

**For discussion
on 15 December 2009**

**Legislative Council
Panel on Environmental Affairs**

**341DS – Harbour Area Treatment Scheme, stage 2A – upgrading
of Stonecutters Island sewage treatment works and
preliminary treatment works**

PURPOSE

Subsequent to approval by the Finance Committee (FC) for the upgrading of *part of 341DS* to Category A in June 2009, this paper seeks Members' support for our proposal to upgrade *the remaining part of 341DS* to Category A at an estimated cost of \$7,928.9 million in money-of-the-day (MOD) prices prior to submission to the Public Works Subcommittee (PWSC) for consideration with a view to seeking funding approval by the FC.

BACKGROUND

2. The Harbour Area Treatment Scheme (HATS) involves the implementation of an integrated sewerage system for collecting and treating sewage generated around the Victoria Harbour in an efficient, effective and environmentally sustainable manner. The implementation of HATS proceeds in two stages. Completed in 2001, HATS Stage 1 now collects 1.4 million cubic metres (m³) of sewage generated daily in Kowloon and north-eastern Hong Kong Island (representing about 75% of the total sewage generated from the harbour catchment) via deep tunnels to the Stonecutters Island sewage treatment works (SCISTW) for centralised treatment before disposal.

3. The remaining 450 000 m³ of sewage currently generated within the areas from North Point to Ap Lei Chau which are not handled by HATS Stage 1 (i.e. the remaining 25%) would be collected and transferred to the expanded SCISTW for centralised treatment under Stage 2A. Our aim is for HATS Stage 2A to be commissioned by end-2014.

4. HATS Stage 2A comprises three major works components, namely –

- (a) the construction of a sewage conveyance system (SCS) to transfer sewage generated from the northern and south-western parts of Hong Kong Island to the expanded SCISTW;
- (b) the upgrading of eight preliminary treatment works (PTWs) along the route of the SCS; and
- (c) the expansion of the SCISTW to increase its treatment capacity and to provide disinfection treatment facilities.

Previous Upgrading of *Part of 341DS* to Category A

5. Based on the target commissioning date of end-2014 and having regard to the scale and complexity of the project, we considered it necessary to commence the construction of time-critical components of HATS Stage 2A (i.e. the SCS mentioned in paragraph 4(a) above and advance preparation works, such as excavation and foundation works) ahead of other works. The design work for expanding the SCISTW and upgrading the PTWs (i.e. the components as mentioned in paragraphs 4(b) and (c) above) would proceed in parallel. Following such an approach, we consulted the Panel on Environmental Affairs on our proposal for upgrading *part of 341DS* to Category A (as **369DS** – *Harbour Area Treatment Scheme, stage 2A – construction of the sewage conveyance system and advance works for upgrading of Stonecutters Island sewage treatment works*¹) in December 2008. Please refer to the discussion paper CB(1)363/08-09(05) for details. Members did not object to the submission of the proposal for consideration by the PWSC.

6. Subsequent to consideration by the PWSC in June 2009, the FC has also approved the funding proposal in June at an estimated cost of \$9,286.5 million in MOD prices. The works of **369DS** are packaged under four civil engineering works contracts and one electrical and mechanical (E&M) works contract. All of the five contracts have been awarded between July and October 2009. With the commencement of construction work on site, the progress has been satisfactory so far.

¹ The scope of **369DS** comprises (i) the construction of an SCS consisting of sewage tunnels of total length of about 21 kilometres and associated ancillary works; (ii) the construction of advance preparation works for the expansion and upgrading of SCISTW within the SCISTW site; and (iii) the provision of covers and deodourisation facilities to the existing sedimentation tanks at SCISTW.

PROPOSAL AND PROJECT SCOPE

7. The Drainage Services Department has now completed the design work for expanding the SCISTW and upgrading the PTWs. We therefore propose to upgrade **341DS** (i.e. *its remaining part*) to Category A at an estimated cost of \$7,928.9 million in MOD prices. Subject to Members' advice, we wish to submit the proposal to the PWSC for consideration in January 2010 with a view to seeking FC's approval in February 2010.

