



## FACT SHEET

### **Environment Impacts of the New Hong Kong Airport** Factsheet No.26

#### **INTRODUCTION**

Hong Kong's new airport, located to the north of Lantau Island at Chek Lap Kok (CLK) (Figure 1), will replace the existing one at Kai Tak, which is operationally constrained by the single runway. Covering an area of 1,248 hectares - three quarters of which has been reclaimed, the remaining quarter comprised of the land area of CLK and Lam Chau Islands - the new airport has been branded the "largest construction site on earth" (Figure 1). Such massive infra-structural projects entail significant environmental impact in both the construction and operation phases.

#### **NOISE, AIR QUALITY AND WATER QUALITY IMPACTS**

During construction exceeding of Allowable Noise Levels and Air and Water Quality Objectives have been recorded in the Environmental Monitoring and Audit program, despite implementation of mitigation measures. These increases cause nuisance to nearby populace.

Underwater blasting and piling activities also proved detrimental to the highly endangered Chinese white Dolphin (*Sousa chinensis*). The shock waves could damage the lungs and the dolphin's sonar capabilities, resulting in internal bleeding or outright death.

In the operational phase substantially increased nitrogen dioxide levels from aircraft emissions are predicted along the shore of Sha Lo Wan whose residents would thus have to be relocated. Modeling of the change in hydrological regimes suggests silt increase to the west of the airport. It also shows that deterioration of water quality would be expected in East Tung Chung Bay as a result of discharge from the Siu Ho Wan plant which provides primary treatment for sewage from the airport and the Tung Chung New Town.

Noise Exposure Forecast (NEF) contours is used to predict aircraft noise impacts. An estimated 500 households will fall within the 25 NEF, which is the Government planning guideline, by the year 2030. These households will have to be relocated or fitted with air-conditioning before operation of the new airport, however, the new airport will remove the undesirable noise impact from the existing airport, which is affecting around 300,000 residents in Kowloon.



## MARINE ECOLOGY

The reclamation of the airport involved dredging the soft mud at the site and an amount of 184 million cubic square meters of such mud was disposed to the south of Cheung Chau (Figure 2). A total of 339 million cubic square meters of fill was then taken from Marine Borrow Areas located east of Sha Chau in Outer Deep Bay, and near the Brother Islands for land formation. Physical removal of seabed causes immediate injury to the natural communities in the area of the borrow pits, reclamation and dump sites. Clouds of suspended sediments adversely affect sensitive marine life through decreased light penetration, clogging of respiratory apparatus and direct burial. This in turn could lead to reduced food supply for marine life higher up the food chain such as fish and dolphins.

Much of the coastal habitats around CLK were also destroyed. Shallow, nutrient-rich coastal areas are preferred feeding habitats of the Chinese White Dolphin and favorable fish nurseries and spawning grounds, some of which are of commercial value. The beds of eelgrass (*Zostera japonica*) at San Tau beach to the south of CLK were adversely affected by increased sedimentation. The eelgrass is found only at three sites in Hong Kong, and attempts to transplant the eelgrass to other sites were unsuccessful; though reared eelgrass re-introduced to San Tau survived.

## TERRESTRIAL ECOLOGY

By far the most visible impact of the airport is the destruction and displacement of almost the entire terrestrial flora and fauna originally found on CLK, which include protected species of orchids, fruit bats, Chinese Pangolin (*Manis pentadactyla*), and 101 species of birds. Compensatory planting of 60 hectares of mixed native woodland on northeast Lantau has been carried out. This gives a ratio of 3 hectares planted for every hectare lost, which is consistent with the concept of mitigation gain, adopted in the USA, where compensation ratios of 1:1.5 to 1:3 are commonly required for projects affecting woodlands, wetlands, etc. However only loss on CLK has been compensated and the plantation areas subsequent protection and management, preferably as a designed Country Park, has yet to be guaranteed.

The destroyed freshwater habitats on CLK were home to the endemic Romer's Treefrog (*Philautus romeri*). A successful captive breeding and translocation program initiated by WWF HK and undertaken by the University of Hong Kong was launched to rescue the rare amphibian. Subsequent monitoring recorded breeding by the released tree frogs in most of the new sites.



The mangroves on CLK, which used to contain many large specimens of the rare *Bruguiera gymnorrhiza*, were also eradicated. Creation of new mangrove habitats at the abandoned salt pans in Tai O, Lantau Island, is tentatively scheduled to commence in mid 1999.

Several wet valleys on CLK were also home to a large population of the protected pitcher plant *Nepenthes mirabilis*, which is nonetheless fairly well represented with Hong Kong. A transplantation program has been attempted to mitigate the loss, though has so far been proved to be unsatisfactory.

### OTHER PROJECTS

The destruction of CLK is only part of the total habitat loss resulting from the Airport Core Program Projects. The richly vegetated Sha Lo Wan headland has been removed for runway alignment. The temporary aviation fuel receiving facility (AFRF) sited off Sha Chau involved dredging and piling works in an area where Chinese White Dolphins have been frequently sighted. The Brothers Islands have been leveled for siting electronic equipment and obtaining land-based fill materials. The terrain of Tai Che Tung, Lantau, which is ecologically sensitive, has been razed during the construction of a microwave relay station. And the list goes on.

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### FURTHER READING

1. *New Airport Master Plan Environmental Impact Assessment Final Report*, Greiner-Mausell. 1992, Provisional Airport Authority.
2. *Quarterly Reports on Environmental Monitoring and Audit for ACP Projects*, Environmental Assessment Division of Environmental Protection Department. 1994, EPD.
3. *Seagrass Rehabilitation at Tung Chung (PADS/1) Final Report*, The Swire Institute of Marine Science. 1994, University of Hong Kong.
4. *WWF HK Factsheet no. 2, 14 and 17*. 1994, WWF HK.