

**ITEM FOR PUBLIC WORKS SUBCOMMITTEE  
OF FINANCE COMMITTEE**

**HEAD 704 - DRAINAGE**

**Environmental Protection - Sewerage and sewage treatment  
203DS - North District sewerage**

Members are invited to recommend to Finance Committee -

- (a) the upgrading of part of **203DS**, entitled “North District Sewerage, stage 1 phase 1A”, to Category A at an estimated cost of \$124.7 million in money-of-the-day prices; and
- (b) the retention of the remainder of **203DS** in Category B.

**PROBLEM**

Existing sewerage facilities in the North District are inadequate to cope with the sewage flow due to population increase in the area. Furthermore, sewage from the unsewered areas is polluting the watercourses and receiving waters in the District. We need to improve the situation in order to tie in with the existing and future developments in the District.

**/PROPOSAL .....**

**PROPOSAL**

2. The Director of Drainage Services, with the support of the Secretary for Planning, Environment and Lands, proposes to upgrade part of **203DS** to Category A at an estimated cost of \$ 124.7 million in money-of-the-day (MOD) prices for the construction of North District Sewerage stage 1 phase 1A works.

### **PROJECT SCOPE AND NATURE**

3. Project **203DS** comprises two stages of works for the improvement of existing sewerage system and the provision of proper sewerage facilities to 74 unsewered villages within North District. Stage 1 will cover the improvements works for the existing sewerage system along Ma Sik Road, Castle Peak Road (Kwu Tung section) and Sha Tau Kok Road (between Man Uk Pin and Luen Wo Hui) and the provision of sewerage facilities to 38 unsewered villages in the area. Stage 1 is further sub-divided into phase 1A, 1B, and phase 2. The improvements works for the existing sewerage system along Ma Sik Road and Castle Peak Road (Kwu Tung Section) will be carried out under stage 1 phase 1A. The provision of sewerage facilities for 7 unsewered villages will be carried out under stage 1 phase 1B while the improvements works for the existing sewerage system along Sha Tau Kok Road (between Man Uk Pin and Luen Wo Hui) and the provision of sewerage facilities for 31 unsewered villages will be carried out in phase 2. Stage 2 works will cover the remaining 36 unsewered villages along Tai Po Road and Sha Tau Kok Road (between Sha Tau Kok and Wo Hang).

4. We now propose to upgrade to Category A the stage 1 phase 1A works of **203DS** to improve the existing sewerage system along Ma Sik Road and Castle Peak Road (Kwu Tung section). The scope of works comprises the following -

- (a) the construction of a new diversion sewer (about 0.6 km in length and 450 millimetres in diameter) along Ma Sik Road;
- (b) the construction of trunk sewers and associated branch sewers (about 3.6 km in length and diameter ranging from 300 to 600 millimetres) along Castle Peak Road from Pak Shek Au to Choi Po Court; and

/(c) .....

- (c) the construction of three sewage pumping stations at Kwu Tung, Tsung Pak Long and Tai Tau Leng

respectively and the associated rising mains (about 0.7 km in length and diameter ranging from 300 to 400 millimetres).

## JUSTIFICATION

5. In August 1994 we completed the North District sewerage master plan study under **113DS** "North District sewerage master plan - consultants' fees and investigations". The study concluded that the existing sewer along Jockey Club Road was overloaded. To avoid flooding and to cater for the sewage flow arising from the projected population increase from the existing 16 460 to 40 000 in 2011 in Kwu Tung, Lung Yuek Tau and other fringe areas of the Sheung Shui new town, we need to enhance the existing sewerage network by constructing a new diversion sewer along Ma Sik Road to carry part of the sewage flow in the existing sewer.

6. The study also assessed the conditions of the unsewered areas in the North District and found that sewage from unsewered areas has polluted stormwater drains serving the areas. As there are no proper sewerage facilities, sewage from the unsewered areas is discharged into the stormwater drains and rivers direct without proper treatment, thus causing pollution to the rivers and receiving waters. To abate the water pollution and overloading problems, we propose to construct sewers, pumping stations and rising mains in stages to collect the sewage generated. We plan to extend the trunk sewerage network to Pak Shek Au along Castle Peak Road and construct three pumping stations at Kwu Tung, Tsung Pak Long and Tai Tau Leng and the associated rising main to uplift the sewage for discharge into the existing sewerage network in the serving areas under the stage 1 phase 1A works. We will then provide proper sewerage facilities to 74 unsewered villages under subsequent phases of the project.