8. The scope of **341DS** for upgrading to Category A comprises –
- (a) provision of a new main pumping station (MPS) at SCISTW;
 - (b) expansion and modification of the chemically-enhanced primary treatment (CEPT) facilities, and the provision of disinfection facilities at SCISTW;
 - (c) construction of an effluent tunnel on Stonecutters Island;
 - (d) expansion of facilities at SCISTW for sludge treatment, handling, transportation and disposal;
 - (e) upgrading of sludge reception facilities at the existing West New Territories (WENT) landfill piers;
 - (f) upgrading of eight PTWs on Hong Kong Island along the route of the SCS; and
 - (g) other ancillary works.

Layout plans showing the proposed works are at **Enclosure 1**.

JUSTIFICATIONS

9. At present, around 450 000 m³ of sewage generated from the northern and south-western parts of Hong Kong Island are receiving only preliminary treatment. This has been a major source of pollution for the Victoria Harbour. Upon the commissioning of HATS Stage 2A by end-2014, the sewage would receive centralised CEPT treatment and disinfection at SCISTW before discharge. We envisage that the water quality in the Victoria Harbour would further improve as a result of reduction in pollution load. The benefits to our environment would be significant.

10. By transferring the additional sewage from the northern and south-western parts of Hong Kong Island to SCISTW for treatment, the volume of sewage to be treated at SCISTW would increase from the current figure of around 1.4 million m³ daily to around 1.85 million m³ daily upon commissioning of HATS Stage 2A; hence a new MPS would be required to lift the additional sewage from the deep tunnels to surface level for treatment at SCISTW. Similarly, we would also need to increase the capacities of the CEPT facilities and the disinfection facilities for handling the additional sewage. The works proposed above are therefore quintessential to the proper and efficient functioning of the SCISTW in the light of the projected surge in the volume of sewage requiring treatment there.

11. As we pointed out in the discussion paper CB(1)363/08-09(05), the quantity of dewatered sludge generated from SCISTW is estimated to increase from about 600 tonnes per day at present to more than 1 000 tonnes per day under the ultimate development scenario. It is therefore necessary to upgrade the facilities at SCISTW for sludge treatment, handling, transportation and disposal prior to transportation to the Sludge Treatment Facilities (STF) at Tsang Tsui for further treatment.

12. We need to commence construction of the works above by mid 2010. The timely commencement would minimise any interfacing problems between the works of **341DS** and the construction of SCS and the advance preparation works under **369DS**, hence allowing HATS Stage 2A to proceed more smoothly and help maintaining the target commissioning timeframe of end-2014.

FINANCIAL IMPLICATIONS

13. We estimate the capital cost of the proposed works to be about \$7,928.9 million² in MOD prices.

14. We estimate that the construction of the proposed works would create about 1 330 jobs (1 070 for labourers and another 260 for professional / technical staff), providing a total employment of 57 450 man-months².

² These figures represent the latest estimates of the capital cost and new job opportunities. We will finalise these figures and include the cost breakdown when submitting the proposal to the PWSC for consideration.

PUBLIC CONSULTATION

15. We have consulted the relevant committees under seven District Councils (DCs), namely Central and Western DC, Eastern DC, Kwai Tsing DC, Sham Shui Po DC, Wan Chai DC, Southern DC and Tsuen Wan DC regarding the proposed works in the first quarter of 2009 (please refer to **Enclosure 2** for details). We have also consulted the Subcommittee on Harbour Plan Review of the Harbourfront Enhancement Committee regarding the proposed layout design of PTW upgrading works at Wanchai East and Central in March 2009. They all had no objection to the proposed works.

ENVIRONMENTAL IMPLICATIONS

16. HATS Stage 2A is a designated project under the Environmental Impact Assessment Ordinance (EIAO) and an Environmental Permit is required for its construction and operation. The Environmental Impact Assessment (EIA) report for HATS Stage 2A was endorsed by the Advisory Council on the Environment on 8 October 2008 and approved under the EIAO on 30 October 2008. The EIA report concluded that HATS Stage 2A will significantly reduce the pollution loads being discharged into Victoria Harbour and improve the water quality of the Victoria Harbour. The report further confirmed that with the implementation of the recommended mitigation measures, the environmental impacts of the proposed works can be controlled to within the standards and guidelines under the EIAO and the Technical Memorandum on the EIA Process. We obtained the Environmental Permit for HATS Stage 2A (which covers the proposed works and those works commenced earlier) on 19 November 2008. We will implement the mitigation measures recommended in the approved EIA report. The STF Feasibility Study EIA report, which was approved under the EIAO on 19 February 2009, has assessed the marine transportation of sludge from SCISTW to the piers at the WENT landfill site for transfer to the nearby STF for treatment.

