

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

Head 704 – DRAINAGE

Environmental Protection - Sewerage and sewage treatment

339DS – North District sewerage, stage 1 phase 2C and stage 2 phase 1

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **339DS**, entitled “Kau Lung Hang sewerage – trunk sewers, pumping station and rising mains”, to Category A at an estimated cost of \$103.2 million in money-of-the-day prices; and
- (b) the retention of the remainder of **339DS** in Category B.

PROBLEM

Domestic sewage from unsewered areas in Kau Lung Hang area is a source of water pollution to nearby streams.

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade part of **339DS** to Category A at an estimated cost of \$103.2 million in money-of-the-day (MOD) prices for providing trunk sewerage and pumping facilities in Kau Lung Hang area.

/PROJECT

PROJECT SCOPE AND NATURE

3. The scope of the part of **339DS** which we propose to upgrade to Category A comprises the construction of -

- (a) a new sewage pumping station at Nam Wa Po;
- (b) about 0.5 kilometres (km) of rising mains at Tai Wo Service Road West;
- (c) about 1.1 km of gravity sewers at Tai Wo Service Road West and Wo Hing Road; and
- (d) ancillary works.

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

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

JUSTIFICATION

5. At present, sewage from village houses in Kau Lung Hang area, which is within a water gathering ground in northern Tai Po, 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 adjacent receiving waters in Kau Lung Hang area.

6. To improve the situation, we propose provision of public sewerage to serve seven villages at Kau Lung Hang area with a total projected population of about 17 000. The facilities will convey domestic sewage to the Shek Wu Hui Sewage Treatment Works for treatment before disposal, thereby mitigating water pollution in the Kau Lung Hang area 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 project to be \$103.2 million in MOD prices (see paragraph 8 below), made up as follows –

		\$ million	
(a)	Sewage Pumping Station and ancillary works	32.9	
	(i) civil works	25.8	
	(ii) electrical and mechanical works	7.1	
(b)	Rising mains	6.4	
(c)	Gravity sewers	33.0	
(d)	Environmental Mitigation Measures	2.4	
(e)	Consultants' fees	9.5	
	(i) contract administration	0.5	
	(ii) site supervision	9.0	
(f)	Contingencies	8.3	
	Sub-total	92.5	(in September 2008 prices)
(g)	Provision for price adjustment	10.7	
	Total	103.2	(in MOD prices)

_____ 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 (September 2008)	Price adjustment factor	\$ million (MOD)
2008 – 2009	1.4	1.00000	1.4
2009 – 2010	16.0	1.04000	16.6
2010 – 2011	26.0	1.08160	28.1
2011 – 2012	24.0	1.12486	27.0
2012 – 2013	13.0	1.16986	15.2
2013 – 2014	7.6	1.21665	9.2
2014 – 2015	4.5	1.26532	5.7
	92.5		103.2

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 \$880,000.

PUBLIC CONSULTATION

11. We consulted the Tai Po Rural Committee on 11 May 2007, the Traffic and Transport Committee of the North District Council on 10 September 2007 and the Environment, Housing and Works Committee of the Tai Po District Council on 14 September 2007. They all supported the proposed works.

/12.

12. We gazetted the proposed works in paragraph 3 above under the Water Pollution Control (Sewerage) Regulation on 18 January 2008. No objection was received during the statutory objection period. The Director of Environmental Protection authorised the proposed sewerage scheme on 24 July 2008.

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. We have submitted an information note to Panel Members on 15 October 2008.

ENVIRONMENTAL IMPLICATIONS

14. The proposed sewerage work is not a designated project under the Environmental Impact Assessment Ordinance. We completed an Environmental Study (ES) for the concerned works in 2008. The ES concluded that with the implementation of recommended mitigation measures, there would not be any long term adverse environmental impacts arising from the proposed works. We would incorporate the recommendations of the ES into the works contract for implementation.

15. For short-term impacts during construction, we will control noise, dust, and site run-off within the standards and guidelines through implementation of mitigation measures in the works contract, such as the use of temporary noise barriers and silenced construction plants to reduce noise generation, water spraying to reduce emission of fugitive dust and strictly controlled on diversion of site run-off. Regular site inspection will be carried out to ensure that these recommended mitigation measures and good site practices will be properly implemented on site. We estimate the cost of implementing the environmental mitigation measures to be \$2.4 million (in September 2008 prices). We have included this cost in the project estimate.

