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for information

Contaminated Mud Disposal at East Sha Chau Interim Report V

Purpose

To provide Members with a regular update on general activities at East Sha Chau and, more specifically, to update Members on the focused EIA for CMP IV, the review of the dredged sediment classification, and recent data on contaminants in the body tissue of Chinese White Dolphins. The previous report to Members was Interim Report IV which was discussed at the meeting on 27 May 1996.

Update on General Activities at East Sha Chau

2. The active disposal pit is CMP IIIb, which is expected to be filled by early December 1996. CMP IIIc and IIId are currently being formed for use starting in early December 1996 and mid-March 1997, respectively. These two mud pits will provide capacity for arisings of contaminated mud through to July 1997 when CMP IV is planned to take over. Attachment A shows the locations of disposal pits at East Sha Chau.
3. Capping has been completed for CMP IIIa. For CMP IIc and CMP IId a further mud layer will be placed to bring the cap levels back to the level of the surrounding seabed after the pit infill has settled. On completion of capping, vibrocores are taken to confirm the final structure of each cap.
4. Environmental monitoring of sediment, water and biota in and around East Sha Chau has continued and no adverse trends have been identified. Following an independent QA/QC audit, recommendations to refine the field and laboratory procedures are now being implemented by the monitoring consultants.

Focused EIA for CMP IV

5. At the ACE meeting on 27 May 1996 Members were informed that EVS Environment Consultants of Canada had completed their report "Review of

Contaminated Mud Disposal Strategy and Status Report on Contaminated Mud Disposal Facility at East Sha Chau” and concluded that :

- 5.1 There is an on-going need for disposal of contaminated mud and marine disposal continues to be the most practical option.
- 5.2 Contained marine disposal is environmentally acceptable within an appropriate management and monitoring structure. The current management programme and its associated refinements provide such an acceptable framework.
- 5.3 East Sha Chau is a suitable area and the one which is preferred for contaminated mud disposal. Current monitoring programmes do not indicate evidence of localized ecosystem impacts. Risk assessments do not indicate general or site-specific public health and ecological risks posed by the present disposal activities at East Sha Chau.

6. Members were also informed at the May 1996 meeting that on the basis of the conclusions of the EVS review, consultants ERM Hong Kong Ltd had been appointed to undertake a focused EIA on the use of an empty sand borrow pit at East Sha Chau as CMP IV. Because the fundamental acceptability of contained marine disposal at East Sha Chau had already been established by the EVS study, the EIA is a Focused EIA study aimed at addressing aspects of the CMP IV disposal which would be different from CMP III, II & I disposal. The Focused EIA draft report is scheduled for late November 1996.

Review of the dredged sediment classification

7. Recent international trends in environmental protection, including the adoption of the Dredged Material Assessment Framework (DMAF) by the London Convention, require increasingly higher levels of confidence in decision making. Therefore, as Members were advised at their May 1996 meeting, EVS were asked to review the existing criteria for classifying contaminated dredged sediment in Hong Kong. Specifically, the DMAF requires :-

- 7.1 consideration of the biological effects and development of sediment classification criteria which identify materials of potential biological concern, and
- 7.2 consideration of other management options where the characteristics of the material are such that disposal at sea would exert harmful biological effects.

8. The existing approach to classification and disposal of dredged sediments in Hong Kong is to apply chemical screening criteria based on seven metals. Material which when tested passes these criteria is deemed suitable for open sea disposal at

either the seabed disposal sites at South of Cheung Chau and East of Ninepins, or for seabed reinstatement by backfilling empty marine borrow areas - currently South Tsing Yi and North of Lantau. Material which fails the chemical screening criteria is taken to East Sha Chau for contained marine disposal.

9. EVS have now largely completed their review and have recommended that consideration be given to three aspects for enhancement of the present system. These are :

- 9.1 to broaden and revise the chemical screening criteria so as to include other contaminants of concern, including some organic contaminants,
- 9.2 for material which fails the initial chemical screening, to use biological testing to determine the appropriate means of disposal, and
- 9.3 to specify criteria for sediments which, if not met, would mean that the material is not suited to marine disposal.

10. The Fill Management Committee has supported these principles and the various actions needed for implementation are now being identified. This work is on-going and progress will be reported to ACE at the next regular update on contaminated mud disposal.

