

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

Head 704 – DRAINAGE

Environmental Protection - Sewerage and sewage treatment

125DS - Tolo Harbour sewerage of unsewered areas

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **125DS**, entitled “Tolo Harbour sewerage of unsewered areas, stage 1 phase 2C”, to Category A at an estimated cost of \$381.4 million in money-of-the-day prices; and
- (b) the retention of the remainder of **125DS**, retitled “Tolo Harbour sewerage of unsewered areas, stage 2”, in Category B.

PROBLEM

Domestic sewage from unsewered areas in Sha Tin and Tai Po is a source of water pollution to the receiving water in Tolo Harbour.

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade part of **125DS** to Category A at an estimated cost of \$381.4 million in money-of-the-day (MOD) prices for implementing sewerage works in 17 unsewered areas in Sha Tin and Tai Po.

/PROJECT

PROJECT SCOPE AND NATURE

3. The part of the project which we propose to upgrade to Category A covers sewerage works in 17 unsewered areas with a projected population of 30 000. The scope of works comprises the construction of -

- (a) about 31.2 kilometres (km) of branch sewers for collecting sewage from 16 unsewered areas in Sha Tin and Tai Po, namely Tung Lo Wan, Pai Tau, Sheung Wo Che (including Ha Wo Che), Lok Lo Ha, Tai Lam Liu, Wu Kai Sha, Tai Mei Tuk, Wong Chuk Tsuen, Lung Mei, Ting Kok, Lo Tsz Tin, Wai Ha, Po Sam Pai, San Tau Kok, Lai Pek Shan San Tsuen and Shuen Wan Lei Uk; and
- (b) about 1.2 km of trunk sewers largely along Tai Po Road – Tai Wo to collect sewage from the Hong Lok Yuen area which is currently not served by public sewers.

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

4. We plan to start construction in January 2009 for completion in December 2012.

JUSTIFICATION

5. At present, domestic sewage from unsewered areas in Sha Tin and Tai Po is discharged into nearby watercourses either without treatment, e.g. the cottage area in Sha Tin, or after treatment by private treatment facilities, such as septic tanks and soakaway systems. These private treatment facilities are not effective in removing pollutants due to their close proximity to watercourses¹ and inadequate maintenance². Hence, the discharge from these unsewered areas is a source of pollution to Tolo Harbour.

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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.

6. As a long term measure to address the water pollution problem in the Tolo Harbour and its catchment, we included the project “Tolo Harbour sewerage of unsewered areas” as **125DS** in the Public Works Programme in August 1990 with a view to providing public sewerage facilities to the unsewered areas in the Tolo Harbour catchment. **125DS** includes constructing public sewers and pumping stations for collecting and conveying sewage flows from these unsewered areas to existing sewerage in Sha Tin and Tai Po, thereby mitigating water pollution in Tolo Harbour and improving the living environment.

7. Works under **125DS** were divided into two stages. Stage 1 covers works in 90 unsewered areas in Sha Tin and Tai Po. Stage 2 covers works in the remaining 41 unsewered areas. To facilitate construction and the land resumption process, stage 1 works were further divided into two phases of more manageable size. Stage 1 phase 1 works comprise four sub-phases (namely 1A, 1B, 1C and 1D) while stage 1 phase 2 works include three sub-phases (namely 2A, 2B and 2C). We have so far completed the works under stage 1 phase 1, and stage 1 phases 2A and 2B in 73 unsewered areas. The proposed works are for stage 1 phase 2C.

FINANCIAL IMPLICATIONS

8. We estimate the cost of the proposed works to be \$381.4 million in MOD prices (see paragraph 9 below), made up as follows –

	\$ million
(a) Construction of	267.6
(i) branch sewers	225.6
(ii) trunk sewers along Tai Po Road – Tai Wo	42.0
(b) Environmental mitigation measures	3.4
(c) Consultants’ fees	36.9
(i) contract administration	0.5
(ii) site supervision	36.4
(d)	

		\$ million
	(d) Contingencies	30.6
	Sub-total	338.5 (in September 2008 prices)
	(e) Provision for price adjustment	42.9
	Total	381.4 (in MOD prices)

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

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

Year	\$ million (September 2008)	Price adjustment factor	\$ million (MOD)
2008 – 2009	0.8	1.00000	0.8
2009 – 2010	53.8	1.04000	56.0
2010 – 2011	68.4	1.08160	74.0
2011 – 2012	82.8	1.12486	93.1
2012 – 2013	84.9	1.16986	99.3
2013 – 2014	47.8	1.21665	58.2
	338.5		381.4

10. 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 2014. We will tender the proposed works under a re-measurement contract because of uncertainties concerning the existence and location of various underground utilities.

