

## ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

### Head 704 – DRAINAGE

#### Environmental Protection – Sewerage and sewage treatment

#### 274DS – Yuen Long and Kam Tin sewerage, stage 3

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **274DS**, entitled “Village sewerage at Wang Chau of Yuen Long”, to Category A at an estimated cost of \$219.2 million in money-of-the-day prices; and
- (b) the retention of the remainder of **274DS** in Category B.

### PROBLEM

Sewage from unsewered areas in Yuen Long is a source of water pollution to nearby watercourses and the receiving waters of Deep Bay.

### PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade part of **274DS** to Category A at an estimated cost of \$219.2 million in money-of-the-day (MOD) prices for implementing sewerage works in nine unsewered areas in Wang Chau of Yuen Long.

/PROJECT .....

**PROJECT SCOPE AND NATURE**

3. The scope of the part of **274DS** which we propose to upgrade to Category A comprises the construction of –

- (a) about 9 kilometres (km) of sewers for collecting sewage from nine unsewered areas in Wang Chau of Yuen Long, namely Lam Uk Tsuen, Yuk Yat Garden, Yeung Uk Tsuen, Tung Tau Wai, Tung Tau Wai San Tsuen, Chung Sam Wai, Fuk Hing Tsuen, Sai Tau Wai and Ting Fook Villas;
- (b) a sewage pumping station near Tung Tau Industrial Area; and
- (c) ancillary works.

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

4. We plan to start construction in July 2009 for completion in June 2013.

**JUSTIFICATION**

5. At present, sewage from unsewered areas in Yuen Long is discharged into nearby watercourses after treatment by private treatment facilities. Most of these private treatment facilities are septic tanks and soakaway systems. These facilities in general are not effective in removing pollutants due to their close proximity to watercourses<sup>1</sup> and inadequate maintenance<sup>2</sup>. Hence, sewage discharged from these unsewered areas is a source of water pollution to nearby watercourses and Deep Bay.

6. As a long term measure to address water pollution problems, we propose provision of a sewerage system to nine unsewered areas in Wang Chau of Yuen Long to serve a total projected population of about 13 600. The sewage

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<sup>1</sup> 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.

<sup>2</sup> Inadequate maintenance of septic tanks or soakaway systems would affect their pollutant removal efficiency and may even lead to overflow of effluent.

collected will be conveyed via existing sewers to the Yuen Long sewage treatment works for treatment before discharge, thereby mitigating water pollution in the nearby watercourses and Deep Bay and improving the living environment.

## FINANCIAL IMPLICATIONS

7. We estimate the capital cost of the proposed works to be \$219.2 million in MOD prices (see paragraph 8 below), made up as follows –

		<b>\$ million</b>	
(a)	Construction of sewers	125.4	
(b)	Construction of sewage pumping station and ancillary works	28.9	
	(i) civil works	19.8	
	(ii) electrical and mechanical works	9.1	
(c)	Environmental mitigation measures	2.2	
(d)	Consultants' fees	2.4	
	(i) contract administration	0.9	
	(ii) management of resident site staff	1.5	
(e)	Remuneration of resident site staff	23.5	
(f)	Contingencies	18.2	
	Sub-total	200.6	(in September 2008 prices)
(g)	Provision for price adjustment	18.6	
	Total	219.2	(in MOD prices)

A detailed breakdown of the estimates for the consultants' fees and resident site staff costs by man-months is at Enclosure 2.

/8. ....

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

Year	\$ million (September 2008)	Price adjustment factor	\$ million (MOD)
2009 – 2010	20.9	1.03500	21.6
2010 – 2011	38.7	1.05570	40.9
2011 – 2012	41.9	1.07681	45.1
2012 – 2013	40.9	1.09835	44.9
2013 – 2014	25.7	1.12032	28.8
2014 – 2015	20.3	1.15113	23.4
2015 – 2016	12.2	1.18566	14.5
	200.6		219.2

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 2009 to 2016. We will tender the civil engineering works under a re-measurement contract because of the uncertain underground conditions that may affect the alignments of the sewers as well as the setting out and depth of the foundations for the pumping station. The contract will provide for price adjustment. We will tender the electrical and mechanical works under a lump-sum contract as the scope of works is well defined.

10. We estimate the annual recurrent expenditure arising from the proposed works to be \$1.8 million. This has been taken into account in determining the sewage charges for the years 2008-09 to 2017-18 stipulated in the Sewage Services (Sewage Charge) Regulation (Cap. 463A).

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**PUBLIC CONSULTATION**

11. We consulted the Ping Shan Rural Committee and the Environmental Improvement Committee of the Yuen Long District Council on 14 November 2006 and 23 July 2007 respectively on the proposed sewerage works at Wang Chau of Yuen Long. They all supported the proposed works. Furthermore, we consulted the local community including the Village Representatives between January and March 2007 and they had no objection to the proposed works.

12. We have divided the proposed sewerage works into two schemes which were gazetted under the Water Pollution Control (Sewerage) Regulation (WPC(S)R) on 17 August 2007 and 28 March 2008. Upon expiry of the statutory objection periods, we received no objection to the two schemes. The Director of Environmental Protection (DEP) authorized the two proposed schemes on 26 November 2007 and 11 July 2008.

