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for information

STRATEGIC SEWAGE DISPOSAL SCHEME (SSDS)
ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY

INTRODUCTION

The SSDS EIA Study has been in progress for more than one year and most of the fieldwork has now been completed. This is a suitable juncture at which to brief members on the progress of the study and outline the planned future work.

BACKGROUND

2. In 1994, the Environmental Protection Department commissioned the SSDS Stage II Options Review to consider a wide range of alternatives for the long term treatment process and location of sewage treatment works and associated outfalls. An International Review Panel (IRP), comprising three internationally acclaimed experts in wastewater treatment and disposal, was appointed to oversee the work of the Consultants.

3. The IRP considered that chemically enhanced primary treatment (CEPT) would be an appropriate solution and should be used permanently at Stonecutters Island Sewage Treatment Works. This option not only saves space for the treatment of sewage from later stages of the SSDS scheme at Stonecutters Island, but also gives flexibility with respect to the choice of long term treatment and disposal options. The IRP also recommended that a comprehensive EIA Study should be carried out to determine the preferred arrangement for Stage II of the scheme, i.e. the preferred long term treatment level and outfall location.

4. Following the recommendations made by the IRP, the Environmental Protection Department commissioned the SSDS EIA Study in May 1996. The main objectives of the study are to evaluate and confirm, based on the recommendations of the previous studies, a preferred long term treatment and disposal option for the SSDS to protect Hong Kong and the surrounding Chinese waters; and to carry out a detailed EIA of, and to recommend measures to mitigate any likely adverse impacts arising from, the construction and operation of the preferred option.

5. The study, undertaken by a joint venture of Hong Kong and Chinese Consultants, is being carried out in two phases:

(a) Phase 1 - in this phase, the Consultants are required to carry out field surveys to characterize the sewage effluent and the existing environmental conditions (including hydrodynamics, water quality, sediment quality and ecological characteristics) for the development of water quality and ecological and human health risk assessment models. A set of environmental, engineering and social-economic criteria will also be established. Based on this set of criteria and the modelling results, a preferred long term treatment and disposal option will be selected.

(b) Phase 2 - following the completion of the Phase 1 Study, the Consultants will prepare a schematic design and carry out a detailed EIA on the preferred option.

STUDY PROGRESS

6. Up to now the Consultants have completed the following survey work:

(a) Wet season and dry season marine surveys - these surveys covered extensive areas of Hong Kong and Chinese waters as shown in Figure 1. In the surveys, a large amount of hydrodynamic, water quality and sediment quality data was obtained for the development of the water quality models and evaluation of options.

(b) Marine ecological surveys for spring, summer, autumn and winter - these ecological surveys aimed at identifying and quantifying the fish, shrimp, plankton and other swimming communities in the sea as well as sessile and bottom-dwelling communities on the seashores and seabed.

(c) Sewage characterization - these tests characterized the chemical composition of the sewage and CEPT treated effluent. Results showed that the heavy metal concentration in the effluent was low and the levels of organophosphorus and organochlorine pesticides were below detection limits.

(d) Whole effluent toxicity tests - these tests used both local and USEPA standard species to determine the toxicity of the sewage and treated effluent. This information will be used to ensure the discharge will not cause any toxic effect to the marine life.

7. Apart from the survey works, the Consultants have recently recommended a set of options selection criteria relating to the marine environment (including water quality, whole effluent toxicity, sediment, mixing zone, and biological and human health risk assessment), the onshore environment (including air, noise, and terrestrial ecology), engineering, economic and social aspects. These criteria will be used:

(a) to establish which potential project components (e.g. treatment works & sewage outfalls) are feasible;

(b) to compare the various options and select the preferred option;

(c) to carry out the detailed Environmental Impact Assessment

8. Based on this set of criteria, findings of the previous studies and the IRP's recommendations, a shortlist of options including CEPT, disinfection and biological treatment processes as well as outfall locations at Stonecutters Island, Lamma Island west, Lamma Island east and Lema Channel were developed for further investigation and preferred option selection. The locations of these sites are shown in Figure 2.

9. To ensure that the most appropriate option is selected, it is important that the criteria are adequate, comprehensive and realistic. The Consultants have initiated a community consultation programme to seek technical and professional inputs from the tertiary education institutes, green groups, and professional bodies. These are listed in Annex A.

10. Comments were received from a total of 13 interest groups. The issues raised included:

(a) the need to establish bacterial criteria to protect the marine mammals (currently, there is no bacterial WQO for general marine waters);

(b) the need to include additional criteria for toxic substances, including mercury and trace organics; and

(c) the methodology in determining the size of the "mixing zone".

11. To follow up these issues, the Consultants have attended meetings with the interest groups to discuss their comments and explain the draft criteria and development of options in more detail. The Consultants are now carrying out further studies on the issue of setting additional toxic substances and bacterial criteria.

