigerants installed	No. of application	47	34	34
Fire extinguishing agents	No. of application	8	9	6

<b>Office Materials</b>	<b>Units</b>	<b>2004</b>	<b>2003</b>	<b>2002</b>
A4/A3-size paper with 100% recycled content	Reams/% of total paper purchased	5753/21.3%	700/2.8%	1320/3.7% [2]
Types of Eco-friendly office suppliers	Types	18	17	17
<b>Construction &amp; Demolition Waste</b>				
C&D waste disposed of to landfills	tonnes	183794	107126	42100
C&D materials disposed of to public fill areas	m <sup>3</sup>	493455	474357	642704
<b>Recyclable Waste Collected at APB Centre</b>				
Waste Paper	kg	6859	5600	5950
Aluminium Cans	No.	546	1248	Not Available
Plastic Bottles	No.	629	1113	Not Available
<b>Timber &amp; Water Use</b>				
Timber Saving	Volume of Timber Saved in m <sup>3</sup> (Ratio Normalised [3] by Contract Value)	1461(0.46)	1566 (0.29)	2718 (0.36)
Water Saving	No. of Water-saving Sanitary Appliances (Ratio Normalised by Contract Value)	3312 (1.29)	3760 (0.71)	2400 (0.34)

<b>Environmental Convictions of Contractors</b>	<b>Units</b>	<b>2004</b>	<b>2003</b>	<b>2002</b>
Convictions per	ArchSD sites	0.515	0.307(0.953)	1.432 (1.729)

100,000 Manhours	(HK sites)	(0.848)		
<b>Accident Rate</b>				
No. of Fatalities	ArchSD	1	1	4
Fatal accident rate per 100,000 Manhours	ArchSD (HK Construction Industry)	0.0024 (0.0072)	0.0021 (0.011)	0.01 (0.01)
No. of Non-Fatal Accidents	ArchSD	275	330	369
Non-Fatal Accident Rate per 100,000 Manhours	ArchSD (HK Construction Industry)	0.66 (1.68)	0.68 (1.90)	0.94 (2.37)

<sup>1</sup>Offices in QGO and APB Centre represent 88% of total ArchSD office space.

<sup>2</sup>This figure differs from the figure previously reported as a different reporting method is adopted this year.

<sup>3</sup>The normalised ratio is an indication of the extent ArchSD has improved in an area after taking into account the changes in contract value each year, so as to facilitate better comparisons over time.

[back to top](#)

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[about the report](#)[director's message](#)[profile](#)[vision and values](#)[GRI content index](#)[our priorities](#)[sustainability in practice](#)[economic performance](#)[environmental performance](#)[social performance](#)[key statistics](#)[the way forward](#)[verification statement](#)

## The Way Forward

Sustainable development is about having the foresight to make provision for our community in the future without compromising our present needs. The following three areas highlight our concerns in 2005.

### Health and Safety

Moving beyond environmental initiatives, we aim to focus on health and safety issues in the coming year, working in close collaboration with our working partners. We have conducted internal auditor training and fine-tuned our Health and Safety Management System and Integrated Management System. We aim to strengthen our risk assessment process, and seek to identify potential hazards and undertake corrective actions in order to achieve the target of zero fatal accidents. We will give an account of our results in the sustainability report next year.

### Research and Development

We may not see the results of our research and development on a yearly basis, but we have no doubt about its importance in putting us at the forefront of the building industry in Hong Kong. In 2004, we have prepared and presented 20 papers on a range of topics for local, regional and international audiences. Our R&D focus on four areas: Sustainable construction, building materials, indoor environmental quality and life cycle costing. The common link between the four areas is sustainable development. We embrace these future challenges so as to contribute to a



more welcoming built environment for Hong Kong.

### Sustainable Design

We strive to deliver on our vision of being the leading practice for procuring and maintaining community facilities. To achieve this, we encourage innovation in architectural design, use of environmentally-friendly construction materials, and meticulous consideration to the urban surroundings and users' needs. This is pertinent to Hong Kong's context, as we need to import most of our building materials, making it all the more important for designers to focus on buildings' longevity and energy efficiency to reduce consumption of natural resources. Through our participation in international conferences, we seek to highlight our progress in sustainable architecture, and exchange know-how with outside experts. We believe our technical solutions provide quality and sustainable buildings for our community. These achievements set our sight higher and further into the future. We aim to build for future generations and will continue to contribute to the sustainability process in Hong Kong.

[back to top](#)

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[about the report](#)[director's message](#)[profile](#)[vision and values](#)[GRI content index](#)[our priorities](#)[sustainability in practice](#)[economic performance](#)[environmental performance](#)[social performance](#)[key statistics](#)[the way forward](#)[verification statement](#)

## Verification Statement

### Verification Objective

BMT Asia Pacific Limited was appointed to benchmark and verify the contents of ArchSD's Sustainability Report 2005. The verification intends to provide ArchSD's stakeholders with external assurance of the accuracy and completeness of information presented in the Report.

This Statement is issued based on:

- Independent third party opinion - BMT was not involved in any aspects of the preparation of Report; and
- The findings of a verification process that involved validation of a representative selection of data and claims, checking of data collection mechanisms and information management systems, assessment of the report's comprehensiveness, and identification of areas to improve ArchSD's reporting process.

### Approach

A series of meetings covering data review sessions was held between 21 September and 04 October 2005 with ArchSD's divisional representatives including senior professionals. During the process, BMT reviewed, examined and checked selected claims and reported figures, relevant supporting data and documented evidence, as well as data systems. BMT also requested ArchSD to further substantiate specific claims and make



necessary amendments to the Report.

### Scope

The following elements of Sustainability Report 2005 were sampled during the verification:

- Implementation of ArchSD's policy, major projects under each programme area and improvement initiatives;
- ArchSD's facilitation of, and input to, government strategies and initiatives;
- Local and regional partnerships and plans for sustainable development;
- Improvements associated with the implementation of ArchSD's initiatives;
- Development and enforcement of relevant legislation;
- Contractor and supply chain management;
- Emergency preparedness and response;
- Complaints handling and response;
- Consultation and address of public concerns and feedback;
- External awareness raising campaigns, community-based programmes and training initiatives;
- Internal management; and
- Target setting, implementation and progress monitoring mechanisms.

### Results and Commentary

- Data collection mechanisms and information management systems are generally efficient, organised and effective. In particular, data were systematically collected, recorded, stored and analysed in accordance with prescribed methodologies, and specific data used to support claims and compile reported figures were appropriately retrieved and interpreted;
- Reliability and efficiency of several data systems have been improved by expanded functions, strengthened archiving and the application of new information technology;
- The Report provides a balanced overview of ArchSD's performance in 2004 with respect to its roles and responsibilities within government, key programme areas and relevant projects, and significant aspects related to

daily operations and services; and

- The Report presents a fair account on the partnerships formed on various levels to raise awareness, advance local trade-specific programmes, reinforce regional efforts and further sustainable development.

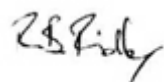
### Recommendations for Future Reports

ArchSD is encouraged to:

- Recommend a review of the existing database used to collect information on material usage to include the various types of materials used on each project (including quantities of brick, rock, etc.) - *currently not tracked*

11 November 2005

Ben Ridey



Project Director & Lead Verifier,  
BMT Asia Pacific Limited

Lyn Ip



Project Manager,  
BMT Asia Pacific Limited

[back to top](#)

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