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Hong Kong's rapid economic progress has in part been built on lax industrial waste disposal practices. This has left us with numerous contaminated land-sites. In this Quarterly we consider the approach taken by the United States to the same problem in that country is to decontaminate all hazardous sites.

The Editors

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COMING TO GRIPS WITH OUR CONTAMINATED LAND: THE SUPERFUND EXPERIENCE

Superfund for Hong Kong?

After decades of misusing and indiscriminately disposing of toxic substances, Hong Kong, like many other countries, must now tackle a fundamentally serious environmental problem, namely how to redress widespread contamination of our land. This is an issue which is increasingly the subject of public discussion. For example, in the Autumn 2000 edition of *HKELA NEWSLETTER* the article *Contaminated Land – The Final Frontier* points out that Hong Kong is no different to other developed countries, such as the United States and United Kingdom, whose governments have had to introduce a comprehensive legislative scheme in order to implement an effective cleanup of contaminated landsites on a national scale.

Large scale projects, like Hong Kong Disneyland, focus renewed attention on yet another serious and pressing environmental problem for Hong Kong. In the construction of Disneyland, extensive reclamation of Penny's Bay, North Lantau Island, is to be carried out for associated infrastructure works. Until now Penny's Bay has been the site of a large shipyard. It is well known that an extensive range of toxic chemicals are used in the business of a shipyard. We can therefore expect that during the many years of its existence the shipyard has caused widespread and deep-rooted contamination of the sea-bed at and surrounding the site. It is imperative that all trace of toxic substances be removed before the site is incorporated as part of the Disneyland complex; see on this, for example: *Disneyland Enquiry Disappoints Greens,* UPELQ, December 2000, p. 6.

Disneyland is just one of myriads of known or potential examples of land contamination in Hong Kong. In order for this land to be used or developed, effective decontamination processes must be employed so that the Government and public are realistically satisfied on the issue of protection against future health risks.

However, decontamination processes can be – usually are – costly. Therefore, whilst it is doubtful any reasonable person in the government, or elsewhere in our community, would argue against the proposition that our land should be decontaminated as soon as reasonably possible, much argument could ensue as to how best fairly and equitably to

spread the decontamination costs. This is the problem a territory-wide decontamination programme would address, in addition to tackling the cleanup process.

The most prominent example of an attempt to implement a nation-wide decontamination process is the United States' Super Fund Programme. There may well be lessons for Hong Kong in this field of environmental protection to be derived from the experience of Super Fund's administrators to date. In this edition we provide a brief overview of Super Fund's essential elements and effectiveness.

Essential elements of Superfund

Super Fund, as the programme colloquially has been known since its inception, was created by the C*omprehensive Environmental Response, Compensation and Liability Act* (CERCLA) which was first enacted by federal Congress on 11 December 1980 (reauthorised in 1986 and 1990). CERCLA also created a tax on America's chemical and petroleum industries to fund the operations of Super Fund. CERCLA provided broad legislative authority for the designated federal agency, the Environmental Protection Authority (EPA), to respond directly to releases or threatened releases of hazardous substances likely to endanger public health or the environment. EPA is empowered to address, either in a programmed or urgent manner, identified releases of toxic substances from or on existing contaminated sites, whether occurring on private or public land. The EPA also has the power under separate legislation to control and monitor new and continuing releases of toxic substances into the environment, pursuant to the *Resource Conservation and Recovery Act* (RCRA) of 1976.

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CERCLA

<u>The legislation</u>

Essentially, CERCLA:

- established prohibitions and requirements concerning closed and abandoned hazardous waste sites;
- provided for liability of persons responsible for releases of hazardous waste at these sites;
- and established a trust fund to provide for cleanup work when no responsible party could be identified.

The law authorised two specific kinds of response actions the EPA may initiate when faced with a dangerous, contaminated land site:

- short-term removal of hazardous waste, which involves taking action to address immediately any leakage/release or threatened release of hazardous substances on an urgent basis;
- long-term remedial response actions by EPA permanently and significantly to reduce dangers associated with releases of toxic substances which are considered serious threats to human or environmental health but may not be immediately life threatening (and therefore not requiring urgent removal).

Clean up process

Implementation of Super Fund began with identifying all of America's contaminated land sites. For this the EPA has relied on information from its own regional offices and from state agencies and private citizens. Once identified, sites are then entered into the Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) which is the EPA's computerised inventory of potential hazardous substance release sites. CERCLIS has been developed to a point where, in theory at least, it is considered that most of America's hazardous land sites have been identified (but certainly not rectified).

In respect of each site, the EPA evaluates the potential for release of hazardous substances and the degree of harm which might eventuate from such release. Using this data and EPA published hazardous site assessment criteria, sites are allocated a Hazard Ranking System (HRS) score up to 100. The HRS is intended to enable the EPA to assess the relative potential of sites to pose a threat to human health or the environment. Uncontrolled sites with a HRS score of 28.50 or greater are then listed on the National Priorities List (NPL), which was first promulgated on 8 September 1983. The EPA usually then carries out a more detailed investigation of the site.

The HRS does not in fact determine EPA's priority in allocating funds for cleaning up sites on the NPL. Funding priority is assessed following more detailed studies of each of the sites, known as remedial investigations/ feasibility studies. However, the HRS score of a site does indicate the level of danger it poses to human or environmental health.

In compiling the HRS a structured analytical approach is used. This assigns numerical values to factors that relate to risk, based on the conditions of the site. The factors are grouped into three categories

- likelihood that a site has released or has the potential to release hazardous substances into the environment;
- characteristics of the waste (e.g. its toxicity or quantity); and
- the people or sensitive environments ("the targets") likely to be affected by a release.

