Annex A

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ACE-EIA Paper 7/2022
For advice on 15 August 2022

Environmental Impact Assessment Ordinance (Cap. 499)
Environmental Impact Assessment Report

Hung Shui Kiu Effluent Polishing Plant

PURPOSE

This paper presents the key findings and recommendations of the Environmental Impact Assessment (EIA) report on "Hung Shui Kiu Effluent Polishing Plant" ("the Project") submitted under Section 6(2) of the Environmental Impact Assessment Ordinance (EIAO) (Application No. EIA-281/2022). The Drainage Services Department (DSD) ("the Applicant") and its consultants will present the report at the meeting of the EIA Subcommittee.

ADVICE SOUGHT

2. Members' views are sought on the findings and recommendations of the EIA report. The Director of Environmental Protection (DEP) will take into account the comments from the public and the Advisory Council on the Environment (ACE) in deciding whether or not to approve the EIA report under Section 8(3) of the EIAO.

BACKGROUND

3. The Government of the Hong Kong Special Administrative Region plans to develop Hung Shui Kiu / Ha Tsuen New Development Area (HSK/HT NDA) to meet the territory's medium to long-term need for housing development. Within the HSK/HT NDA, about 5.2 hectares of land is reserved for the Project to treat the sewage generated from the HSK/HT NDA and other developments in the North West New Territories (NWNT).

4. The Applicant submitted the EIA report for the Project for approval under Section 6 of the EIAO. DEP, in consultation with relevant authorities, considered that the EIA report has met the requirements in the EIA Study Brief and the Technical Memorandum on EIA Process (TM), for the purpose of its exhibition for public inspection under Section 7(4) of the EIAO.

NEED FOR THE PROJECT

5. The HSK/HT NDA is proposed to accommodate a population of approximately 176,000 and generate about 15,000 employment opportunities upon its full development. The Project, with a maximum capacity of Average Dry Weather Flow (ADWF) up to 90,000m^3/day, is therefore recommended to treat the sewage generated from the HSK/HT NDA and other developments in the NWNT.

DESCRIPTION OF THE PROJECT

6. The Project is to construct and operate a Secondary plus Nitrification, Denitrification and Disinfection (secondary plus) sewage treatment works comprising a sewage treatment plant, the associated supporting structures and the food waste/sewage sludge anaerobic co-digestion facilities. The Project will adopt the same treated effluent discharge arrangement as the adjacent San Wai Sewage Treatment Works (SWSTW), i.e. discharge to the Urmston Road submarine outfall located within the North Western Water Control Zone (WCZ) via the existing North West New Territories Tunnel (NWNT Tunnel). Construction works are anticipated to commence in early 2027 for completion by 2031. The location and general layout of the Project is shown in **Figure 1**. Key elements of the Project include:

(i) Demolition of existing structures and buildings of the San Wai Preliminary Treatment Works (SWPTW), which is located at the northern portion of the Project area and has ceased operation since September 2020;

(ii) Construction of an Effluent Polishing Plant at secondary plus treatment level with a maximum treatment capacity of 90,000m^3/day;

(iii) Construction of sludge treatment facilities for treating sludge generated from the Project and other nearby sewage treatment works;

(iv) Construction of facilities for receiving and co-digesting pre-treated food or organic wastes for generating biogas as alternative energy source for plant operation;

(v) Construction of effluent discharge pipe connecting to the existing NWNT Tunnel; and

(vi) Other associated ancillary facilities and works.

7. The Project is a Designated Project under Item F.1, Part I, Schedule 2 of the EIAO, as it will involve sewage treatment works with an installed capacity of more than 15,000m^3/day.

ENVIRONMENTAL BENEFITS

8. According to the EIA report, the Project will bring about the following potential environmental benefits to the area upon its completion:

(i) The Project can provide comprehensive sewage treatment for the HSK/HT NDA and other developments in NWNT;

(ii) The treated sewage effluent will be discharged via the existing NWNT Tunnel to Urmston Road submarine outfall within the North Western WCZ to avoid extra pollution loadings to Deep Bay;

(iii) The Project is designed to receive approximately 200 wet tonnes of pre-treated food waste per day for anaerobic co-digestion with sludge generated from sewage treatment, which will help reduce the volume of sludge and food waste to be disposed of at Environmental Protection Department (EPD)'s Sludge Treatment Facility and landfills; and

(iv) The Project will also allow energy recovery from biogas generation for utilisation within the plant and hence reduce its overall carbon footprint. Moreover, the organic contents in digested sludge would be much reduced so as to minimise odour level in the downstream dewatering and offsite disposal process.

