

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 704 – DRAINAGE

Environmental Protection – Sewerage and sewage treatment

235DS – Yuen Long and Kam Tin sewerage and sewage disposal

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **235DS**, entitled “Yuen Long South sewerage and expansion of Ha Tsuen sewage pumping station”, to Category A at an estimated cost of \$550.8 million in money-of-the-day prices; and
- (b) the retention of the remainder of **235DS** in Category B.

PROBLEM

Sewage from unsewered areas in Yuen Long South is a source of water pollution to nearby watercourses and the receiving waters of Deep Bay.

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade part of **235DS** to Category A at an estimated cost of \$550.8 million in money-of-the-day (MOD) prices for the provision of trunk sewerage to Yuen Long South and the expansion of the Ha Tsuen sewage pumping station.

/PROJECT

PROJECT SCOPE AND NATURE

3. The scope of the part of **235DS** which we propose to upgrade to Category A comprises –

- (a) construction of about 9 kilometres of trunk sewers in Yuen Long South and Ha Tsuen areas;
- (b) construction of a new sewage pumping station near Shui Tsiu San Tsuen Road in Yuen Long South and expansion of the existing Ha Tsuen sewage pumping station; and
- (c) ancillary works.

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

4. We plan to start construction in August 2009 for completion in September 2013.

JUSTIFICATION

5. Apart from Yuen Long town centre and Tin Shui Wai, the remaining areas in the Northwest New Territories (NWNT) are largely not served by public sewers. Sewage from these unsewered areas is currently treated and discharged by means of privately owned sewage treatment plants or septic tank and soakaway systems. These privately owned facilities in general are not effective in removing pollutants due to their close proximity to watercourses¹ and inadequate maintenance². Sewage discharged from these unsewered areas is a source of water pollution to nearby watercourses and Deep Bay. The lack of public sewerage also hinders future development in these areas.

6. As a long term measure to address water pollution problems and to meet future development needs in NWNT, we propose provision of trunk sewer systems and a new sewage pumping station in Yuen Long South to serve a total

/projected

¹ Soakaway systems operate by allowing the effluent to percolate through the ground so that pollutants would be removed in a natural manner. However, if a system is located in an area where the ground water table is high such as an area in close proximity to watercourses, it cannot function properly.

² Inadequate maintenance of septic tanks or soakaway systems would affect their pollutant removal efficiency and may even lead to overflow of effluent.

projected population of about 38 000. The sewage collected from Yuen Long South will be conveyed, via the Ha Tsuen sewage pumping station, to San Wai sewage treatment works for treatment before discharge, thereby mitigating water pollution in the nearby watercourses and Deep Bay and improving the living environment. The pumping capacity of Ha Tsuen sewage pumping station is required to be upgraded to cater for the increasing volume of sewage collected from the unsewered areas where sewers are planned to be provided and future developments in Yuen Long.

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of the proposed works to be \$550.8 million in MOD prices (see paragraph 8 below), made up as follows –

	\$ million	
(a) Construction of sewers	246.2	
(b) Construction and expansion of sewage pumping stations and ancillary works	153.6	
(i) civil works	105.5	
(ii) electrical and mechanical works	48.1	
(c) Environmental mitigation measures	7.1	
(d) Consultants' fees for contract administration	1.1	
(e) Resident site staff costs	56.1	
(f) Contingencies	43.7	
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Sub-total	507.8	(in September 2008 prices)
(g) Provision for price adjustment	43.0	
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Total	550.8	(in MOD prices)

/A

— A detailed breakdown of the estimates for the consultants' fees and resident site staff costs by man-months is at Enclosure 2.

8. Subject to approval, we will phase expenditure as follows –

Year	\$ million (September 2008)	Price adjustment factor	\$ million (MOD)
2009 – 2010	31.6	1.03500	32.7
2010 – 2011	117.1	1.05570	123.6
2011 – 2012	147.2	1.07681	158.5
2012 – 2013	139.3	1.09835	153.0
2013 – 2014	36.0	1.12032	40.3
2014 – 2015	20.6	1.15113	23.7
2015 – 2016	16.0	1.18566	19.0
	507.8		550.8

9. We have derived the MOD estimate on the basis of the Government's latest forecast of trend rate of change in the prices of public sector building and construction output for the period from 2009 to 2016. We will tender the civil engineering works under a re-measurement contract because of the uncertain underground conditions that may affect the alignments of the sewers as well as the depth of the foundations of the pumping stations. The contract will provide for price adjustment. We will tender the electrical and mechanical works under a lump-sum contract as the scope of works is well defined.