13. As the owner of a lot affected by the second scheme subsequently initiated a sub-division of the lot, we gazetted an amendment of the scheme under WPC(S)R on 14 November 2008 for delineating the redefined lot boundary as a result of lot sub-division. Upon expiry of the statutory objection period, we received no objection to the amendment scheme. The DEP authorized the proposed amendment works of the second scheme on 20 February 2009.

14. We consulted the Legislative Council Panel on Environmental Affairs (the Panel) on 23 February 2009 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 a breakdown on the percentage of village houses which had made connections upon provision of the public village sewerage, together with information on the distance between reception points and the lot boundaries of village houses and the reasons for those unable to be connected; supplementary information on the assistance schemes available to villagers in implementing the sewer connection works, and the measures to ensure compliance with sewer connection requirements; as well as the schedules of delivery for village sewers, sewer connection works and their respective site plans. We submitted an information note to the Panel on 9 April 2009.

**ENVIRONMENTAL IMPLICATIONS**

15. The proposed sewage pumping station near Tung Tau Industrial Area is a designated project under the Environmental Impact Assessment Ordinance (EIAO). We have assessed its potential environmental impacts and concluded that it will not cause long term adverse environmental impacts. We obtained an environmental permit (EP) for the construction and operation of the sewage pumping station on 14 January 2009. We shall implement the mitigation measures set out in the EP and as required by the DEP. Furthermore, the proposed sewers will not cause long term adverse environmental impacts.

16. For short-term impacts during construction, we will control noise, dust and site run-off to levels within the established standards and guidelines through the implementation of mitigation measures, such as the use of silenced construction equipment and noise barrier to reduce noise, water-spraying to reduce emission of fugitive dust, and proper treatment of site run-off before discharge. We will also carry out regular site inspection to ensure that these recommended mitigation measures and good site practice are properly implemented on site. We have included in paragraph 7(c) above a sum of \$2.2 million (in September 2008 prices) in the project estimate for implementing environmental mitigation measures.

17. We have considered in the planning and design stages ways to reduce the generation of construction waste where possible, including optimisation of the sewer alignments, depths and gradients so as to reduce 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 facilities. 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.

18. 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 approval plan.

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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<sup>3</sup> and landfills respectively through a trip-ticket system.

19. We estimate that the project will generate in total about 23 000 tonnes of construction waste. Of these, we will reuse about 12 500 tonnes (54%) of inert construction waste on site and deliver 8 600 tonnes (37%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 1 900 tonnes (9%) 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 \$470,000 for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne<sup>4</sup> at landfills.)

## HERITAGE IMPLICATIONS

20. 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 ACQUISITION

21. We will resume 1 293.6 square metres (m<sup>2</sup>) of private agricultural land for the proposed works. The land resumption and clearance will not affect any households and structures. We will charge the land resumption and clearance costs estimated at \$9.7 million to **Head 701 – Land Acquisition**. A breakdown of the land resumption and clearance costs is at Enclosure 3.

**/BACKGROUND .....**

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<sup>3</sup> 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.

<sup>4</sup> The 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/m<sup>3</sup>), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

**BACKGROUND INFORMATION**

22. In March 1992, we completed a sewerage master plan for Yuen Long and Kam Tin under **112DS** “Yuen Long and Kam Tin sewerage master plan study – consultants’ fees and investigations”. In December 1992, we upgraded **157DS** “Yuen Long and Kam Tin sewerage” to Category B for implementation of sewerage works recommended under the sewerage master plan.

23. In May 1993, we upgraded part of **157DS** to Category A as **164DS** “Yuen Long and Kam Tin sewerage, stage 1” for the improvement of existing sewers in Yuen Long and the construction of new sewers along Castle Peak Road. We started the works under **164DS** in October 1993 and completed them in February 1996.

24. In May 1995, we upgraded another part of **157DS** to Category A as **194DS** “Yuen Long and Kam Tin sewerage, stage 2 phase 1 – modification works at Ping Shun Street pumping station, rising main to Ha Tsuen pumping station and sewers in Tong Yan San Tsuen”. We started the works under **194DS** in August 1995 and completed them in October 1998.

25. In October 1995, we sub-divided **157DS** into **157DS** “Yuen Long and Kam Tin sewerage, stage 2” and **274DS** “Yuen Long and Kam Tin sewerage, stage 3”.

26. In June 2002, we upgraded part of **274DS** to Category A as **335DS** “Yuen Long and Kam Tin sewerage, stage 3 phase 1” for construction of trunk sewers along Yuen Long Highway and a sewage pumping station near Pok Oi Interchange. We started the works under **335DS** in January 2003 and completed them in May 2006.

27. In September 2006, we engaged consultants to carry out site investigation, surveys, traffic and environmental impact assessments, and detailed design for the remaining works under **274DS**, which are for provision of public sewerage to 34 unsewered areas in Yuen Long, at an estimated cost of \$8.3 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 sewerage works for nine of the unsewered areas mentioned in paragraph 3 above.