CONSIDERATION OF ALTERNATIVE OPTIONS

9. The EIA report presented various development options, including alternative layouts, sewage and sludge treatment technologies to be adopted, construction methods and sequence of works. The recommended options have taken into account environmental considerations, site constraints and operational requirements. The key approaches that have been adopted by the Applicant to avoid or minimise environmental impacts are summarised as below:

(i) adopting construction methods and sequence to minimise construction noise impact, reduce the excavation volumes and shorten the construction period;

(ii) carefully designing and optimising the location, size and arrangement of facilities as well as selecting more compact sewage treatment technologies to minimise the footprint, scale of construction works and the associated environmental impacts to the surroundings;

(iii) covering all odourous sources for collecting and conveying odourous gas for treatment at deodourisers with 95% odour removal efficiency before venting to the atmosphere;

(iv) selecting ultra-violet (UV) as the recommended disinfection technology, and leaving no residuals in effluent and not harming the water life; and

(v) adopting sustainable design and green features such as green roof, photovoltaic system, utilisation of biogas from co-digestion of food waste with sewage sludge, etc. to reduce the carbon footprint of the Project.

SPECIFIC ENVIRONMENTAL ASPECTS TO HIGHLIGHT

Water Quality Impact

10. Water quality impacts on various sensitive receivers have been assessed by quantitative water modelling in the EIA study. Under the scenario of normal operation, treated sewage effluent from the Project and the adjacent SWSTW will be discharged to the North Western WCZ via the NWNT Tunnel and the Urmston Road submarine outfall. The water modelling predicts that the normal operation scenario will not result in adverse water quality impacts.

11. Water modelling was also conducted for a 12-day NWNT Tunnel maintenance as a worst case scenario, under which treated sewage effluent from the Project and SWSTW will be discharged to the Deep Bay WCZ via Tin Shui Wai Nullah through the emergency bypass pipe. Although the maintenance discharge event will cause an inevitable increase of pollution level in Deep Bay, it is predicted that the potential water quality impacts would be short-term and reversible. The modelling results also suggest that the NWNT Tunnel maintenance should avoid wet season (April to October) to minimise water quality impact to the Deep Bay.

12. Precautionary measures have been recommended in the EIA report to avoid the chance of emergency discharge during operation of the Project. These measures include the provision of dual power supply and standby units, application of peaking factors for major treatment units and electrical and mechanical equipment to avoid equipment failure, and design of by-pass mechanism for incoming sewage in case of coarse and fine screens failure. An Emergency Response Plan will also be formulated prior to commissioning of the Project to minimise the impact of emergency discharges and facilitate subsequent management of the emergency.

Air Quality Impact

13. The EIA study has identified that odour arising from the Project mainly comes from sewage treatment and anaerobic co-digestion of sewage sludge and pre-

treated food waste. With the implementation of odour control measures including enclosure of odour emission sources, use of extraction fans and installation of de-odourisation units with at least 95% odour removal efficiency, the predicted cumulative odour levels at all air sensitive receivers will comply with the odour criterion.

14. Flue gas emission would be emitted from the stacks of combined heat and power system and boiler of the Project. It is predicted that all relevant Air Quality Objectives would be met and no adverse air quality impact is expected.

Ecology

15. The Project site is located in an area of extensive development in HSK/HT NDA and mainly occupied by the existing SWPTW and brownfield operations at present. No sites of conservation importance and other ecologically sensitive areas would be directly affected.

Landscape and Visual Impact

16. Approximately 224 numbers of existing trees which are of poor to average condition and low to medium amenity value have been identified within the Project area and would be affected. None of the trees found on site is registered Old and Valuable Tree or of conservation important species. Compensatory tree planting is proposed in the EIA report, with a minimum of 250 heavy standard trees to be planted on site and along roadside using native tree species to enhance ecological value and re-creation of vegetation habitat. The residual landscape and visual impacts of the Project is considered acceptable with mitigation measures proposed.

Other Environmental Impacts

17. Other environmental impacts including noise, waste management, land contamination and hazard to life are relatively minor and have also been addressed in the EIA report. With the implementation of the recommended mitigation measures, the Project will comply with the relevant requirements of the EIA Study Brief and TM.