7. If we do not implement the proposed project, sewage generated from the unsewered areas will remain a source of water pollution. It will also result in serious flooding problem in the area as the existing sewer along Jockey Club Road is unable to cope with the increase in sewage flow arising from the projected population in the area by 2011. To abate the water pollution problem and to avoid flooding, we need to commence the construction of proposed works in April 1999.

**/FINANCIAL .....**

**FINANCIAL IMPLICATIONS**

8. We estimate the cost of the proposed project to be \$124.7 million at MOD price, made up as follows -

	<b>\$ million</b>	
(a) Sewage pumping stations	31.0	
(i) Civil works	14.6	
(ii) Electrical and mechanical works	16.4	
(b) Sewers	56.4	
(c) Rising Mains	4.3	
(d) Consultants' fees <sup>1</sup>	0.1	
(e) Contingencies	9.1	
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Sub-total	100.9	(at December 1997 prices)
(f) Inflation allowance	23.8	
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Total	124.7	(in MOD prices)
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/A .....

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<sup>1</sup> A section of about 120 m long rising mains lies within the work site of Territory Development Department (TDD) drainage project **7053CD** "New Territories North East development - main drainage channels for Fanling, Sheung Shui and hinderland", which will start construction in January 1999. We plan to incorporate the above section of rising mains into TDD's contract to minimise interface conflicts between different contracts. The estimated cost for the consultants' fees and site supervision under TDD contract is \$0.1 million.

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

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

<b>Year</b>	<b>\$ million (Dec 1997)</b>	<b>Price adjustment factor</b>	<b>\$ million (MOD)</b>
1999 - 2000	21.6	1.12890	24.4
2000 - 2001	32.1	1.19663	38.4
2001 - 2002	30.0	1.26843	38.1
2002 - 2003	9.5	1.34454	12.8
2003 - 2004	7.7	1.42521	11.0
	100.9		124.7

10. We have derived the MOD estimate on the basis of the Government's latest forecast of trend labour and construction prices for the period 1999 to 2004. We will tender the civil works of the project under a standard remeasurement contract because we are uncertain about the ground conditions such as the existence and exact locations of underground utilities including electric cables, telephone lines and watermains. The contract will allow for adjustments to the tender price due to inflation as the contract period will exceed 21 months. We will tender the electrical and mechanical works of the pumping stations under a fixed price lump sum contract because we can clearly define the scope of the relevant works.

11. We estimate the total annual recurrent cost to be \$3.4 million.



12. Based on the current level of expenditure on operation and maintenance of sewerage facilities, the proposed works by itself would lead to an increase in the recurrent cost of providing sewage services of about 0.5% which will need to be taken into account in determining sewage charges.<sup>2</sup>

## **PUBLIC CONSULTATION**

13. We briefed the North District Board on the findings and recommendations of the North District Sewerage Master Plan Study on 8 December 1994. Members supported the implementation of the proposed works under **203DS**. On 7 July 1998, we consulted the Provisional North District Board of the stage 1 phase 1A works. Members supported the implementation of the proposed works.

## **ENVIRONMENTAL IMPLICATIONS**

14. We completed an Environmental Review (ER) for the North District Sewerage Master Plan Study in 1994. The ER concluded that the proposed works would not cause adverse environmental impact and no Environmental Impact Assessment was required.

15. For short term impacts during construction, we will control noise, dust and site run-off nuisance to within established guidelines through the implementation of mitigation measures in the relevant works contracts.

## **LAND ACQUISITION**

16. The proposed works do not require any land acquisition.

## **BACKGROUND INFORMATION**

17. In October 1994, we upgraded **203DS** to Category B for implementation of the proposed sewerage works for the North District.

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<sup>2</sup> Sewage charges are determined by the recurrent cost of providing sewage services to the community as a whole and the level of subsidy from the General Revenue. The Administration is currently considering various options on the level of subsidy, and the relevant Panels will be consulted before any decision is made.

