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ACE-EIA Paper 7/2008
For advice

Environmental Impact Assessment Ordinance (Cap. 499)
Environmental Impact Assessment Report
Harbour Area Treatment Scheme (HATS) Stage 2A - Investigation

PURPOSE

This paper presents the key findings and recommendations of the Environmental Impact Assessment (EIA) report for the Harbour Area Treatment Scheme (HATS) Stage 2A - Investigation (hereafter known as the Project) submitted under section 6(2) of the Environmental Impact Assessment Ordinance (EIAO) (Application No. EIA-148/2008). Drainage Services Department (the applicant) and the consultants will present the report. Comments from the public and the Advisory Council on the Environment will be taken into account by the Director of Environmental Protection in deciding on the approval of the EIA report under the EIAO.

ADVICE SOUGHT

2. Members' views are sought on the findings and recommendations of the EIA report.

NEED FOR THE PROJECT

3. In Stage 1 of the HATS, which was commissioned in 2001, sewage from Tsuen Wan, Kwai Tsing, Tseung Kwan O, the urban areas of Kowloon and northeastern

Hong Kong Island is collected and treated at the existing Stonecutters Island Sewage Treatment Works (SCISTW). Since the implementation of HATS Stage 1, the water quality in the Victoria Harbour has improved. However, the remaining sewage (around 450,000 m^3/d) generated by a population of about 1 million people living on the northern and western shores of Hong Kong Island still receives only rudimentary treatment before discharging into the Victoria Harbour, posing a significant negative impact on water quality.

4. Under the Project, sewage would be collected from eight upgraded preliminary treatment works (PTWs) on the northern and western parts of Hong Kong Island, and conveyed through a deep sewage tunnel system to the expanded SCISTW for centralized treatment (please see **Figure 1**). The objective is to restore the Victoria Harbour to a healthier condition and prevent further degradation of water quality due to the anticipated increase in population and economic activities.

DESCRIPTION OF THE PROJECT

5. The key elements of the Project include –

(i) upgrading of eight existing PTWs on Hong Kong Island, including North Point, Wan Chai East, Central, Sandy Bay, Cyberport, Aberdeen, Wah Fu and Ap Lei Chau;

(ii) construction of Sewage Conveyance System (SCS) for conveying sewage from the eight upgraded PTWs to the SCISTW; and

(iii) expanding the treatment capacity of the existing SCISTW from 1.7M m^3/d to 2.45M m^3/d including expansion of the interim disinfection facilities and other ancillary facilities.

6. The Project is classified as a designated project under –

(i) Item F.1 Part I Schedule 2: "Sewage treatment works with an installed capacity of more than 15,000 m^3 per day";

(ii) Item F.3(b)(i) Part I Schedule 2: "*A sewage pumping station with an installed capacity of more than 2,000 m^3 per day and a boundary of which is less than 150 m from an existing or planned residential area"*; and

(iii) Item F.5 Part I Schedule 2: "A submarine sewage pipeline with a diameter of 1200 mm or more and a length of 1 km or more".

CONSIDERATION OF ALTERNATIVE OPTIONS

7. The EIA study considered various alternatives including alternative SCS alignments, SCS designs, sewage treatment methods and construction methods.

8. The environmental benefits and disbenefits of the various alternatives were considered in recommending the preferred option. Environmental benefits of the preferred option include reduced nuisances to the sensitive receivers from the revised SCS alignment, reduced dust and noise impacts during the construction stage due to the adoption of deep tunnel design compared with the shallow pipeline option, and reduced noise and vibration impacts through non-percussive piling.

9. For alternative disinfection options, reference was made to the EIA report for "HATS - Provision of Disinfection Facilities at Stonecutters Island Sewage Treatment Works", which was approved under the EIAO in November 2007.

SPECIFIC ENVIRONMENTAL ASPECTS TO HIGHLIGHT

Water Quality

10. The EIA predicted that implementation of the Project would improve the water quality in the receiving water as compared with the baseline condition. The size of mixing zone near the SCISTW outfall is also smaller with the implementation of the Project due to the reduction in pollution loading and better dilution capacity at the SCISTW outfall area. Despite an overall improvement in water quality due to the implementation of the Project, the levels of three parameters, namely total inorganic nitrogen (TIN), unionized ammonia (UIA) and ortho-phosphate (PO_4), still exceed the limits of the relevant criteria. Nonetheless, based on the findings of the EIA, such exceedances would not impair the integrity of the water body.

