

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 704 – DRAINAGE

Environmental Protection – Sewerage and sewage treatment

160DS – Tuen Mun sewerage, stage 1

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **160DS**, entitled “Tuen Mun sewerage, stage 1 – village sewerage in Tsing Chuen Wai and Tuen Tsz Wai”, to Category A at an estimated cost of \$21.7 million in money-of-the-day prices; and
- (b) the retention of the remainder of **160DS** in Category B.

PROBLEM

Sewage from the unsewered villages or areas in Tuen Mun is a source of water pollution to the nearby watercourses and Tuen Mun River Channel.

/PROPOSAL

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade part of **160DS** to Category A at an estimated cost of \$21.7 million in money-of-the-day (MOD) prices for implementing sewerage works in two unsewered areas in Tuen Mun, namely Tsing Chuen Wai and Tuen Tsz Wai.

PROJECT SCOPE AND NATURE

3. The part of **160DS** which we propose to upgrade to Category A comprises the construction of –

- (a) about 1.5 kilometres of sewers with diameters from 150 millimetres (mm) to 225mm to serve part of the areas of Tsing Chuen Wai and Tuen Tsz Wai in Tuen Mun; and
- (b) ancillary works.

_____ A site plan showing the locations of the above works of **160DS** proposed to be part-upgraded is at Enclosure 1.

4. Subject to the funding approval of the Finance Committee, we plan to commence the proposed works in September 2011 for completion in August 2014.

5. We will retain the remainder of **160DS** in Category B, which covers the construction of a sewage pumping station with associated sewers in Siu Lam and laying of sewers at ten villages in Tuen Mun (including the remaining areas of Tsing Chuen Wai and Tuen Tsz Wai). Planning and design of the relevant works is in progress. Funding for the remainder of **160DS** will be sought at a later stage after completion of the design and preparatory works.

/JUSTIFICATION

JUSTIFICATION

6. At present, the sewage from Tsing Chuen Wai and Tuen Tsz Wai is treated and disposed of by means of private treatment facilities (such as septic tank and soakaway (STS) systems). These facilities are often ineffective in removing pollutants due to their close proximity to watercourses¹ and inadequate maintenance². This is detrimental to the water quality of Tuen Mun River Channel as well as environmental hygiene in the vicinity.

7. In 2003, the Environmental Protection Department (EPD) completed a review of the Tuen Mun and Tsing Yi Sewerage Master Plans in which extension of public sewerage to Tsing Chuen Wai and Tuen Tsz Wai was recommended. The proposed works aim to collect the sewage generated from part of the areas of Tsing Chuen Wai and Tuen Tsz Wai and convey it to the Pillar Point sewage treatment works for treatment and disposal, instead of entering Tuen Mun River Channel.

FINANCIAL IMPLICATIONS

8. We estimate the cost of the proposed works to be \$21.7 million in MOD prices (please see paragraph 9 below), broken down as follows –

	\$million
(a) Construction of sewers	13.1
(b) Ancillary works	1.2
(c) Environmental mitigation measures	0.3
(d) Consultants' fee for	0.2
(i) contract administration	0.1
(ii) management of resident site staff	0.1
	/(e)

¹ STS systems operate by allowing the effluent to percolate through gravels whereby pollutants would be removed in a natural manner. However, if the STS system is located in an area where the underground water table is high, such as an area in proximity to watercourses, it will not be able to function properly due to ineffective percolation.

² Inadequate maintenance of STS systems would affect their pollutant removal efficiency and might even lead to an overflow of effluent.

		\$million	
(e)	Remuneration of resident site staff	2.2	
(f)	Contingencies	<u>1.6</u>	
	Sub-total	18.6	(in September 2010 prices)
(g)	Provision for price adjustment	3.1	
	Total	<u>21.7</u>	(in MOD prices)

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

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

Year	\$ million (Sept 2010)	Price adjustment factor	\$ million (MOD)
2011 – 2012	2.2	1.04525	2.3
2012 – 2013	5.4	1.10143	5.9
2013 – 2014	4.1	1.16201	4.8
2014 – 2015	3.7	1.22592	4.5
2015 – 2016	2.1	1.29335	2.7
2016 – 2017	1.1	1.36448	1.5
	<u>18.6</u>		<u>21.7</u>

/10.

10. We have derived the MOD estimate on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period 2011 to 2017. We will deliver the works under a re-measurement contract because of the uncertain underground conditions that may affect the alignments of the sewers. The contract will provide for price adjustments.

11. We estimate the additional annual recurrent expenditure arising from the proposed works to be \$170,000. The recurrent expenditure attributable to sewage charges has been taken into account in determining the sewage charges for the years 2008-09 to 2017-18 stipulated in the Sewage Services (Sewage Charge) Regulation (Cap. 463A) and the recurrent expenditure attributable to trade effluent surcharges will be taken into account in reviewing the trade effluent surcharge rates in future.