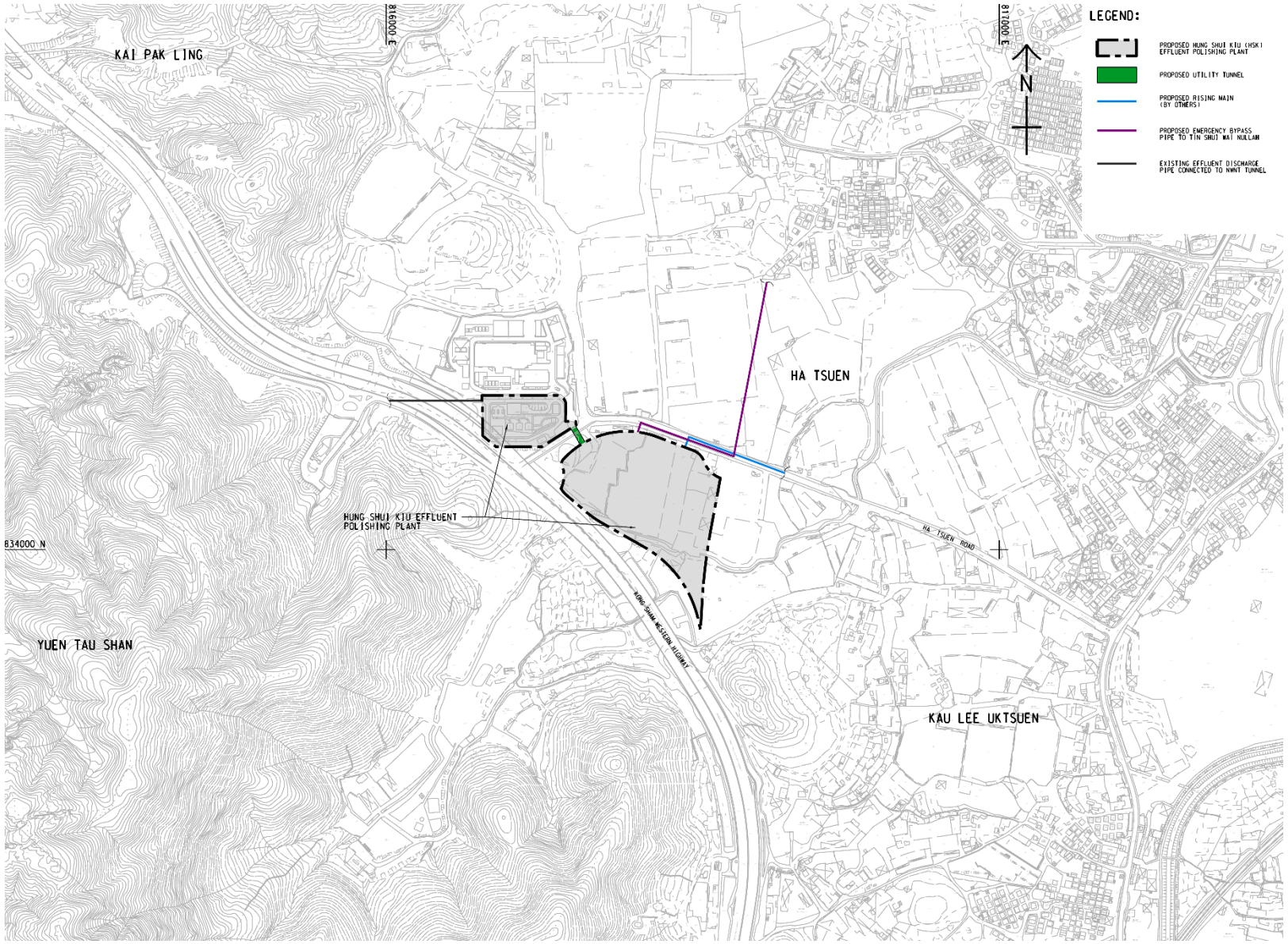
ENVIRONMENTAL MONITORING AND AUDIT

18. The EIA report has included an Environmental Monitoring and Audit (EM&A) Manual, which recommends an EM&A programme during the construction and operation phases of the Project. Key recommended EM&A requirements cover water and odour issues.

PUBLIC CONSULTATION

19. The Applicant has made the EIA report, EM&A Manual and Executive Summary available for public inspection under the EIAO from 15 June to 14 July 2022. No public comments were received during the public inspection period under the EIAO.

August 2022
Environmental Assessment Division
Environmental Protection Department



Project Title:	**Hung Shui Kiu Effluent Polishing Plant**	**EIA Application No.:**	
Figure 1	**General Layout of the Project**	**EIA – 281/2022**	