16. We have considered in the planning and design stages ways to reduce the generation of construction waste where possible, including optimisation 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

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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 11 500 tonnes of construction waste. Of these, we will reuse about 8 000 tonnes (70%) of inert construction waste on site and deliver 3 300 tonnes (28%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 200 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 \$110,000 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

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

HERITAGE IMPLICATION

20. 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

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.

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.

BACKGROUND INFORMATION

21. In October 1994, we upgraded **203DS** “North District sewerage” to Category B to implement sewerage works recommended under the comprehensive study of the sewerage systems in the North District in two stages.
22. We deployed in-house resources to conduct detailed design for the stage 1 phase 1 works. In December 1998, we engaged consultants to carry out detailed design for the stage 1 phase 2 works and necessary investigations at an estimated cost of \$13.1 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”.
23. In December 1998 and February 2002, we upgraded part of **203DS** to Category A as **219DS** “North District sewerage, stage 1 phase 1A” at an estimated cost of \$124.7 million and **330DS** “North District sewerage, stage 1 phases 1B and 2A” at an estimated cost of \$125.1 million in MOD prices respectively. The construction works of the projects **219DS** and **330DS** were completed in December 2002 and January 2006 respectively.
24. Between 2004 and 2006, we re-packaged the remaining works under **203DS** with due regard to the priority of the works and availability of resources. In October 2004, we retained part of **203DS** in Category B and re-designated it as **339DS**.
25. In January 2006, we engaged consultants to carry out detailed design for the stage 2 phase 1 works and necessary investigations at an estimated cost of \$9.84 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.
26. In January 2007, we upgraded part of **339DS** to Category A as **359DS** “North District sewerage, stage 1 phase 2B” at an estimated cost of \$130.0 million in MOD prices. The construction works commenced in March 2007 for completion in November 2010.

27. Upon upgrading of the proposed works which are part of stage 2 phase 1, the remainder of 339DS under stage 1 phase 2C and stage 2 phase 1 involves the construction of remaining trunk sewerage, branch sewerage and associated rising mains with local pumping stations to collect sewage from 22 existing villages in Kau Lung Hang area and North district. Design is in progress.

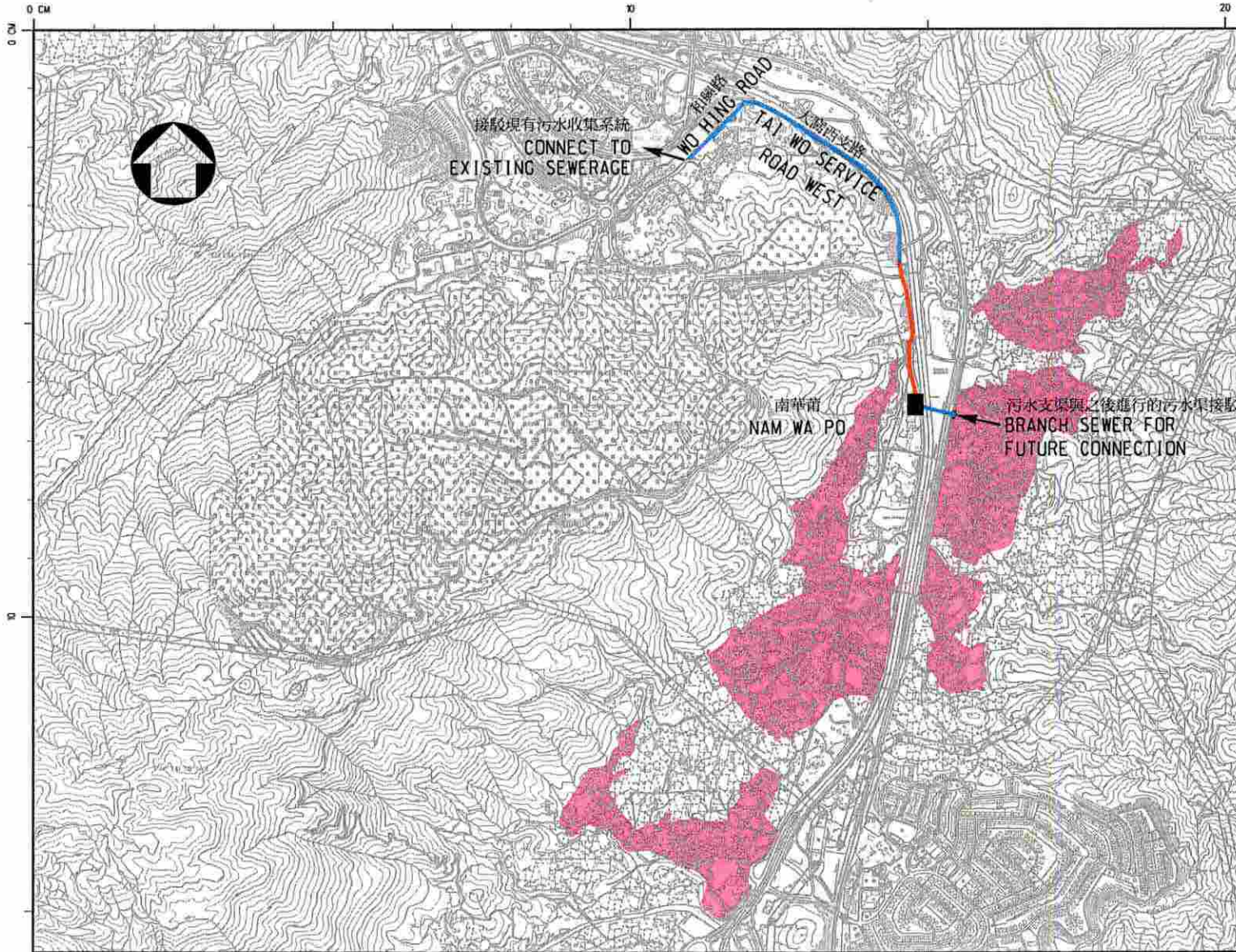
28. The proposed sewerage construction works will involve the felling of 16 trees. All the trees to be felled are not important trees⁵. We will incorporate planting proposals as part of the project, including estimated quantities of 50 shrubs and 42 square metres of grassed area.