Chinese White Dolphin : General background and recent data on contaminants in dolphin tissue

11. The Chinese White Dolphin is the local name for the Indo-pacific Hump-backed Dolphin (*Sousa chinensis*). The species is found in coastal waters from southern Africa, through the Indian Ocean to southeast Asia and northern Australia, and individuals are capable of travelling distances of up to 150 km in the space of two days. They live mostly in estuarine waters, and in this region are found in areas such as the Pearl River Estuary and other river estuaries along the coast from Tonkin Gulf to Shanghai. In Hong Kong, the dolphins are seen mostly in more turbid estuarine waters in the western part of Hong Kong both to the north and to the south of Lantau.

12. In 1994, AFD funded a three-year baseline study of Chinese White Dolphins in Hong Kong by two Ph.D. students at the Swire Institute of Marine Sciences, Hong Kong University. This study is nearly complete. In April 1996, AFD funded a second study which is being undertaken by a cetacean expert with the Ocean Park Conservation Foundation. This second study is a more in-depth one and focuses on knowledge gaps identified in the first study. Attachment B gives more details about the second study. Neither of these studies is primarily intended to address matters related to effects of contaminants on cetaceans.

13. Using the results of contaminant tests on samples of fatty tissue recovered from stranded Chinese White Dolphins found over the last two years, the Hong Kong

University researchers have indicated that the greatest concern is the micro-organic contaminant DDT, which was found to be present at relatively high levels in three out of the eight sampled dolphins. They also concluded that heavy metal concentrations in the dolphins are not a major concern, and although metal levels in some samples might be high enough to cause some health effects they are not likely to constitute a life-threatening hazard. Consultants EVS have also reviewed the dolphin tissue data and have similarly concluded that while some metal concentrations could be a potential health concern, the greater concern is the fairly widespread occurrence of DDT. However, it must be borne in mind that the results of the micro-organic contaminant tests are relatively varied and are based on the small number of samples available from strandings. Given the general absence of DDT in Hong Kong's contaminated sediments, the DDT is presumed to have come from outside Hong Kong. On the basis of all the available information EVS have concluded that there is no evidence of direct or indirect links between contaminated mud disposal at East Sha Chau and contaminants found in the Chinese White Dolphin tissue.

Next Report to ACE

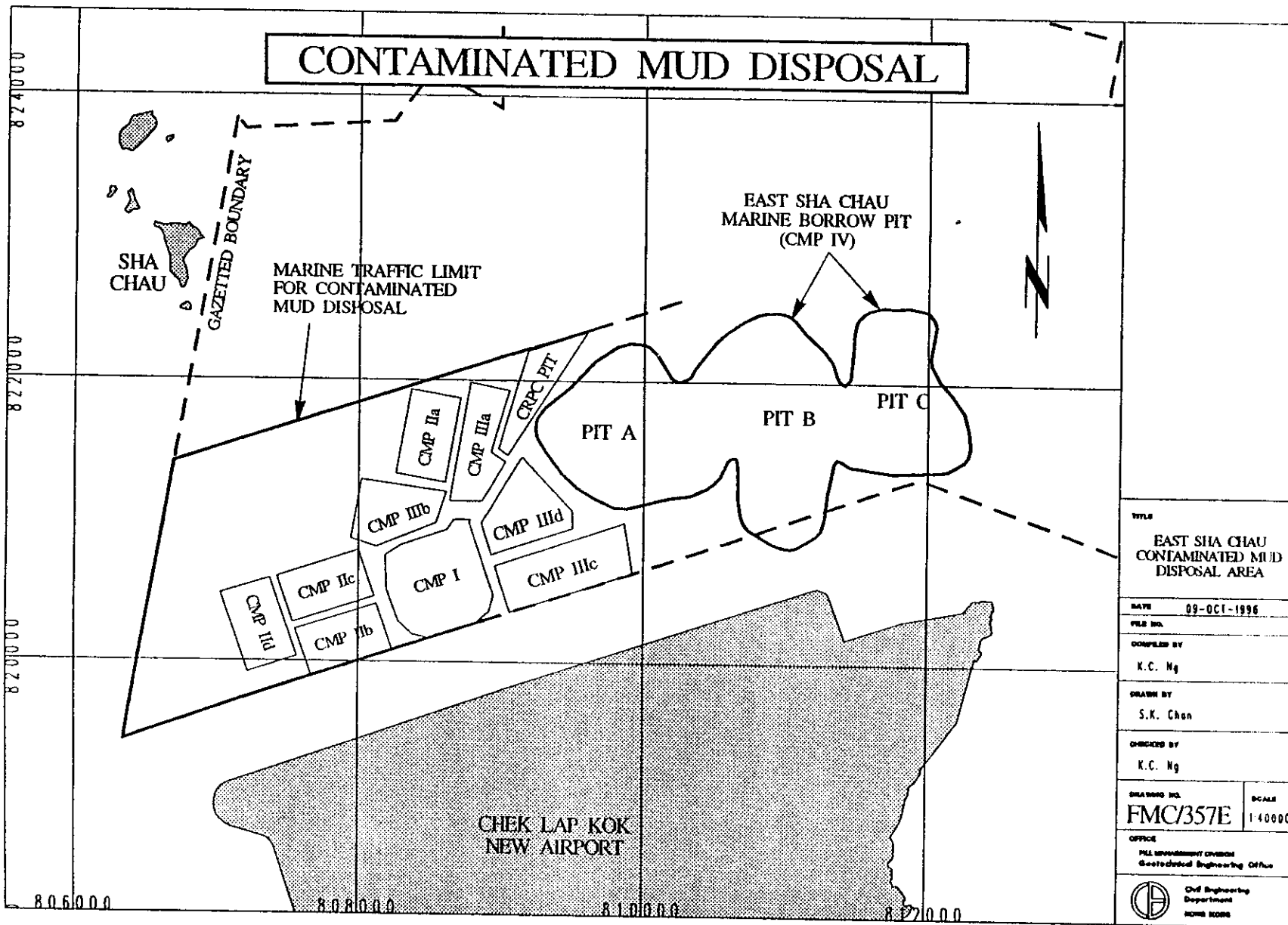
14. The focused EIA for CMP IV is scheduled to be submitted to the EIA subcommittee of ACE in February 1997. The next regular report to ACE, Interim Report VI, will be in March 1997.