In determining the factor of release, four release or seepage pathways are considered:

- ground water migration (drinking water);
- surface water migration (drinking water, human food chain, sensitive environments);

- soil exposure (resident population, nearby population, sensitive environments); and
- air migration (population, sensitive environments).

Unless a NPL site falls within the emergency response category, which entails urgent removal of the identified hazardous wastes, it will be decontaminated by "remedial action". Remedial actions normally take longer and are more complex than urgent responses. They are designed to provide a permanent remedy, that is, permanent decontamination of the subject site. In effect, there are three distinct phases carried out by the EPA for remedial action:

- the investigation phase (referred to briefly above);
- the remedial design phase, when the EPA designs the construction or other works required to decontaminate the site; and
- the remedial works phase.

A high level toxic site which, because of the nature or quantity of the hazardous substances poses a potential risk to people or the environment even after extensive decontamination, will become the subject of a fourth phase – ongoing operation and maintenance. For example, sites where underground water supplies have been severely contaminated are likely to require regular, continuing monitoring. It may be decades before such a site could confidently be declared decontaminated.

The NPL is reviewed and updated periodically. It is included as Appendix B to the National Contingency Plan (NCP) which the EPA has prepared to cater for toxic wastes risks on a national basis. There are procedures allowing for public participation in the NPL listing process. Listing of a site may carry eventual legal liabilities for current or former occupiers of the site, and may trigger service of notice of CERCLA – financed remedial action.

However, NPL listing does not itself determine liability for cleanup costs. The list is designed primarily to provide information to the public and state and federal agencies of the location and nature of hazardous sites. Contaminated sites which are a) assessed, b) are not federal sites and c) are not listed on the NPL are the responsibility of the states.

In summary, the cleanup process follows these steps:

- Preliminary Assessment/Site Inspection (PA/SI) – investigations of site conditions
- HRS Scoring – screening mechanism used to place sites on the NPL
- NPL Site Listing Process – list of the most serious sites identified for possible long-term cleanup
- Remedial Investigation/Feasibility Study (RI/FS) – determines the nature and extent of contamination
- Record of Decisions (ROD) – explains which cleanup alternatives will be used at NPL sites
- Remedial Design/Remedial Action (RD/RA) – preparation and implementation of plans and specifications for applying site remedies
- Construction Completion – identifies completion of cleanup activities
- Operation and Maintenance (O&M) – conducted after site works are completed to ensure that the remedial objectives are attained
- NPL Site Deletions – removal of sites from the NPL once certified as decontaminated.

The EPA uses these steps to determine and implement the appropriate response to threats posed by releases of hazardous substances. Releases that require immediate or short-term response actions are addressed under the Emergency Response programme of Superfund. However, federal agencies are responsible for decontaminating their own hazardous sites.

Finance and liabilities under Superfund

Legislative authority for the taxes which have funded Superfund expired in December 1995, leaving Superfund with approximately only $1.4 billion to finance its continued work. However, it is likely Congress will vote continuing appropriations to enable the programme to be completed.

By any criteria, expenditures in implementing the Superfund programme to date have been substantial. Between 1981 and 1998 approximately US$13.5 billion in taxes was collected for Superfund. These funds together with interest earned on them and penalties imposed by courts and paid into the Superfund trust account have been used to finance decontamination works undertaken directly by Superfund contractors, which have cost approximately US$15.9 billion to the end of 1998.

CERCLA empowers the EPA to force responsible parties either to decontaminate or to pay EPA to do so. The bases for private parties liability are very broad indeed. For example, section 103 (c) required all past as well as present owners or operators of facilities where hazardous substances were stored, treated or disposed of to notify EPA by June 1981 of the existence of such facilities and of any known, suspected or likely releases of hazardous substances at those facilities. Continuing releases or suspected releases of hazardous substances must also be reported as and when they occur.

Present and past occupiers of such sites may be liable for decontaminating them. There have been cases where even a bank lending the funds to enable an operator to establish a hazardous waste facility has years later been made liable for the decontamination costs. Generators and transporters of hazardous wastes to sites may also be liable. Superfund has operated on the theoretical basis that its own funds would be used for decontamination works only in rare cases where private parties could not be made liable for such costs or could not be identified.

To date the EPA has succeeded in forcing or convincing responsible parties to conduct approximately 70% of long-term Superfund cleanups. However, it has been less successful in recovering from responsible private parties the costs of decontamination works carried out by Superfund, to the extent of at least US$2 billion. Between 1980 and 1998 responsible private parties' expenditure on decontamination works at sites on the NPL (i.e. disregarding decontamination of other sites not listed on the NPL) was approximately US$15.5 billion.

A significant proportion of Superfund's annual expenditure consists of the legal costs of court actions instigated by EPA to recover decontamination works/costs from private parties. Nevertheless,

GAO (General Accounting Office) frequently notes in its reports that the EPA is less than robust in using its powers under CERCLA to make responsible private parties accountable. This reflects a surprisingly common reluctance of government agencies in numerous countries to enforce regulations designed to prevent or cure environmental degradation.

How effective is Superfund?

Approximately 1400 hazardous sites have been listed on the NPL since the establishment of Superfund. Of these, approximately 838 sites had not been decontaminated as at April 1999. 640 of these were non-federal sites, i.e. were on state or private land. However, more alarming are GAO's estimates in a 1987 report that up to 425,000 sites were potential hazardous waste sites. At that time, the EPA's CERCLIS inventory listed only 27,000.