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11. We estimate the annual recurrent expenditure arising from the proposed works to be \$3.8 million.

PUBLIC CONSULTATION

12. We consulted the Tai Po Rural Committee and the Environment, Housing and Works Committee of the Tai Po District Council on 8 November 2006 and 12 January 2007 on the proposed stage 1 phase 2C works respectively. We also consulted the Sha Tin Rural Committee and the Development and Housing Committee of the Sha Tin District Council on 17 November 2006 and 27 February 2007 on these works respectively. They all supported the implementation of the proposed works.

13. 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.

14. We have divided the works under stage 1 phase 2C of **125DS** into five schemes. We gazetted the proposed works under the Water Pollution Control (Sewerage) Regulation (WPC(S)R) between September 2007 and May 2008. Upon expiry of the statutory objection periods, we received nine objections to three of the schemes requesting for reduction of land resumption area. After several meetings with the objectors and considering their grounds of objections, we slightly adjusted the scheme boundary accordingly and gazetted two amendments on 18 April 2008 and 25 July 2008. All the nine objectors were satisfied with our responses and withdrew their objections unconditionally. In light of this, the Director of Environmental Protection authorised the proposed works of the five schemes between December 2007 and October 2008.

ENVIRONMENTAL IMPLICATIONS

15. The proposed sewerage work is not a designated project under the Environmental Impact Assessment (EIA) Ordinance. The project will not cause long term environmental impact. We have included in paragraph 8(b) above a sum of \$3.4 million (in September 2008 prices) in the project estimate for the implementation of suitable mitigation measures to control short term environmental impacts.

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16. We have considered measures in the planning and design stages to reduce the generation of construction waste where possible. These measures include optimising the sewer alignments, depths and gradients so as to reduce the extent of excavation. 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.

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 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.

18. We estimate that the project will generate in total about 80 000 tonnes of construction waste. Of these, we will reuse about 48 000 tonnes (60%) of inert construction waste on site and deliver 28 000 tonnes (35%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 4 000 tonnes (5%) of non-inert construction waste at landfills. The total cost for accommodating the construction waste at public fill reception facilities and landfill sites is estimated to be about \$1.26 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

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

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.

LAND ACQUISITION

20. We will resume about 18 538 square metres (m²) of private agricultural land for the proposed works. The land resumption and clearance will not affect any households and structures. We will charge the cost of land resumption and clearance estimated at \$136.7 million to **Head 701 – Land Acquisition**. A breakdown of the land resumption and clearance costs is at Enclosure 3.

BACKGROUND INFORMATION

21. We included **125DS** in Category C in August 1990 for implementing long-term water pollution abatement works in the Tolo Harbour Catchment.

Stage 1 phase 1 works

22. In February 1991, we upgraded part of **125DS** to Category A as **137DS** “Tolo Harbour sewerage of unsewered areas, stage 1 phase 1 – consultants’ fees and design” at an estimated cost of \$11.9 million for employing consultants to carry out the detailed design, site investigation and EIA for the stage 1 phase 1 works.

23. The phases 1A, 1B, 1C and 1D works were respectively upgraded to Category A as **163DS** “Tolo Harbour sewerage of unsewered areas, stage 1 phase 1A”, **177DS** “Tolo Harbour sewerage of unsewered areas, stage 1 phase 1B”, **284DS** “Tolo Harbour sewerage of unsewered areas, stage 1 phase 1C” and **328DS** “Tolo Harbour sewerage of unsewered areas, stage 1 phases 1D and 2B” in January 1993, June 1994, January 1997 and April 2001. Works for these phases have been completed. The total approved project estimate of the stage 1 phase 1 works is about \$251.7 million.