10. We estimate the annual recurrent expenditure arising from the proposed works to be about \$11.0 million.

/PUBLIC

PUBLIC CONSULTATION

11. We consulted Ha Tsuen Rural Committee (HTRC) on 5 March 2008 and HTRC supported our proposed works. We consulted Shap Pat Heung Rural Committee (SPHRC) on 9 May 2008 and SPHRC had no objection to the proposed works. We then consulted the Environmental Improvement Committee (EIC) of the Yuen Long District Council on 19 May 2008. Some EIC members requested us to provide written clarification on whether small house applications would be affected by the proposed sewerage works. We provided supplementary information to the EIC members on 2 June 2008 and they subsequently endorsed our proposed works on 17 June 2008. Furthermore, we consulted the local community including Village Representatives between November 2007 and May 2008 and they had no objection to the proposed works.

12. We gazetted the proposed expansion of Ha Tsuen sewage pumping station and its associated sewers under the Water Pollution Control (Sewerage) Regulation on 29 August 2008. We received one objection upon the expiry of the statutory objection period. However, the ground of objection was not related to the gazetted sewerage scheme. After our clarifications with the objectors, the objectors unconditionally withdrew the objection. In light of this, the Director of Environmental Protection authorised the proposed sewerage scheme on 2 January 2009.

13. We consulted the Legislative Council Panel on Environmental Affairs (the Panel) on 23 February 2009 on the proposed works. Members raised no objection to our plan to submit the funding proposal to the Public Works Subcommittee. Nevertheless, some Members requested the Administration to provide a breakdown on the percentage of village houses which had made connections upon provision of the public village sewerage, together with information on the distance between reception points and the lot boundaries of village houses and the reasons for those unable to be connected; supplementary information on the assistance schemes available to villagers in implementing the sewer connection works, and the measures to ensure compliance with sewer connection requirements; as well as the schedules of delivery for village sewers, sewer connection works and their respective site plans. We submitted an information note to the Panel on 9 April 2009.

ENVIRONMENTAL IMPLICATIONS

14. The proposed expansion of the existing Ha Tsuen sewage pumping station is a designated project under the Environmental Impact Assessment

/Ordinance

Ordinance (EIAO). We have assessed its potential environmental impacts and concluded that it will not cause long term adverse environmental impacts. We obtained an environmental permit (EP) for the construction and operation of the expanded portion of Ha Tsuen sewage pumping station on 23 January 2009. We shall implement the mitigation measures set out in the EP. The environmental impacts arising from the proposed sewers and sewage pumping station near Shui Tsiu San Tsuen Road in Yuen Long South were also assessed and we concluded that they will not cause long term adverse environmental impacts.

15. For short term impacts during construction, we will control noise, dust and site run-off to levels within the established standards and guidelines through implementation of mitigation measures in the works contract, such as the use of silenced construction plants and temporary noise barriers to reduce noise, proper scheduling of construction activities to minimize nuisance to the public, water-spraying to reduce emission of fugitive dust, and proper treatment of site run-off before discharge. We will also carry out regular site inspection to ensure that these recommended mitigation measures and good site practice are properly implemented on site. We have included in paragraph 7(c) above a sum of \$7.1 million (in September 2008 prices) in the project estimate for implementing environmental mitigation measures.

16. We have considered in the planning and design stages ways to reduce the generation of construction waste where possible, including optimisation of the sewerage design to minimise the extent of excavation and to avoid as far as practicable demolition of existing structures. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil and demolished concrete) on site or in other suitable construction sites as far as possible, in order to minimize the disposal of inert construction waste to public fill reception facilities³. We will encourage the contractor to maximize the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimize the generation of construction waste.

17. We will also require the contractor 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 approval plan.

/We

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.

We will require the contractor 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.

18. We estimate that the project will generate in total about 241 400 tonnes of construction waste. Of these, we will reuse about 162 800 tonnes (67%) of inert construction waste on site and deliver 62 900 tonnes (26%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 15 700 tonnes (7%) 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 \$3.7 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne⁴ at landfills.)

HERITAGE IMPLICATIONS

19. 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 ACQUISITION

20. The proposed works do not require any land acquisition.

BACKGROUND INFORMATION

21. In September 1998, we upgraded **215DS** “Yuen Long and Kam Tin sewerage and sewage disposal” to Category B for the provision and upgrading of sewerage facilities in the NWNT.

