For information

Legislative Council
Panel on Environmental Affairs

4340DS "Port Shelter sewerage stage 3 –
Sai Kung Area 4 and Mang Kung Uk sewerage"

Supplementary Information Note on Water Quality Assessment

PURPOSE

During the discussion on the proposal to provide trunk sewerage for Sai Kung Area 4 at the Legislative Council Panel on Environmental Affairs meeting on 24 October 2005, Members requested the Administration to provide supplementary information on the water quality assessment, in particular the potential increase in *E. coli* level in the surrounding marine waters and at the beaches, arising from the increase in sewage flows in Port Shelter. This paper provides the required details.

WATER QUALITY ASSESSMENT

The Existing Environmental Condition of Port Shelter

2. The water quality in Port Shelter is amongst the best in Hong Kong. Since 1989, it has been declared for secondary contact recreational uses with a water quality objective (WQO) for *E. coli* of less than 610 per 100 millilitres (mL). There are six gazetted beaches in Port Shelter with an *E. coli* WQO of less than 180 per 100 mL. The Environmental Protection Department takes routine seawater samples from ten marine monitoring stations and the beaches to monitor the water quality in Port Shelter. The monitoring data in 2004 indicated that –

(a) the marine water quality is good, with an average *E. coli* level at PM3, the marine monitoring station closest to the outfall from Sai Kung Sewage Treatment Works (SKSTW), of 2 per 100 mL; and

(b) the water quality of the three closest beaches, namely Kiu Tsui Beach, Hap Mun Bay Beach and Trio Beach, is good. In 2004 they were all graded as Category 1 beaches, with average *E. coli* levels of 17, 3 and 2 per 100 mL respectively.

Effluent Discharge from Sai Kung Sewage Treatment Works

3. Sewage generated in Sai Kung town is currently collected and conveyed to the SKSTW for treatment before disposal via a submarine outfall into the Port Shelter waters. SKSTW is a secondary sewage treatment works with nutrient removal and ultraviolet disinfection. The effluent standard for *E. coli* is 100 per 100 mL as a monthly geometric mean, with an additional requirement of not more than 1,500 per 100 mL for 95% of the time. In 2004, the average sewage flow to SKSTW was around 10,000 m^3/day. Following UV disinfection, the average *E. coli* level in the effluent was 2 per 100 mL.

