

For discussion
on 22 November 2004

**Legislative Council
Panel on Environmental Affairs**

**Extension of Tai Po Sewage Treatment Works and
Peng Chau Sewage Treatment Works Upgrade**

PURPOSE

This paper seeks Members' support for the Administration's proposal of submitting the following two projects to the Public Works Subcommittee for consideration with a view to seeking the Finance Committee's funding approval –

- (a) **4222DS** “Tai Po sewage treatment works, stage 5 phase 1” at an estimated cost of \$465.1 million in money-of-the-day (MOD) prices; and
- (b) **4211DS** “Outlying Islands sewerage, stage 1 phase 2- Peng Chau sewage treatment works upgrade” at an estimated cost of \$93.0 million in MOD prices.

PROPOSAL AND JUSTIFICATION

4222DS “Tai Po sewage treatment works stage 5 phase 1”

2. The existing Tai Po sewage treatment works (TPSTW) serving the Tai Po district is a secondary treatment plant with a design capacity of 88 000 cubic metres (m³) per day. Treated effluent of TPSTW is conveyed by two effluent pumping stations at Tai Po and Sha Tin to Victoria Harbour for disposal. Due to the continuing population growth and expansion of sewerage network in the Tai Po district in recent years, the flow to TPSTW has reached its design capacity. Based on the latest planning figures, we forecast that the sewage flow from residential, commercial, industrial and other developments in the Tai Po district will increase to 98 200 m³ per day by 2012. To cope with the projected increase in sewage flow, it is necessary to increase the treatment capacity of TPSTW to 100 000 m³ per day.

3. Apart from constructing new facilities, we will modify a number of the existing units so as to increase the overall treatment capacity and to improve the plant performance by enhancing the nitrogen removal process.

4. If we do not implement the proposed extension, the effluent quality of TPSTW will deteriorate as the sewage flow continues to increase, leading to the discharge of inadequately treated effluent into Victoria Harbour.

5. The scope of the proposed extension and upgrading works for TPSTW comprises -

- (a) expansion and modification of the existing inlet works, including additional pumping, degritting and screening facilities;
- (b) modification of four existing bioreactors;
- (c) construction of two final clarifiers and modification of six existing ones;
- (d) provision of sludge thickening facilities and a sludge thickening house;
- (e) provision of sludge dewatering facilities and an extension to the existing sludge dewatering house;
- (f) provision of odour control measures; and
- (g) ancillary works including a filtrate treatment plant, power supply systems, control systems, pipeworks, chemical dosing facilities, building services installations, fire services installations, lifting appliances, cabling works and road works.

A site plan showing the scope of the proposed works is at Enclosure 1.

6. We plan to commence construction in mid-2005 for completion in late 2009.

4211DS “Outlying Islands sewerage, stage 1 phase 2 - Peng Chau sewage treatment works upgrade”

7. The existing Peng Chau sewage treatment works (PCSTW) is a secondary plus disinfection sewage treatment plant with a design capacity of 450 m³ per day. It mainly serves two public housing estates, namely Kam Peng Estate and Peng Lai Court in Peng Chau. The other areas in Peng Chau are relying on on-site sewage treatment facilities which are mainly septic tanks and soakaway systems. We are now implementing a comprehensive village sewerage programme to improve the sewerage infrastructure of Peng Chau. In this regard, we started the construction of the sewerage works at the central parts of Peng

Chau under project **4228DS** “Outlying Islands sewerage, stage 1 phase 2 – Peng Chau and Cheung Chau sewerage” in 2002 for completion in 2005. At the moment, the sewage flow received by PCSTW has reached its design capacity. With the extension of the sewerage system, the sewage flows to PCSTW will substantially increase to 1 260 m³/day in the coming years. To cope with the increase in sewage flow, we need to increase the capacity of the existing PCSTW and the associated inlet pumping mains. We propose to upgrade the treatment level by including nitrogen removal and providing dechlorination, and to expand the treatment capacity to 1 580 m³ per day. We will also construct a submarine outfall to enhance the initial dilution of the effluent in the receiving waters.