Attachments

Attachment A Drawing no. FMC/357E "East Sha Chau Contaminated Mud Disposal Area"

Attachment B AFD's two year consultancy study on the Chinese White Dolphin

**Fill Management Committee Secretariat
Geotechnical Engineering Office
Civil Engineering Department
November 1996**



AFD's Two-Year Consultancy Study on CWD

1. The purpose of the newly started consultancy study is to examine population dynamics and life history of the local Chinese White Dolphins. It became clear during the planning stages for the New Airport, the Northwest Sewer Outfall, the Siu Ho Wan Sewer Outfall, the Aviation Fuel Receiving Facility, and other projects in that area, that while some assessment of the potential impacts of these developments on the dolphins was possible, little was known about the size of the Pearl Estuary population, its foraging habits, daily and seasonal life patterns, etc. It is primarily to address these questions that AFD's two year study has been commissioned.

2. Specific objectives of the study include :-

- to examine the distribution and estimate the abundance and population trends through line transit analysis of ship survey data and photo-identifications;
- to strengthen the recovery of stranded dolphins by establishing a stranding programme and network for reporting and archiving dolphin stranding data;
- to conduct complete necropsies on all recovered carcasses in order to establish causes and rates of mortality;
- to make detailed assessment of movement pattern and home ranges of Indo-pacific Hump-backed Dolphins in and around Hong Kong waters by means of systematic surveys and photo-identification techniques;
- to estimate recruitment rates to the population by gonads/teeth analysis;
- to study the feeding habits of *Sousa chinensis* through methods such as stomach content analysis and fatty acid signatures/stable isotope techniques;
- to examine the stock structure of Hong Kong Chinese White Dolphins using cranial morphometrics and molecular genetic techniques;
- to monitor and audit the effectiveness of measures which have been drawn up to mitigate the cumulative impacts arising from various projects on the dolphins, and to propose further mitigation measures if necessary; and

- to give expert advice on the establishment and sustainable management of the proposed marine sanctuary at Sha Chau.

3. Attempts will be made for additional measurements of levels of contaminants in dolphin tissue. Besides relying on fresh carcasses of stranded dolphins, AFD are considering testing of living tissue if an acceptable method of sampling (eg by collecting biopsy samples) can be found. However, the all important population dynamics purpose of the study does not rely on the availability of stranded animals.