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建築署
Architectural Services Department

環保 · 健康 · 安全
Environmental · Health · Safety

報告 2003
Report 2003

Text-only Version - [English](#) | [Traditional Chinese](#) | [Simplified Chinese](#)]



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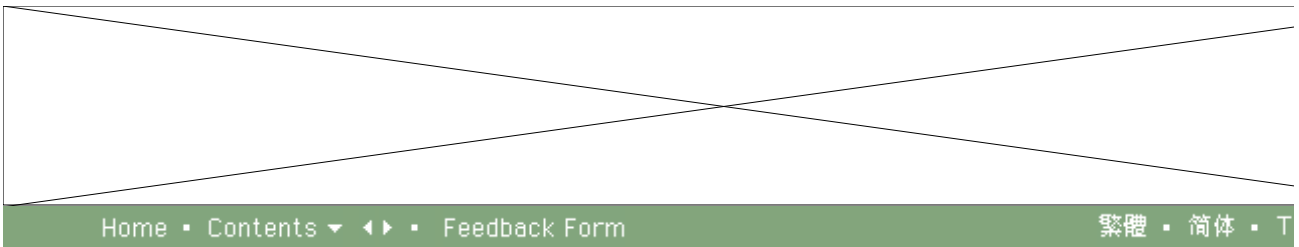
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VISION AND STRATEGY - A Message from Our Director



“We are committed
to furthering the sustainable development
of Hong Kong.”

It is with great pleasure that I welcome you to the Architectural Services Department (ArchSD)'s fifth progress report on our environmental, health and safety (EHS) initiatives and achievements. We have been publicly reporting on our environmental performance since 1998 and in our last report, for the year 2001, we expanded our reporting to include our combined EHS performance.

This year's report marks a new milestone for our department. It reports on our EHS initiatives and results in 2002, as well as our performance on key operational and social aspects of our activities. ArchSD's core responsibilities include designing, procuring and maintaining public buildings and facilities on behalf of the HKSAR Government and providing advisory services to the Government. In meeting these responsibilities, we have the opportunity to deliver our services in ways that are cost effective, efficient, environmentally responsible and socially aware, and to influence our partners in the construction industry to also adopt sustainability principles.

Our vision is to integrate sustainability principles into our operations to minimize our impact on the environment and to create a healthy, safe and aesthetically pleasing built environment for our community. To achieve this vision we recognize the importance of dialogue with our stakeholders and our role as a leading promoter of excellence in EHS practices within the local construction industry. In this report, we aim to communicate to our stakeholders what sustainable development means to us and how we are integrating sustainability principles into our operations. Our key stakeholders include

our employees, our partners in Government and the construction industry, users of our buildings and facilities, and the general public.

In line with international best reporting practice, we have drawn on the Global Reporting Initiative's Sustainability Reporting Guidelines in preparing our report and had its contents independently verified. The GRI reporting elements and indicators provide a useful framework for us to begin to identify, address and report on our operational, environmental and social performance. This report is a starting point, laying the groundwork for us to expand our reporting of our overall sustainability performance in subsequent years.

We welcome your feedback on our report and your ideas on how we can work together to further the sustainability of the built environment in Hong Kong.



Yue Chi Hang, JP
Director of Architectural Services

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TO OUR READERS - A Guide to the Report

Our Reporting Scope and Approach

This report focuses on our operational, environmental, health, safety and social performance and initiatives in 2002. It outlines our policies and management systems that guide us in delivering our responsibilities in an efficient and effective manner and in keeping with EHS best practices. Comprehensive coverage of our financial performance is included in our Controlling Officer's Report that is available from the HKSAR Government website at www.info.gov.hk.

In line with international best practice, we are taking a first step towards sustainability reporting. We have drawn on the Global Reporting Initiative's [Sustainability Reporting Guidelines](#), the Association of Chartered Certified Accountants' (ACCA) reporting criteria and the HKSAR Environmental Protection Department's Benchmark. This year's report adopts a new format and provides a framework for us to further expand our reporting in the future.

Communicating with and Engaging Our Stakeholders

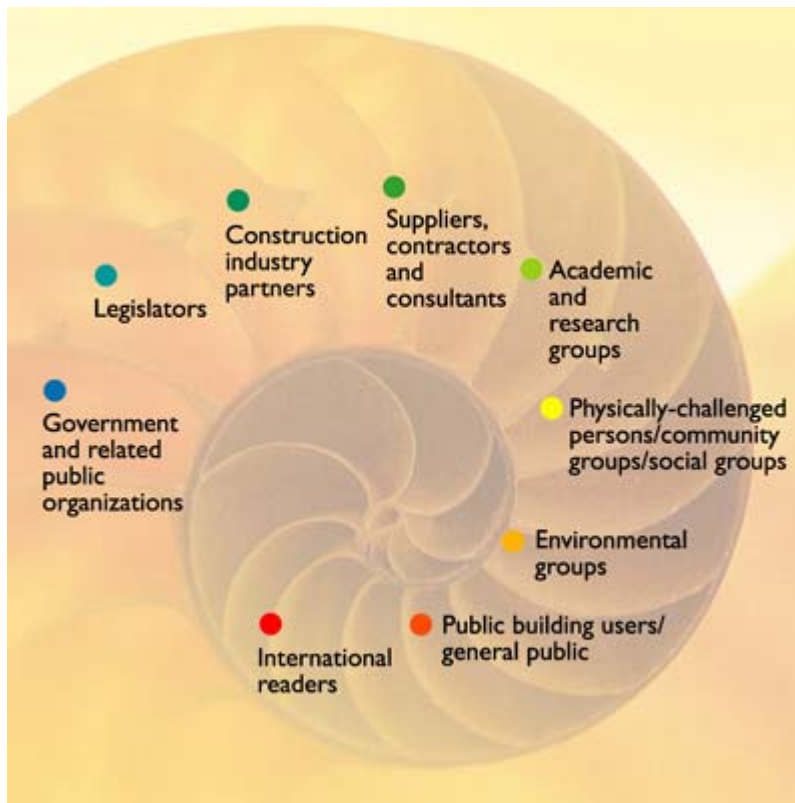
We all benefit from reporting if our staff and other stakeholders are able to learn from our experience and share ideas. We are grateful for the constructive feedback on our previous reports and have endeavoured to respond to specific comments in this report.

For example, we were commended by a locally renowned construction company on our efforts to be a model for the construction industry. Given this positive encouragement, we aim to continue our efforts to promote sustainable construction in the coming year by communicating our achievements and sharing our experiences through our reporting process.

We also proactively sought feedback through our Client Satisfaction Survey on our completed projects. In 2002 our survey covered the Hong Kong Central Library, the Sha Tin Government Offices, the Hong Kong Science Park (Phase 1a) and a primary school in Tsing Yi. Clients of these projects were generally "satisfied" to "very satisfied" with our work, and provided detailed comments for us to further improve our services. We duly responded to our clients' concerns and followed up by implementing immediate modifications or improvement works, and by updating elements of our project implementation process (e.g. contract specifications).

We value feedback from our stakeholders and will continue to adopt a transparent approach to communicating our policies and performance information.

A "Roadmap" for our Stakeholders



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QEHS = Quality, Environmental, Health and Safety
H&S = Health and Safety

For Further Information

If you are interested in additional information on our EHS performance, or our previous reports, please visit our website at <http://www.archsd.gov.hk/> or contact Ms. Karen Cheng, Quality and Environmental Management Unit, by phone at 2867-3975, fax at 2596-0361 or email chengkl@archsd.gov.hk.

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2002 QEHS Highlights

In 2002, we have:

Operational Performance

- Managed projects totalling HK\$84 billion with HK\$10.53 billion allocated to capital expenditure in 2002
- Completed major projects such as, the Hong Kong Science Park (Phase 1a), Public Health Laboratory Centre, Fanling Magistracy Building, Victoria Park Improvement and Caritas Medical Centre Redevelopment
- Completed a total of 48 new major facilities, including 22 schools, 5 recreation facilities, 12 hospital redevelopment and improvement projects, 4 government quarters, 3 buildings of the Science Park, 1 magistracy building and 1 combined fire station and ambulance depot
- Upgraded 76 existing facilities, including 22 schools, 25 recreation facilities and 29 police stations
- Maintained and serviced 27,190,000 m² of public facilities
- Provided over 7,300 professional architectural and maintenance advice to subvented/entrusted projects and 4,370 advice to other projects

Environmental Performance

- Provided 332 no. of general advice on environmental sustainability issues
- Provided specific advice on environmental sustainability issues to 208 projects
- Incorporated contract requirements to use recycled aggregates in 15 new works projects
- Planted 94,338 m² of landscaped areas within the urban environment with 1,209,003 trees, shrubs and annuals, and incorporated landscaping in buildings for 96% of projects
- Saved an estimated HK\$85 million off our clients' electricity consumption in 2002 through energy efficient designs

Health, Safety and Social Performance

- Commenced the upgrading of 10 modification projects to government facilities to cater for the needs of physically-challenged persons; an investment totaling HK\$2.51 million
- Experienced a non-fatal accident frequency rate of 0.95 per 100,000 manhours in comparison to the HK construction industry rate of 2.37 per 100,000 manhours
- Achieved our longest period of 8 months of continuous construction work at our construction sites without any fatal accidents

Awards

- Achieved the highest rating of "Excellent" under the HK-BEAM for new office design for the Public Health Laboratory Centre
- Attained 8 certificates for building services systems in new projects under the Energy Efficiency Registration Scheme
- Received the Design Excellence award for our pavilion at the 2002 Hong Kong Flower Show

- Received an Award of Merit from the HKILA under their Annual Award for the project "Improvement to Victoria Park"
- Received two Awards of Merit from the LCSD under their Outstanding Greening Project Award in the Landscape Design Project category for the projects "Improvement to Victoria Park" and "Landscape Garden at Lai King Building, Princess Margaret Hospital"
- Received a Special Architectural Award for Sustainable Design from the HKIA for "Tai Lung Veterinary Laboratory"
- Received an Award of Merit under the Quality Building Award for the project "Sheung Shui Slaughter House"
- Received a Commendation from the ACCA Environmental Reporting Award Scheme for our 2002 EHS Report

ACCA = Association of Chartered Certified Accountants
HK-BEAM = Hong Kong Building Environmental Assessment Method
HKIA = Hong Kong Institute of Architects
HKILA = Hong Kong Institute of Landscape Architects

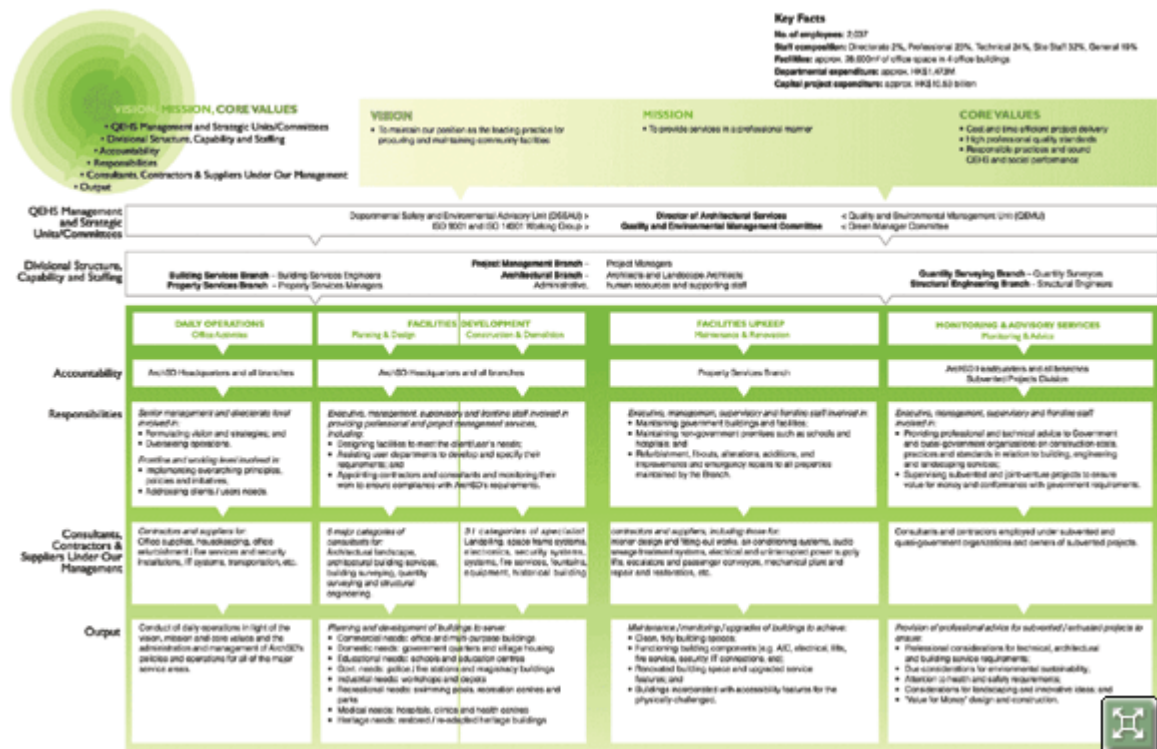


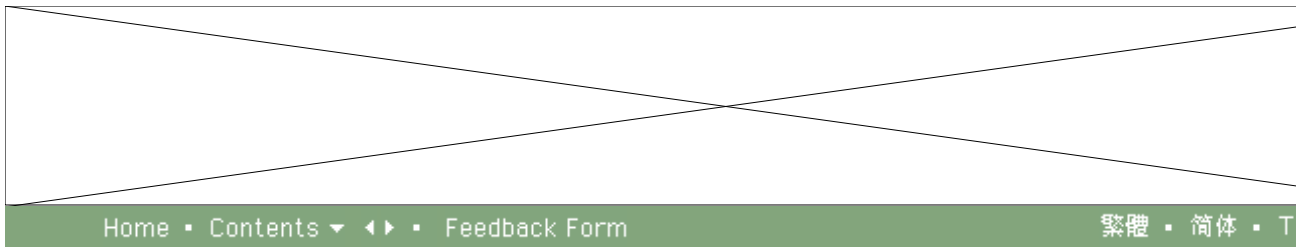
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ORGANIZATIONAL PROFILE





QEHS POLICY AND STRATEGY

Integrating Our Vision, Mission and Policy

ArchSD has long recognized the importance of furthering sustainable development within the Hong Kong community. To contribute, we actively seek high quality, cost-effective, timely and resource efficient options in delivering our services. We also strive to prevent and minimize impacts on the environment and to safeguard the health and safety of our employees and partners.