11. Impacts due to the disinfection facilities, which have been assessed in the previous EIA on "HATS – Provision of Disinfection Facilities at Stonecutters Island

Sewage Treatment Works" and updated in the EIA of the current Project, are considered acceptable in terms of meeting relevant requirements under the EIAO Technical Memorandum (TM).

12. Based on results of Whole Effluent Toxicity Tests, laboratory tests, chemical analysis and water quality modeling, the EIA concluded that the Project would not cause any adverse impact on the marine water quality and on the identified sensitive receivers during normal operation of the SCISTW.

13. Emergency sewage discharges due to the failure of equipment, power supply or treatment process have been critically examined. Mitigation measures including dual power supply and standby pumps, treatment units and equipment would be provided at SCISTW. Standby unit(s) and dual or backup power supply would also be provided at all the PTWs under this Project. The EIA predicted that the water quality impacts associated with power or equipment failure would be short-term, and the water quality would return to normal quickly after the emergency has passed. An emergency contingency plan has also been formulated to minimize the impact of emergency discharges and facilitate emergency management.

Marine Ecology and Fisheries

14. Construction works would mostly be land-based apart from the reconstruction of a small section of existing seawall (about 50 m) at Aberdeen. The deep tunnel system would be constructed from a land access and would not disturb the seabed.

15. The seawall reconstruction at Aberdeen would involve the removal of seawall blocks and gravel and no dredging would be required. Ecological survey confirmed 3 coral communities would be affected by the removal of the seawall section. These corals are common species, small in size and attached to movable boulders (<50 cm diameter). The EIA recommended that the affected coral communities be translocated to the other end of the seawall, where other coral communities are located.

16. The EIA confirmed that there are no sensitive receivers within the mixing zone near the SCISTW outfall. The nearest fish culture zone from SCISTW is at Ma Wan, which is over 7 km away. As the Project would improve the water quality in the receiving water, ecological and fisheries impacts are not anticipated during the operation stage.

Terrestrial Ecology

17. The Project would be constructed in developed areas and wasteland of low ecological value. Adverse ecological impact is not anticipated.

Air Quality

18. Mitigation measures have been recommended to address odour impacts near the PTWs and SCISTW throughout the operation of the Project. The EIA recommended covering all the odour sources and provision of deodorizer for the PTWs. With such measures, the predicted odour levels at the nearby sensitive receivers are within the criteria of the TM.

19. For expansion works at SCISTW, the EIA recommended covering all the odour sources including the existing facilities of HATS Stage 1. A two-stage deodorization system consisting of biofilter and activated carbon is also recommended. With such provisions, the predicted odour level is within the criteria of the TM.

Hazard to Life

20. Two Potential Hazardous Installations (PHI), i.e. Hong Kong & China Gas Company's Gas Holder and Shell's Liquefied Petroleum Gas Transit Depot/Bulk Domestic Supply are located close to the works area of Aberdeen PTW and Ap Lei Chau PTW respectively. Quantitative Risk Assessments were carried out to confirm that both the individual and societal risks from the two PHIs would be within the acceptable region stipulated in the TM. Preventive measures including monitoring the vibration and ground settlements near the PHIs, and installation of gas leakage detector at the Liquefied Petroleum Gas depot boundary were recommended by the EIA to further reduce the risk levels.

21. The potential risk at SCISTW associated with the mixing of incompatible chemicals involving ferric chloride and sodium hypochlorite/sodium bisulphite has been assessed in the previous EIA on "HATS – Provision of Disinfection Facilities at Stonecutters Island Sewage Treatment Works" and updated in the EIA of the current Project. With the recommended precautionary measures to prevent and minimize the potential risk from the handling and storage of chemicals on site, the EIA concluded

that both individual and societal risk levels would be within the acceptable criteria stipulated in the TM.

Other Environmental Impacts

22. Noise, human health, waste management as well as landscape and visual impacts were also assessed in the EIA. Mitigation and monitoring measures were recommended to minimize such impacts. The EIA concluded that, with the implementation of recommended mitigation measures, the anticipated environmental impacts are considered acceptable in meeting the relevant requirements under the TM.

