

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

Head 704 – DRAINAGE

Environmental Protection - Sewerage and sewage treatment

346DS - Upgrading of Tuen Mun sewerage, phase 1

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **346DS**, entitled “Sewerage at Tseng Tau Chung Tsuen, Tuen Mun”, to Category A at an estimated cost of \$33.0 million in money-of-the-day (MOD) prices; and
- (b) the retention of the remainder of **346DS** in Category B.

PROBLEM

There is no public sewerage at Tseng Tau Chung Tsuen in Tuen Mun. Domestic sewage from this unsewered area is mostly discharged directly into open drainage channels without any treatment, thus causing hygiene problems at Tseng Tau Chung Tsuen and contributing to water pollution in Tuen Mun River Channel and Castle Peak Bay.

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade part of **346DS** to Category A at an estimated cost of \$33.0 million in MOD prices to implement the sewerage works at Tseng Tau Chung Tsuen, Tuen Mun.

/PROJECT

PROJECT SCOPE AND NATURE

3. The part of the project we now propose to be upgraded to Category A comprises the construction of about 4 kilometres (km) of sewers, ranging from 150 millimetres (mm) to 400mm in diameter at Tseng Tau Chung Tsuen, Tuen Mun. A location plan is at Enclosure 1.

4. The remainder of **346DS** proposed for retention in Category B comprises –

- (a) construction of about 6.8 km of trunk sewer (“the Western Interceptor Sewer”, (WIS)) and the associated Tuen Mun North sewage pumping station and WIS sewage pumping station in Tuen Mun; and
- (b) provision of pumping stations and village sewerage to collect and convey sewage from 27 unsewered villages/areas in Tuen Mun to the main sewer system.

5. We plan to start the construction works described in paragraph 3 in January 2008 for completion in October 2010. We will continue the planning and design for the remaining works under **346DS**.

JUSTIFICATION

6. At present, domestic sewage from unsewered areas in Tuen Mun is discharged into nearby watercourses after treatment by private treatment facilities, such as septic tanks and soakaway systems. The facilities in these areas are often ineffective in removing pollutants due to their close proximity to watercourses¹ and inadequate maintenance². Sewage discharged from these unsewered areas is a source of pollution to the existing watercourses and the receiving waters in Tuen Mun River Channel and Castle Peak Bay. Moreover, the existing trunk sewerage in Tuen Mun does not have adequate capacity to handle the increasing sewage flow generated in the catchment areas.

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¹ Soakaway systems operate by allowing the effluent to percolate through the soil so that pollutants would be removed in a natural manner. However, if a system is located in an area where the underground 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 the pollutant removal efficiency of a system and may even lead to an overflow of effluent.

7. Tseng Tau Chung Tsuen is one of the unsewered villages under **346DS**. The hygiene problem in Tseng Tau Chung Tsuen is compounded by the fact that the domestic sewage is mostly discharged directly into open drainage channels without any treatment or treated by private treatment facilities which are often ineffective. The situation of this village is worse than that in the other villages where sewage is carried by underground conduits.

8. To bring early improvement in the hygiene and environmental conditions in Tseng Tau Chung Tsuen, we will implement the Tseng Tau Chung Tsuen sewerage, which does not require any private land acquisition, under the first phase of **346DS**. Upon completion of the recommended works, we would be able to alleviate the water pollution problem in Tuen Mun. Sewerage for other villages that may require acquisition of private land will be carried out under the subsequent phases. This implementation strategy is in line with the expectation of the Tuen Mun District Council. With the proposed sewerage facilities in place, the sewage of about 1 100 people will be collected for proper treatment, and we expect that the hygiene condition in Tseng Tau Chung Tsuen will be improved.

FINANCIAL IMPLICATIONS

9. We estimate the cost of the proposed works to be \$33.0 million in MOD prices (see paragraph 10 below), made up as follows –

	\$ million	
(a) Sewers	22.4	
(b) Environmental mitigation measures	0.5	
(c) Consultants' fees	6.4	
(i) construction stage	1.0	
(ii) resident site staff	5.4	
(d) Contingency	2.9	
	<hr/>	
Sub-total	32.2	(in September 2007 prices)
(f) Provision for price adjustment	0.8	
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Total	33.0	(in MOD prices)
	<hr/>	

/A

— A breakdown of the estimates for the consultants' fees by man-months is at Enclosure 2.

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

Year	\$ million (September 2007)	Price adjustment factor	\$ million (MOD)
2007 – 2008	0.5	1.00000	0.5
2008 – 2009	4.0	1.00750	4.0
2009 – 2010	10.0	1.01758	10.2
2010 – 2011	10.0	1.02775	10.3
2011 – 2012	3.9	1.03803	4.0
2012 – 2013	3.8	1.05619	4.0
	32.2		33.0

11. We have derived the MOD estimate on the basis of the Government's latest forecasts of trend rate of change in the prices of public sector building and construction output for the period from 2007 to 2013. We will tender the proposed works under a re-measurement contract because of uncertainties concerning the existence and location of various underground utilities. The contract will provide for price adjustments because the contract period will exceed 21 months.