In March 1998, we formally established our Environmental Policy when ArchSD became the first government department certified under the ISO 14001 Environmental Management System Standard. We have also been certified to the ISO 9001 Quality Management System Standard since 1995. We recently expanded our policy to more fully reflect our commitments to improving our quality and EHS performance.

We believe it is important to fully integrate these principles into all that we do. Our senior management staff reinforces the Department's commitments to all working levels in regular briefings and in our day-to-day activities. Our progress in reducing the environmental impacts of our buildings during all phases of their operation and development, and the engagement of our staff in professional and voluntary initiatives to enhance their skills and personal development, are but two examples of these commitments in action.

Our quality and EHS commitments are communicated to our consultants, contractors and suppliers and included in our contractual agreements. The performance of our consultants, contractors and suppliers in meeting these requirements is monitored and formally assessed in the Performance Reporting procedure. As adverse reports in the assessment impact on their opportunities for future work, we believe this approach provides a useful incentive for all to ensure best practice. We also actively promote the importance and benefits of responsible EHS performance to our clients and our partners in the construction industry through seminars, on-site training for construction contractors, exhibitions, our own Green Contractor Award Scheme and the Environment, Transport and Works Bureau's Considerate Contractors' Site Award Scheme.

We will continue to uphold our quality and EHS principles and seek opportunities to further integrate them into the delivery of our services.

ArchSD's

Quality, Environmental, Health and Safety Policy

“To design, procure, maintain property and advise professionally”

ArchSD, when offering our Clients a comprehensive range of multi-disciplinary professional and technical services for public buildings and facilities, is committed to:

- a. Fulfil the agreed requirements of our Clients to the highest professional standards.
- b. Deliver our services in an environmentally responsible manner by preventing pollution, conserving energy and reducing the consumption of natural resources.
- c. 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.
- d. Comply with all relevant legislation and regulations as minimum requirement, and, wherever practicable, to achieve standards beyond those that are legally required.
- e. Provide adequate resources as well as training to all staff to continually improve our quality, environmental, health and safety performance and effectiveness.
- f. Promote ArchSD's principles of quality, environmental sustainability, health and safety to our partners at work, in the construction industry and to the general public.



Yue Chi Hang, JP
Director of Architectural Services



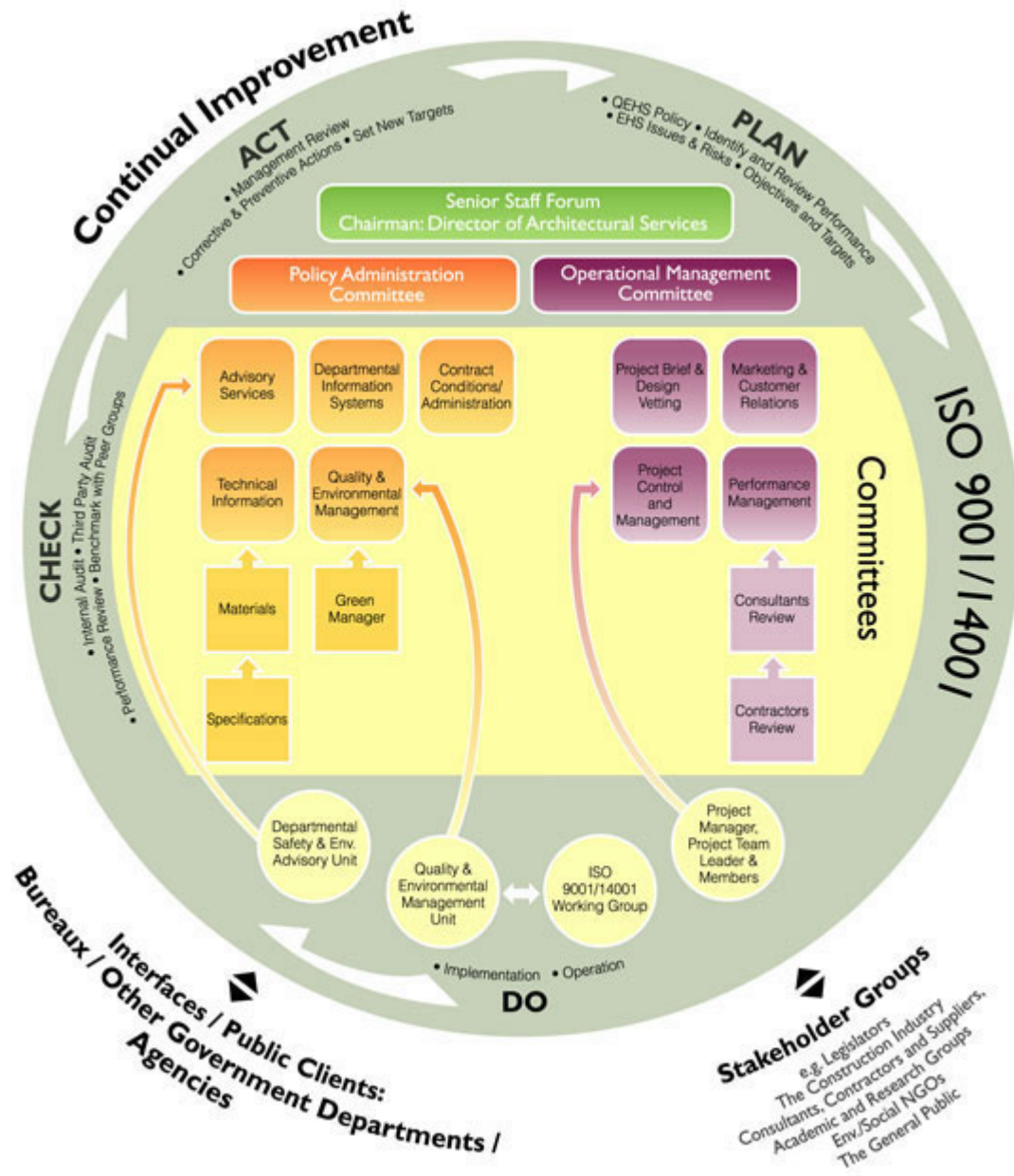


GOVERNANCE STRUCTURE AND MANAGEMENT SYSTEMS

Our Governance Structure

Meeting high standards of operational, EHS and social performance requires a transparent and accountable governance structure and clear and engaging communication channels. Our approach to managing, monitoring and reviewing our services and activities, and integrating these processes with ISO 9001 and ISO 14001 requirements, is outlined below.







OUR ISSUES AND INITIATIVES

Overarching Principles, Policies and Mechanisms - To Achieve Our Vision

- Adherence to HKSAR Government's policies on human rights, labour and non-discrimination
- Consultant/ contractor/ supplier management
- EHS information and experience sharing and training
- Ongoing monitoring, auditing and review

	DAILY OPERATIONS Office Activities	FACILITIES Planning & Design	DEVELOPMENT Construction & Demolition	FACILITIES UPKEEP Maintenance & Renovation	MONITORING & ADVISORY SERVICES Monitoring & Advice
Operational	Office Expenditure and Procurement Budget Control Contractor and Supplier Management	Project Budget Planning Consultant and Contractor Management Innovative Project Procurement Methods	Project Expenditure Control	Project Budget Planning and Budget Control Maintenance Expenditure Planning	Resource Allocation and Budget Control Provision of Quality, Professional Services Meeting Client Building Usage Needs
Operational & Environmental	Green Housekeeping Measures Waste Management Practices	Balancing Environmentally Sustainability with Operating and Maintenance Cost Requirements Resource Conservation Energy Efficiency	Innovative Construction Methods for Environmental Sustainability Construction & Demolition Waste Avoidance and Minimization	Building Environmental Performance Improvement (Energy Efficiency, Resource Conservation) and Building Life Extension and Refurbishment	Balancing Environmentally Sustainability Requirements with Operational and Maintenance Cost Requirements Capacity Building to Become Government's Steward for Facilities and Professional Corporate Advisor
Environmental	Green Office Culture Environmentally Preferable Procurement Volunteer Environmental Work	Environmentally Sustainable Design, Environmental Compatibility and Use of Renewable and Cleaner Energy Environmentally Preferable Building Materials Procurement	Environmental Best Practices, Pollution Prevention and Environmental Management for Construction Activities	End-user Guidance and Assistance on the Management of Approved Completed Projects	Environmental Sustainability Advice to Government on Property Planning and Development
Environmental & Social	Emergency Preparedness and Response Office Indoor Air Quality Improvement Smoke-free Work Place Policy	Innovative Landscape Design Designs for Indoor Air Quality	Environmental Best Practices, Pollution Prevention and Environmental Management for Construction Activities	Urban Landscaping and Public Amenity Improvements Slope Safety and Aesthetics Enhancement Adaptive Re-use, Restoration and Preservation of Historical Heritage Buildings and Monuments	Environmental Promoter in the Construction Industry Environmental Awareness Raising for the Community
Social	Staff Training and Continuous Education Volunteer Social Work	Design for Safety and Accessibility in Buildings	Construction Health and Safety Training for Consultants, Contractors and Internal Staff	Enhancement of Accessibility in Buildings	Health and Safety Awareness Raising in the Community
Social & Operational	Healthy Office Culture Work Ergonomics Stress Management	Efficient Use of Public Funds and Meeting Public Needs	Health and Safety Practices at Construction Sites Health and Safety Supervision and Performance Assessment at Construction Sites	Enhancement of Health and Safety Aspects of Buildings	Health and Safety Promotion in the Construction Industry





OPERATIONAL PERFORMANCE

Towards Providing Quality, Timely and Professional Services

To achieve our high operational standards, ArchSD adopts a "results-oriented approach" that integrates our policy commitments into the delivery of our services. Our goals, initiatives and resulting performance in this area are highlighted in this section.

LONG-TERM GOALS:

- Implementation of projects based on prudent financial principles and high quality standards in a time and resource efficient manner.
- Management of operational funds to meet budget requirements and ensure financial stability.