8. If we do not proceed with the proposed upgrading works, the flows collected by the newly constructed sewerage systems will not receive proper treatment before being discharged. This will not only result in the deterioration of water quality in the receiving water body but also render the investment in the village sewerage network virtually useless.

9. The scope of the proposed upgrading works for PCSTW comprises-

- (a) laying of about 350 metres (m) of twin inlet pumping mains (i.e. total length of mains about 700m) to the treatment works;
- (b) re-construction of the sewage treatment works to increase the capacity from 450 m³ to 1 580 m³ per day and to provide nitrogen removal and dechlorination;
- (c) construction of a submarine outfall and an emergency overflow outfall with an approximate length of 100 m and 40 m, respectively;
- (d) provision of de-odourization facilities;
- (e) provision of sludge dewatering and handling facilities; and
- (f) provision of ancillary works including building services, architectural, landscape works.

A site plan showing the scope of the proposed works is at Enclosure 2.

10. We plan to commence construction in mid-2005 for completion in mid-2008.

FINANCIAL IMPLICATIONS

11. We estimate the project costs¹ and the annual recurrent costs¹ of the proposed works to be –

	Project cost \$ million (MOD)	Annual recurrent cost \$ million
(a) Tai Po sewage treatment works stage 5 phase 1	465.1	8.0
(b) Outlying Islands sewerage, stage 1 phase 2 - Peng Chau sewage treatment works upgrade	93.0	2.5
Total	558.1	10.5

12. Based on the current level of expenditure on operation and maintenance of sewerage facilities, the proposed works by themselves will lead to an increase in the recurrent cost of providing sewage services by about 0.64%, which will need to be taken into account in determining sewage charges.

13. We estimate that the projects will create some 200 new jobs¹, including 40 professional/technical staff and 160 labourers during construction of the above proposed works, including conducting relevant consultancies.

PUBLIC CONSULTATION

4222DS “Tai Po sewage treatment works stage 5 phase 1”

14. On 12 March 2004, DSD consulted the Works and Environment Committee of the Tai Po District Council on the project and obtained their support for the proposed works. DSD also consulted the village representatives of Fung Yuen Village located near the TPSTW and the Estate Management Office of the Tai Po Industrial Estate in February 2004, and they had no objection to the proposed works.

4211DS “Outlying Islands sewerage, stage 1 phase 2 - Peng Chau sewage treatment works upgrade”

15. DSD consulted the Peng Chau / Discovery Bay Area Committee and the Island District Council on the proposed works in December 2003 and February 2004 respectively. They supported implementation of the proposed works.

¹ These are latest estimates. We would finalize the project costs and new job opportunities, and include cost breakdown prior to submitting the proposals to the PWSC for consideration.

DSD also consulted the residents of Sea Crest Villa, the Green Peng Chau Association and the Peng Chau Fishermen Association in January 2004 and obtained their support for the project.

ENVIRONMENTAL IMPLICATIONS

16. Upon commissioning of these upgraded secondary treatment works, significant pollutant loads will be removed from the sewage effluent before the effluent is discharged into the respective receiving water bodies. This will improve the environmental and public health conditions of these water bodies and bring long term benefits to the population served.

17. DSD has completed the necessary Environmental Review and Environmental Impact Assessment (EIA) studies for the proposed works in accordance with EPD's requirements and the EIA Ordinance as applicable. The studies concluded that with the implementation of mitigation measures, the proposed works should not give rise to unacceptable environmental impacts. For short-term impacts during construction, DSD will control noise, dust, site run-off, suspended solids in marine water, and other related impacts to comply with the established standards and guidelines, through implementation of mitigation measures under the works contracts. The mitigation measures include temporary noise barriers and silenced construction plant to reduce noise generation, water-spraying to reduce dust emission, strict implementation of sewage flow diversion schemes, and the use of closed-grab dredger and silt curtains to confine the dispersion of suspended solids. DSD will also require the works contractors to implement a waste management plan (WMP) to be approved by the Engineer. The WMP will include appropriate measures to reduce, reuse and recycle construction and demolition materials (C&DM).