17. For short term impacts during construction, we will control noise, dust and site run-off to levels within established standards and guidelines, through the implementation of mitigation measures such as the use of noise enclosures to reduce noise generation, water-spraying to reduce dust emission and proper pre-treatment of site run-off. We will carry out a comprehensive environmental monitoring and audit programme to ensure compliance with the environmental permit

requirements. We will also carry out site inspections to ensure that these recommended mitigation measures and good site practices are properly implemented.

18. In the planning and design stages, we have considered different ways (such as minimising the excavation for structures) to reduce the generation of construction waste where possible. In addition, we will require the contractors to reuse inert construction waste (e.g., excavated rock and soil, demolished concrete) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste to public fill reception facilities³. We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

19. We will also 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 construction waste and non-inert construction waste to public fill reception facilities and landfills respectively through a trip-ticket system.

20. We estimate that the project will generate in total about 308 000 tonnes of construction waste. Of these, we will reuse about 10 000 tonnes (3.3%) of inert construction waste on site, deliver 156 800 tonnes (50.9%) of inert construction waste which are granitic rocks to Lam Tei Quarry or Anderson Road Quarry for processing into aggregate, and deliver 131 600 tonnes (42.7%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 9 600 tonnes (3.1%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be \$4.8 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception

³ Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

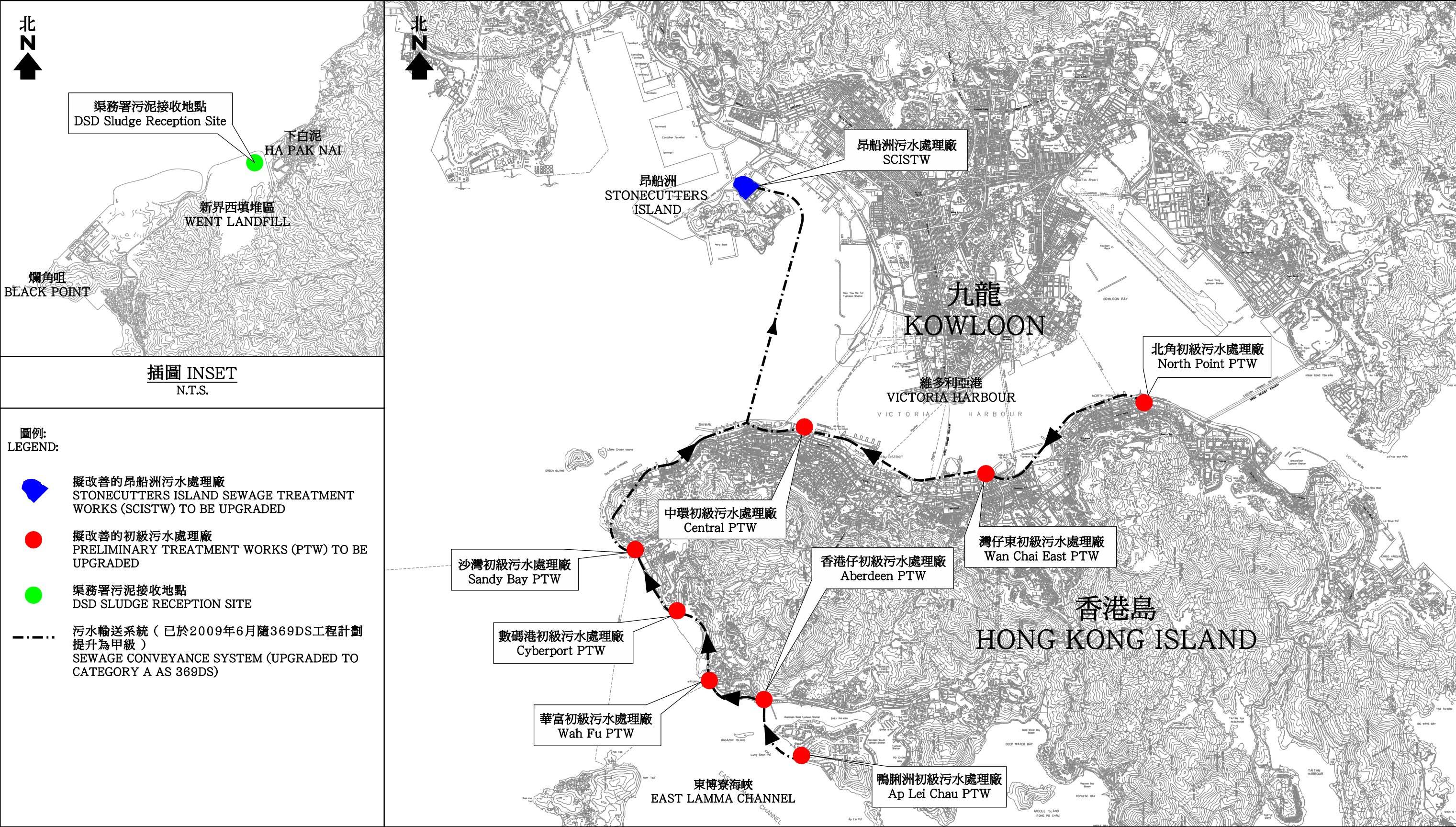
facilities and \$125/tonne⁴ at landfills).


