

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

Head 704 – DRAINAGE

Environmental Protection - Sewerage and sewage treatment 332DS - Lam Tsuen Valley sewerage

Members are invited to recommend to Finance Committee -

- (a) the upgrading of part of **332DS**, entitled “Lam Tsuen Valley sewerage – trunk sewers, pumping station and rising mains”, to Category A at an estimated cost of \$162.8 million in money-of-the-day prices; and
- (b) the retention of the remainder of **332DS** in Category B.

PROBLEM

Domestic sewage from unsewered areas in Lam Tsuen Valley is a source of water pollution in Lam Tsuen Valley area and Tolo Harbour.

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade part of **332DS** to Category A at an estimated cost of \$162.8 million in money-of-the-day (MOD) prices for providing trunk sewerage and pumping facilities in Lam Tsuen Valley area.

/PROJECT

PROJECT SCOPE AND NATURE

3. The scope of the part of **332DS** which we propose to upgrade to Category A comprises the construction of -

- (a) a new sewage pumping station near Lam Kam Road Interchange;
- (b) about 0.7 kilometres (km) of rising mains at Tai Po Road – Tai Wo;
- (c) about 3.7 km of gravity sewers at Lam Kam Road and nearby access roads; and
- (d) ancillary works.

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

4. We plan to start construction in December 2008 for completion in September 2012.

JUSTIFICATION

5. At present, sewage from village houses in Lam Tsuen Valley is discharged into nearby watercourses after treatment by private treatment facilities, such as septic tanks and soakaway systems. These private treatment facilities in general are not effective in removing pollutants due to their close proximity to watercourses¹ and inadequate maintenance². Hence, the discharge from such facilities is a source of pollution to the Lam Tsuen Valley area (which is a water gathering ground) and the receiving waters at Tolo Harbour.

6. To improve the situation, we propose provision of public sewerage to serve 27 villages in the Lam Tsuen Valley area with a total projected population of about 21 500. The facilities will convey domestic sewage to the Tai Po Sewage Treatment Works for treatment before disposal, thereby mitigating water pollution in Lam Tsuen Valley area and Tolo Harbour and improving the living environment.

/FINANCIAL

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.

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of the proposed works to be \$162.8 million in MOD prices (see paragraph 8 below), made up as follows -

	\$ million	
(a) Sewage pumping station	47.3	
(i) civil works	38.9	
(ii) electrical and mechanical works	8.4	
(b) Rising mains	11.6	
(c) Gravity sewers	55.3	
(d) Environmental mitigation measures	3.6	
(e) Consultants' fees	14.6	
(i) contract administration	0.8	
(ii) site supervision	13.8	
(f) Contingencies	13.2	
	<hr/>	(in September
Sub-total	145.6	2008 prices)
(g) Provision for price adjustment	<hr/> 17.2	
Total	162.8	(in MOD prices)
	<hr/>	

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

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

Year	\$ million (September 2008)	Price adjustment factor	\$ million (MOD)
2008 – 2009	1.6	1.00000	1.6
2009 – 2010	27.0	1.04000	28.1
2010 – 2011	36.0	1.08160	38.9
2011 – 2012	40.0	1.12486	45.0
2012 – 2013	22.5	1.16986	26.3
2013 – 2014	11.0	1.21665	13.4
2014 – 2015	7.5	1.26532	9.5
	145.6		162.8

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 2008 to 2015. We will implement the works under two contracts: a civil engineering works contract and an electrical and mechanical (E&M) works contract. We will tender the civil engineering works under a re-measurement contract because of the uncertain underground conditions. We will tender the E&M works under a lump-sum contract because of its defined scope of works.

10. We estimate the annual recurrent expenditure arising from the proposed works to be about \$1.8 million.

PUBLIC CONSULTATION

11. We consulted the Tai Po Rural Committee on 24 July 2007, and the Environment, Housing and Works Committee of the Tai Po District Council on 12 March 2008. They all supported the proposed works.

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12. We consulted the Legislative Council Panel on Environmental Affairs on 23 June 2008 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 supplementary information on the extent of land resumption necessitated by the project. We have submitted an information note to Panel Members on 15 October 2008.