Key Operational Performance indicators by business areas (Financial Year 02/03)

> Facilities Development (Planning, Design and Construction):

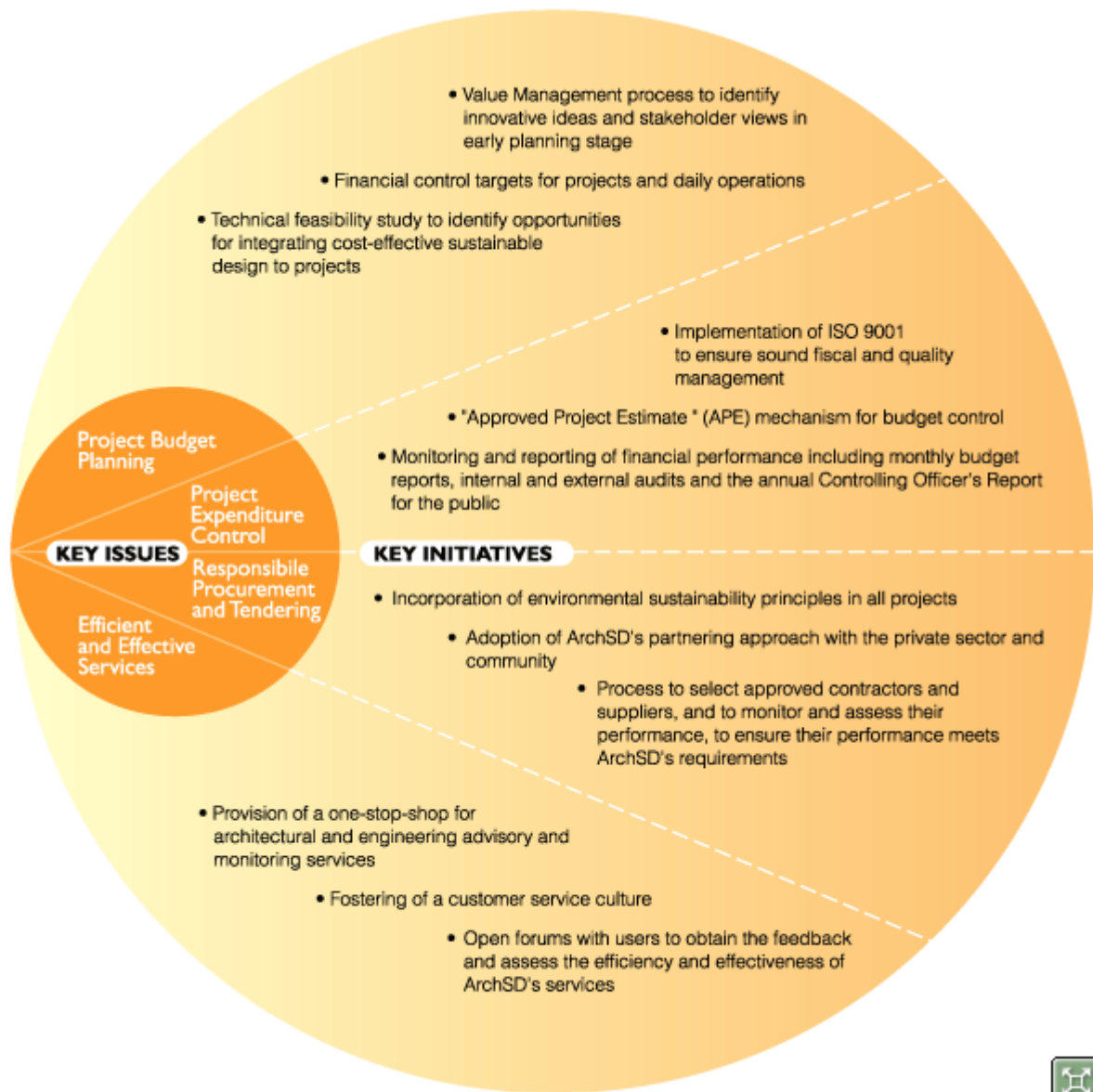
- 320 capital projects valued at HK\$84 billion on rolling programme
- 78 capital projects completed with works expenditure of \$10,530M

> Facilities Upkeep (Maintenance & Renovation):

- 27,190,000 m² of gross floor area maintained
- 337,000 work orders completed
- Expenditure of \$4,722 M

> Monitoring and Advisory Services:

- 1,800 subvented projects reviewed valued at HK\$62 billion
- 7,300 no. of technical advice given for subvented projects
- 4,370 no. of technical advice given for other projects

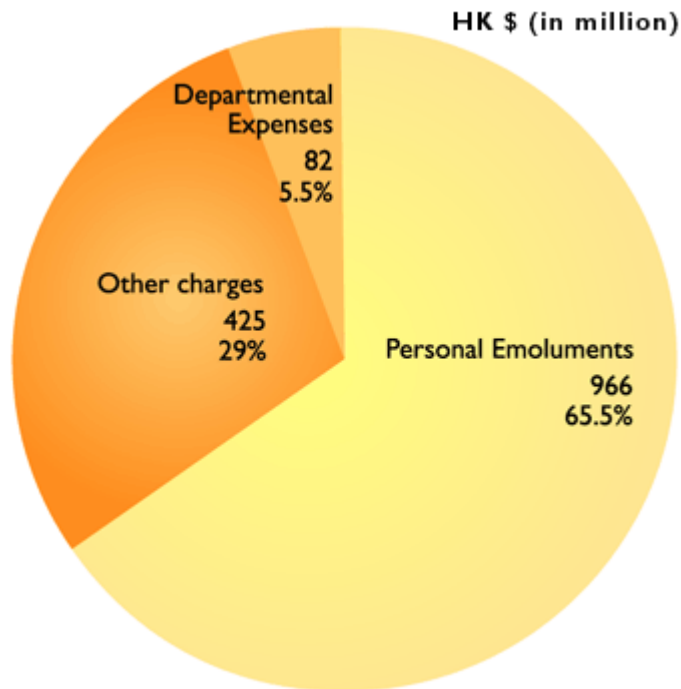


Analyzing Operational Performance by Indicators and Aiming for New Objectives and Targets

As the Government's architect, we are responsible for ensuring that our operations serve the public interest. We have a number of ongoing objectives and targets that guide us in tracking our performance. In the year 2002, we are pleased to report that we exceeded most of our targets.

Key areas for us to focus and improve on for next year include improving our mechanisms for budget control and the efficiency of our operations through increased outsourcing of projects.

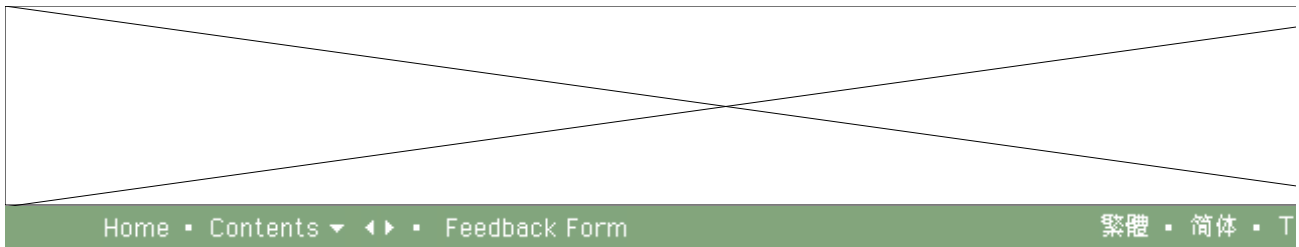
Departmental Expenditure (Financial Year 02/03)



LEGEND 🏆 = target substantially achieved ▶ = target achieved ● = target progressing ◀ = target not achieved

Key Objectives	Key Targets	Measurement Methods / Indicators	2002 Performance and Status	Follow-on Targets for 2003 and Beyond
Assess client satisfaction	Conduct client satisfaction surveys for newly completed projects and set up a Client Satisfaction Index (CSI)	Measured in terms of no. of client satisfaction surveys conducted and identification of improvement areas for the following year	4 client satisfaction surveys completed. Information consolidated to establish the CSI by end of 2003	● Conduct client satisfaction survey for at least 12 newly completed projects
Improve timeliness of service and project delivery	Deliver, in a timely manner, at least 75% of major capital works projects scheduled for completion within the financial year 2002/03	Measured in terms of % of no. of projects that are completed on schedule out of total no.	100% (27 out of 27) of projects completed on schedule	🏆 Deliver, in a timely manner, at least 80% of projects scheduled for completion within the financial year 2003/04
	Provide advice on building, engineering services and planning and development issues within 10 calendar days of receipt of request for 90% of all subvented projects	Measured in terms of % of no. of advice that are provided within 10 days out of total no.	95.69% of advice (3,662 out of 3,827) were provided within 10 days	▶ Same target on-going
	Attend to 99% emergency repairs, e.g. a burst water pipe, on Hong Kong Island and in Kowloon and new towns in the New Territories, within 1 hour of notification	Measured in terms of % of no. of emergency repairs that are attended to within 1 hour of notification out of total no.	99.2% of urgent repairs (4,980 out of 5,020) were attended to within 1 hour of notification	▶ Same target on-going
Improve project accuracy	Ensure at least 90% of works as audited by the Technical Audit Assurance Team are in compliance with the design and standard	Measured in terms of % of no. of audited works that are in compliance out of total no.	97.1% of works audited (4,895 out of 5,043) were in full compliance	▶ Same target on-going
Improve project expenditure control and budget planning	Deliver, within approved budget, 85% of the major works projects scheduled for completion within the financial year 2002/03	Measured in terms of % of no. of projects that are completed within the approved budget out of total no.	100% (27 out of 27) of projects completed within budget	🏆 Same target on-going
	Outsource public projects to harness resources in the private sector	Measured in terms of % of total value of capital works projects under ArchSD's mandate that are outsourced to the private sector	54% of total value of capital works projects (HK\$32 billion out of HK\$59.5 billion) were outsourced to the private sector	● Same target on-going New Target: Provide staff training on outsourcing
Build capacity	Organize training based on the training needs of branches and top management and input from Bureau and Departmental Consultative Committee	Measured in terms of % of no. of staff received training out of total no. of staff designated for training as per the training plan	120% of staff designated for training (5,439 out of a target of 4,504) had received training	🏆 Same target on-going New Target: Attain satisfaction level of at least 70% by all trainees on the overall effectiveness of the training
Promote professional practices and drive improvements in service standards	Complete the review of the existing <i>General Specification for Buildings</i> and prepare for the publishing of a new edition of the <i>General Specification</i> by end of 2003	Measured in terms of progress towards publishing a new edition of the <i>General Specification</i> by end of 2003	The final draft submitted and comments received from members	▶ Continue the target to complete the public consultation and publish the new edition of the <i>General Specification</i> by end of 2003





ENVIRONMENTAL PERFORMANCE

What Environmental Sustainability Means to Us

To ArchSD, environmental sustainability means reducing the ecological footprint of our activities through the integration of environmental considerations into both the design process and our specifications to consultants, contractors and suppliers throughout the construction and maintenance processes. It also means raising environmental awareness among our staff, reducing the environmental impacts of our own operations and continually building the necessary skills and competencies to adopt the best environmental practices.

As the Government's architect, we have a stewardship role to support the HKSARG's overall objectives for sustainable development. For us, key examples of this responsibility include reducing the impact of public buildings and facilities on the surrounding natural and built environment, maximizing the environmental performance and energy efficiencies of the building materials and systems used, and setting an example of environmentally sustainable design and building for the construction sector in Hong Kong.

Our goals, initiatives and resulting environmental performance are presented below.

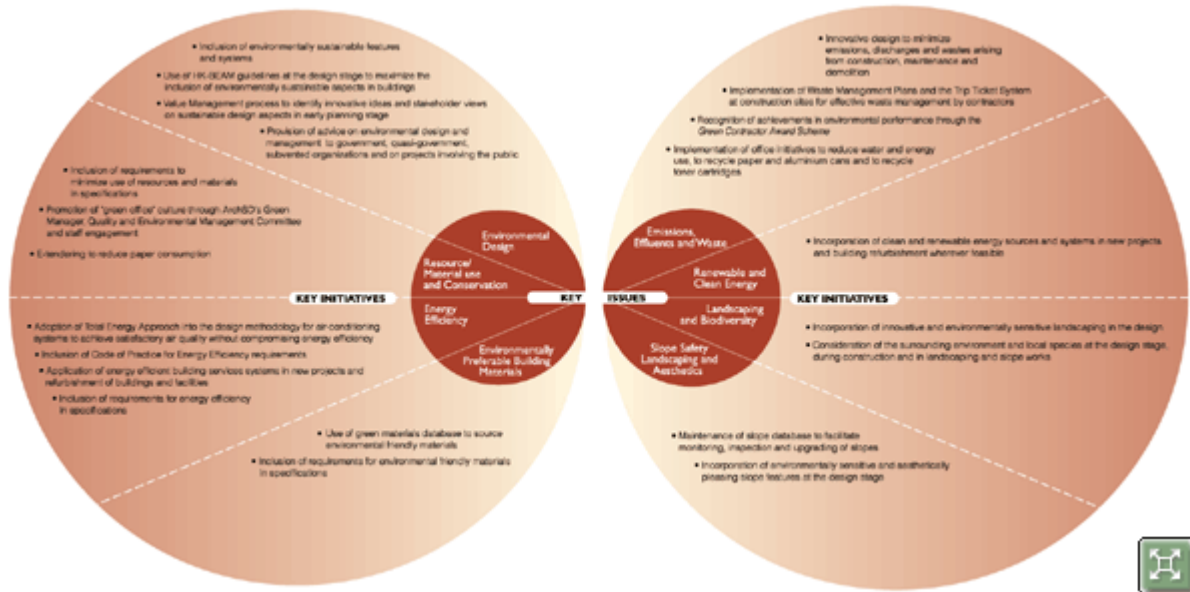
LONG-TERM GOALS:

- Public buildings that are designed, refurbished and maintained based on environmentally sustainable principles.
- Cityscape and open space that are both environmentally sound and aesthetically pleasing.
- Operations conducted with continual improvements in environmental performance.



From left:

1. An open area at the Sai Kung Waterfront decorated by sculptures, landscaped flower beds and mature trees.
2. Pavilions provide shading for pedestrian resting areas at the Sai Kung Waterfront.



Analyzing Environmental Performance by Indicators

We have continued to make progress in reducing the environmental impacts of our operations in the year 2002. We have integrated innovative environmental features, such as energy efficient building services systems into all of our projects and BIPV into several of them, including the Science Park. We have also expanded our performance monitoring and reporting to include issues such as our greenhouse gas emissions. Through a combination of energy-saving initiatives, which reduce the quantity of carbon dioxide arising from the energy used in our projects, our contribution to global warming continues to decrease.

Our procurement policies and our green materials database assist us to reduce the consumption of natural resources in our projects and to incorporate innovative materials that help to reduce the environmental impact of projects. For example, the safety mats in children's play areas are made of recycled tyres. In developing our buildings, we use timber from sustainable sources, recycled aggregates in concrete, quartz-based artificial stone instead of granite, biodegradable linoleum flooring and low VOC emission paint, to name but a few initiatives. We are also updating the General Specification for a new 2003 edition. The new specification will require the use of timber from sustainable forests certified by the Forestry Stewardship Council (i.e. FSC certified) in all projects.