In effect, only the most severely contaminated sites have been listed in the NPL. Many more have not been assessed or, if assessed, have been given an HRS below 28.5. Additionally, Superfund has not addressed what will happen to the more than 5,000 sites in America where hazardous wastes continue to be used and discharged under permits granted pursuant to RCRA. Decontamination of these sites will be necessary once they are no longer in use.

A further problem in administering Superfund is the clash of jurisdictions between the federal and state authorities (which will not be a problem for Hong Kong should we eventually adopt a scheme along the Superfund lines). State agencies are required under RCRA to identify all facilities which handle or have handled hazardous wastes. The EPA uses this data as an input to compiling CERCLIS. As explained before, CERCLIS listing is a preliminary step to having a site listed on the NPL. However, experience indicates that states do not always report sites to the EPA, usually because they:

a) want additional time to verify the presence of hazardous waste;
b) or believe that they can force responsible parties to clean up the sites more quickly and at less cost than if the EPA is involved;
c) and/or consider themselves obliged to report only those sites which they consider eligible for federal funding for decontamination.

Further, a four year legislative deadline imposed on states for nomination of sites to CERCLIS meant that in practice states limited evaluation and identification of sites in accordance with the extent of federal or other funds available to carry out the evaluation process.

Current Status of Superfund

More than $10 billion has been spent in the Superfund programme since its inception. Nevertheless, the GAO's pessimistic assessment is that Superfund has accomplished little towards its overall goal of substantially ridding America of its hazardous waste land sites. In its numerous reports to Congress concerning the administration of Superfund, a recurring criticism of the GAO is that too great a proportion of Superfund's limited funds is wasted on administration. Additionally, because the EPA is obliged to decontaminate many of the identified sites where private parties cannot be made responsible for some reason, the EPA retains a panel of appropriate contractors on retainers to be available to carry out decontamination work. This is apparently necessary because often the work has to be done on an urgent basis. However, when there is no work currently available the contractors continue to be paid at least a proportion of their contract rates in order to cover their fixed overheads. This is a significant drain on Superfund's assets. For example, between 1996 and 1998 approximately 45% of all Superfund's expenditures were for contractor cleanup costs, including support costs.

As at October 1999 the GAO estimated that of 640 non-federal sites on the NTL, 376 were under remedial investigation and feasibility study, 133 were in the remedial design phase and 131 were in the remedial action phase. Projections at that time indicated that decontamination of 85% of the sites on the NPL would be completed by the end of calendar year 2008, with the remainder to be completed well after that year. The additional costs for cleaning up non-federal sites (federal sites being treated as a separate category) was estimated by the GAO to be US$11.7 billion over and above the considerable funds already expended by both Superfund and private parties.

As stated, in broad terms the GAO considers Superfund has been a failure. Perhaps this is most strikingly illustrated by GAO's estimate that the total cost of cleaning up remaining federal hazardous facilities alone ranges from US$234 billion to more than US$300 billion over an anticipated seventy-five year period. Added to that are the future costs of decontaminating state and privately owned hazardous sites.

Such daunting figures support the argument advanced by environmentalists here in Hong Kong and elsewhere for many years that it makes ecological *and* economic sense to avoid inappropriate hazardous waste usage and disposal. It is a pity that the authorities here, as in too many countries, have been slow to appreciate this.

Conclusion

Whilst in Hong Kong we might say that the experience of much larger countries, such as the United States, is of minimal assistance to us in addressing our own significant environmental problems, that should not be our reaction in respect of land contamination. In the light of Hong Kong's very limited land reserves and an increasing population putting pressure on those reserves, combined with our historical *laissez faire* approach to the use and disposal of hazardous wastes, serious consideration should be given to establishing a HKSAR – wide land decontamination programme, perhaps modelled on Superfund. Our government has the financial resources and is less hampered by federal/state jurisdictional issues that exist in the United States. Further, in its position as landlord of all Hong Kong's land the government already holds considerable rights of access and control over land in Hong Kong which should facilitate implementation of a Superfund-style programme in Hong Kong.

LEGISLATION DIGEST

FIXED PENALTY (PUBLIC CLEANLINESS OFFENCES) BILL

(L.S. No.3 to Gazette No.7 of 2001)

The purpose of this Bill is to enable persons who commit offences relating to public cleanliness to discharge their liability to a court conviction and imposed penalty by payment of a fixed penalty (HK$600). The specified offences include: (i) displaying bills or posters without permission under section 104A(2) of the Public Health and Municipal Services Ordinance (Cap.132); (ii) depositing litter or waste in public places and spitting in public places under sections 4(1) and 8A(1) of the Public Cleansing and Prevention of Nuisances Regulation (Cap.132 sub. Leg.); (iii) depositing litter or waste in Country Parks and Special Areas and spitting in Country Parks and Special Areas under sections 12(1)(c) and (e) of the Country Parks and Special Areas Regulations (Cap.208 sub. Leg.); (iv) marine littering under section 4D(1) of the Summary Offences Ordinance (Cap.228); and (v) unlawful disposal of waste under section 16A of the Waste Disposal Ordinance (Cap.354).

[Reg. 3] Fixed penalty notice given by public officer

If a public officer has reason to believe that a person has committed any of the specified offences, he may give that person a notice. The notice requires the person to pay a fixed penalty (HK$600). This arrangement gives the person an opportunity to discharge his liability to conviction.