18. DSD will ensure that the day-to-day operations on site should comply with the approved WMP. DSD will reuse public fill generated from the projects either on site or on other construction sites as far as possible. DSD will require the contractors to implement necessary measures to minimize the generation of C&DM and to reuse and recycle C&DM

ADVICE SOUGHT

19. Members are invited to support the Administration's proposal of upgrading the following two projects to Category A for consideration by the Public Works Subcommittee in December 2004 with a view to seeking funding approval by the Finance Committee in January 2005 -

- (a) **4222DS** "Tai Po sewage treatment works stage 5 phase 1" at an estimated cost of \$465.1 million in MOD prices; and






- (b) **4211DS** “Outlying Islands sewerage, stage 1 phase 2 - Peng Chau sewage treatment works upgrade” at an estimated cost of \$93.0 million in MOD prices.

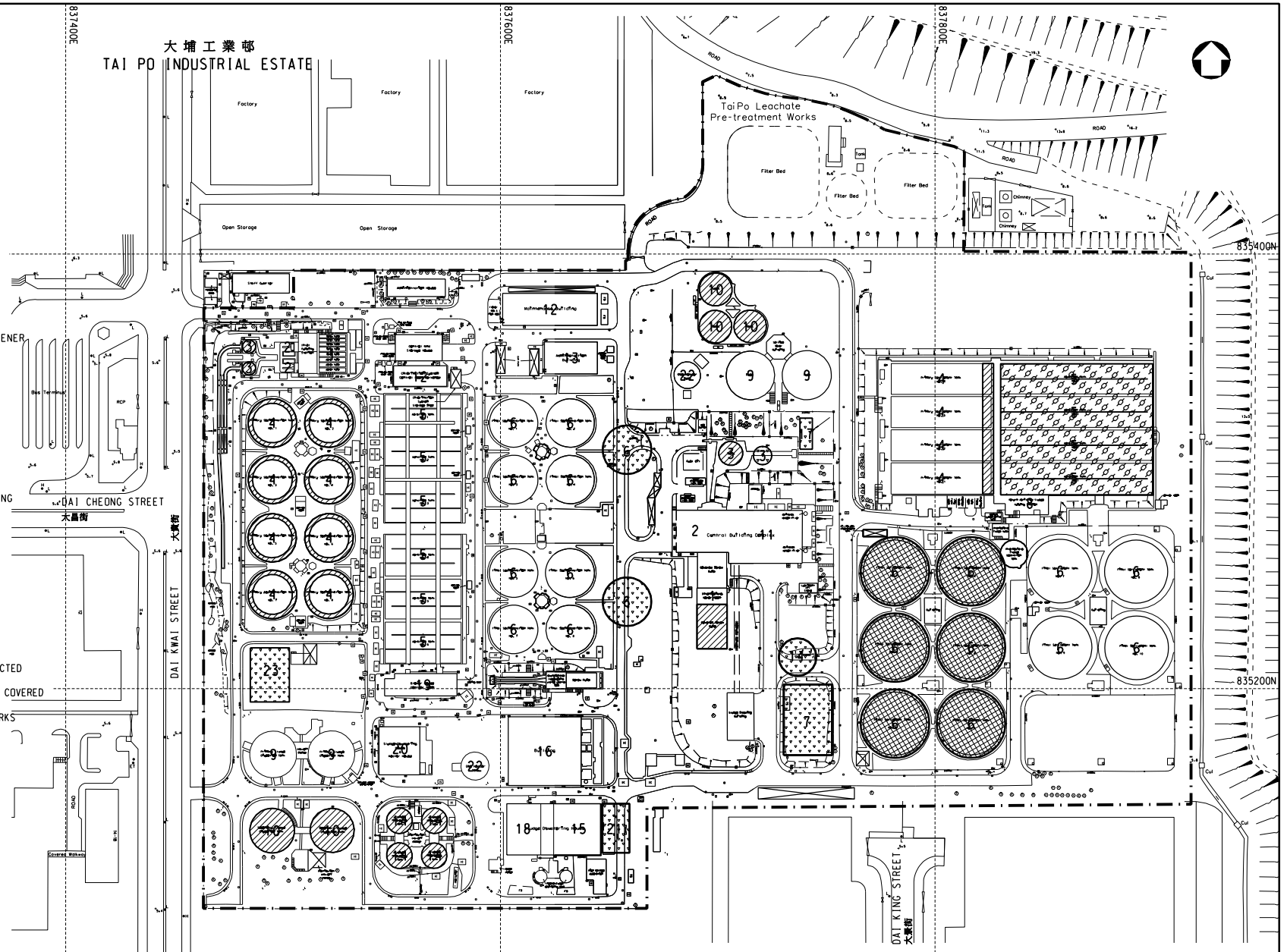
Environment, Transport and Works Bureau
November 2004