Water Quality Assessment for the Increased Sewage Flow

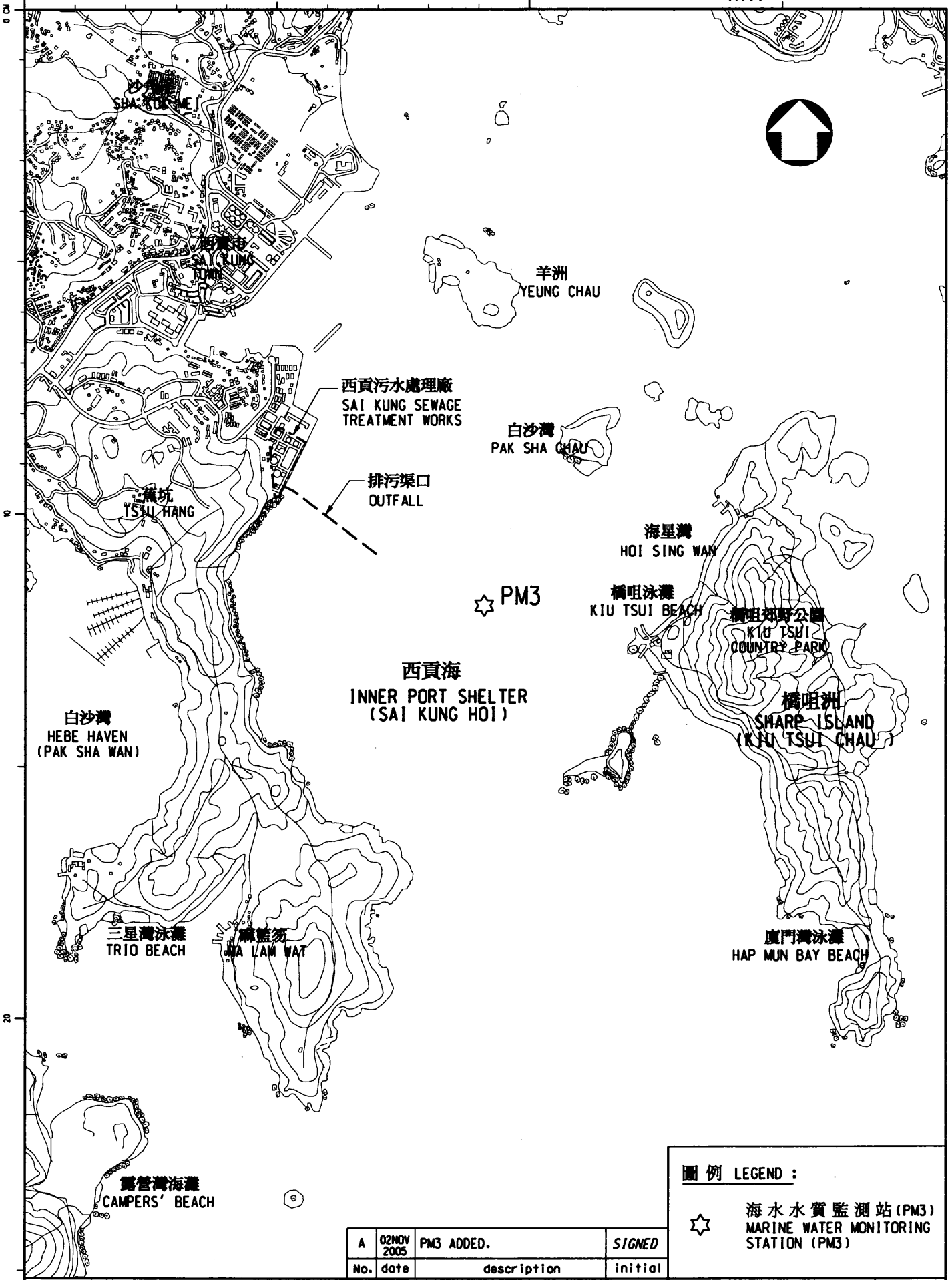
4. The proposed project would increase the sewerage capacity for flows to SKSTW to 18,000 m^3/day. It is planned to maintain the same high level of treatment at SKSTW and to discharge the treated effluent via a submarine outfall at about 15 metres deep and 500 metres offshore, as shown in **Enclosure 1**.

5. Mathematical computer models were used to predict the potential impacts on the quality of the Port Shelter waters. The modeling results indicated that within a downstream distance of less than 10 metres from the outfall, the effluent will be diluted by 100 times on average. The modeling results also indicated that even with the worst case scenario of 1,500 *E. coli* per 100 mL discharged from SKSTW, there will be no material impact on the water quality in Port Shelter. The *E. coli* level in the surrounding marine water would remain below 10 per 100 ml and the beach water quality will remain unaffected by the effluent discharge from SKSTW.

CONCLUSION

6. Both the water quality monitoring results and the modeling results indicate that the water quality in Port Shelter is good and will continue to be good in the future. Given the high level of treatment to be provided, there is no indication that the increase in sewage flow would result in any deterioration of water quality in Port Shelter.

Environmental Protection Department
Drainage Services Department
November 2005



圖例 LEGEND :

☆ 海水水質監測站(PM3)
MARINE WATER MONITORING STATION (PM3)

No.	date	description	initial
A	02NOV 2005	PM3 ADDED.	SIGNED

圖則名稱 drawing title

西貢污水處理廠位置圖
LOCATION PLAN OF SAI KUNG SEWAGE TREATMENT WORKS

繪畫 drawn	SIGNED	Y. K. FAN	日期 date 28OCT05
核對 checked	SIGNED	S. C. CHIU	日期 date 28OCT05
批核 approved	SIGNED	T. Y. YUEN	日期 date 28OCT05

部門 office 污水工程部
SEWERAGE PROJECTS DIVISION

圖則編號 drawing no. DDN/340DS/0008A

比例 scale 1 : 20 000

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