ADVICE SOUGHT

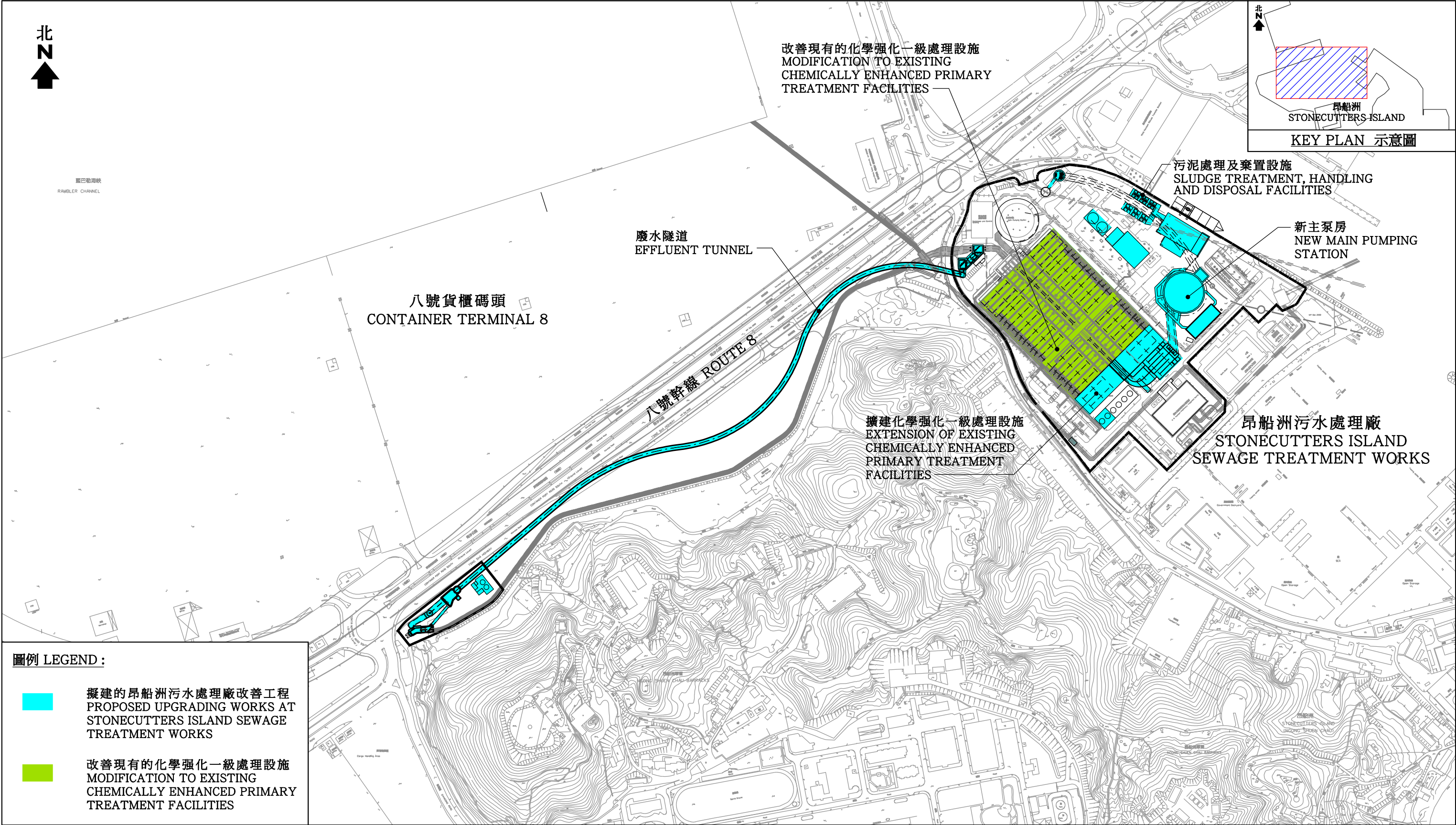
21. Members are invited to support our proposal for upgrading the remaining part of **341DS** to Category A at an estimated cost of about \$7,928.9 million in MOD prices. Subject to Members' advice, we wish to submit the proposal for consideration by the PWSC in January 2010 with a view to seeking funding approval by the FC in February 2010.