/18. ....

18. We have deployed in-house resources to conduct the detailed design and construction supervision of the stage 1 phase 1 works. We have divided the phase 1 works into phases 1A and 1B, and have substantially completed the detailed design for phase 1A. We plan to start construction of stage 1 phase 1A works in April 1999 for completion in February 2002. The detailed design of phase 1B works was started in August 1997 and will be completed in February 2000. We plan to start the construction of stage 1 phase 1B works in July 2000 for completion in July 2002.

19. We plan to carry out the detailed design for stage 1 phase 2 works in December 1998 and start the construction works in November 2000 for completion in November 2004. As regards the stage 2 works, we plan to carry out the detailed design from mid-2000 to mid-2003. We also plan to start the construction of the stage 2 works in mid-2003 for completion in late-2005.

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Planning, Environment and Lands Bureau  
November 1998



203DS - North District sewerage

DETAILS OF CONSULTANTS' FEES

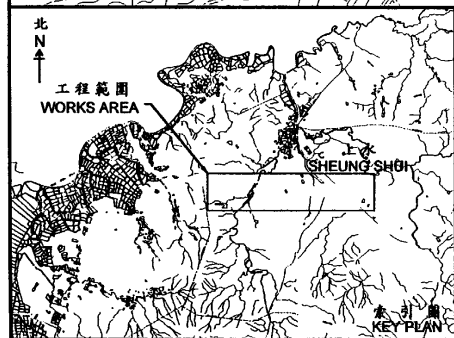
Breakdown of estimates for consultants' fees

Consultants' staff costs			Estimated man months	Average MPS salary point	Multiplier factor	Estimated fee (\$ million)
(a)	Preparation of tender documents for entrustment works	Professional	0.2	40	3.0	0.04
		Technical	0.1	16	3.0	0.01
(b)	Consultants' fees for construction stage	Professional	0.2	40	3.0	0.04
<b>Total consultants' staff costs</b>						<b>0.09</b>

= Say \$0.1 million

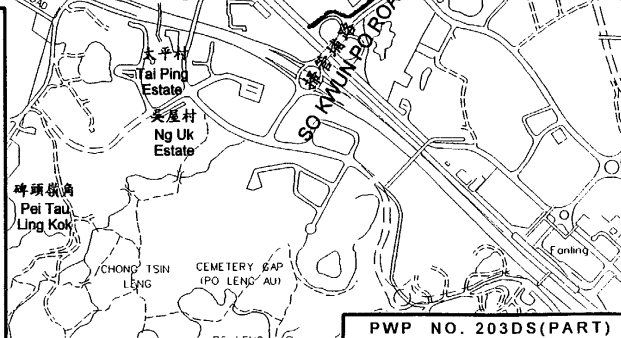
Notes

1. A multiplier factor of 3 is applied to the average MPS point to arrive at the full staff costs including the consultants' overheads and profit, as the staff will be employed in the consultants' offices. (At 1.4.97, MPS pt. 40 = \$59,210 p.m. and MPS pt. 16 = \$19,860 p.m.)
2. The figures given above are based on actual fee proposal from the consultants undertaking the design and construction supervision of the TDD contract.



**圖例**  
**LEGEND**

- 擬建之泵房  
PROPOSED PUMPING STATION
- 擬建之污水幹渠  
PROPOSED TRUNK SEWER
- 擬建之泵水管  
PROPOSED RISING MAINS
- 現有的污水渠  
EXISTING SEWER
- 擬在拓展署合約內興建的泵水管  
PROPOSED RISING MAINS TO BE INCORPORATED IN TDD'S CONTRACT



北區污水收集系統第1階段第1A期  
擬於上水青山公路古洞段及馬適路興建之污水系統  
**NORTH DISTRICT SEWERAGE, STAGE 1 PHASE 1A**  
PROPOSED SEWERAGE WORKS AT CASTLE PEAK ROAD, KWU TUNG SECTION & MA SIK ROAD

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checked by <i>W.W. Tsang</i> W.W. TSANG		date 14 - 10 - 98	CONSULTANTS MANAGEMENT DIVISION		
			DRAINAGE SERVICES DEPARTMENT HONG KONG		