

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 704 – DRAINAGE

Environmental Protection – Sewerage and sewage treatment 52DS – Ting Kau sewerage stage 2

Members are invited to recommend to Finance Committee the upgrading of **52DS** to Category A at an estimated cost of \$64.9 million in money-of-the-day prices for provision of public sewerage to the unsewered areas in Ting Kau.

PROBLEM

There is no public sewerage in the village areas at Ting Kau. Sewage discharging from these unsewered areas is polluting the nearby coastal waters.

PROPOSAL

2. The Director of Drainage Services (D of DS), with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade **52DS** to Category A at an estimated cost of \$64.9 million in money-of-the-day (MOD) prices for constructing the sewerage in Ting Kau.

PROJECT SCOPE AND NATURE

3. The scope of works under **52DS** comprises –

/(a)

- (a) construction of three sewage pumping stations and laying of a total of about 200 metres of twin rising mains at Approach Beach, Lido Beach and Ting Kau; and
- (b) construction of 1.6 kilometers (km) of sewers in Ting Kau Village.

_____ A layout plan showing the location of the proposed works is at Enclosure 1.

4. We plan to commence construction in February 2007 for completion in December 2009.

JUSTIFICATION

5. At present, domestic sewage from unsewered areas in Ting Kau is discharged into nearby coastal waters either without treatment or after treatment by private treatment facilities. Most of these private treatment facilities, if available, are septic tanks and soakaway systems in village houses. 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 one of the causes of the serious water pollution in the nearby coastal waters including the beaches in the vicinity of Ting Kau.

6. The proposed sewerage will collect and convey sewage from the unsewered areas of Ting Kau, including sewage currently handled by private facilities and sewage from the lavatories at Approach Beach, Ting Kau Beach and Lido Beach, to the Sham Tseng sewage treatment plant for proper treatment and disposal. After completion of the projects and subsequent connection of the village houses to the sewers, the pollution problems caused by the discharge of sewage from Ting Kau into local coastal waters will be alleviated.

/FINANCIAL

¹ Soakaway systems operate by allowing the effluent to percolate through the gravel 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.

FINANCIAL IMPLICATIONS

7. We estimate the cost of the proposed works to be \$64.9 million in MOD prices (see paragraph 8 below), made up as follows –

	\$ million	
(a) Sewers and rising mains	16.8	
(b) Three sewage pumping stations	31.4	
(i) civil engineering works	21.8	
(ii) electrical and mechanical works	9.6	
(c) Environmental mitigation measures	1.1	
(d) Consultants' fees	7.6	
(i) construction stage	0.7	
(iii) resident site staff	6.9	
(e) Contingencies	5.6	

Sub-total	62.5	(in September 2006 prices)
(f) Provision for price adjustment	2.4	

Total	64.9	(in MOD prices)

/A

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

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

Year	\$ million (Sept 2006)	Price adjustment factor	\$ million (MOD)
2006 – 2007	0.1	1.00000	0.1
2007 – 2008	9.0	1.01250	9.1
2008 – 2009	19.3	1.02769	19.8
2009 – 2010	24.5	1.04310	25.6
2010 – 2011	7.7	1.05875	8.2
2011 – 2012	1.9	1.08257	2.1
	62.5		64.9

9. 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 2006 to 2012. 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 as a re-measurement contract because of the uncertainties of the existence and location of various underground utilities. The contract will provide for price adjustments because the contract period will exceed 21 months. We will tender the proposed E&M works on a fixed-price lump-sum basis because we can clearly define the scope of works in advance.

10. We estimate the annual recurrent expenditure arising from the proposed works to be \$ 1.1 million.

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11. Based on the current level of expenditure on operation and day-to-day maintenance of sewerage facilities, the proposed works by themselves will lead to an increase in the recurrent cost of providing sewage services by about 0.05 %, which will need to be taken into account in determining sewage charges.

PUBLIC CONSULTATION

12. We consulted the Tsuen Wan Rural Area Committee and the Environmental and Health Affairs Committee of the Tsuen Wan District Council on 20 January 2005 and 3 March 2005 respectively. Members supported the implementation of the proposed works. We reported the development and the updated implementation programme of the project to the Tsuen Wan District Council on 27 September 2005, 28 March 2006 and 26 September 2006. Members raised no questions concerning the implementation programme.