12. We estimate the annual recurrent expenditure arising from the proposed works to be \$0.4 million.

13. Based on the current level of expenditure on operation and day-to-day maintenance of sewerage facilities, the proposed works will lead to an increase in the recurrent cost of providing sewage services by about 0.02%. This has been taken into account in determining future sewage charges.

/PUBLIC

PUBLIC CONSULTATION

14. We consulted the Tuen Mun District Council on 14 July 2006 on the proposed sewerage works for the villages in Tuen Mun. The District Council supported the implementation of the proposed works. We also consulted the Village Representatives of Tseng Tau Tsuen, San Wai Tsai and Leung Tin Tsuen on 27 April 2007 on the proposed sewerage works for Tseng Tau Chung Tsuen. They supported the implementation of the proposed works.

15. We consulted the Legislative Council Panel on Environmental Affairs on 25 June 2007 on the proposed works. Members raised no objection to our plan to submit the funding proposal to the Public Works Subcommittee.

ENVIRONMENTAL IMPLICATIONS

16. The proposed sewerage in paragraph 3 above is not a designated project under the Environmental Impact Assessment Ordinance. We completed the Preliminary Environmental Review (PER) for the Review of Tuen Mun and Tsing Yi Sewerage Master Plans in 2003. The PER concluded that environmental impacts brought about by the proposed works will mainly be short term effects 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 quieter construction plant to reduce noise generation, water-spraying to reduce dust emission, and strict control over the diversion of site run-off. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good site practices are properly implemented. We have included \$0.5 million in September 2007 prices in the project estimate for the implementation of environmental mitigation measures.

17. Taking account of the existing ground conditions we have optimised the sewer alignments, depths and gradients at the planning and design stages so as to reduce excavation and the generation of construction waste. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil) on site or at other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste at public fill reception facilities³. We will encourage the contractor 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.

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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.

18. 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 approved plan. 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.

19. We estimate that the project will generate in total about 6 400 tonnes of construction waste. Of these, we will reuse about 3 600 tonnes (56%) of inert construction waste on site, and deliver 1 800 tonnes (28%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 1 000 tonnes (16%) of non-inert construction waste at landfills. The total cost of accommodating construction waste at public fill reception facilities and landfill sites is estimated to be \$173,600 for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne⁴ at landfills).

LAND ACQUISITION

20. The proposed works do not require any land resumption or major land clearance.

BACKGROUND INFORMATION

21. In January 2003, we completed the study “Review of Tuen Mun and Tsing Yi Sewerage Master Plans” which assessed the adequacy of the existing sewerage system in Tuen Mun for meeting future demands. It recommended, among other things, implementation of the sewerage works mentioned in paragraphs 3 and 4 above. Based on the result of the review study, we upgraded **346DS** “Upgrading of Tuen Mun sewerage, phase 1” to Category B in October 2005.