[Reg. 5] Fixed penalty notice issued by Authority

If a person fails to pay the fixed penalty under section 3 within 21 days, the Authority (i.e. the Director of Agriculture, Fisheries and Conservation, Director of Environmental Protection, or Director of Food and Environmental Hygiene) shall issue a further notice demanding payment of the fixed penalty, and requesting him to notify the Authority if he wishes to dispute liability for the offence.

[Reg. 6] Withdrawal of notice of fixed penalty

A fixed penalty notice may be withdrawn, in which case any penalty paid pursuant to the notice shall be repaid.

[Reg. 7] Recovery of fixed penalty

Where a fixed penalty notice is ignored and no fixed penalty is paid, a magistrate may order payment of the fixed penalty and an additional penalty equal to the amount of the fixed penalty.

[Reg. 13] Distress in case of default

Distress may be levied to recover penalties due.

HONG KONG BRIEFING

Water pollution

A legal loophole is allowing company directors responsible for water pollution to escape prosecution by the Environmental Protection Department (EPD). In theory, directors of companies convicted under the Water Pollution Control Ordinance can be liable, but none has ever been held to account. Time limitations on bringing charges can mean directors are immune from prosecution if it takes more than 6 months to convict their companies (when directors are not charged at the same time as their companies).

The EPD has proposed a range of tougher measures, including amendments that would close the loophole, but has warned the changes could take two years to implement. Principal Environmental Protection Officer Patrick Lei Chee-wong said the department must punish directors of repeat offender companies.

More than a quarter of the 342 offenders convicted under the ordinance last year had previously been convicted of polluting water.

The EPD aimed to work in a spirit of partnership with businesses, and generally compliance was high, Mr. Lei said: “The construction industry was a problematic exception,” he said. More than 15% of discharge licence holders in that industry were caught breaking the permit conditions last year – mainly by discharging muddy water into sewers.

The EPD proposes raising fines for hindering investigations from a maximum of $10,000 to $50,000. It also wants to double the maximum fine for repeat offenders who break effluent discharge standards specified in their licences from $200,000 to $400,000.

[SCMP, 2 April 200l]

Going green

Baptist University is putting an award-winning greenhouse to use in a United Nations Environment Programme experiment on pollution control. The new roof-top structure has won a silver medal in the “Outstanding Green Project Awards 2000 Scheme”, organised by the Hong Kong Institute of Landscape Architects and the Society of Horticulture, for its energy-saving design and use of natural ventilation. This $2 million regional segment of the two-year global project is assessing the environmental impact of persistent organic pollutants, such as dioxins and DDT.

*[*SCMP, *17 March 2001]*

Shark- fin pollution

A shop in Bonham Strand East, Sheung Wan, Hong Kong, which imports shark-fins from around the world for sale , is seeking a judicial review of a decision by the Director of the Environmental Protection Department and another by the Air Pollution Control Appeal Board that its dried sea-food products are responsible for fouling the air. EPD Officers, after making several visits to the shop, issued an abatement notice in February last year under the Air Pollution Control Ordinance requiring the company to install an air-filtering system. This system has not been installed. The company appealed against the decision to the Appeal Board, which concluded that the smell could be

described as an objectionable odour. The company wants the court to quash the abatement notice and the decision handed down by the Appeal Board. Counsel for the shop said there was insufficient evidence that the trading of dried seafood in large quantities within the shop without protective measures caused air pollution. The Judge reserved his judgment.

[*SCMP*, 14 March 2001]

Guangdong water data

Guangdong officials have agreed to publish water-monitoring data from the Dongjiang river in an attempt to ease concerns in Hong Kong over the quality of its drinking water. The agreement was announced after a meeting of the Hong Kong and the Guangdong Joint Committee on Sustainable Development and Environmental Protection in Hong Kong yesterday. No details were given on what data would be released.

The Water Supplies Department publishes online data on drinking water received from its Muk Wu pumping station at the border, but not Dongjiang data. The SAR spends more than $2 billion on water supplied from the mainland each year.

Besides water from the Dongjiang, or East River, the two sides also discussed the progress of 8 subcommittees which are looking into issues such as cross-border air quality and the setting up of common diesel-emission standards. This study will be finished by the end of next month. Diesel in Hong Kong has about 1/10th the sulphur content of that used in China.

The Joint Committee also discussed co-operation in dealing with *mikania*, an exotic weed that threatens trees in southern Guangdong. Guangdong authorities also reported on the progress of setting up a protection zone for Chinese white dolphins in the Pearl River estuary.

[*SCMP*, 23 February 2001]

Litterbugs and spitters

Litterbugs and people who split in the street will be hit with a $600.00 fine under a proposed law. The fixed penalty will largely replace the existing summons process. The proposal has been approved by the Chief Executive-in-Council and is due to be debated by legislators at the end of the month.

Offenders face on the spot face fines of $600.00 under the new Fixed Penalty (Public Cleanliness Offences) Bill. Fines imposed by courts for such offences now average about $500.00.Unauthorised displays of bills and posters will also be subject to the fixed penalty.

Last year, 26,123 people were fined for littering in public places, compared with 29,351 in 1999 and 45,080 in 1998.

To enable more effective enforcement of the proposed law, the Government plans to allow its officers to check the identity cards of offenders. As well as 4,600 officers from the Food and Environmental Hygiene Department, the power to issue fixed-penalty tickets would be given to officers of the Environmental Protection Department, the Housing Department, the Agriculture, Fisheries and Conservation Department and the Leisure and Cultural Services Department.