Key Environmental Performance Indicators in 2002

> Energy, Materials and Resources Consumption

- Electricity (APB Centre only): 2,669.5 MWh; 262.4 kWh per m²
- Building-Integrated Photovoltaic (BIPV) adopted: 18kW BIPV system comprising 120 panels at the Hong Kong Science Park (Phase 1a)
- Types of fire suppressants/extinguishing agents: CO₂, Clean Agent Type Gaseous Systems including FM200, FE13, FIC
- Types of refrigerants: R134a, R407c, R410a, CO₂, Ammonia
- Paper and paper products: 177 tonnes

> Emissions, Waste and Compliance

- GHG emissions equivalents (APB Centre only): 1,194 tonnes CO₂
- GHG emissions reduction equivalents (new projects): 37,500 tonnes CO₂
- Construction and Demolition (C&D) Waste disposed of to landfill: 42,100 tonnes
- C&D materials disposed of to public fill areas: 642,704 m³
- Construction sites adopting the trip ticket system: 130
- Environmental convictions: see figure on opposite page

> Contractor/Supplier Management and Service Stewardship

- On-site review of contractor performance: 3,555 contractor performance reports completed (reviewed)

quarterly)

• *Green Contractor Award Scheme*: 91 sites participated; 3 awards given (Gold, Silver and Bronze awards)

> Awareness Raising

• *No. of environmental training courses (including internal and external seminars/workshops/training courses/visits)*: see figure on page 23

• *No. of trainees on environmental courses (including ArchSD staff, consultants and contractors)*: see figure page 23

> Environmental Expenditure

• *Capital expenditure on environmental works (including pollution control, abatement and mitigation; environmental works; ISO 14001 EMS and housekeeping)*: HK\$463.9M

• *Manpower expenditure on environmental works and matters*: HK\$76.7M

• *Expenditure on environmental review and impact assessments for projects*: HK\$1.9M

• *Expenditure on environmental training*: HK\$386,907

Recognizing that the number of convictions related to noise and air pollution increased last year, we will expend additional efforts to improve the performance of our contractors involved in ArchSD's projects. This will involve more frequent auditing of project sites, sharing information and experience with the construction industry and recognizing best practices through our Green Contractor Award Scheme.

In 2002 we are proud to announce that:

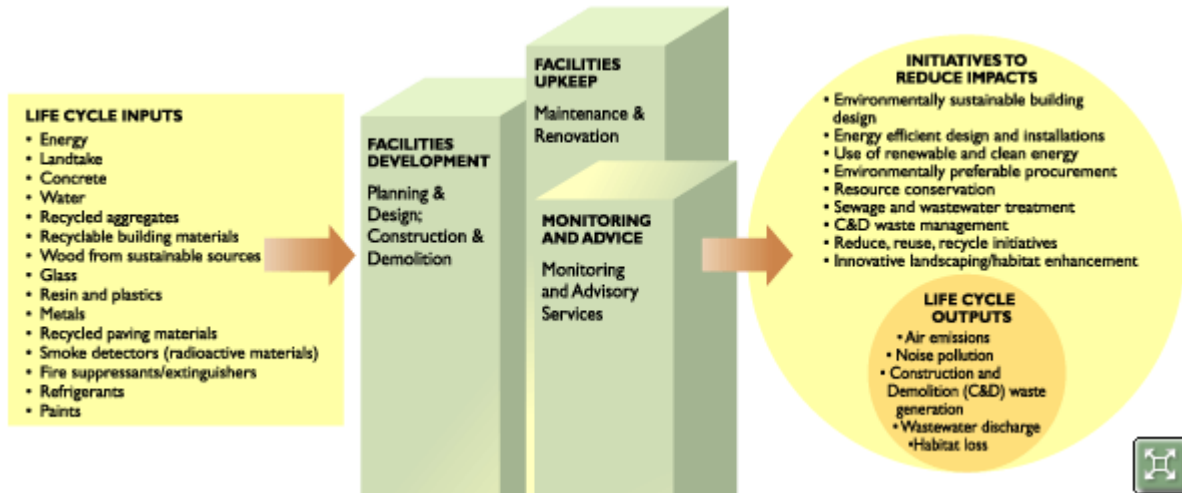
- Shui On Construction Company Ltd. received our Gold Award for the Castle Peak Hospital Redevelopment;
- Hong Kong Kwong Tai Builders Ltd., received our Silver Award for the Hong Kong Jockey Club Drug InfoCentre; and
- China State Construction and Engineering (Hong Kong) Ltd., was awarded the Bronze Award for Building 4 of the Science Park.

We also recognize the importance of prioritizing and balancing the needs of all stakeholders in the planning, design and delivery of our new projects. To achieve this, we adopt a Value Management process early in the feasibility study stage to engage stakeholders and seek their views, address known constraints and potential issues, and explore opportunities and alternative options. The goal is to develop a solution that is acceptable to all relevant stakeholders. In 2002, the Value Management process was applied to 2 projects in the planning stage, including the "Extension to Lok Ma Chau Boundary Facilities" and "Tsim Sha Tsui Promenade Beautification".

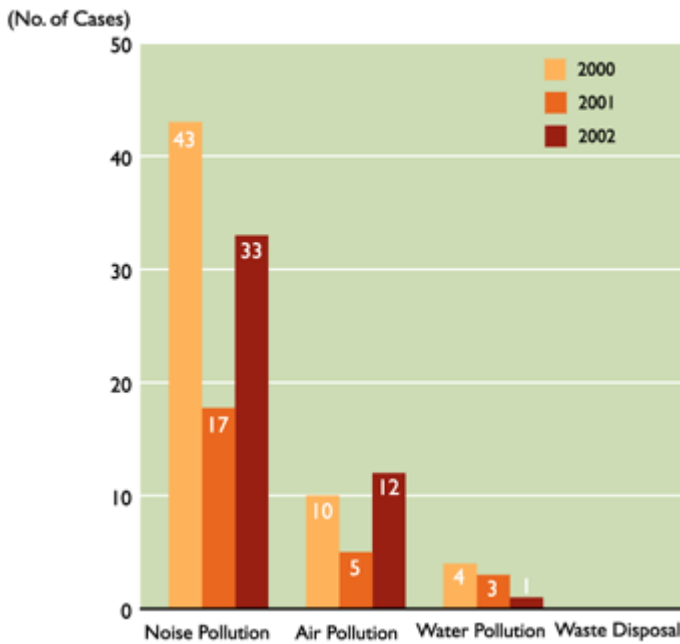
In our office, we have increased the amount of recycled paper used and have also seen reductions in the use of energy for those offices that we are able to measure our consumption.

We have set new targets for the year 2003 to improve our use of resources, to reduce pollution arising from our projects, and to incorporate environmental design features and systems and landscaping into future projects. As noted in our Summary of Key EHS Statistics, there are several new indicators that we have begun to track.

Life Cycle Analysis of ArchSD's Operations



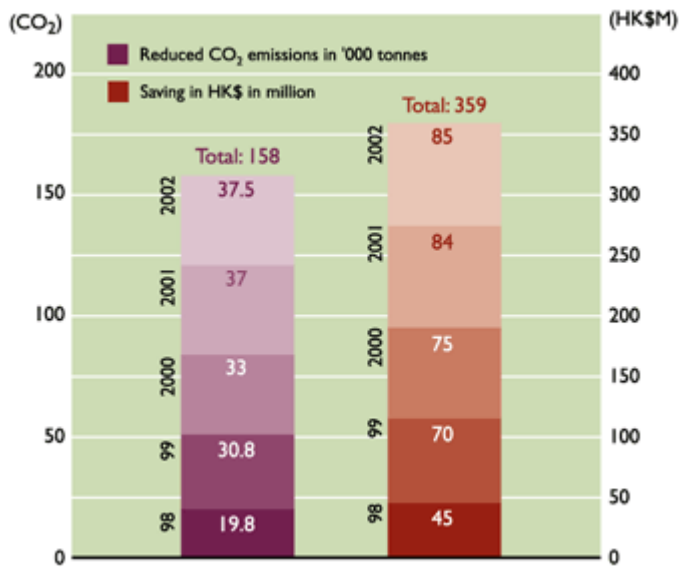
Statistics on Contractors' Environmental Convictions at ArchSD sites



Notes:

As the number of convictions had increased in 2002, ArchSD will expend more efforts to improve contractors' performance, such as through more frequent auditing, awareness raising and experience sharing.

Estimated Savings in Utility Bills / CO₂ Emissions avoided in Completed Projects due to Energy Saving



Notes:

1. Savings are achieved through the adoption of energy efficient installations, e.g. use of T5 fluorescent tubes, high performance A/C systems, etc.
2. Savings in HK\$ are estimated.
3. CO₂ emissions avoided are calculated using the conversion formula of 1 kWh = HK\$1 = 0.44kg CO₂ reduction.

The Value Management Process





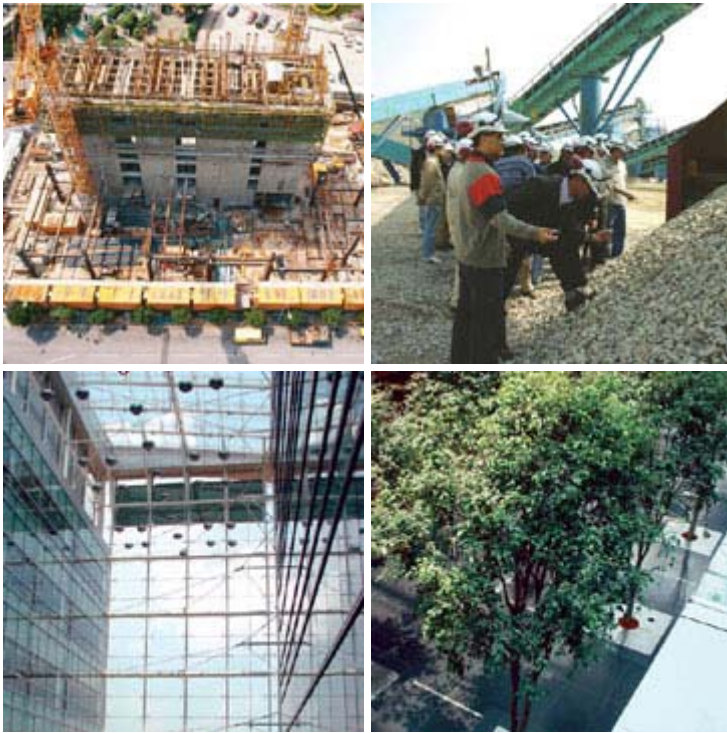
Arch's Green Contractor Award presentation ceremony.

LONG-TERM GOAL:

Public buildings that are designed, refurbished and maintained based on environmentally sustainable principles.

LEGEND ▶▶ = target substantially achieved ▶ = target achieved ● = target progressing ◀ = target not achieved