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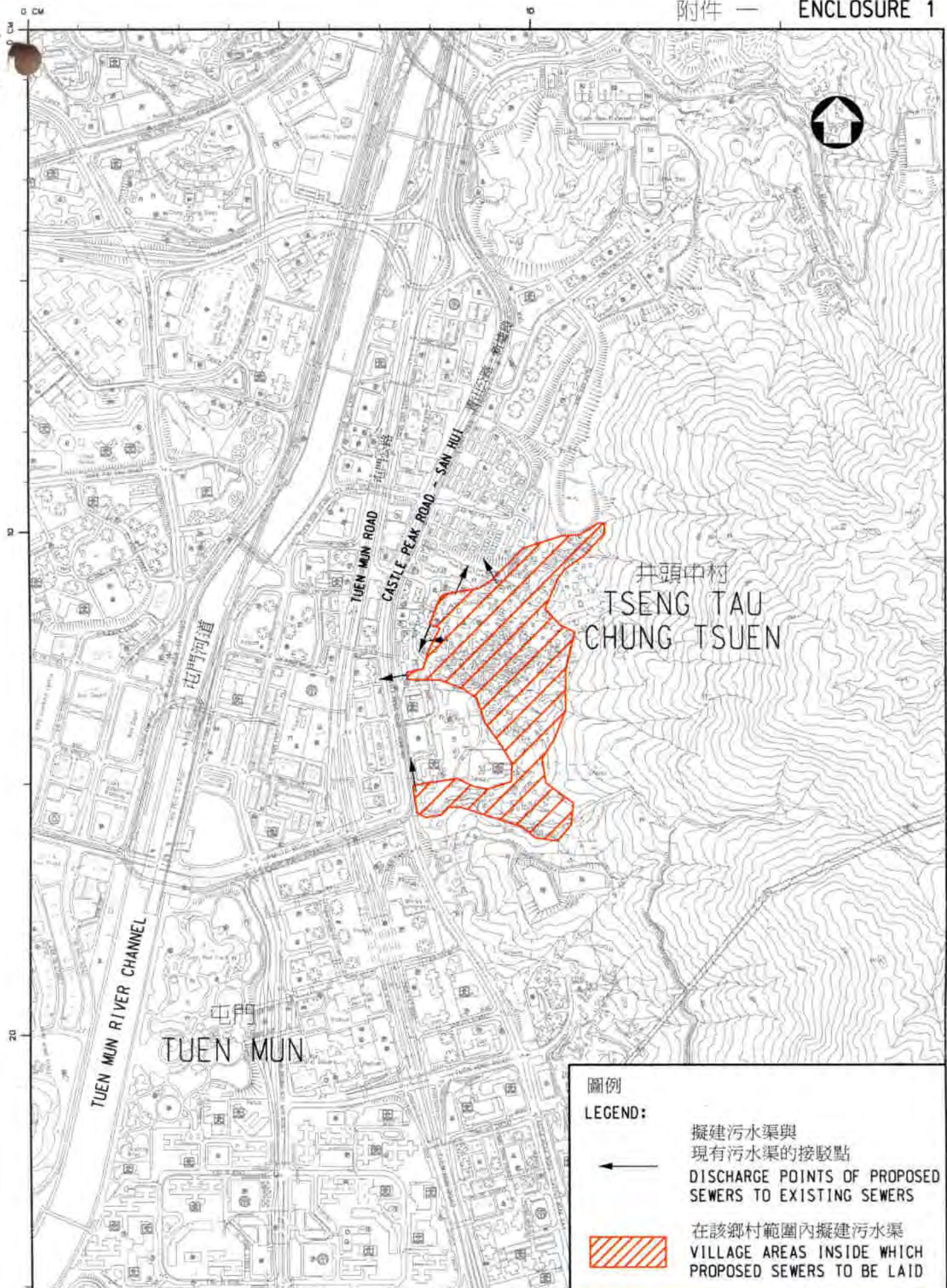
⁴ This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90/m³), nor the cost to provide new landfills, (which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

22. In January 2007, we engaged consultants to carry out investigations and design for **346DS**. We funded this consultancy at a sum of \$14.3 million under block allocation **Subhead 4100DX** “Drainage works, studies and investigations for items in Category D of the Public Works Programme”.

23. The proposed sewerage works will not involve any tree removal or planting proposal.

24. We estimate that the proposed works will create about 21 jobs (17 for labourers and another four for professional/technical staff) providing a total employment of 670 man-months.

Environment Bureau
October 2007



圖例
LEGEND:

← 擬建污水渠與現有污水渠的接駁點
 DISCHARGE POINTS OF PROPOSED SEWERS TO EXISTING SEWERS

▨ 在該鄉村範圍內擬建污水渠
 VILLAGE AREAS INSIDE WHICH PROPOSED SEWERS TO BE LAID

圖則名稱 drawing title 工務計劃項目4346DS 屯門污水收集系統改善計劃第1期 - 井頭中村污水收集系統 PWP ITEM 4346DS UPGRADING OF TUEN MUN SEWERAGE, PHASE 1 - SEWERAGE AT TSENG TAU CHUNG TSUEN	繪畫 drawn SIGNED C.K.LAM	日期 date 19.04.07	圖則編號 drawing no. DPM/346DS/0005	比例 scale N.T.S.
	校對 checked SIGNED W.H.CHO	日期 date 28.05.07	日期 date 28.05.07	保留版權 COPYRIGHT RESERVED 香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION
高門 office 工程管理部 PROJECT MANAGEMENT DIVISION			圖則編號 drawing no. (repeated) DPM/346DS/0005	

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346DS – Upgrading of Tuen Mun sewerage, phase 1

Breakdown of estimate for consultants' fees

			Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
Consultants' staff costs						
(a)	Consultants' fees for construction stage	Professional	6	38	1.6	0.5
		Technical	16	14	1.6	0.5
(b)	Site supervision by resident site staff employed by the consultants	Professional	39	38	1.6	3.6
		Technical	60	14	1.6	1.8
Total consultants' staff costs						<hr/> 6.4 <hr/>
						(Note 2)

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS salary 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 2007, MPS point 38 = \$56,945 per month and MPS point 14 = \$18,840 per month)
2. The consultants' fees for contract administration are estimated in accordance with the existing consultancy agreement for the construction of the project. We will only know the actual man-months and actual costs for site supervision after completion of the works.