LEGEND:

- ① INLET PUMPING STATION
- ② SCREENS HOUSE
- ③ DETRITORS
- ④ PRIMARY CLARIFIERS
- ⑤ BIOREACTORS
- ⑥ FINAL CLARIFIERS
- ⑦ SAS THICKENING HOUSE
- ⑧ RETURN ACTIVATED SLUDGE PUMPING STATION
- ⑨ SLUDGE DIGESTION TANKS
- ⑩ SLUDGE CONSOLIDATION TANKS
- ⑪ CENTRAL BUILDING COMPLEX
- ⑫ MAINTENANCE BUILDING
- ⑬ ADMINISTRATION BUILDING
- ⑭ PRIMARY SLUDGE GRAVITY THICKENER
- ⑮ CHEMICAL HOUSE
- ⑯ EFFLUENT PUMPING STATION
- ⑰ PRIMARY SEDIMENTATION TANK DISTRIBUTION CHAMBER
- ⑱ SLUDGE DEWATERING HOUSE
- ⑲ BLOWER HOUSE
- ⑳ SLUDGE PUMPING STATION
- ㉑ EXTENSION OF SLUDGE DEWATERING HOUSE
- ㉒ GAS HOLDER
- ㉓ FILTRATE TREATMENT PLANT

LEGEND:

-  PROPOSED STRUCTURE
-  EXISTING STRUCTURE TO BE DEMOLISHED AND RECONSTRUCTED
-  EXISTING STRUCTURE TO BE COVERED
-  PROPOSED MODIFICATION WORKS
-  SITE BOUNDARY



drawing title

TAI PO SEWAGE TREATMENT WORKS - STAGE 5 PHASE 1
GENERAL LAYOUT

drawing no.

SK-T6-04-017

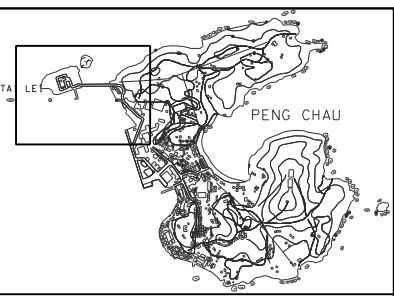
scale

NTS



DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

ENCLOSURE 1 附件一



位置圖 KEY PLAN



821200 E
821400 E
821600 E
821800 E

坪洲污水處理廠
PENG CHAU SEWAGE
TREATMENT WORKS

816800 N

816600 N

816400 N

擬建兩條海底排放管
PROPOSED SUBMARINE
OUTFALLS

擬建入水泵喉
PROPOSED TWIN INLET
PUMPING MAINS

金坪邨
KAM PENG ESTATE

坪麗苑
PENG LAI COURT

坪洲
PENG CHAU


圖例 LEGEND

 擬建之新設施
PROPOSED UPGRADED WORK

圖則名稱 drawing title

擬建的坪洲污水處理改善工程
LOCATION OF PROPOSED PENG CHAU
SEWAGE TREATMENT WORKS UPGRADE

繪畫 drawn	H.K. LAI	日期 date	21-10-2004
核對 checked	H.W. LEUNG	日期 date	21-10-2004
批核 approved	S.K. WONG	日期 date	21-10-2004
部門 office	顧問工程管理部 CONSULTANTS MANAGEMENT DIVISION		

圖則編號 drawing no.	比例 scale
DCM/2004/046	N.T.S.
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