Stage 1 phase 2 works

24. In July 1994, we upgraded part of **125DS** to Category A as **179DS** “Tolo Harbour sewerage of unsewered areas, stage 1 phase 2 – consultants’ fees and investigations” at an estimated cost of \$19.0 million for employing consultants to carry out the detailed design, site investigation and EIA for the stage 1 phase 2 works.

25. The phases 2A and 2B works were respectively upgraded to Category A as **213DS** "Tolo Harbour sewerage of unsewered areas, stage 1 phase 2A" and **328DS** "Tolo Harbour sewerage of unsewered areas, stage 1 phases 1D and 2B" in May 1997 and April 2001. Works for these phases were completed in March 2001 and June 2005 respectively. The total approved project estimate of the stage 1 phases 2A and 2B works is about \$208.0 million.

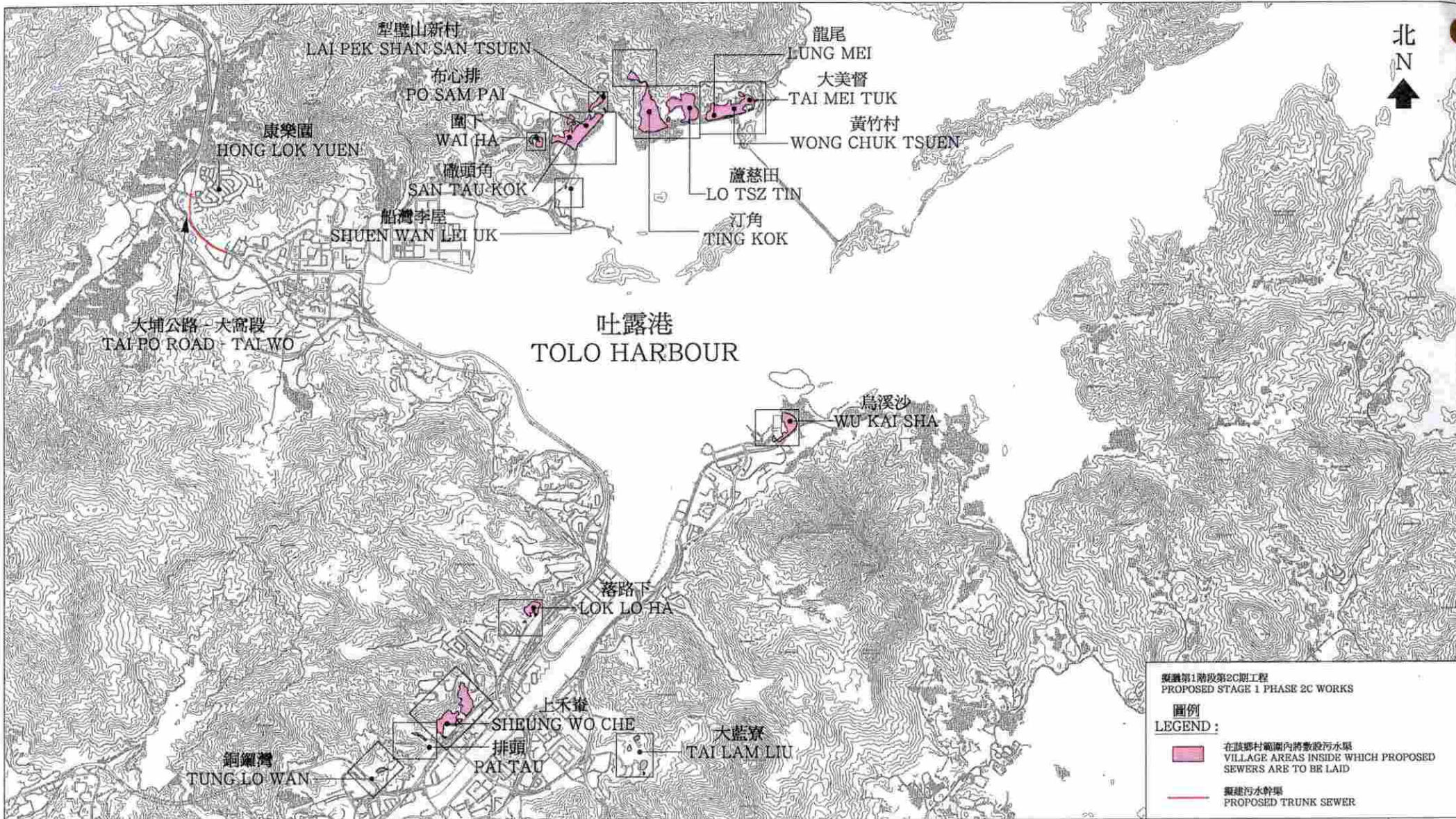
26. The present proposal involves upgrading the stage 1 phase 2C works to Category A. We plan to start the proposed works in January 2009 for completion in December 2012.