ENVIRONMENTAL IMPLICATIONS

13. The proposed sewage pumping station at Lam Kam Road Interchange is a designated project under the Environmental Impact Assessment (EIA) Ordinance. Having regard to the project profile, the Director of Environmental Protection is satisfied that the environmental impact of the proposed sewage pumping station can meet the requirements of the Technical Memorandum on EIA Process. With the consent of the then Secretary for the Environment, Transport and Works, permission to apply directly for an environmental permit was granted in August 2002. The environmental permit for the project was issued in August 2008. We shall implement the mitigation measures set out in the environmental permit. The proposed gravity sewers and rising mains will not cause long term environmental impact. The short term environmental impacts caused by the works during the course of construction could be mitigated through implementation of standard pollution control measures such as the use of quiet construction equipment to reduce noise, water-spraying to reduce dust generation, and proper treatment of site run-off before discharge. We have included in paragraph 7(d) above a sum of \$3.6 million (in September 2008 prices) in the project estimate for the implementation of environmental mitigation measures.

14. We have considered in the planning and design stages ways to reduce the generation of construction waste where possible, including optimization 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 minimise the disposal of inert construction waste to 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.

15. 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.

16. We estimate that the project will generate in total about 37 800 tonnes of construction waste. Of these, we will reuse about 19 000 tonnes (50%) of inert construction waste on site and deliver 18 000 tonnes (48%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 800 tonnes (about 2%) 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 \$0.59 million 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

17. The proposed works does not require any land acquisition.

HERITAGE IMPLICATION

18. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archeological interest and Government historic sites identified by the Antiquities and Monuments Office.

BACKGROUND INFORMATION

19. In November 2002, we completed the study “Review of North District and Tolo Harbour Sewerage Master Plan” which assessed the adequacy of the existing sewerage system in Tai Po to meet future demands as well as to establish a long term sewerage improvement plan for the Tai Po area.

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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.

20. Based on the recommendation of the study, we included **332DS** in Category B in October 2005.

21. In December 2006, we commissioned a consultancy to carry out the detailed design and necessary investigation for **332DS** at an estimated cost of \$14.3 million in MOD prices. We have 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 substantially completed the detailed design of the proposed works mentioned in paragraph 3 above.

22. The remainder of **332DS** proposed for retention in Category B involves the construction of branch sewerage and associated rising mains with local pumping stations to collect sewage from 27 existing villages in Lam Tsuen Valley. Design is in progress.