Key Objectives	Key Targets	Measurement Methods / Indicators	2002 Performance and Status	Follow-on Targets for 2003 and Beyond
Ensure holistic approach in sustainable design	Upload the Project Environmental Design Submission (PEDS) of all projects to ArchSD's intranet for easy reference and idea exchange by colleagues	Measured in terms of no. of PEDS that are uploaded to ArchSD's intranet	50 PEDS for projects in stage 1, 2 & 3 are uploaded to intranet	▶ Same target on-going
Reduce impacts to the environment through sustainable building design	Facilitate the incorporation of environmental requirements in new public works project briefs through the provision of information to clients on the potential environmental performance of planned facilities	Measured in terms of % of no. of client project briefs that have included environmental requirements	84% of client project briefs (61 out of 73) had incorporated environmental requirements	▶ Same target on-going
Promote environmental awareness through advisory services to government and quasi-government clients	Provide at least 320 no. of general technical advice on environmental protection measures to government departments and quasi-government bodies	Measured in terms of no. of environmental advice given	332 no. of environmental advice given	▶ Provide at least 335 no. of general technical advice on environmental protection measures to government departments and quasi-government bodies
	Provide at least 150 no. of technical advice on environmental protection measures for subvented / entrusted projects	Measured in terms of no. of environmental advice given	208 no. of environmental advice given	▶▶ Provide at least 160 no. of technical advice on environmental protection measures for subvented/ entrusted projects
Manage contractors through monitoring of their environmental performance	Collect and analyze information on contractors' environmental regulatory performance at ArchSD sites	Measured in terms of no. of environmental convictions at ArchSD sites and comparison of statistics against all sites in Hong Kong	46 environmental convictions (including 1 water pollution, 33 noise pollution, 12 air pollution and 0 waste management), compared to a total of 306 (-15%) at all sites in Hong Kong	● Same target on-going
Strengthen waste management by monitoring waste arisings from ArchSD projects	Develop a database to monitor construction and demolition material (C&DM) arisings from ArchSD sites	Measured in terms of no. of contracts covered in the database	148 contracts monitored and input into the database with data collected on 10 types of C&DM	▶ Same target on-going
	Develop a database to monitor types of waste arisings from maintenance projects	Measured in terms of no. of projects with statistics collected	Statistics of 45 projects collected	▶ Same target on-going
Upgrade existing buildings with environmental installations	Include replacement of lighting systems in planned maintenance and refurbishment projects to make new systems at least 10% more energy efficient than old systems	Measured in terms of % increase in efficiency and savings in kWh	New systems are about 20% more energy efficient resulting in an electricity saving of about 4,464, 150.6 kWh after completion of planned maintenance and refurbishment projects	▶▶ Include replacement of lighting systems in planned maintenance and refurbishment projects to make new systems at least 15% more energy efficient than old systems
Achieve energy efficiency and conserve energy	Achieve an Overall Thermal Transfer Value (OTTV) of not more than 23 W/m ² for 90% of all new projects with air conditioning systems, and an OTTV of not more than 18 W/m ² for 25% of these projects	Measured in terms of % of no. of new projects that achieved the targeted OTTV level out of total no.	97% (29 out of 30) of all new projects have achieved an OTTV of less than 23W/m ² , and 63% (19 out of 30) of new projects have achieved an OTTV of less than 18W/m ²	▶▶ Achieve an OTTV of not more than 23 W/m ² for 92% of all new projects with air conditioning systems, and an OTTV of not more than 18 W/m ² for 30% of these projects
	Use heat recovery chillers in 75% or more of all new projects that have central chiller plants with total cooling load capacity that exceed 400kW	Measured in terms of no. of projects out of total no.	80% (8 out of 10 projects) complied with the target	▶ Remark: This target has become a mandatory requirement for year 2003 onwards
Promote the use of renewable and clean energy	Use Nickel-Metal Hydride (Ni-MH) batteries or batteries of equivalent capacity and environmental preference in building services installations requiring batteries (e.g. fire service system, emergency lighting, burglar alarm, security system, lift and escalator installations) for at least 50% of all new projects	Measured in terms of % of projects out of total no.	85% (45 out of 53 projects) complied with the target	▶▶ Use Ni-MH batteries for capacity requirement of less than 15 Ampere-hour (Ah) in building services installations requiring batteries (e.g. emergency lighting) for at least 85% of all new projects
Use environmentally preferable materials (e.g. materials from renewable sources, reusables,	Reduce the use of timber by using alternative structural solutions (e.g. metal hoarding, system form-work, metal form-work, semi-pre-cast flooring systems, pre-cast roofing, dry walls and other structural means such as steel structural section, left-in formwork, etc.)	Measured in terms of quantity of timber saved	1217m ³ timber saved	▶ Same target on-going
	Use recycled structural materials (e.g.	Measured in terms of quantity	15 projects commencing in 2003	● Same target on-going



From top left:

1. The hybrid structure (i.e. prefabricated structural steel frame with concrete core walls) is adopted to shorten construction time, improve safety during construction, provide better control on workmanship standard and eliminate the use of timber formwork.
2. Visit to the recycled aggregate plant operated by the Civil Engineering Department to confirm quality of aggregates used in projects.
3. Sun roof, extensive natural lighting and spacious interior are some of the characteristic design features of buildings in Science Park Phase 1a.
4. Indoor landscaping greens the spacious interior of a Science Park Phase 1a building.

LONG-TERM GOAL:

Cityscape and open space that are both environmentally sound and aesthetically pleasing.

LEGEND ▶▶ = target substantially achieved ▶ = target achieved ● = target progressing ◀ = target not achieved

Key Objectives	Key Targets	Measurement Methods / Indicators	2002 Performance and Status	Follow-on Targets for 2003 and Beyond
Use landscaping extensively as possible to improve visual and air quality of the urban built environment	Landscape usable roof area (i.e. roof gardens)	Measured in terms of no. and % of projects	74% (14 out of 19) of all new building projects have incorporated roof garden	▶ Landscape usable in roof area for at least 70% of new projects
	Incorporate landscaping in buildings (i.e. terraces, balconies and other covered and semi-covered areas)	Measured in terms of no. and % of projects	96% (22 out of 23) of all new projects have incorporated landscaping in buildings	▶ Incorporate landscaping in buildings for at least 90% of new projects





From top left:

1. Garden terraces adorn the outer rim of the Sha Tin Government Offices.
2. Roof garden on the split-level provides a pleasant outdoor space for office users.
3. Beautified promenade at the Siu Sai Wan Waterfront.
4. Green space design and compatible landscaping blend pedestrian comfort with aesthetics.

LONG-TERM GOAL:

Operations conducted with continual improvements in environmental performance.

LEGEND ➤ = target substantially achieved ▶ = target achieved ● = target progressing ◀ = target not achieved

Key Objectives	Key Targets	Measurement Methods / Indicators	2002 Performance and Status	Follow-on Targets for 2003 and Beyond
Improve the working environment and conserve resources	Reduce electricity use at the APB Centre of ArchSD's Property Services Branch by 0.2%	Measured in terms of consumption in kWh/m ² and % reduction	262.4 kWh/m ² (i.e. 2,669,470 kWh). A reduction of 4% in kWh/m ² consumption was achieved compared with 2001	● Reduce electricity use at the ArchSD's Property Services Branch (APB) Centre by a further 0.2%
Avoid, reduce, reuse and recycle	Use electronic copies of standard forms, letters and memos to avoid and reduce paper consumption for printed copies	Measured in terms of no. of hardcopies and paper consumption avoided	33 sets of controlled documents of approx. 590 pages per set (total 19,470 pages) previously issued will no longer be maintained and updated in hard copy form	▶ Same target on-going
	Centralize Quality and Environmental Management System documents and eliminate duplication to reduce paper consumption	Measured in terms of types of standard forms on the ArchSD Intranet	Standard forms of the Core Manual and several of the Local Manuals were centralized and uploaded to ArchSD intranet	▶ Same target on-going
	Collect waste paper for recycling and monitor quantity collected at APB Centre	Measured in terms of quantity collected in kg	5,950kg waste paper collected and sent for recycling	▶ Same target on-going New Target: Collect aluminium cans and plastic bottles for recycling in APB Centre
Promote environmental awareness	Organize/arrange staff participation in courses/ seminars/visits related to environmental issues	Measured in terms of no. of environmental courses/ seminars/visits organized for/participated by staff	Staff were signed on to and participated in 86 environmental training courses/ seminars/visits	▶ Same target on-going
	Promote environmental awareness to consultants, contractors and the general public through publicity functions, e.g. seminars, interviews, forums and exhibitions	Measured in terms of no. of publicity functions	Organized/participated in 5 publicity functions to promote environmental awareness	▶ Same target on-going



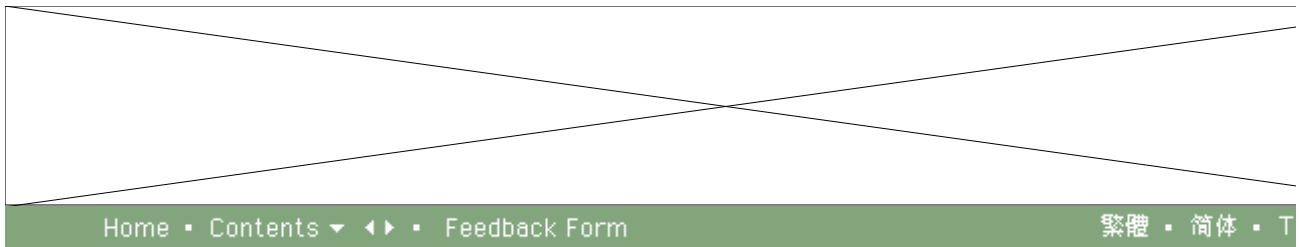
From top left:

1. An office floor at our Queensway headquarters with energy efficient lighting. (using T5 fluorescent tubes) and green plants in an open office setting.
2. Green box conveniently located to collect waste paper for recycling.
3. Three/six-litre dual flush water-saving cisterns for toilet flushing.

4. A staff member's workstation brightened up by fresh green plants.

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HEALTH, SAFETY AND SOCIAL PERFORMANCE

What Social Sustainability Means to Us

For our department, social sustainability includes providing public buildings and facilities that meet both the functional needs and the aesthetic and cultural expectations of our clients, users and the general public. It also means integrating issues such as construction site safety, building health and accessibility into the design and construction of all our projects. Another important element is how we involve and engage our staff to address these issues. We need to ensure that our staff are aware of and sensitive to our stakeholders' needs and that they have a supportive, engaging and fulfilling work environment in which to build their own skills and capacities. We also aim to foster a similar spirit of service excellence and dedication to meeting our sustainability expectations among our consultants, contractors and suppliers.

Our goals, initiatives and resulting performance on health, safety and social issues are highlighted in this section.

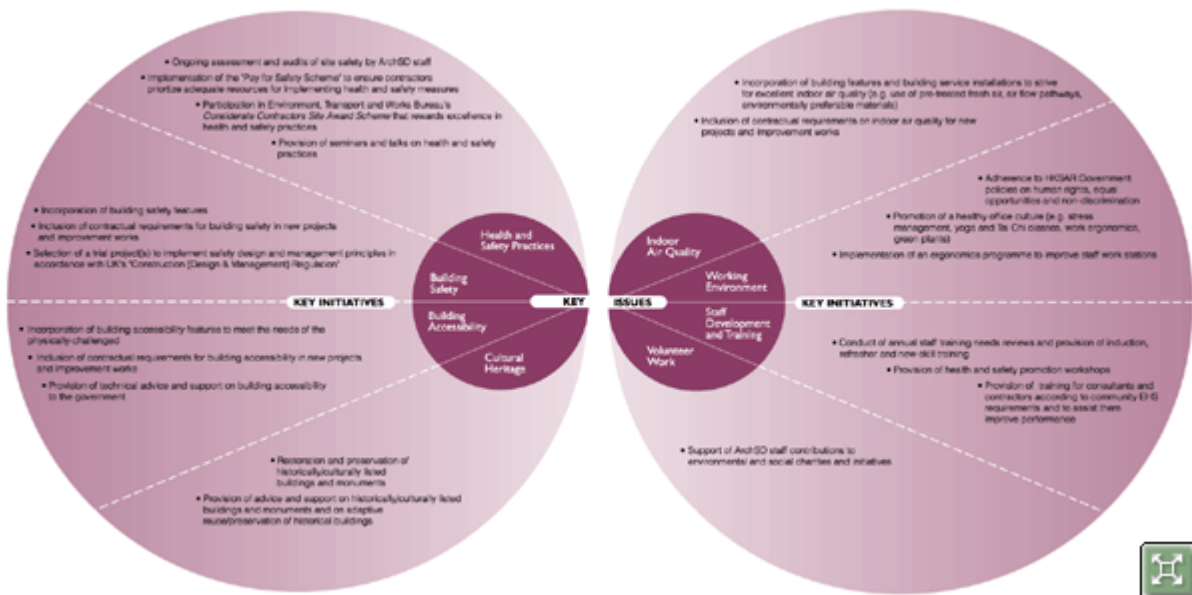
LONG-TERM GOALS:

- Projects that are implemented in a socially responsible manner by taking into account the associated health, safety and cultural heritage concerns.
- Appropriate considerations are given to stakeholder concerns through the maintenance of dialogue with consultants, contractors, suppliers, user communities and other interested parties.



From left:

1. Tactile guide path installed to assist physically-challenged users.
2. Tactile guide paths are provided for new projects and included in improvement works.



Analyzing Health and Safety (H&S) and Social Performance by Indicators

Health and safety is an important issue and we monitor and assess our performance very seriously. Our non-fatal accident rate was significantly lower than the Hong Kong construction industry average and it has been significantly improving each year since 2000. However, we sincerely regret that there were four fatalities and quite a number of accidents and injuries, and 83 health and safety convictions arising from the work of our contractors in 2002.

Since our goal is for zero fatalities and accidents and full compliance, we will therefore continue our diligent efforts to ensure that best practices for health and safety are enforced. We recognize that the fatalities in 2002 are related to falling from height. We are hence working to strengthen our control by issuing further reminders, conducting relevant refresher training and intensifying our supervision of the implementation of relevant safety work instructions and procedures at our sites.

Other key health and safety initiatives include our support of the Environment, Transport and Works Bureau's Considerate Contractors Site Award Scheme to recognize contractors with good site management, environmental best practice, compliance, and consideration of neighbours and the community during the construction process. In 2002, 12 ArchSD sites registered for this scheme and our Safety Advisor and Inspectors were heavily involved in advising these entrants to improve their performance, resulting in 5 sites receiving the award.

We not only require all new facilities to be designed and built with accessibility features for the physically challenged (e.g. tactile guides, braille lift button panels and special washrooms), but have also been continually enhancing our existing buildings and facilities to incorporate such features.

As in previous years, a large number of our staff attended training courses and were involved in community-volunteering initiatives. In 2002, our staff joined charity marathons, walks and events, and contributed over \$20,000 to organizations such as the Community Chest, Po Leung Kuk and the Conservancy Association.



From top left:

1. Metal scaffoldings at an ArchSD site.
2. An ArchSD site managed based on environmental, health and safety best practices.
3. A workday started by pre-work exercises.
4. Management meeting held on construction site health and safety.