29. We estimate that the proposed works will create about 56 jobs (45 for labourers and another 11 for professional/technical staff), providing a total employment of 2 000 man-months.

Environment Bureau
November 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 of 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.



擬建第2階段第1期工程下的污水幹渠系統
 PROPOSED TRUNK SEWERAGE UNDER STAGE 2
 PHASE 1 WORKS

圖例:
 LEGEND:

- 擬建的污水幹渠
PROPOSED TRUNK SEWERS
- 擬建的南華莆污水泵房
PROPOSED NAM WA PO SEWAGE PUMPING STATION
- 擬建的加壓污水管
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

九龍坑山
 CLOUDY HILL
 (KAU LUNG HANG SHAN)

D	10OCT08	GENERAL REVISION	SIGNED
C	03OCT08	GENERAL REVISION	SIGNED
B	02SEP08	GENERAL REVISION	SIGNED
A	13JUN08	GENERAL REVISION	SIGNED

圖則名稱 drawing title
 工務計劃項目第339DS號 -
 北區污水收集系統第1階段第2C期及第2階段第1期工程
 PWP ITEM No.339DS -
 NORTH DISTRICT SEWERAGE, STAGE 1 PHASE 2C
 AND STAGE 2 PHASE 1

繪畫 drawn	SIGNED	C.K.LAM	日期 date 15APR08
核對 checked	SIGNED	S.W.LAM	日期 date 06JUNE08
批核 approved	SIGNED	K.S.TONG	日期 date 06JUNE08
部門 office	工程管理部 PROJECT MANAGEMENT DIVISION		

圖則編號 drawing no. 比例 scale
 DPM/339DS/0004D N.T.S.

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香港特別行政區政府渠務署
 DRAINAGE SERVICES DEPARTMENT
 GOVERNMENT OF THE
 HONG KONG
 SPECIAL ADMINISTRATIVE REGION

Enclosure 2 to PWSC(2008-09)44

339 DS – North District sewerage, stage 1 phase 2C and stage 2 phase1

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	Professional	-	-	-	0.4
	for contract administration (Note 2)	Technical	-	-	-	0.1
(b)	Site supervision	Professional	46	38	1.6	4.5
	by resident site staff employed by the consultants (Note 3)	Technical	142	14	1.6	4.5
Total consultants' staff costs						<hr/> 9.5 <hr/>

* 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 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.