The Food and Environmental Hygiene Department will also provide training for staff, which will include lessons on gathering evidence, handling confrontations, operational procedures, giving evidence in court and conduct and discipline.

The Bill also allows the Director of Food and Environmental Hygiene Department to close restaurants operating without licences. Under existing practices, a closure order is needed to shut a restaurant. Such orders take an average of eight months to obtain. By vesting the power in the Director, this should be reduced to six weeks.

Courts issued one closure order and 558 prohibition orders last year.

[*SCMP*, 13 February 2001]

HONG KONG DISNEYLAND UPDATE

Hand-over of shipyard

The 19-hectare Cheoy Lee Shipyard, adjacent the site of the proposed Disneyland theme park, was finally handed over to the government in early April 2001 after months of negotiations and controversy over its contamination problems. The site will be reclaimed to make way for access roads around the theme park, which is scheduled to open in late 2005.

Detailed investigation will be carried out by government civil engineers at the site to check its contamination levels. Preliminary tests conducted before the handover have found that contamination problems on the site are localised. Before construction work starts at the yard, the Civil Engineering Department will also conduct an Environmental Impact Assessment study of the decommissioning of the shipyard.

The shipyard operator has been paid HK$1.5 billion as compensation by the government based on the government's standard compensation rate of $738 per square foot for areas affected by essential projects with territory-wide significance. The compensation rate was higher than the ex-gratia compensation rates for resumed agricultural land, which range from $93 to $311 per square foot. It has been suggested by a property strategy consultant that the government should reveal the calculation details to enable the public know if the deal was fair to the rest of the community.

[*SCMP*, 2/3/01 & 5/4/01]

MTR link from Yam O to Penny Bay

Construction of the MTR link from Yam O on the Tung Chung line to the Penny's Bay site is set to begin in 2002.

It is estimated that journey times will be about 31 minutes from Tsim Sha Tsui and 24 minutes from Hong Kong Station at Central. New Territories and cross-border visitors will take 29

minutes on the MTR network from the East Rail interchange at Kowloon Tong, or 15 minutes from West Rail interchange at Nam Cheong station. The Airport Authority is also planning a ferry terminal at Disney with direct ferry links to cities and airports in the Pearl River Delta.

[*SCMP*, 20/2/01]

Development of new hotels for Disneyland

Demand for hotel rooms is expected to increase with the opening of Disneyland in 2005. Tourist numbers are expected to reach more than 18 million a year by 2005. Approximately 9,000 additional hotel rooms are estimated to be needed by that time.

The Disney Corporation is planning to build only two hotels, which are assumed to be comparatively high-tariffed properties. This would leave significant opportunities for the local hotel industry to cater for the increased demand.

However, it has been raised by Legco's tourism representative, Mr. Howard Young, in a recent two-day conference *Preparing for Disneyland*, that claims made by the some aspects that 5,000 new hotel rooms were already under constructions were not accurate.

According to the Hong Kong vice-president of Century International Hotels, only two hotels listed for development this year have actually been built, and he doubted if many of the proposed hotel developments would ever be constructed.

[*SCMP*, 21/2/01]

ADVISORY COUNCIL ON THE ENVIRONMENT (ACE)

Report on the Review of the Strategic Sewage Disposal Scheme Stage II by International Review Panel (Review of ACE EIA Paper 10/2000)

The task of the International Review Panel (IRP) was to review the options and recommendations of the Environmental Impact Assessment (EIA) requirements on Strategic Sewage Disposal Scheme (SSDS) Stage II, to review the subsequent stages of SSDS and, if appropriate, propose alternative plans with greater environmental and cost benefits.

On SSDS Stage I, the IRP noted that the Sewage Treatment Plant at Stonecutters' Island functioned more efficiently than originally expected. Its effluent discharge had achieved 90% of the level of secondary treatment plants.

The EIA options recommended that effluents be discharged by a long outfall pipe to the west / east of Lamma Island or farther south in the Lamma Channel. The IRP was of the opinion that this option was neither viable nor sustainable in the long run. The main reason was that the southern waters are a nursery ground for marine plants and animals. As well, the present water quality in the southern waters was close to and occasionally fell below the water quality objectives of that particular zone in Hong Kong. The IRP did not consider it viable to discharge additional effluents in the southern waters because this would deplete dissolved oxygen and render the waters unsuitable for marine life. Furthermore, in the event that Hong Kong should decide to upgrade the level of sewage treatment and build additional treatment facilities, the benefit of the 17 kilometres outfall would be lost.

The EIA option for biological treatment involving conventional activated sludge technology were considered by the IRP not viable. The IRP recommended Biological Aerated Filter (BAF). BAF is an innovative tertiary treatment technology and a space-efficient compact technology. It is expected that the limited space at Stonecutters' Island should be adequate for installing BAF facilities. If BAF was to be introduced for the proposed treatment plants on Hong Kong Island, the proposed plants in North Point and Sandy Bay would occupy an area of 4 hectares and 1.2 hectares respectively.

As effluent would be subject to tertiary treatment, it could be discharged via the existing interim outfall in the vicinity of the Victoria Harbour and still meet existing water quality objectives for the harbour. The 17 km long outfall would therefore not be necessary, thereby saving public money and the marine life in Lamma Channel.