Key H&S and Social Performance Indicators in 2002

> Health & Safety

Contractors at ArchSD sites

Fatalities: 4 cases

Accidents and injuries: 366 cases

Fatal accident rate: 0.01

Non-fatal accident rate: 0.95

Length of longest operation period without an accident: 8 months

ArchSD staff

Fatalities: 0 case

Fatal accident rate (per 100,000 manhours): 0

Reportable non-fatal injuries: 4 cases

Total sick days of all ArchSD staff: 4,188 days (31,410 manhours)

> Facilities for Physically-challenged Staff

- No. of physically-challenged staff: 65
- No. of car parking spaces for physically-challenged users: 2 out of a total of 37 parking spaces for ArchSD at the Queensway headquarters

> Staff Training and Development

- Continual learning and training: 5,439 ArchSD staff attended training
- No. of H&S training courses (including internal and external seminars/ workshops/ training courses/ visits): see figure on opposite page
- No. of trainees on H&S (including ArchSD staff, consultants and contractors): see figure on opposite page

> Supplier/ Contractor Management and Service Stewardship

- Manhour input by ArchSD on site work: 38,579,572 manhours
- On-site review of contractor performance: 3,555 contractor performance reports completed (reviewed quarterly)
- No. of H&S training courses (including internal and external seminars/ workshops/ training courses/ visits): see figure on opposite page
- No. of trainees on H&S courses (including ArchSD staff, consultants and contractors): see figure on opposite page

> Social Considerations in Design

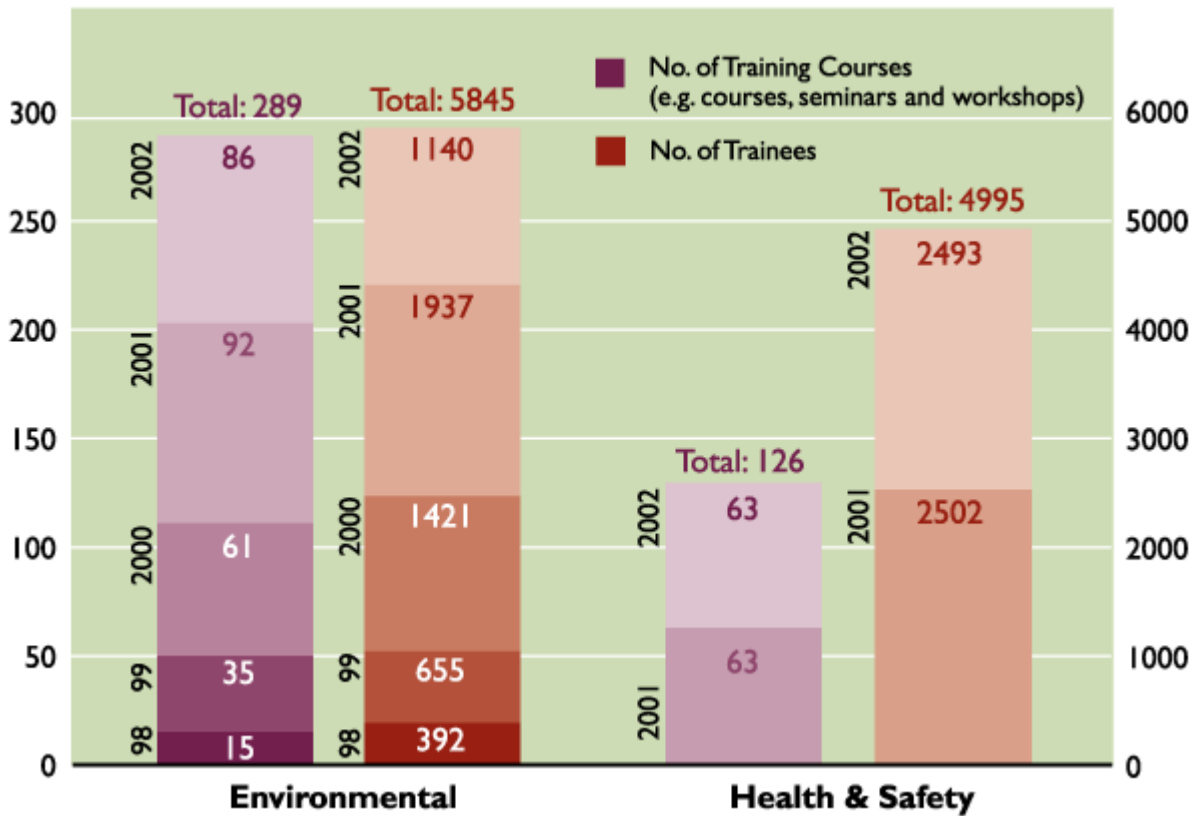
- Modification works in existing government buildings/ offices to facilitate access for physically-challenged staff/users: 10 projects
- Expenditure on modification works in existing government buildings/ offices to facilitate access for physically-challenged staff/users: HK\$2.51M
- % of new building designs that have incorporated social considerations (e.g. for disadvantaged persons):

100%

> **Community Volunteer Work**

Types of community volunteer work events with staff participated: Tai Chi demonstrations, Cantonese opera performances and house-warming visits to elderly homes

Statistics for Environmental and Health & Safety Training

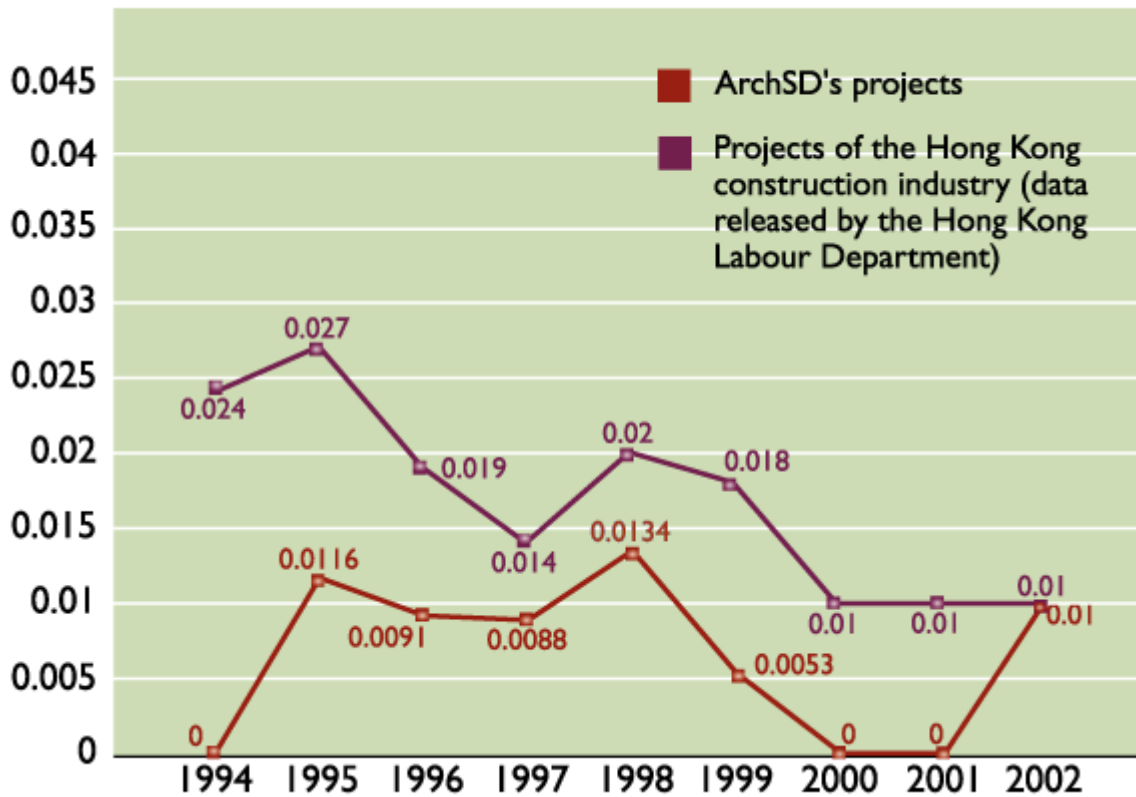




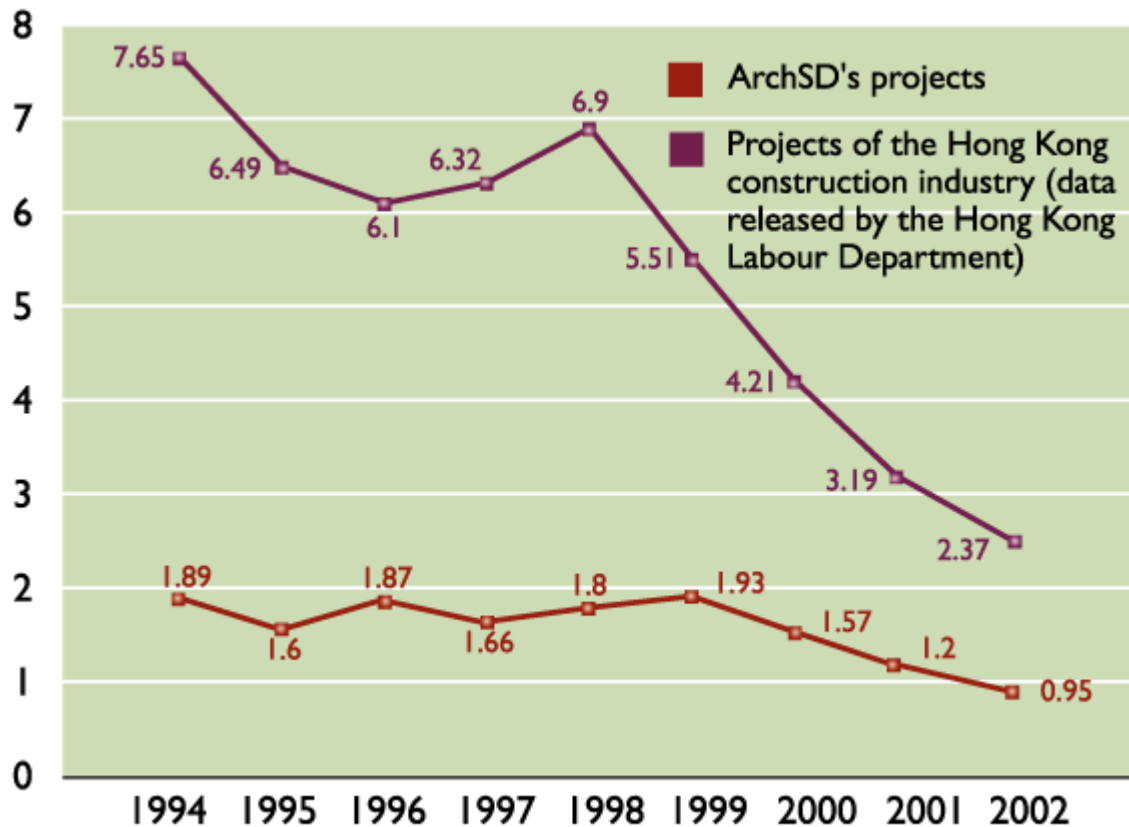
From left:

1. Shading for common outdoor spaces in the School Village at Po Kong Village Road.
2. Revitalized nurse station at the completion of the Caritas Medical Centre Redevelopment.
3. Site visit to Science Park (Phase 1a).
4. Main school building set in landscaped common areas and decorated pedestrian walkways in the School Village.
5. Football field and accompanying audience stand in the School Village.

Fatal Accident Rate of ArchSD Projects Against Average Fatal Accident Rate of the Hong Kong Construction Industry



Non-Fatal Accident Rate of ArchSD Projects Against Average Non-Fatal Accident Rate of the Hong Kong Construction Industry



Notes:

We sincerely regret, and express our condolences for, the four cases of fatalities at our construction sites related to falling from height. We are determined to improve our control on construction safety by strengthening measures, which would include the issuance of reminders and guidance notes, conduct of training for specific target groups, and intensified supervision. We will strive to ensure that best practices are adequately enforced at ArchSD sites.



From Left:

1. Volunteer visit to an elderly home.
2. Cleaning as an integral part of site management at an ArchSD site.

This year is the first time we have begun to report on other social issues, such as the composition of our workforce, initiatives to reduce stress levels and improvements in the office environment for our staff. We have taken measures to ensure that our workplace is accessible for physically-challenged staff and/or staff having special needs. We also collect feedback to resolve issues and complaints at all staff levels and review and resolve all significant issues through our Departmental Consultative Committee.

It has long been our practice to adhere to the Government's standards for workplace ethics and equal opportunities. We pride ourselves on being an "equal opportunity employer" and can report that at

each level - from secretarial to management staff - a quarter of our staff are female. We will continue to review areas where we can enhance the opportunities provided to our staff and to report on additional social performance indicators.

LONG-TERM GOAL:

Projects that are implemented in a socially responsible manner by taking into account the associated health, safety and cultural heritage concerns.

