For discussion
on 27 May 2019

Legislative Council
Panel on Environmental Affairs

4408DS - Yuen Long Effluent Polishing Plant

PURPOSE

This paper seeks Members' views on our proposal to upgrade part of **4408DS** - Yuen Long Effluent Polishing Plant to Category A at an estimated cost of $6,861.4 million in money-of-the-day (MOD) prices for taking forward the stage 1 upgrading of the Yuen Long Sewage Treatment Works (YLSTW) to meet future development needs and to protect the water quality of the receiving waters of Deep Bay.

PROJECT SCOPE

2. The proposed part of **4408DS** to be upgraded to Category A as stage 1 works comprises -

(a) the demolition and reconstruction of part of the existing YLSTW to increase its treatment capacity from 70 000 cubic metres (m^3) per day to 100 000 m^3 per day and upgrading of sewage treatment level to tertiary effluent polishing standard;

(b) the demolition and reconstruction of sludge treatment facilities;

(c) the demolition and reconstruction of the administration building, storage building, switchgear house and transformer house; and

(d) ancillary works[1] and environmental mitigation measures[2].

3. The location plan and photomontage of the proposed works are shown in **Enclosures 1** and **2**.

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[1] Ancillary works include the utilities diversion, provision of manholes, walkway, necessary building services and landscaping works that are required to complete the proposed works and local improvement works for the community such as provision of river-side walkway, viewing decks, etc.

[2] Environmental mitigation measures include comprehensive odour control/mitigation measures such as fully-enclosing all treatment units and provision of ventilation and deodourisation system.

JUSTIFICATION

4. To cater for population growth and development needs of Hong Kong and to safeguard public health and the environment, we need to enhance the capacity and coverage of the existing sewerage infrastructure in a sustained manner. At present, the public sewerage system of Hong Kong has reached over 93% of the population. Building on this performance, we still need to upgrade the system to improve its effectiveness and extend its coverage to serve expansion areas in developed districts, new development areas and more rural villages.

5. On 25 March and 29 April 2019, we sought Members' view on nine sewerage projects for Cheung Chau, Sai Kung, Kowloon, Tsuen Wan, Lantau Island, Sha Tin and Tai Po, and obtained their support. This paper proposes a project for an effluent polishing plant at Yuen Long, upon completion of its consultation procedure and design work.

6. The existing YLSTW serves Yuen Long Town, Yuen Long Industrial Estate and Kam Tin areas with a design capacity of 70 000 m^3 per day. Based on the latest planning data[3], the volume of sewage generation from the YLSTW catchment is estimated to increase to 150 000 m^3 per day[4] after 20 years. We plan to reconstruct YLSTW to increase its capacity in two stages. The proposed works, as stage 1 of the project, will firstly increase the treatment capacity to 100 000 m^3 per day and reserve space for future construction of codigestion facilities for sludge and food waste. In the course of stage 1 construction, about half of the existing facilities of YLSTW would be demolished, while the other half would be kept in operation to maintain the sewage treatment service for Yuen Long area.

7. YLSTW is a secondary sewage treatment works, located at Yuen Long Industrial Estate within a congested site of only 8 hectares in area. It has been operating for over 30 years and most of its facilities are of out-dated design and reaching the end of their design life. We will take this opportunity to upgrade the environmental facilities of the plant and improve the adjacent environment through the following measures :

(a) upgrading the treatment level of the plant to tertiary standard to further reduce the residual organic content of the effluent by 50% (i.e. reducing the biological oxygen demand[5] concentration from 20 milligrams per litre (mg/L) to 10 mg/L) and adding a nutrient removal process, so as to ensure

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[3] 2014-based Territorial Planning and Employment Database Matrix.

[4] The increase in sewage volume is attributed to natural population growth, further housing developments, village sewerage programme in Yuen Long and Kam Tin areas as well as Yuen Long Industrial Estate's development.