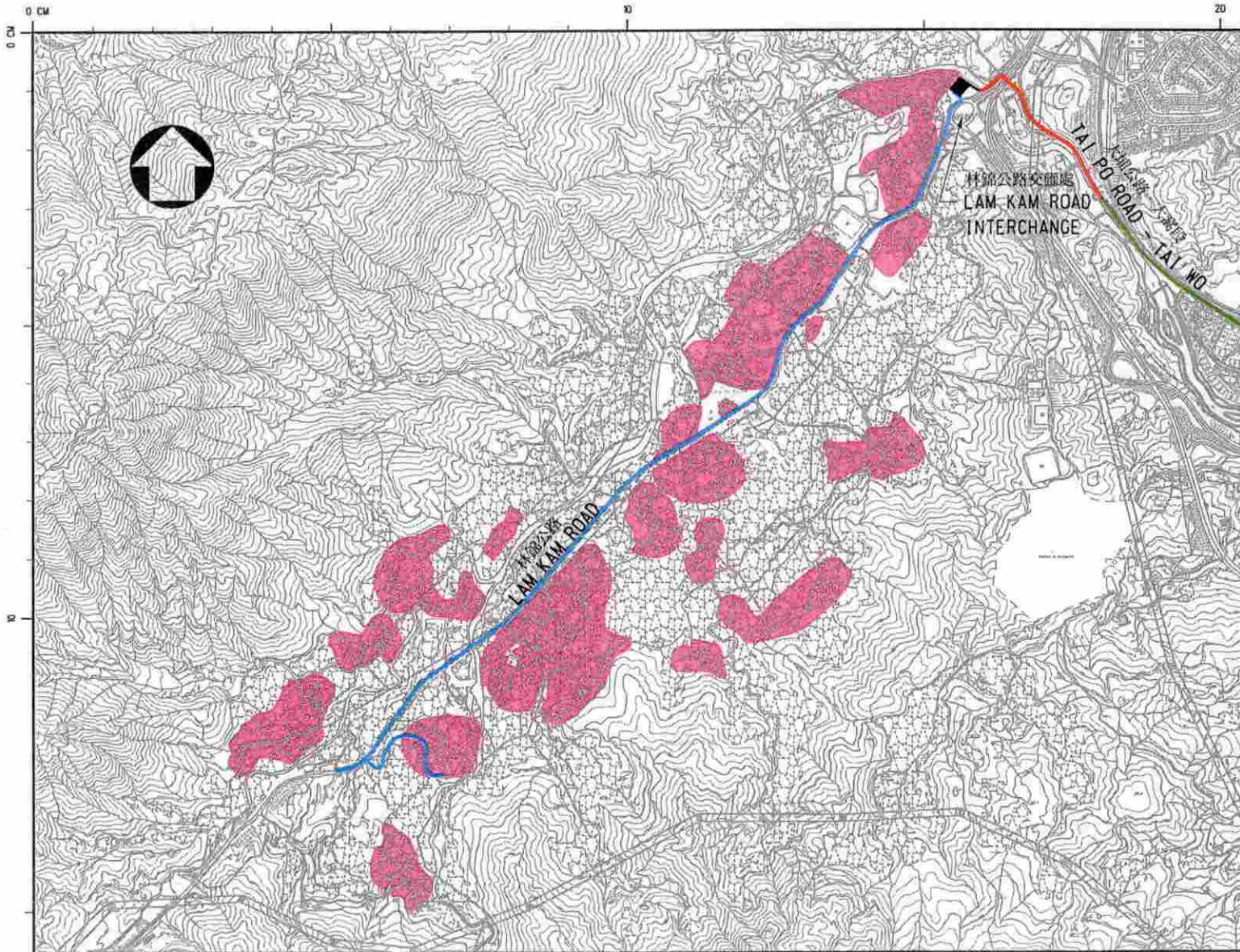
23. The proposed sewerage construction works will involve the felling of six trees. All trees to be felled are not important trees⁵. We will incorporate planting proposals as part of the project, including estimated quantities of 27 trees and 8 810 shrubs.

24. We estimate that the proposed works will create about 90 jobs (73 for labourers and another 17 for professional/technical staff) providing a total employment of 3 100 man-months.

Environment Bureau
October 2008

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 m (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.



LEGEND:

- 擬建的污水幹渠
PROPOSED TRUNK SEWERS
- 擬建的林村谷污水泵房
PROPOSED LAM TSUEN VALLEY PUMPING STATION
- 擬建的污水泵喉
PROPOSED RISING MAINS
- 受惠於擬議污水收集系統的鄉村
VILLAGES TO BE SERVED BY THE PROPOSED SEWERAGE
- 由其他工程項目建造的下游污水收集系統
DOWNSTREAM SEWERAGE TO BE CONSTRUCTED UNDER OTHER PROJECTS

圖則名稱 drawing title
 工務計劃項目第332DS號 -
 林村谷污水收集系統
 PWP ITEM No.332DS -
 LAM TSUEN VALLEY SEWERAGE

繪畫 drawn	SIGNED	C.K.LAM	日期 date	27AUG08
核對 checked	SIGNED	H.K.LAU	日期 date	28AUG08
批核 approved	SIGNED	K.S.TONG	日期 date	28AUG08
部門 office	工程管理部 PROJECT MANAGEMENT DIVISION			

A	04SEP08	GENERAL REVISION	SIGNED
圖則編號 drawing no.		比例 scale	
DPM/332DS0/0003A		N.T.S.	
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Enclosure 2 to PWSC(2008-09)40

332DS – Lam Tsuen Valley sewerage

Breakdown of estimate for consultants' fees

Consultants' staff costs			Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a)	Consultants' fees for contract administration (Note 2)	Professional	-	-	-	0.6
		Technical	-	-	-	0.2
(b)	Site supervision by resident site staff employed by the consultants (Note 3)	Professional	72	38	1.6	7.0
		Technical	215	14	1.6	6.8
Total consultants' staff costs						14.6

* 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 2008, MPS point 38 = \$60,535 per month and MPS point 14 = \$19,835 per month)
2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the investigation, design and construction of the project.
3. We will only know the actual man-months and actual costs for site supervision after completion of the construction works.