LEGEND ► = target substantially achieved ▶ = target achieved ● = target progressing ◀ = target not achieved

Key Objectives	Key Targets	Measurement Methods / Indicators	2002 Performance and Status	Follow-on Targets for 2003 and Beyond
Improve air quality in the built environment	Install high dust spot efficiency filters (with at least 85 % efficiency), bio-oxygen generators and UV sterilizers in air conditioning systems for at least 80% of new projects of a specific nature (e.g. market, clinic, hospital, etc.) or projects with occupancy density less than 10 m ² /person	Measured in terms of no. of projects in relevant categories that incorporate the installations out of total no.	81% of projects in relevant categories (17 out of 21) have high dust spot efficiency filters, bio-oxygen generators and UV sterilizers installed	▶ New Target: Install carbon dioxide monitoring sensors to control the amount of fresh air to ensure the carbon dioxide level is lower than 800 ppm for 85% of all new projects with central air conditioning systems
Improve health and safety performance at ArchSD sites	Reduce accident rate to less than 1.25 per 100,000 manhours (equivalent to less than 45 accidents per 1,000 workers per year)	Measured in terms of the rate of an accident occurring for each 100,000 manhours	0.95 per 100,000 manhours	▶ Same target on-going
Manage contractors through contractual safety requirements and site inspections	Improve contractors' safety performance through contractual safety provisions (e.g. the use of metal scaffolding and implementation of site safety cycle) and safety culture promotion	Measured in terms of no. of contracts that have incorporated safety provisions	3 trial contracts with requirements for metal scaffolding; 5 contracts have requirements for implementation of site safety cycle; 16 contracts conducting site safety cycle on voluntary basis	▶ Remark: In late 2002, it became mandatory to incorporate contractual provisions for implementing site safety cycle under the "Pay for Safety Scheme"
Promote safety awareness	Organize in-house construction site safety workshops / seminars / site visits for staff and contractors and consultants	Measured in terms of no. of workshops / seminars / site visits organized	8 in-house safety workshops/ seminars and 1 site visit have been organized for ArchSD staff, contractors and consultants, with a total of 463 attendants	▶ Same target on-going
	Arrange staff to participate in external construction site safety workshops / seminars / courses and health and safety seminars	Measured in terms of no. and types of site safety courses, workshops, seminars, visits that are organized for / participated by staff	2,030 ArchSD staff attended 54 health and safety workshops / seminars / courses provided by external parties	▶ Same target on-going

LONG-TERM GOAL:

Appropriate considerations are given to stakeholder concerns through the maintenance of dialogue with consultants, contractors, suppliers, user communities and other interested parties.

Key Objectives	Key Targets	Measurement Methods / Indicators	2002 Performance and Status	Follow-on Targets for 2003 and Beyond
Maintain dialogue with key stakeholders and address their concerns	Review feedback from stakeholders on EHS Report and address in next report	Measured in terms of feedback addressed in the report for the year 2002	Feedback addressed in the section "To Our Readers"	▶ Same target on-going



CASE HIGHLIGHT

Turning Sustainable Design into Reality

- The Hong Kong Science Park (Phase I)
- The Victoria Park Improvement
- The Public Health Laboratory Centre

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CASE HIGHLIGHT

Turning Sustainable Design into Reality - The Hong Kong Science Park (Phase I)



From left:

1. Projecting horizontal sun-shading structure
2. Double-skinned façades with sun shading louvres
3. Landscaped pedestrian walkways and resting areas

The Hong Kong Science Park aspires to be a world-class intellectual and incubation centre for local, national and international R&D in the Asia Pacific region. Phase 1, comprising 10 buildings, is to be constructed in 3 phases from 2002 to 2005. The Park will eventually cover an area of 22 hectares and have high-tech buildings in a landscaped park setting. Our Department has strived to meet standards of excellence in both the design and construction of the buildings, paying detailed consideration to environmental, health and safety and social requirements throughout the entire process.

Key Environmental Features

Environmentally Sustainable Building Design & Innovative Landscape Design

- Low-rise buildings in a park-like setting facing the Tolo Harbour
- Strategically designed interior office spaces that maximize the use of natural daylight
- Aesthetically planned landscaping that provides a relaxing, refreshing and welcoming atmosphere
- Double skin façades for the Tolo Harbour-facing, south and west sides that greatly reduce noise and heat transmission, as well as energy consumption for air-conditioning needs
- Acoustic enclosures or silencers adopted to minimize noise from mechanical equipment
- Flexible space design with facilities planned to allow for future functional changes by tenants

Environmentally Preferable Building Materials Procurement

- Extensive use of materials that are durable, recyclable, produced from ecological sustainable sources and non-toxic in their use and disposal, and require less maintenance
- Use of non-ozone depleting substances; R134a refrigerants for chillers and FM-200 fire suppressants for fire fighting installations
- Paving blocks made from waste glass and soil are used for the open space
- Ceiling panels made from waste glass are used for the majority of the office areas



From left:

1. BIPV panel (close up)
2. BIPV panel on a double-skinned facade
3. Building Integrated Photovoltaic (BIPV) panels

Use of Renewable and Cleaner Energy

- Building integrated photovoltaic (BIPV) system on the glass curtain walls and roof of buildings that supplies clean, renewable solar energy with an approximate 200 kilo-Watt output. This system reduces pollution from the generation of electricity and is projected to save approximately 250 MWh of electricity consumption annually
- Mobile maintenance spiders used within the Park are all electric powered

Installations for Energy Efficiency and Resource Conservation

- Energy efficient space zoning and installations such as water-cooled air conditioning systems, heat recovery systems, automatic office lighting controls, and "service-on-demand" lifts and escalators that save energy in the round-the-clock facilities
- Intelligent smart-card system that enables park users to reserve facilities and bill accounts electronically, thereby reducing paper use
- Irrigation system serving 3 hectares of landscaped areas with rain sensors and wash basins in office buildings with infrared controls that reduce water consumption



From left:

1. Sky light over the atrium of a building
2. The ARCS waste management system
3. Water cooling towers ensure energy efficiency

State-of-the-Art Waste Management

- The Centralized Automatic Refuse Collection System (ARCS) links all buildings and automatically collects and segregates common commercial refuse and recyclable paper through separate, vertical vacuum chutes and automatic discharge valves
- Direct collection of refuse in concealed chutes and tunnels that eliminates the handling of refuse in the building and open area, thereby minimizing odour and nuisance, enhancing environmental hygiene, minimizing within-Park refuse transportation fuel use and emissions, and reducing visual impacts
- Odour and nuisance at the central collection point is mitigated by the use of air blower fans and a water scrubber and through the compaction of waste into containers for direct transport to landfills

Installations for Cleaner Operations

- Kitchen exhaust systems comprising electrostatic precipitators and grease filters to ensure air emissions meet emission standards
- All exhaust outlets are carefully aligned to avoid facing adjacent buildings and all are at least 5 metres above ground level



From left:

1. Main access road with landscaping
2. Spacious interior
3. Corridors with natural lighting

Adopting Best Practices and Exceeding Regulations

- The majority of the park buildings achieved the ArchSD's target Overall Thermal Transfer Value (OTTV) of 23 watts per m², which is more stringent than the statutory requirement of 30 watts per m² as stipulated in the Building (Energy Efficiency) Regulation
- Air-conditioning systems incorporated with high efficiency filtering and air treatment components that remove odour and chemical pollutants, suppress bacteria and maintain humidity and temperature at desirable levels. The designs are based on the requirements of the Environmental Protection Department (EPD)'s Guidance Notes for the Management of Indoor Air Quality in Offices, thereby striving for excellence in indoor air quality
- Air-conditioning, electrical, lighting and lift and escalator systems that conform with the Electrical and Mechanical Services Department's Energy Codes



From left:

1. Touch-screen elevator panel
2. Sleek and edge-cutting reception kiosk

Key Health, Safety and Social Features

Installations for Indoor Air Quality

- Air filtering equipment that maintains good indoor air quality by filtering and treatment to remove dust, odour and bacteria in air

- Service and extraction ducts in the R&D offices that eliminate the mixing of room air with unpleasant gases arising from research processes

Facilitation of Flexibility Usage

- Facilities and supporting building services work round-the-clock, while incorporating usage efficiency components and operating schemes, to allow tenants to work flexible hours

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CASE HIGHLIGHT

Turning Sustainable Design into Reality - The Victoria Park Improvement



Victoria Park, situated in Causeway Bay, has been one of the community's favourite urban parks since it first opened 40 years ago. Gradually evolving into a diverse park with facilities that cater for both active and quiet souls, the 17-hectare park has facilities that include 6 soccer pitches, walking and jogging trails, children's play areas, a model boat pool, fountains, gardens and resting areas. The well-patronized park has been a popular venue for numerous major outdoor recreational events over the last 20 years, including the annual Chinese New Year Night Market, the Flower Show, the Mid-Autumn Festival Lantern Show, races, charity fun fairs and regular soccer games.

Victoria Park aspires to be the people's park. It aims to serve the people's needs and provide breathing space to the city. To better meet these goals, Victoria Park underwent improvement works from 2000 to 2002, led by the former Urban Services Department (currently the Leisure and Cultural Services Department) and implemented by our Department. The approach was to:

- Rejuvenate the park without losing its cultural reference and character;
- Upgrade its quality to meet world-class standards for a modern city park;
- Incorporate landscaped environments that provide an oasis in the city;
- Create a modern day refuge for people to relax and enjoy; and
- Establish an "Event City" that caters for community recreational functions.



From left:

1. Rejuvenated leisure path shaded by mature trees
2. Band stand for special events
3. Feature fountain set in a topiary garden

Key Social Features - The People's Gathering, Resting and Contemplation Place

Cultural Heritage

- Unique city park with heritage and identity
- Endowed with the Bauhinia emblem of the city
- East-meets-west with local and global gardening influences
- Full of romantic character in its landscaping, layout and use of stylistic design features

Community Needs and Accessibility

- Accessible and welcoming for all to enjoy
- Suitable for relaxation, social interaction or solitude
- Re-engineered pedestrian boulevards and traffic flow system to enhance use of the entire park

Diverse Social Functions

- Custom designed entrance features, fountains, gardens, pavilions and leisure footpaths
- Rejuvenated jogging trails, foot massage stone paths and fitness stations
- Refurbished band stands, chess tables, children's play areas, boat pool, refreshment kiosks and rest areas
- Renovated soccer pitches, sitting areas and pedestrian boulevards



From left:

1. Bauhinia emblem as an artistic design feature
2. Detail of an oriental theme fountain

Key Environmental Features - The Oasis, the Event City

Environmental Compatibility

- Linkage and integration with the surrounding urban fabric
- Rationalized park boundary, enhanced access pathways and corridors, and improved entrances
- Increased visual transparency with appropriate landscaping beautification

Sustainable Planning and Design

- Carefully planned utilization of land and resources
- Refocused and strategically zoned to blend active, passive and green zones

Aesthetics

- Artistically designed planting palettes and topiary gardens
- Aesthetically pleasing yet practical leisure features

Landscaping Biodiversity

- Preservation of mature trees as the central focus
- Native and rare species appropriately mixed with imports
- Diversified horticultural ecosystem

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CASE HIGHLIGHT

Turning Sustainable Design into Reality - The Public Health Laboratory Centre



From left:

1. Offices and laboratories strategically aligned along external wall
2. Sun-shading structure set at various angles
3. Integrated building complex with labs, incubation rooms and lecture halls

Commissioned in 2001, the Public Health Laboratory Centre in Shek Kip Mei is a multi-functional building of 3 office floors, 7 laboratory floors and supporting facilities including a 3-sub-storey carpark, cold rooms, cultivation/ incubation rooms, autoclaves, conference/ seminar rooms and a multi-purpose hall. At a gross floor area of 27,000m², the building has incorporated environmentally sustainable design features and addressed all relevant health and safety requirements. This project, which was designed and implemented by our Department, received the highest rating of "Excellent" by the Hong Kong Building Environmental Assessment Method (HK-BEAM) in 2002. The Laboratory Centre plays a significant role in serving the community, providing public health testing, research and diseases control services. It was also built and now operates in an environmentally sound manner.