/22.

⁴ The 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.

22. In January 1999, the Environmental Protection Department completed the study “Review of Yuen Long and Kam Tin sewerage and sewage disposal requirements”. The study recommended a package of sewerage improvement works to provide trunk sewer systems and to upgrade relevant sewerage facilities to abate the water pollution problems and to meet future development needs in the NWNT.

23. From July 1999 to March 2004, we engaged consultants to carry out environmental impact assessment, ground investigations and traffic impact assessment studies for **215DS** at a total estimated cost of \$10.8 million in MOD prices. We charged this amount to block allocation **Subhead 4100DX** “Drainage works, studies and investigations for items in Category D of the Public Works Programme”.

24. In February 2004, we split **215DS** into **215DS** “Yuen Long and Kam Tin sewerage and sewage disposal – Kam Tin trunk sewerage phase 1 and Au Tau trunk sewers” and **235DS** “Yuen Long and Kam Tin sewerage and sewage disposal”. We upgraded **235DS** to Category B in October 2005.

25. In July 2006, we upgraded part of **235DS** to Category A as **350DS** “Yuen Long and Kam Tin sewerage and sewage disposal – consultants’ fees and investigations” at an estimated cost of \$28.0 million in MOD prices for engaging consultants to undertake detailed design and necessary investigations. We have substantially completed the design of the proposed works mentioned in paragraph 3 above.

26. The remainder of **235DS** proposed for retention in Category B mainly comprises the provision of trunk sewerage to Ngau Tam Mei, San Tin, Pat Heung, Kam Tin and Lau Fau Shan, expansion of the existing San Wai sewage treatment works and modification of the sewage treatment facilities at the existing Yuen Long sewage treatment works. Planning and design of the remainder is in progress.

27. Of the 946 trees within the project boundary, 787 trees will be preserved. The proposed sewerage construction works will involve the removal of 159 trees, including 21 trees to be felled and 138 trees to be replanted within the

/project

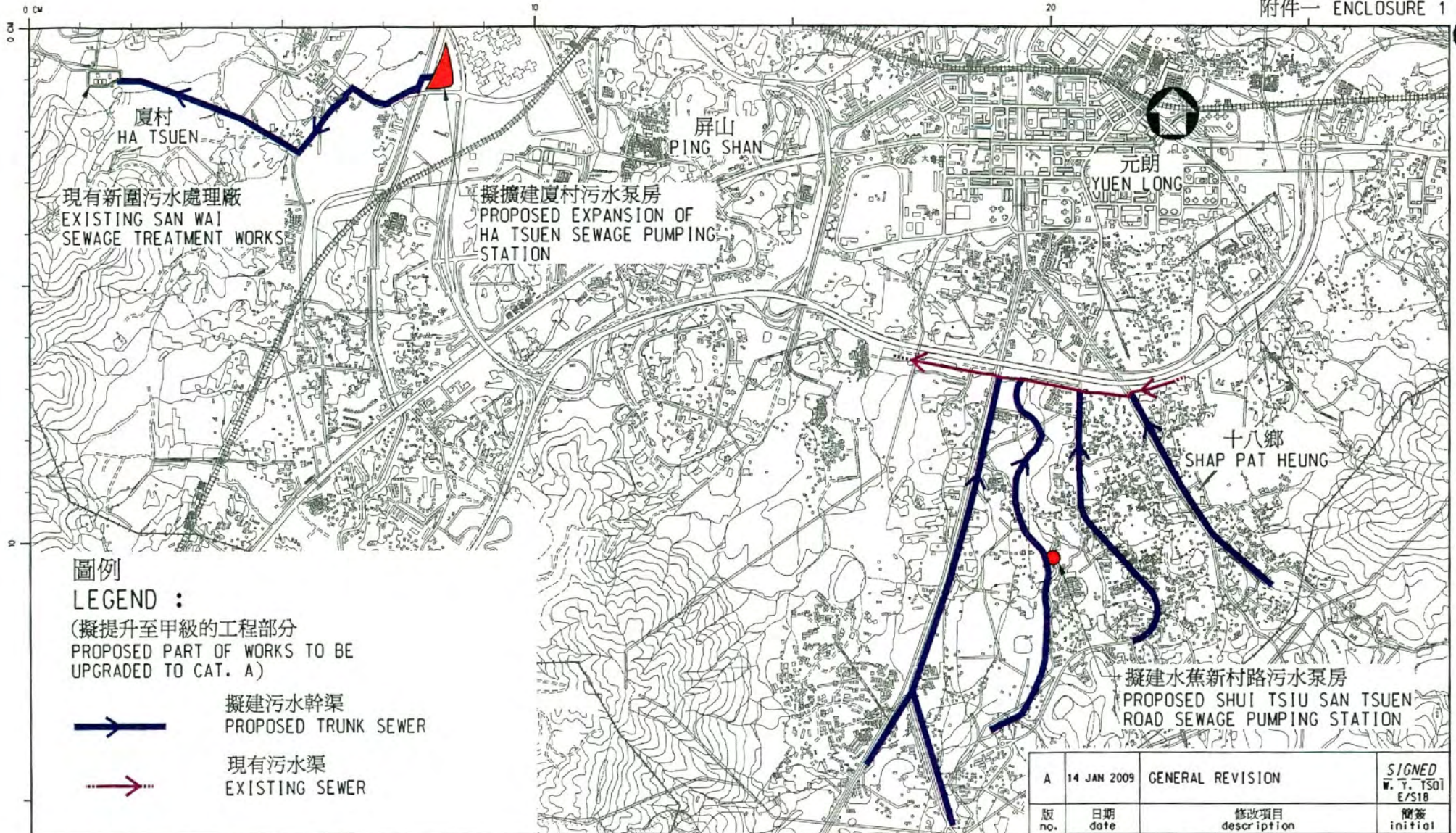
project site. All trees to be removed are not important trees⁵. We will incorporate planting proposals as part of the project, including estimated quantities of 32 trees.