13. We consulted the Legislative Council Panel on Environmental Affairs on 22 May 2006 on the proposed works. While members raised no objection to our plan to submit the proposal to the Public Works Subcommittee, they requested the Government to provide information on the level of sewage treatment at Sham Tseng sewage treatment plant and the impact on the surrounding water bodies. The required materials were circulated to the members on 12 September 2006.

14. We gazetted the proposed works under the Water Pollution Control (Sewerage) Regulation (WPC(S)R) on 25 November 2005. We received two objections during the statutory objection period. While both objectors in principle supported the proposed works for the benefit of the environment, they objected to the resumption of their land for implementing these works. One of the objectors also requested the Government to carry out the final house connection works and pay the associated costs. This is however contrary to the current policy and the provisions of the WPC(S)R. We held several meetings with the objectors between January 2006 and June 2006, but the objections remained unresolved.

15. After considering the justifications for implementing the proposed works, the grounds of the objections and the interest of the public at large, the Chief Executive in Council authorised the proposed works without modification under the WPC(S)R on 17 October 2006. The notice of authorisation was gazetted on 27 October 2006.

/ENVIRONMENTAL

ENVIRONMENTAL IMPLICATIONS

16. We assessed the environmental impacts arising from the construction and operation of the sewerage works in an Environmental Impact Assessment study completed in August 1995. The study concluded that the environmental impacts of the project including noise, odour and dust could be mitigated to within acceptable standards and guidelines. We will implement the mitigation measures recommended in the study. This will involve the provision of deodorization facilities to mitigate odour impact, the use of quieter equipment for noise control and limiting the height of the sewage pumping stations to reduce visual impact. For short term impacts during construction, we will control noise, dust and site run-off to levels within established standards and guidelines through implementation of mitigation measures, such as temporary noise barriers and quieter construction plant to reduce noise generation, water-spraying to reduce dust emission, and strict control over 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 \$1.1 million (in September 2006 prices) in the project estimate for implementation of the environmental mitigation measures.

17. We have given due consideration to the need to minimise construction and demolition (C&D) materials in the planning and design stages of the proposed works. We will require the contractor to reuse inert C&D materials (e.g. excavated soil) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of C&D materials to public fill reception facilities³. We will encourage the contractor to maximise the use of recycled or recyclable C&D materials, as well as the use of non-timber formwork to further minimise the generation of construction waste.

18. In addition, we will require the contractor to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures to avoid, reduce, reuse and recycle C&D materials. We will ensure that the day-to-day operations on site comply with the approved WMP. We will control the disposal of public fill and C&D waste to designated public fill reception facilities and landfills respectively through a trip-ticket system. We will

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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 public fill in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

require the contractor to separate public fill from C&D waste for disposal at appropriate facilities. We will record the disposal, reuse and recycling of C&D materials for monitoring purposes.

19. We estimate that the project will generate about 4 500 tonnes of C&D materials. Of these, we will reuse about 3 150 tonnes (70%) on site, and deliver 900 tonnes (20%) to public fill reception facilities for subsequent reuse. In addition, we will dispose of 450 tonnes (10%) at landfills. The total cost of accommodating C&D materials at public fill reception facilities and landfill sites is estimated to be about \$80,000 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 require resumption of about 18 square metres (m²) of agricultural land and 33 m² of building land for the proposed works. The project will not involve any clearance of dwellings. We will charge the resumption and clearance cost for the project, estimated to be about \$770,000, to **Head 701 – Land Acquisition**.

BACKGROUND INFORMATION

21. We included **52DS** “Ting Kau development: sewerage and sewage treatment works including submarine outfall” in Category AB⁵ in July 1988. The original scope of the project was to provide permanent sewerage collection and disposal facilities, including a submarine outfall, pumping station and sewage treatment works, for developments in the hinterland of Ting Kau Beach. In 1989, the Environmental Protection Department (EPD) commissioned the Tsuen Wan, Kwai Chung and Tsing Yi Sewerage Master Plan Study (the Study) to review the sewerage requirement in these areas including Ting Kau, Sham Tseng and Tsing

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⁴ The estimate has taken into account the cost of 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.