Regarding cost, timing and engineering feasibility of the EIA and IRP options, the investment in a long outfall under the EIA option would be wasted if Hong Kong were to upgrade the level of sewage treatment within 15 years after the construction of the long outfall. In this connection, the IRP Chairman quoted the experience in Boston, where double investments has been made in a 15 km outfall and secondary treatment facilities which still could not achieve the required tertiary level treatment in terms of ammonia and nitrogen reduction. The IRP options, on the other hand, would avoid construction of long outfall. In addition, sewage treatment processes, such as nitrification and nitrogen removal by denitrification, could be easily incorporated into BAF, thereby enabling a further upgrade of the level of sewage treatment at Stonecutters' Island.

BAF technology is about 15 years old. The technology has reached a stage of maturity and has been used in new wastewater treatment plants as an alternative to the conventional activated sludge treatment process. A BAF plant being built in Paris is expected to treat sewage from more than 8 million people.

The treatment level of sewage could be adjusted according to the different beneficial uses of water bodies in the various water quality zones in Hong Kong where the effluents are eventually discharged, e.g. shipping purposes for Victoria Harbour and nursery grounds for fish and marine life for the southern waters.

Progress on Investigations into the Location of Permanent Aviation Fuel Receiving Facility for Hong Kong International Airport (ACE Paper 38/2000)

In 1999, the two site options south of Lantau for locating a Permanent Aviation Fuel Receiving Facility (PAFRF) were ruled out due to potential environmental impacts and high construction costs, as well as other operational factors.

The Airport Authority (AA) had proposed a Ma Wan Channel site. In 1993, the Ma Wan Channel Hazard Assessment Study indicated that the Channel was not suitable for ocean-going aviation fuel tankers because the transit of large tankers through the Channel posed levels of risk that could not be mitigated to a level as low as reasonably practicable (ALARP). However, the Hazard Assessment Study Update (the Study Update) has concluded that the risk related to the use of the Ma Wan Channel for transportation of aviation fuel in ocean going tankers could now be reduced to ALARP. This is because of the introduction by the Marine Department of vessel traffic control measures and restrictions on transit movements of vessels during periods of low visibility. The Environmental Protection Department has now accepted the Study Update, and the government confirmed that there were no insurmountable problems in allowing large aviation fuel vessels to transit Ma Wan Channel. Sites north of Lantau making use of Ma Wan Channel are now available for re-investigation.

There are three possible sites: Tuen Mun Area 38, Tuen Mun West, and Sham Shui Kok. The last two of these options require reclamation for the project, and therefore would take longer to construct.

The PAFRF is classified a "Designated Project" under the EIA Ordinance. An environmental permit is therefore required prior to commencement of the project. Items to be covered in the EIA would include noise (including underwater noise), air, visual impact, risk to life, water quality and marine ecological impacts, covering both the construction and operational phases. Aviation fuel spill modelling and forecasting studies might also be required. A key issue is the potential impact on marine mammal population. The AA must be mindful of the impacts on the marine park when assessing the feasibility of the various options.

Regarding an ACE member's concern about the safety of people living in the vicinity of the PAFRF, the AA advised ACE that the nearest residents to Tuen Mun Area 38 were several kilometers away from the proposed sites. They also relied on precedents in locating fuel farms in the vicinity of populated areas e.g. the 170,000m³ aviation fuel tank farm surrounded by various facilities within Cathay Pacific City, which is less than 1 km away. The AA assured ACE that the actual risk, in hazard terms, would be within an acceptable range.

Following the discussion with ACE, the AA will continue to further explore the three site options.

Proposed Cable Car System Between Tung Chung and Ngong Ping (ACE Paper 3/2001)

In May 1998, the government asked the Mass Transit Railway Corporation (MTRC) to take the lead in developing a cable car proposal on Lantau Island linking Tung Chung and Ngong Ping. The MTRC commissioned a feasibility study of the cable car project which involved preliminary assessments of the financial and engineering feasibility of the project and its initial environmental, ecological, heritage, landscape and visual impacts.

The study concluded that the project is feasible in both technical and financial terms and will bring about socio-economic benefits to the economy of Hong Kong, including increased tourist visitation and providing alternative means of access to attractions on Lantau Island.

The Airport Authority expressed concern about the location of the proposed intermediate station in the designated route of the cable car, as the proximity of the proposed location of the fuel tank farm could pose potential hazards to cable car commuters and could preclude future expansion of the fuel tank farm. The government conducted a desk top study (DTS) in December 2000 in conjunction with the Airport Authority, which aimed at identifying necessary changes to the route. The DTS has taken into consideration a number of environmental, ecological and engineering constraints, such as the location of conservation areas and Sites of Special Scientific Interest, flight paths of helicopters and the proximity to the fuel tank farm on the Airport Island. A revised route, known as "Preliminary Preferred Alignment" was identified.

As the development of the cable car system is a designated project under the EIA Ordinance, a Study Brief for an application for an Environmental Permit is required. The Study Brief will be included in the Project Brief for bidders' reference. The right to develop and operate the cable car system will be tendered through an open tender process.

TOWN PLANNING

Causeway Bay traffic problem

There is always a huge number of cars and people around Times Square in Causeway Bay, especially in rush hours. Therefore, the Transportation Department (TD) will adopt new measures on traffic control in that precinct. Apart from taxis, all vehicles will be prevented from entering Russell Street daily between 12 noon and 12 midnight. It is estimated by the TD that the number of cars in Russell street in rush hours will reduce from 650 to 250 per hour.

In addition, after consulting District Board members and shopkeepers, the TD has decided to extend the pedestrian component of Russell Street. New colourful walk-ways will be installed so that citizens can enjoy a better shopping environment.