28. We estimate that the proposed works will create about 165 jobs (134 for labourers and another 31 for professional/technical staff) providing a total employment of about 6 900 man-months.

Environment Bureau
April 2009

⁵ “Important trees” refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –



- (a) trees over 100 years old or above;
- (b) trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument, and trees in memory of important persons or event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- (e) trees with trunk diameter equal or exceeding 1.0 metre (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.



圖例

LEGEND :


(擬提升至甲級的工程部分
PROPOSED PART OF WORKS TO BE
UPGRADED TO CAT. A)

-  擬建污水幹渠
PROPOSED TRUNK SEWER
-  現有污水渠
EXISTING SEWER

擬建水蕉新村路污水泵房
PROPOSED SHUI TSUI SAN TSUEN
ROAD SEWAGE PUMPING STATION

A	14 JAN 2009	GENERAL REVISION	SIGNED W. Y. TSOI E/S1B
版 no.	日期 date	修改項目 description	簡簽 initial

圖則名稱 drawing title
工務計劃項目第235DS號
元朗及錦田污水收集系統及污水排放計劃
PWP ITEM NO. 235DS
YUEN LONG AND KAM TIN SEWERAGE AND SEWAGE DISPOSAL

繪畫 drawn	SIGNED M. W. CHEUNG	日期 date	11 DEC 2008	圖則編號 drawing no.	DDN/235DS1/8001A	比例 scale	1:25000 OR AS SHOWN
核對 checked	SIGNED Ir W. Y. TSOI	日期 date	17 DEC 2008	保留版權 COPYRIGHT RESERVED			
批核 approved	SIGNED Ir C. H. LAI	日期 date	17 DEC 2008				
部門 office	污水工程部 SEWERAGE PROJECTS DIVISION			 香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION			

Enclosure 2 to PWSC(2009-10)12

235DS – Yuen Long and Kam Tin sewerage and sewage disposal

**Breakdown of the estimates for consultants' fees and resident site staff costs
(in September 2008 prices)**

			Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a)	Consultants' fees	Professional	--	--	--	0.8
	for contract administration (Note 2)	Technical				0.3
(b)	Resident site staff	Professional	287	38	1.6	27.8
	costs (Note 3)	Technical	892	14	1.6	28.3
					Total	57.2

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS point to arrive at the full staff costs, including the consultants' overheads and profit, for staff employed in the consultants' offices. MPS points 38 and 14 are used as the average MPS salary points for professionals and technical staff respectively. (As at 1 April 2008, MPS point 38 = \$60,535 per month and MPS point 14 = \$19,835 per month)
2. The consultants' fees for contract administration is calculated in accordance with the existing consultancy agreement for the design and construction of the project.
3. We will only know the actual man-months and actual costs after completion of the construction works.