ENVIRONMENTAL MONITORING AND AUDIT

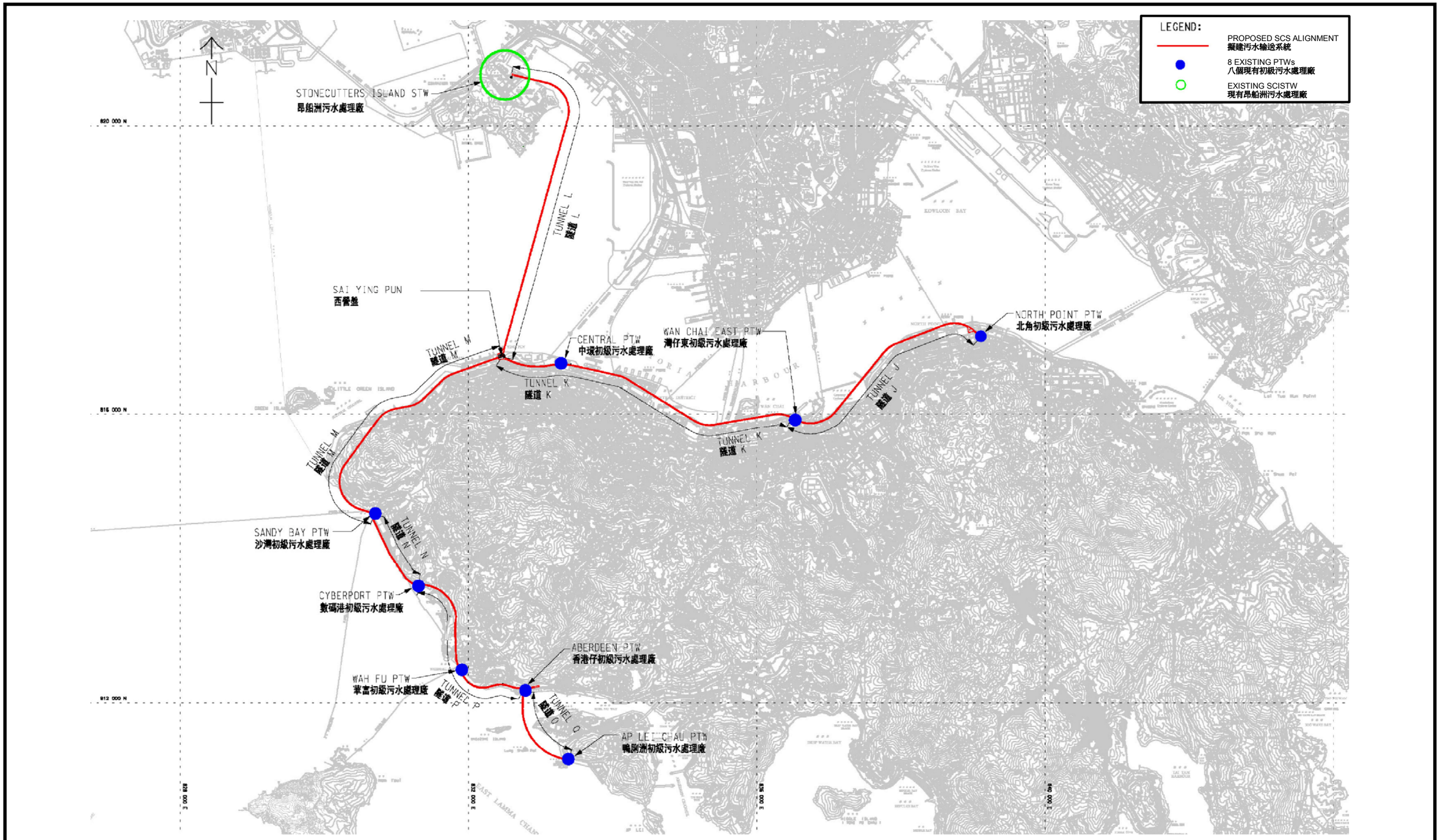
23. The EIA report includes an Environmental Monitoring and Audit (EM&A) Manual which recommends an EM&A programme during the construction and operation phases of the Project.

PUBLIC CONSULTATION

24. As part of the Continuous Public Involvement process, the applicant has consulted some green groups, academics and professional institutions to seek their comments on the Project during preparation of the EIA report.

25. The applicant has also made the EIA report, EM&A Manual and Executive Summary available for public inspection under the EIAO for 30 days, starting from 12 August 2008. Members will be briefed on any comments received from the public at the meeting.

August 2008
Environmental Assessment Division
Environmental Protection Department



Project Title: Harbour Area Treatment Scheme (HATS) Stage 2A

Figure 1 General Layout Plan (Reproduced from Figure 1 of the Executive Summary of the EIA Report)