Environmental Protection Department
Drainage Services Department
December 2009

⁴ This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90/m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.



圖則名稱 drawing title 工務工程計劃第341DS號 淨化海港計劃第二期甲 - 改善昂船洲污水處理廠及初級污水處理廠工程 PWP ITEM No. 341DS HARBOUR AREA TREATMENT SCHEME, STAGE 2A - UPGRADING OF STONECUTTERS ISLAND SEWAGE TREATMENT WORKS AND PRELIMINARY TREATMENT WORKS	繪畫 drawn	日期 date	圖則編號 drawing no.	比例 scale
	核對 checked	日期 date	DSS/2009/002	N.T.S.
	批核 approved	日期 date		
	部門 office		保留版權 COPYRIGHT RESERVED	
	淨化海港計劃部 HARBOUR AREA TREATMENT SCHEME DIVISION		 香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	



圖例 LEGEND :

擬建的昂船洲污水處理廠改善工程
PROPOSED UPGRADING WORKS AT
STONECUTTERS ISLAND SEWAGE
TREATMENT WORKS

改善現有的化學強化一級處理設施
MODIFICATION TO EXISTING
CHEMICALLY ENHANCED PRIMARY
TREATMENT FACILITIES

<div>圖則名稱 drawing title</div> <div>工務工程計劃第341DS號 淨化海港計劃第二期甲 - 改善昂船洲污水處理廠及初級污水處理廠工程</div> <div>PWP ITEM No. 341DS HARBOUR AREA TREATMENT SCHEME, STAGE 2A - UPGRADING OF STONECUTTERS ISLAND SEWAGE TREATMENT WORKS AND PRELIMINARY TREATMENT WORKS</div>	繪畫 drawn		日期 date	圖則編號 drawing no.	比例 scale
	W.Y. HUI		01-09-2009		
	核對 checked		日期 date	DSS/2009/003	1 : 5000
	C.Y. LAI				
	批核 approved		日期 date	保留版權 COPYRIGHT RESERVED	
K.M. HO			<div><div></div><div>香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION</div></div>		
部門 office					
淨化海港計劃部 HARBOUR AREA TREATMENT SCHEME DIVISION					

Enclosure 2

Details of Consultation with DCs

DC	Committee consulted on the proposed works	Date
Central and Western District	Food, Environment, Hygiene and Works Committee	15 January 2009
Eastern District	Planning, Works and Housing Committee	15 January 2009
Kwai Tsing District	Community Affairs Committee	10 February 2009
Sham Shui Po District	Environment and Hygiene Committee	12 February 2009
Wan Chai District	Development, Planning and Transport Committee	17 February 2009
Southern District	District Development and Environment Committee	23 February 2009
Tsuen Wan District	Environmental and Health Affairs Committee	5 March 2009