Key Environmental Features - A Building Rated "Excellent" by HK-BEAM

Sustainable Building Envelope Design for Natural Daylighting and Energy Efficiency

- Laboratory and office spaces are strategically arranged along the external wall of the building to optimize natural lighting for the comfort of users and to conserve energy
- Sun-shading structures are extensively incorporated onto the external façades, and silk-screened glass and wide projecting horizontal fins are included in internal building spaces (e.g. lift lobbies) to balance heat gain, provide natural shading and reduce electricity consumption for air conditioning



From left:

1. Modular lab bench
2. Air-filtering system
3. Pre-fabricated pipes with insulation

Flexible Designs and Layouts for Waste Minimization

- Flexible, modular unit concept and pre-fabricated blocks in the design, construction and operational phases that minimize construction and refurbishment waste
- Examples include de-mountable dry wall partitions, modular laboratory furniture and service booths, and pre-fabricated air-duct and pipe-work with insulation and cladding



From left:

1. Silk-screened glass wall
2. Clean corridor with energy efficient lighting

Installations for Energy Efficiency and Conservation

- Heat recovery chillers in the air-conditioning system that recover heat for pre-heating hot water for laboratory and office users
- Variable frequency drive pumps and fans in the chilled water and air handling systems that use less energy under partial load conditions
- Centralized refrigeration system, serving 11 cold rooms, that saves energy through its water-cooling design
- State-of-the-art T5 fluorescent lamps and low-loss electronic ballasts in the lighting system that provide visual comfort and save energy
- Static contactor type capacitor banks that minimize energy lagging (or loss) in the electrical system
- Variable Voltage Variable Frequency (VVVF) drives installed to save energy when lifts are partially occupied

Key Health and Safety Features - A Laboratory Centre for Public Health

Installations for Indoor Air Quality

- Installation of coolant-filled heat pipes in the air-conditioning system, rather than the traditional air-mixing thermal heat wheel, to eliminate the risk of cross contamination between exhausts from and fresh air supply for the Biohazard Level 3 laboratories and animal houses. The heat pipes act as a medium to extract "cooling" energy from the exhausts and use this extracted energy to pre-cool segregated incoming fresh air
- More than 110 fume cupboards and safety cabinets installed to meet health and safety and fume treatment requirements and standards
- Eight sets of centralized jet fan systems that support the ventilation needs of the fume cupboards and safety cabinets. The fan design also avoids the conventional "chimney" design for better aesthetics
- An automatic detection and control system that ensures optimal indoor air quality in the lecture theatre and multi-purpose hall by varying fresh air supply based on detected level of CO₂ output by occupants
- Enclosed car-park ventilation systems, equipped with carbon monoxide sensors, that automatically adjust exhaust air flow rates to ensure that carbon monoxide is maintained at an acceptable level



From left:

1. Centralized jet fan systems
2. Completely enclosed fume cupboard



SUMMARY OF KEY EHS STATISTICS

	Units	2002	2001	2000
Energy Choice, Consumption and Design Efficiency				
Electricity consumed (APB Centre only) ⁽¹⁾	kWh/m ²	262.4	272.2	251.9
Building complexes with OTTV < 23 W/m ² ⁽²⁾	% of total no. of projects	97% of 30	93% of 15	100% of 11
Buildings complexes with OTTV < 18 W/m ² ⁽²⁾	% of total no. of projects	63% of 30	67% of 15	45% of 11
High performance building service equipment used	no. applied	431 ⁽³⁾	278 ⁽³⁾	605
Energy saved due to energy efficient design (estimated) ⁽⁴⁾	kWh	85,000,000	84,000,000	75,000,000
Equivalent monetary savings	HK\$	85M	84M	75M
Solar PV panels under design or construction	m ²	7,000 ⁽⁵⁾	1,700 ⁽⁵⁾	882
Materials Choice and Consumption				
Non-ozone Depleting Substances				
Refrigerants installed	no. of application	34	19	23
Fire extinguishing agents	no. of application	6	7	4
Office Materials				
A4-size office paper with 100% recycled content used	reams	500	50	-
Total paper and paper products used ⁽⁶⁾	tonnes	177.2	-	-
Types of environmentally preferable office supplies in use	types	17	-	-
Emissions to Air				
CO ₂ emission equivalent to electricity consumption (APB Centre only) ⁽⁷⁾	tonnes	1,194	1,238	1,146
CO ₂ emissions avoided equivalent to electricity saved ⁽⁷⁾	tonnes	37,500	37,000	33,000
Waste Avoidance, Arisings, Treatment and Disposal				
Construction Activities				
Timber saved due to use of reusable metal hoardings	m ³	1,040	476	590 ⁽⁸⁾
Timber saved due to use of pre-cast/semi pre-cast slab construction, Aluminum and steel table formwork	m ³	1,641	1,972	1,672
Timber saved due to use of metal formwork for in-situ construction	m ³	37	2,203	2,674 ⁽⁸⁾
C&D waste arisings disposed of to landfills	tonnes	42,100	-	-
C&D material arisings disposed of to public fill areas	m ³	642,704	-	-
Internal Housekeeping				
Office paper recovered for recycling	tonnes	5,950	7,700	6,900
Biodiversity				
Landscaped areas to improve biodiversity	m ²	94,338	-	-
Trees and shrubs planted for urban landscaping	Trees; shrubs no.	16,480; 903,898	-	-
Annuals (flowering plants) planted for urban landscaping	no.	114,426	-	-
Health and Safety				
At ArchSD Construction Sites				
Fatalities	cases	4	0	0
Non-fatal reportable accidents ⁽⁹⁾	cases	366	421	547
Fatal accident rate (per 100,000 manhours)	ArchSD (HKCI)	0.01 (0.01)	0 (0.01)	0 (0.01)
Non-fatal accident rate (per 100,000 manhours)	ArchSD (HKCI)	0.95 (2.37)	1.20 (3.19)	1.57 (4.21)
At ArchSD Offices				
Fatalities	cases	0	-	-
Awareness Raising and Training				
Training for Staff and Contractors				
Environmental training (i.e. courses / seminars / workshops / visits)	no.	86	92	61
Trainees on environmental courses	no.	1,140	1,937	1,421
H&S training (i.e. courses / seminars / workshops / visits)	no.	63	63	-
Trainees on H&S courses	no.	2,493	2,502	-
Outreach to the Public				
EHS exhibitions / talks	no.	13	20	25
EHS Compliance				
Environmental convictions at ArchSD sites	no.	46	25	57
H&S convictions at ArchSD sites	no.	83	58	68
Target Achievement Status				
No. of targets achieved ⁽¹⁰⁾	no.	33	31	25
No. of targets achieved better than expected ⁽¹⁰⁾	no.	29	12	15
No. of targets on-going ⁽¹⁰⁾	no.	6	2	1
No. of targets not achieved ⁽¹⁰⁾	no.	4	4	1
% performance (i.e. targets achieved / total no. of targets)	%	86% (62 of 72)	88% (43 of 49)	95% (40 of 42)

Explanatory Notes:

- = data not collected / not available

HKCI = Hong Kong Construction Industry

(1) The total office area of the APB Centre is approx. 10340 m².

(2) Figures based on calculated data available from design projects approved by ArchSD at the Stage 3 Detailed Design Phase.

(3) Figure compiled based on the date of project completion for new works and the date of issue for the works order for refurbishment projects.

(4) Figure calculated based on the projected savings due to the use of energy saving building service equipment.

(5) Figures based on the number of projects under design and construction during the reporting years of 2001 and 2002.

(6) Figure includes consumption of A4-size office paper, A3-size office paper, computer paper, plotting drawing paper, plotting tracing paper, printing drawing paper and envelopes.

(7) CO₂ emission equivalents are calculated based on a conversion factor of 0.44kg CO₂ per kWh.

(8) The figures for timber savings in 2000 have been adjusted using an updated calculation methodology that is consistent with the methodology used in 2001 and 2002.

(9) A non-fatal reportable accident is defined as an accident that results in incapacity for more than 3 days.

(10) Targets for 2002 include environmental targets under the ISO 14001 system and quality targets and improvement areas under the ISO 9001 system.

The calculation for number of targets achieved in 2000 and 2001 includes environmental targets only.





Clockwise from left:

1. HKIA Special Architectural Award for Sustainable Design for Tai Lung Veterinary Laboratory
2. Commendation from the ACCA Environmental Reporting Award Scheme
3. The ACCA Commendation Award
4. Design Excellence award from the 2002 Hong Kong Flower Show
5. HK-BEAM certificate with "Excellent" rating for the Public Health Laboratory
6. HKILA Award of Merit for "Improvement to Victoria Park"

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CHALLENGES AND PRIORITIES

Our Department, as with other public and private sector organizations, is challenged to integrate sustainability principles into all that we do. This means considering the economic, environmental and social impacts and opportunities arising from our activities and finding ways to maximize benefits from adopting sustainable options. Within this context, the Government conducted a business review of our Department in 2001. As a result of this review, a key challenge for ArchSD is to progressively outsource our role as the works agent for project delivery and facilities maintenance to the private sector and to devolve our maintenance responsibilities to government departments and subvented and non-governmental organizations. This will harness the resources of the private sector and enable us to focus on strategic issues that include our project management and advisory functions.

In moving forward we will continue to: 1) seek opportunities to further the sustainability of the built environment; 2) engage our stakeholders to ensure that our priorities and performance meet the expectations of our clients, partners and the public; and 3) continue to expand the monitoring, assessment and reporting of our operational, environmental, health, safety and social performance.

To meet these challenges, we have established the following priorities:

- **Seek support from all stakeholders to achieve a smooth transition to the new mode of operation**
We will work closely with our colleagues to develop implementation plans and provide them with the necessary briefing, training and assistance to meet our new challenges. We will enhance our communication with all stakeholders including our clients, consultants, contractors, professional bodies etc., to foster two-way dialogues for achieving continual improvements in quality, environmental, health, safety and social performance.
- **Maximize the effective and efficient use of expertise and resources in the public and private sectors**
We will explore various project procurement strategies to make the best use of expertise and resources in the private sector.
- **Ensure the quality of service and promote high standards in environmental, health, safety and social performance**
Strengthening our management and monitoring mechanism is an important priority for ensuring that the quality of our service will not be compromised through outsourcing. We will also strengthen our role as the Building Authority for Government projects and provide training and clear guidelines to our consultants and contractors, especially on matters where the standard expected is higher than the minimum required under law.
- **Improve the overall professionalism of the construction industry**
We strive to foster a quality culture in the construction industry by motivating all parties to continually improve their performance. We will review our strategies in the selection of consultants and contractors to ensure that apart from the tender cost, other quality attributes such as technical capabilities, past performance, site safety records and environmental performance, etc., are taken into account.



“ We look forward to moving ahead with more challenging initiatives in partnership with our colleagues, the construction industry and the community to improve the quality of the built environment in Hong Kong. ”

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VERIFICATION STATEMENT



Scope

Hong Kong Productivity Council (HKPC) was commissioned by Architectural Services Department (ArchSD) to verify the Department's Environmental, Health and Safety Report 2003 (hereinafter the "Report"), and the Report covers the operational, environmental, health, safety and social (EHS) performance in 2002. In doing so, HKPC provided this Verification Statement.

Objectives

The verification objectives are to:

- Assess whether the scope of the Report covers all relevant issues in relation to ArchSD's EHS performance;
- Assess and verify the accuracy of the data and information presented in the Report; and
- Assess whether the data management system used to prepare the Report is reliable.

ArchSD is responsible for the preparation of the Report and this statement is based on the results of a systematic verification process and represents HKPC's independent opinion of the Report.

Approach

The verification process was conducted through interviews with ArchSD's representative staff from all branches. During these interviews, ArchSD's EHS performance was discussed and verified. The sources of data and information and data collection and analysis methods used in the preparation of the Report were examined.

Results

Report Completeness

The Report is considered to be comprehensive and provides a balanced account of ArchSD's EHS performance with respect to its core responsibilities and activities, to its key EHS issues and initiatives, and the management of these issues and associated achievements. The Report presents sufficient information in a structured manner to communicate ArchSD's commitment to furthering sustainable development of Hong Kong through integrating sustainability principles into its operations, and establishing measurable future EHS targets as well as formulating strategic directions. Comments on the last report have also received proper attention in this Report.

Report Accuracy and Reliability

The data and information presented in the Report are consistent with the materials reviewed by HKPC consultants during the verification process and reflect an accurate account of ArchSD's EHS management practices and the Department's status of achieving the objectives and targets for 2002. The data management system used is considered to be both effective and reliable. In particular, various tools, methodologies and communication channels appropriate to the nature of data and information are used to collect, store and analyze them.

Recommendations for Future Reports

ArchSD is commended for responding to the recommendations made by the verifier in the last report and as a result the Department's key operational and social performance information are included in this Report and the Global Reporting Initiative's Sustainability Reporting Guidelines has been used as far as possible. We encourage ArchSD to continue to move towards sustainability reporting by further enhancing the economic and social aspects of the Department's EHS reports. In particular, further social performance indicators and measurable targets can be established.

12 December, 2003



C M Lin
General Manager
Environmental Management Division
Hong Kong Productivity Council

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WE WELCOME YOUR FEEDBACK

Architectural Services Department

	Poor	Marginal	Adequate	Good	Excellent	Additional Comments
How does our report rate? Please tick:						
Topics covered are relevant and interesting?						
Contents and information are comprehensive?						
Text is clear and easy to understand?						
Graphs and charts are clear and easy to understand?						
Report is a pleasure to read?						
Overall rating is?						

	Poor	Marginal	Adequate	Good	Excellent	Additional Comments
How would you rate our report sections? Please tick:						
To Our Readers						
2002 EHS Highlights						
Operational Performance						
Environmental Performance						
Health, Safety and Social Performance						
Case Highlights						
Summary of Key Operational and EHS Statistics						

Any information missing from this report that should be included in our next report?

Any other comments or suggestions?

Which stakeholder group do you belong to?

- Client of ArchSD
- User of ArchSD's Facilities
- Government Department
- Consultant / Contractor / Supplier / Construction Industry
- Architect / Engineer / Landscape Architect / Surveyor
- Environmental NGO
- Social NGO
- Academic/Education Sector
- Staff of ArchSD
- General Public
- Other _____

If you would like to receive future reports/information from us please provide your contacts:

Name _____

Address _____

Phone _____

Email _____

Thank you very much! We appreciate your feedback.

PLEASE FAX TO : 2596-0361 OR

EMAIL TO: Ms. Karen Cheng, Quality and Environmental Management Unit, at chengkl@archsd.gov.hk