⁵ In August 1990, the Administration introduced changes to the system of the Public Works Programme. Category AB projects under the previous system were classified as Category B projects under the new system.

Lung Tau. As a long-term measure to address the water pollution problem in the area, the Study recommended, among others, the provision of a sewage treatment plant, namely, the Sham Tseng sewage treatment plant, a submarine outfall at Sham Tseng and comprehensive sewerage stretching from Approach Beach in the east to Tsing Lung Tau in the west. In the light of the recommendation of the Study, we revised the scope of works of **52DS** in August 1990 for the provision of the sewage collection system to convey the sewage from Ting Kau to the proposed treatment facilities at Sham Tseng.

22. On 10 March 2000, Finance Committee approved the upgrading of part of **52DS** and **126DS** to Category A as **221DS** entitled “Ting Kau sewerage stage 1 and Sham Tseng sewerage stage 2 phase 2” at an approved project estimate of \$438.3 million in MOD prices for the Sham Tseng sewage treatment plant and trunk sewers along Castle Peak Road (Ting Kau section and Tsing Lung Tau section). Construction of the Sham Tseng sewage treatment plant started in May 2001 and was substantially completed for commissioning in December 2003. Since commissioning, Sham Tseng sewage treatment plant has been serving most of the commercial and residential developments along both sides of Castle Peak Road in Sham Tseng.

23. The proposed works belong to the final stage of **52DS** which involves mainly the provision of public sewers in the unsewered areas of Ting Kau. Upon completion, the villagers will be required to connect their premises to these public sewers under the WPC(S)R.

24. Of the 20 trees within the project boundary, 11 trees will be preserved. The proposed works will involve felling of nine common trees. All trees to be removed are not important trees⁶. We will incorporate a planting proposal as part of the project, including estimated quantities of three trees and 28 shrubs.

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⁶ “Important trees” include trees on the Register of Old and Valuable Trees, and any other trees that meet one or more of the following criteria –

- (a) trees over 100 years old;
- (b) trees of cultural, historical or memorable significance; e.g. Fung Shui tree, tree as landmark of monastery or heritage monument, and trees in memory of an important person or event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of overall tree size, 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 metre above ground level), or with height/canopy spread equal or exceeding 25m.

25. We estimate that the proposed works will create about 45 jobs (36 for labourers and another nine for professional/technical staff) providing a total employment of 1 150 man-months.

Environment, Transport and Works Bureau
November 2006



圖則號碼 Drawing Title

工務計劃項目第52DS號 - 汀九污水收集系統第2階段工程
PWP ITEM No. 52DS - TING KAU SEWERAGE STAGE 2

繪圖 Drawn	ORIGINAL SIGNED	C.W. CHAN	日期 Date	31-08-2006
核對 Checked	ORIGINAL SIGNED	C.M. CHAN	日期 Date	31-08-2006
批准 Approved	ORIGINAL SIGNED	S.S. LAM	日期 Date	31-08-2006

圖則編號 Drawing No. DCM/2006/071

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部門
Division
顧問工程管理部
CONSULTANTS MANAGEMENT DIVISION

52DS – Ting Kau Sewerage Stage 2

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	Professional	5	38	1.6	0.4
	for construction stage	Technical	10	14	1.6	0.3
(b)	Site supervision	Professional	45	38	1.6	3.9
	by resident site staff employed by the consultants	Technical	104	14	1.6	3.0
Total consultants' staff costs						<hr/> 7.6 <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 consultant's offices. MPS points 38 and 14 are used as the average MPS salary points for professionals and technical staff respectively. (As at 1 January 2006, MPS point 38 = \$54,255 per month and MPS point 14 = \$18,010 per month)
2. The consultants' fees for contract administration are estimated in accordance with the existing consultancy agreement for the design and construction of the project. We will only know the actual man-months and actual costs for site supervision after completion of the works.