Mr. Tsui, the Senior Engineer of the TD, explained that there are serious car and pedestrian traffic problems in Russell Street. According to their statistics, the number of pedestrians in rush hours is approximately 15,000 per hour. The new measures should eliminate these problems. At the same time, it is not disadvantageous to public vehicles, as taxis may still enter Russell Street to pick up passengers. Private cars may

also stop at a designated area in Sharp Street East.

On the commencement of the new measures, vehicles going to Canal Road East should first go through Percival Street and Sharp Street East. As a result, the number of vehicles in Sharp Street East will increase from 40/hour to 140/hour. Mr. Tsui, however, believes that this increase will not lead to traffic-jam problems in Sharp Street East.

A majority of the public welcome the new measures and consider that they will improve the air quality and reduce pedestrian crowds. However, Ms. Lee, a fashion shopkeeper in Russell Street, dislikes the new measures as they might adversely affect her business and interfere within the loading and unloading of goods.

[*Ming Pao*, 21.2.2001]

Large-scale traffic improvement project in Wanchai

Transportation Department (TD) will undertake a large-scale traffic improvement project in Wanchai, which will involve expenditure of HK$300 million and take 8 years to be completed. The project will include the following measures: (1) Lockhart Road will be changed to a one-way road to the east; (2) the east direction of Hennessy Road will be changed to designated bus routes; (3) Johnston Road and other smaller roads near Wanchai MTR station will be converted to designated pedestrian areas.

People operating bars and restaurants in Lockhart Road hope that this project will reduce traffic- jams and create business opportunities. General engineer of the TD, Mr. Tsang, commented that in order to facilitate the traffic changes, the bus routes in Johnston Road will move to Hennessy Road. Necessary construction work will commence in 2003.

Fleming Road, Stewart Road and Fenwick Street will be extended to Johnston Road, and perhaps to the Causeway Bay area. Starting from next year, the footbridge in south Johnston Road will extend to the tramway, and part of the areas near Johnston Road will become a “leisure street” where vehicle movements will be severely restricted. In 2008, areas near Johnston Road will be designated for pedestrian use only, subject to the use of the tramway.

[*Ming Pao*, 19.2.2001]

REGIONAL & INTERNATIONAL

International

Farmers need to switch to methods that improve soil quality and use less water - or risk being unable to feed the world's growing population, a new report says.

Scientists at the International Food Policy Research Institute, who carried out the study, say irrigation is draining underground water supplies faster than they could be replenished. Satellite mapping of the world's farmland has revealed widespread damage to soil quality.

Stanley Wood, lead author of the report, said that essentially agriculture has been quite successful in supplying the world with food, but has been much less successful in nurturing the natural resources that underpin that production capacity. Biotechnology could help boost production if crops were genetically engineered to need less water and to grow in poorer soil but that alone would not be enough, Mr Wood said.

About 16 per cent of the world's farmland is free of fertility problems, such as chemical contamination, acidity, salinity or poor drainage, the report found. However, in parts of Asia, as little as six per cent of the land is free from such problems. In North America that figure is 29 per cent.

Aluminium contamination is at a level in 17 per cent of the world's farmland to be toxic to plants. Salt deposits are a significant problem on irrigated land. Nearly 1.6 million hectares of farmland are lost to excessive salt every year, or about one per cent of irrigated areas worldwide, the report says. Depletion of organic matter in soil is also widespread, reducing fertility and moisture retention and increasing emissions of carbon dioxide - a factor in global warming.

According to Ian Johnson, a vice-president of the World Bank and chairman of the consultative group on international agricultural research, scientists need to find ways to increase food production without 'major increases in the amount of new land under cultivation, which would further threaten forests and biodiversity and without resorting to unsustainable farming practices'. The world's population is expected to grow by 1.5 billion over the next 20 years.

In many areas, the main problem is that there is no economic incentive for farmers to change their ways. However, chemical fertilisers are not effective unless sufficient organic matter remains in the ground.

The report also cited 'an urgent need' to use irrigation water more efficiently. Irrigation accounts for 70 per cent of the fresh water withdrawn, with 30 to 60 per cent returned for downstream use.

In a separate World Watch Institute study, scientists say developing countries could be courting hunger because of their increased reliance on cars. The study suggests countries like India and China, with large populations and limited arable land, are especially at risk because every car added to the system generates about 0.02 hectares of pavement - either for roads or parking spaces. Much of the cement is laid down on prime cropland, which offers the flat and well-drained surfaces needed for roads. This figure is based on studies of Japan and Europe, and is even greater for the United States, which has paved more than 0.07 hectares for every car.

The report states that there are many reasons to question the goal of building automobile-centred transportation systems everywhere, including climate change, air pollution and traffic congestion, but the loss of cropland is sufficient reason alone.

The global fleet of 520 million vehicles grows by about 11 million every year, much of the growth occurring in the Third World.

With 1.3 billion people, China has about 13 million cars. But if its car consumption grew to the level of Japan's, it would have 640 million cars and a further 13 million hectares of land covered with cement, World Watch says. India, with 1 billion people and 8 million cars, also faces the loss of valuable cropland.

[*SCMP*, 16 February 2001]

Belize

When a Canadian power company proposed the Chalillo Dam on a branch of the Macal River, officials welcomed the investment. They hoped the project would wean Belize from electricity bought from Mexico, and would provide a new water source for an existing dam and power plant that struggle during the dry season.

But the plan has unleashed a barrage of criticism from environmentalists, who have also decided to look beyond Belize's borders for support, taking their cues from the flows of global capital. If local developers and government officials are wooing foreign investors with environmentally sensitive projects, they say, then environmental activists must respond by bringing in help from abroad.