PUBLIC CONSULTATION

12. We consulted the Environment, Hygiene and District Development Committee of Tuen Mun District Council on 26 November 2010 and obtained its support for the proposed works. We also consulted the Village Representatives of Tsing Chuen Wai and Tuen Tsz Wai who both expressed support to the implementation of the proposed works.

13. We consulted the Legislative Council Panel on Environmental Affairs on 28 February 2011 on the proposed works. Members raised no objection to the proposed works.

ENVIRONMENTAL IMPLICATIONS

14. This is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We have completed the Preliminary Environmental Review for the proposed works, which concludes that they would not have any long term adverse environmental impacts.

15. For short term environmental impacts during construction, we will control noise, dust and site run-off to levels within the established standards and guidelines through implementation of environmental mitigation measures, such as the use of silenced construction equipment and noise barriers or acoustic shed to reduce noise generation, 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 practices are properly implemented on site. We have included in paragraph 8(c) above a sum of \$300,000 (in September 2010 prices) in the project estimates for implementing the environmental mitigation measures.

16. At the planning and design stages, we have considered ways to reduce the generation of construction waste where possible. For example, in addition to the need for meeting the hydraulic and traffic requirements, we have designed the alignment of the proposed sewerage works in such a manner that excavation and demolition of existing structures will be minimised. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil) on site or in 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.

17. At the construction stage, we will 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 at public fill reception facilities and landfills respectively through a trip-ticket system.

/18.

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 estimate that the proposed works will generate in total about 6 860 tonnes of construction waste. Of these, we will reuse about 3 700 tonnes (54%) of inert construction waste on site and deliver 2 820 tonnes (41%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 340 tonnes (5%) 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 about \$100,000 for the proposed works (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per 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 October 1993, EPD completed the “Tuen Mun Sewerage Master Plan Study” (the Study) to establish a long-term sewerage improvement plan for Tuen Mun. Based on the result of the Study, we upgraded **160DS** to Category B in May 1994.

22. We upgraded respectively three parts of **160DS** to Category A as **196DS** entitled “Tuen Mun sewerage, stage I phase I” at an approved project estimate (APE) of \$62.4 million in MOD prices in July 1995, **280DS** entitled “Tuen Mun sewerage, stage I phase II – trunk sewers to Siu Hong Road pumping station” at an APE of \$28.9 million in MOD prices in July 1996 and **321DS** entitled “Tuen Mun sewerage, stage I phase III – enhancement of Siu Hong Road low-flow interceptor” at an APE of \$30.1 million in MOD prices in February 1998.

/23.

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 per m³), nor the cost to provide new landfills (which is likely to be more expensive), when the existing ones are filled.

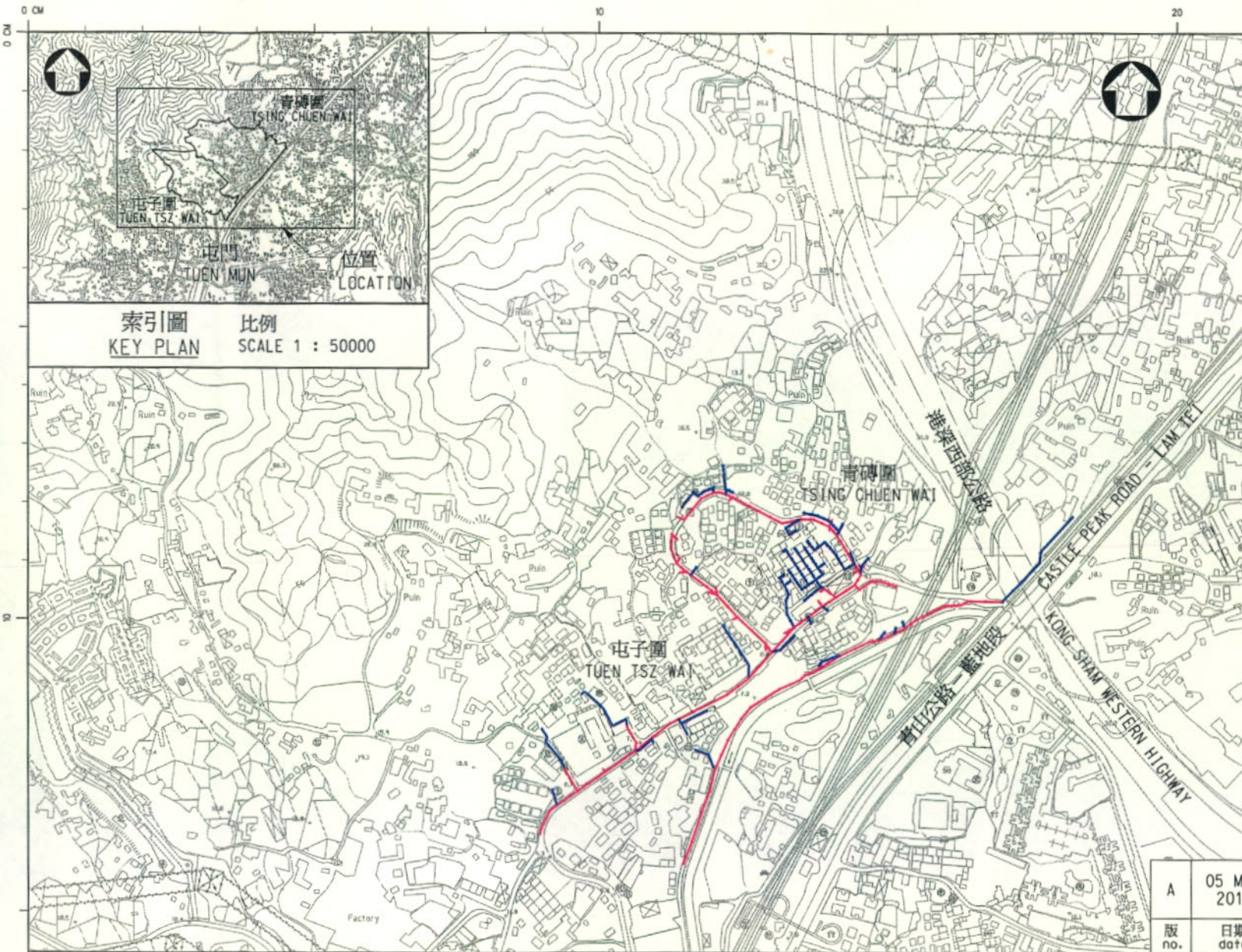
23. In January 2003, EPD completed the “Review of Tuen Mun and Tsing Yi Sewerage Master Plans” (the Review) which assessed the adequacy of the existing sewerage system in Tuen Mun and Tsing Yi for meeting future demands. It recommended, amongst others, implementation of the sewerage works under **160DS**.