Stage 2 works

27. The remainder of **125DS** proposed for retention in Category B is the stage 2 works covering 41 unsewered areas in Sha Tin and Tai Po. We have employed consultants to carry out the detailed design, site investigation and EIA for the stage 2 works 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". Planning and design works is in progress. Under our current programme, we plan to start the construction works on stage 2 in end 2009.

28. The proposed stage 1 phase 2C sewerage works will not involve any tree removal or planting proposals.

29. We estimate that the proposed works will create about 186 jobs (150 for labourers and another 36 for professional/technical staff) providing a total employment of 8 000 man-months.





圖則名稱 drawing title

工務計劃項目第125DS號 -
吐露港未敷設污水設施地區的污水收集系統
PWP ITEM NO. 125DS -
TOLO HARBOUR SEWERAGE OF UNSEWERED AREAS

繪製 drawn	ORIGINAL SIGNED	C.W. CHAN	日期 date	03-03-2008
校對 checked	ORIGINAL SIGNED	W.F. WONG	日期 date	03-03-2008
批核 approved	ORIGINAL SIGNED	S.K. WONG	日期 date	03-03-2008
部門 office	顧問工程管理部 CONSULTANTS' MANAGEMENT DIVISION			

擬議第1階段第2C期工程
PROPOSED STAGE 1 PHASE 2C WORKS

圖例
LEGEND:

-  在該鄉村範圍內將敷設污水渠
VILLAGE AREAS INSIDE WHICH PROPOSED SEWERS ARE TO BE LAID
-  擬建污水幹渠
PROPOSED TRUNK SEWER

圖則編號 drawing no.

DCM/2008/006

比例 scale

N.T.S.

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DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION

Enclosure 2 to PWSC(2008-09)41

125DS – Tolo Harbour sewerage of unsewered areas

Stage 1 phase 2C

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 Technical	- -	- -	- -	0.4 0.1
(b)	Site supervision by resident site staff employed by the consultants (Note 3)	Professional Technical	169 630	38 14	1.6 1.6	16.4 20.0
Total consultants' staff costs						36.9

* 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.

Enclosure 3 to PWSC(2008-09)41

125DS – Tolo Harbour sewerage of unsewered areas

Stage 1 phase 2C

Breakdown of the land resumption and clearance costs

	\$ million
(a) Agricultural Land Ex-gratia Compensation on land resumption (including 653 lots of private land) 18 538m ² @ \$6,520/ m ² (Notes)	120.9
(b) Compensation for crops	1.1
(c) Ex-gratia compensation for miscellaneous permanent improvements to farms	0.4
(d) “Tun Fu” ceremonial fees	0.2
(e) Interest payment on various ex-gratia compensations and contingencies	14.1
Total cost	136.7

Notes

1. All the land to be resumed in the project **125DS** is agricultural land within Compensation Zone “A”. As published in the Gazette, the ex-gratia compensation rate for this zone is \$606 per square foot (or \$6,520 per square metre). Hence the ex-gratia compensation rate used for estimating the resumption cost of the 653 lots affected by the project **125DS** is \$6,520 per square metre.
2. There are four ex-gratia compensation zones, namely Zones A, B, C and D, for land resumption in the New Territories as approved by the Executive Council in 1985 and 1996. The boundaries of these zones are shown on the Zonal Plan for Calculation of Compensation Rates.