[5] Biochemical oxygen demand means the amount of oxygen consumed by micro-organism to break down organic matter.

that the water quality of the nearby Shan Pui River and the Deep Bay further downstream would not be affected by the higher volume of effluent discharge;

(b) replacing all existing sewage treatment facilities and sludge treatment facilities with more compact and efficient units so that their capacities and treatment level can be upgraded without the need of additional land;

(c) adopting fully enclosed design to reduce potential odour and noise nuisance to the neighbourhood;

(d) incorporating extensive greening features and provision of public co-use facilities for the benefit of the local community; and

(e) Installing "combined heat and power units" to utilise the biogas derived from the digestion of sludge and organic waste (e.g. food waste) as fuel, and using photovoltaic panels to generate renewable energy.

8. At the planning stage, we have considered alternative schemes to meet the increased demand for sewage treatment capacity, including relocation of YLSTW, construction of an additional effluent polishing plant elsewhere within the district and diversion of the sewage to other sewage treatment facilities. However, it would take considerable time to search for an alternative site for the plant, while cross-district sewage diversion would require extensive sewer re-routing works involving additional capital cost and causing widespread traffic impact. As such, we consider that the proposed scheme of reconstructing YLSTW on the existing site is most preferable.

9. Subject to funding approval of the Finance Committee (FC), we aim to commence the proposed works in the first quarter of 2020 for planned completion in 2026. The remainder of **4408DS** for providing a further treatment capacity of 50 000 m^3 per day for Yuen Long Effluent Polishing Plant to increase its overall treatment capacity to 150 000 m^3 per day will be retained in Category B, with funding to be sought at a later stage after completion of the design and preparatory work.

FINANCIAL IMPLICATIONS

10. The estimated total capital cost of the proposed works as detailed in paragraph 2 is $6,861.4 million in MOD prices. The relevant unit construction cost is comparable with that of other similar tertiary sewage treatment facilities.

PUBLIC CONSULTATION

11. We consulted the Ping Shan Rural Committee (PSRC) on 27 November 2018 and the Environmental Improvement Committee of the Yuen Long District Council on 21 January 2019. Both Committees supported the proposed works.

ENVIRONMENTAL IMPLICATIONS

12. The project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) and an environmental permit (EP) is required for the construction and operation of the project. The Environmental Impact Assessment (EIA) Report for the project was approved with conditions in April 2019 under the EIAO. The EIA Report concluded that the environmental impact of upgrading YLSTW can be controlled to within the criteria under the EIAO and the Technical Memorandum on EIA Process. An EP for the project had been issued in April 2019. We will implement the measures recommended in the EIA Report and stipulated in the EP. The key measures include the installing deodourisation units for odour control, removing sewage sludge off-site in fully enclosed containers, enclosing all process equipment inside building structures, fitting exhaust fans with acoustic louvre/silencer and providing standby units with dual power supply to prevent any emergency discharge due to power interruption during operation. We have included in the project estimate of the proposed works the cost for implementing the necessary environmental mitigation measures.

13. During the construction period, we will adopt restricted working hours and use quiet powered mechanical equipment and temporary noise barriers to minimise construction noise impact. In order to minimise disturbance to migratory birds, noisy construction activities (i.e. percussive piling works and demolition using mechanical breakers) would not be carried out during the winter period. In addition, water-spraying to the construction site will be applied regularly to minimise emission of fugitive dust, and on-site treatment of site run-off will be carried out to minimise potential water quality impact. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good practices will be properly implemented.

14. At the planning and design stages, we have considered ways to reduce the generation of construction waste where possible. In addition, we will require the contractors to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible in order to minimise the disposal of inert construction waste at the public fill reception facilities (PFRF)[6]. We will encourage the contractors to maximise the use of recycled/recyclable inert construction waste and the use of non-timber formwork to further reduce the generation of construction waste.