24. In January 2007, we engaged consultants to carry out investigations and design for the remaining works of **160DS** at an estimated cost of \$8.0 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”. We have completed the detailed design of the proposed works mentioned in paragraph 3 above.

25. The proposed works will not involve any tree removal proposal. Existing trees within the project boundary will be preserved.

26. We estimate that the proposed works will create about ten jobs (eight for labourers and another two for professional/technical staff), providing a total employment of 300 man-months.

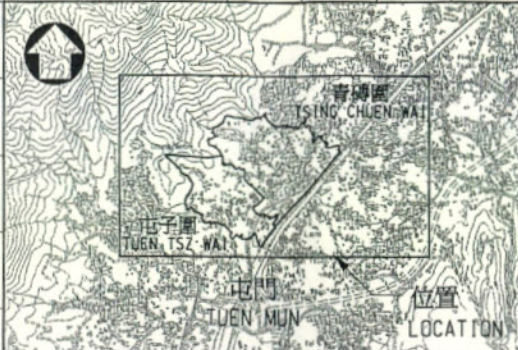
Environment Bureau
May 2011



圖例：
LEGEND :

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

現有污水渠
EXISTING SEWER



索引圖 比例
KEY PLAN SCALE 1 : 50000

圖則名稱 drawing title

工務計劃項目第160DS號 - 屯門污水收集系統第1階段
PWP ITEM NO. 160DS - TUEN MUN SEWERAGE, STAGE 1

A	05 MAY 2011	GENERAL REVISION	SIGNED L.F. CHAN E/PM6
版 no.	日期 date	修改項目 description	簡簽 initial
繪畫 drawn	SIGNED T.M. SIU 日期 date 07 JAN 2011	圖則編號 drawing no. DPM/160DS/0010A	比例 scale 1 : 7500 OR AS SHOWN
核對 checked	SIGNED L.F. CHAN 日期 date 07 JAN 2011	保留版權 COPYRIGHT RESERVED	
批核 approved	SIGNED K.C. LO 日期 date 07 JAN 2011	香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	
部門 office	工程管理部 PROJECT MANAGEMENT DIVISION		

附件一
ENCLOSURE 1

160DS – Tuen Mun sewerage, stage 1

**Breakdown of the estimates for consultants' fees and resident site staff costs
(in September 2010 prices)**

			Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a)	Consultants' fees for contract administration (Note 2)	Professional	-	-	-	0.07
		Technical	-	-	-	0.03
					Sub-total	0.1
(b)	Resident site staff costs ^(Note 3)	Professional	12	38	1.6	1.1
		Technical	38	14	1.6	1.2
					Sub-total	2.3
Comprising –						
(i)	Consultants' fees for management of resident site staff				0.1	
(ii)	Remuneration of resident site staff				2.2	
					Total	2.4

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS salary point to estimate the cost of resident site staff supplied by the consultants. (As at now, MPS salary point 38 = \$58,195 per month and MPS salary point 14 = \$19,945 per month.)
2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the design and construction of the project. The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade part of 160DS to Category A.
3. The actual man-months and actual costs will only be known after completion of the construction works.