ON-GOING AND PLANNED WORKS

12. Analysis of data collected in the above surveys and testing programmes is now in progress. The Consultants have also started the development of the risk assessment model and the full 3-dimensional water quality model. However, as the water quality model is more complicated than the originally planned one, the study has been delayed by around 4 months. Upon completion of model calibration, the Consultants will run the models, evaluate the shortlisted options, and recommend a preferred option by early 1998. At that time, we will consult widely on the outcome and recommendation of the Phase 1 Study.

13. After the consultation, we intend to firm up on the preferred option and seek advice from ACE in the process. Upon confirmation of the preferred option, we will proceed to Phase 2 of the study, that is the detailed assessment of the environmental impact during construction and operation stages. Measures required to mitigate environmental impacts will also be formulated in this phase of the Study. We plan to complete the Phase 2 Study in August 1998, at which time, the recommendations will be presented to the EIA Sub-committee of ACE in the normal way.

Environmental Protection Department
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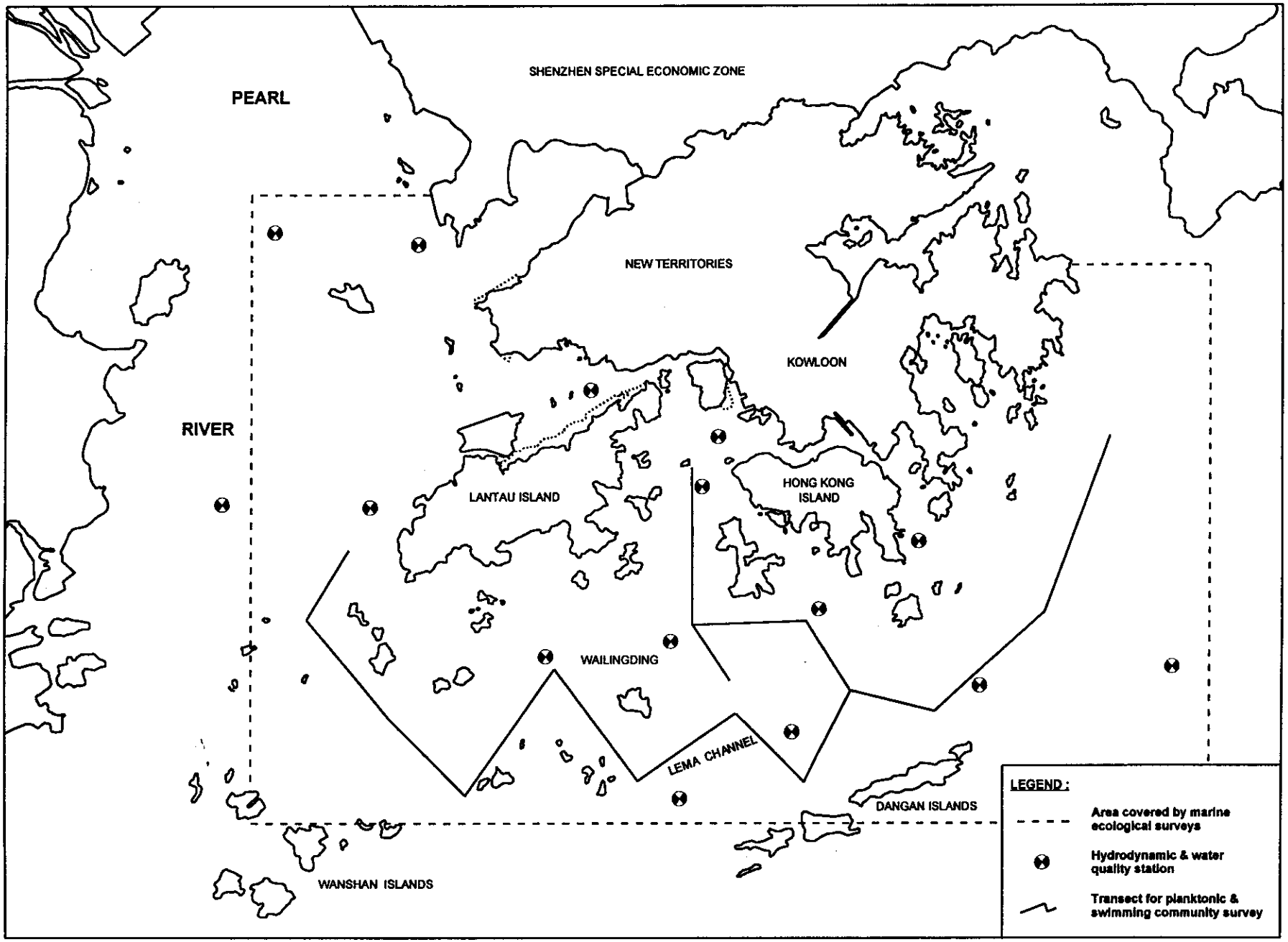

Figure 1 Marine Hydrodynamic and Ecological Surveys

Figure 2. Possible Outfall Locations and Treatment Works Sites