15. At the construction stage, we will require the contractors to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractors to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert

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[6] PFRF are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in PFRF requires a licence issued by the Director of Civil Engineering and Development.

and non-inert construction waste at PFRF and landfills respectively through a trip-ticket system.

16. We estimate that the proposed works will generate in total about 546 720 tonnes of construction waste. Of these, we will reuse about 40 800 tonnes (7.5%) inert construction waste on site, and deliver 408 000 tonnes (74.6%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 97 920 tonnes (17.9%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be $48.6 million for the proposed works (based on a unit charge rate of $71 per tonne for disposal at PFRF and $200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

HERITAGE IMPLICATIONS

17. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

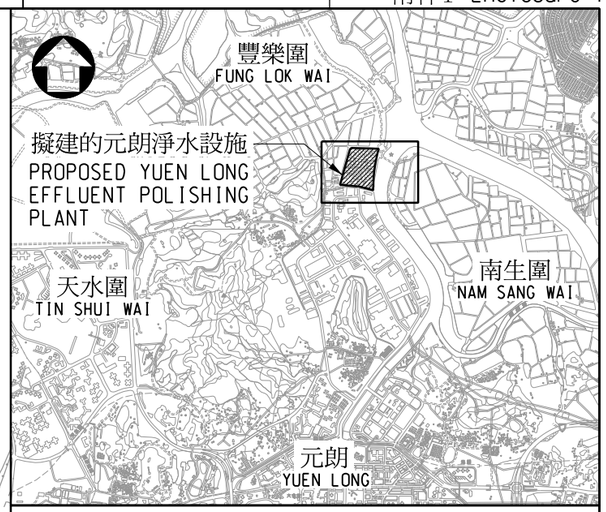
LAND ACQUISTION

18. The implementation of the proposed works will only involve government land. No land resumption is required.

WAY FORWARD

19. We plan to seek funding approval from the FC for the proposed works under part of **4408DS** after consulting the Public Works Subcommittee. Members are invited to comment on the proposed works.

Environment Bureau
Drainage Services Department
May 2019



索引圖 KEY PLAN

比例 SCALE 1 : 50 000

圖例 LEGEND :

- 現有元朗污水處理廠的邊界
  EXISTING BOUNDARY OF YUEN LONG SEWAGE TREATMENT WORKS
- 第一階段工程進行期間繼續運作的污水處理組件
  TREATMENT FACILITIES IN OPERATION DURING STAGE 1 CONSTRUCTION WORKS
- 擬建的行人通道
  PROPOSED WALKWAY
- 現有設施在工程完工後停用
  EXISTING FACILITIES TO BE DECOMMISSIONED UPON COMPLETION OF THE WORKS

1	基本處理設施 PRELIMINARY TREATMENT FACILITIES
2	初級處理設施 PRIMARY TREATMENT FACILITIES
3	生物處理設施 BIOLOGICAL TREATMENT FACILITIES
4	三級處理設施 TERTIARY TREATMENT FACILITIES
5	污泥處理設施 SLUDGE TREATMENT FACILITIES
6	行政樓 ADMINISTRATION BUILDING
7	貯存庫 STORAGE BUILDING
8	觀景及園景平台 VIEWING AND LANDSCAPED DECK

圖則名稱 drawing title

工程計劃項目4408DS號
元朗淨水設施第一階段
PWP ITEM NO.4408DS
YUEN LONG EFFLUENT POLISHING PLANT (STAGE 1)

圖則編號 drawing no. DSP/408DS1/16011

比例 scale 1 : 2000 OR AS SHOWN

香港特別行政區政府渠務署
DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION

圖則名稱 drawing title

工程計劃項目4408DS號
元朗淨水設施第一階段
PWP ITEM NO.4408DS
YUEN LONG EFFLUENT POLISHING PLANT (STAGE 1)

圖則編號 drawing no. DSP/408DS1/16012

比例 scale N.T.S.

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