The environmental groups fear the project would flood a sensitive jungle habitat whose thick riverbank vegetation offers a bountiful green feast for tapirs (Belize's noodle-nosed national animal), which share the remote area with other endangered species, such as jaguars and scarlet macaws. They also argue that the dam is unnecessary and uneconomical, and say it will enrich only a small clique while not cutting electricity rates for residents.

The campaign against the dam was boasted when the Natural Resources Defense Council (NRDC), an international group which has placed the Macal River on a list of 12 "biogems" - environmentally important areas threatened by development became involved.

The support of international groups such as NRDC has emboldened local conservationists, who have bucked the nation's typically quiescent political culture and demanded greater openness in public debate on the dam proposed.

Jacob Scherr, director of international programs at the NRDC said that as this is a globalized world, governments and companies have to be accountable for their actions no matter where in the world they take place. So environmental groups will use the tools of globalization to give concerned citizens a voice in Belize and around the world.

In turn, the NRDC and other international groups have been vilified in the local press and called lawbreakers and terrorists, though no evidence is offered to support that extreme allegation. A few leading citizens have called the environmental groups enemies of the nation that are trying to impose racist schemes to keep Belize undeveloped. More restrained voices have said the environmental groups are denying this country the kinds of modern conveniences that others take for granted.

Prime Minister Said Musa said it is not fair for the environmental groups to be criticising Belize over this “little dam” when their own countries have so many of them.

The Chalillo Dam was proposed in the early 1990's. An initial feasibility study warned against it because of a potentially harmful environmental impact, more recent studies supported the project, though local environmental officials said those studies were inadequate. Supporters of the project say it is necessary to resolve capacity problems with the country's current dam and generator at Mollejón. The new dam at Chalillo, they said, would give them enough water to power the Mollejón generators through several months of the dry season.

In addition to the dam and generator at Mollejón, which was recently bought by Fortis Inc., the Canadian company that proposes building the new dam, Belize depends on pollution-prone diesel-powered generators for about a third of its power. Another third is supplied by a Mexican power grid.

[*New York Times*, 2 March 2001]

Beijing

Beijing’s bid to host the 2008 Olympics has given Chinese environmental activists a rare chance to sell green ideas to government officials.

According to the founder of the Beijing-based Friends of Nature, (an NGO established in 1994), Liang Congjie, it was the first time officials had come to them for help. He said his group and other organizations had met city officials four times, including meetings with the Mayor and Vice-Mayor, to discuss the Olympic bid. Mr. Liang said the city Government was under pressure to involve activist groups because it is an international practice to do so.

Mr. Liang and Sheri Liao, head of an organization called Global Village, have become advisers to the Games-bid committee. They were given a preview of the committee’s presentations to 17 inspectors from the International Olympic Committee. Mr. Liang said this kind of special treatment was unimaginable before the Olympic bid.

The Beijing government accepted most of the 40 environmental suggestions made by numerous groups. These included burning less coal, building sewage treatment plants and building new subway lines. According to earlier reports, the city has earmarked 100 billion yuan (HK$94 billion) for pollution control over the next eight years. Mr. Liang said that if Beijing wins the bid and all the environment projects they proposed can be carried out, the city will be much cleaner by 2008.

As part of the bid, the city government allowed Ms. Liao to speak to more than 100 local cadres about building green communities. She said features of the green communities project include provision of separate bins for recyclable waste, and water-saving taps. These and other innovations have been set up in several Beijing districts with support from officials who heard her speak.

The government has also provided financing to NGOs for the first time, for Olympics-related projects. Ms. Liao received 130,000 yuan to publish pamphlets encouraging residents to help the environment as Beijing entered the

last stage of the race to host the Games. Despite support from the Government, the activists intend to stay independent and remain critical.
[*SCMP*, 21 February 2001]

Convictions under environmental legislation: January – March 2001

The EPD's summary of conviction recorded and fines imposed during the period January to mary 2001 is as follows:

January2001

A total of 85 convictions were recorded in January 2001 for breaching anti-pollution legislation enforced by the Environmental Protection Department.

Among them, 27 were convictions made under the Waste disposal Ordinance, 21 under the Noise Control Ordinance, 18 under the Air Pollution Control Ordinance, 17 under the Water Pollution Control Ordinance and two under the Dumping at sea Ordinance.

The heaviest fine was HK$60,000.

A company was fined HK$60,000 last month for contravening the provision of a licence.

February 2001

A total of 110 convictions were recorded in February 2001 for breaching anti-pollution legislation enforced by the Environmental Protection Department.

Among them, 38 were convictions made under the Waste disposal Ordinance, 30 under the Noise Control Ordinance, 23 under the Air Pollution Control Ordinance and 19 under the Water Pollution Control Ordinance.

A man was sentenced to 80 hours of community service for depositing waste unlawfully.

The heaviest fine in February was HK$50,000.

March 2001

A total of 83 convictions were recorded in March 2001 for breaching anti-pollution legislation enforced by the Environmental Protection Department.

Among them, 24 were convictions made under the Air Pollution Control Ordinance, 23 under the Waste Disposal Ordinance, 19 under the Noise Control Ordinance and 17 under the Water Pollution Control Ordinance.

The Heaviest fine was HK$120,000.

A company was fined HK$1200,000 for failing to comply with the requirements of a noise abatement notice.

Note: The above changed format reflects the EPD's new style of publishing environmental offences data. Details of all offences are available from EPD's Media Relations Unit.

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