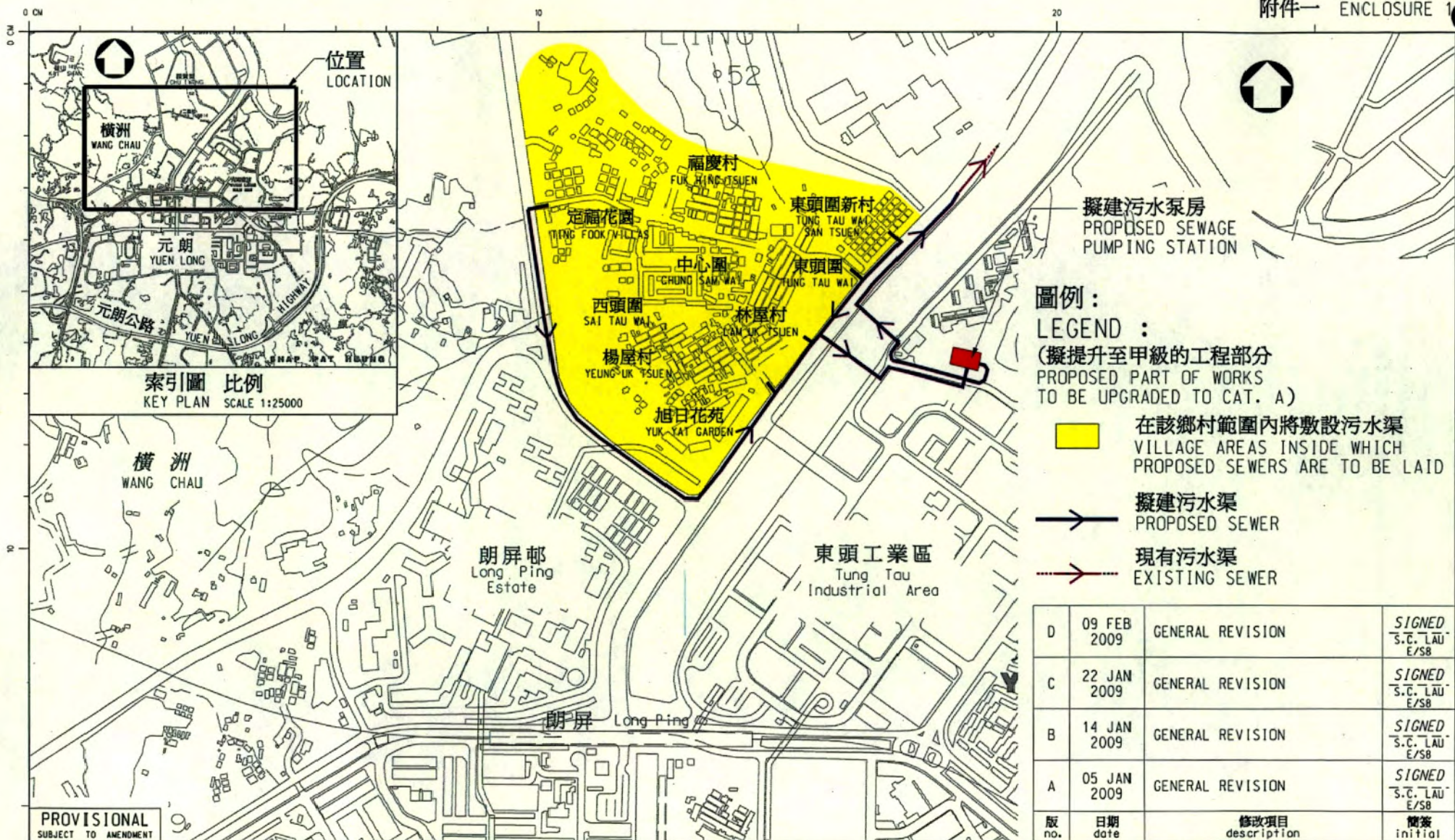
28. The remainder of **274DS** proposed for retention in Category B comprises the provision of public sewerage to 25 unsewered areas in Yuen Long. Planning and design of the remainder is in progress.

29. The proposed sewerage works will not involve any tree removal. We will incorporate planting proposal as part of the proposed works, including estimated quantities of 14 trees and 1 500 shrubs.

30. We estimate that the proposed works will create about 76 jobs (61 for labourers and another 15 for professional/technical staff) providing a total employment of 2 800 man-months.

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Environment Bureau  
May 2009



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PROVISIONAL SUBJECT TO AMENDMENT

圖則名稱 drawing title  
工務計劃項目第274DS號  
元朗及錦田污水收集系統第三階段  
PWP ITEM NO. 274DS  
YUEN LONG AND KAM TIN SEWERAGE, STAGE 3

繪畫 drawn SIGNED M. W. CHEUNG 日期 date 10 DEC 2008  
核對 checked SIGNED Ir S. C. LAU 日期 date 12 DEC 2008  
批核 approved SIGNED Ir C. H. LAI 日期 date 12 DEC 2008  
部門 office 污水工程部  
SEWERAGE PROJECTS DIVISION

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## 274DS –Yuen Long and Kam Tin sewerage, stage 3

**Breakdown of the estimates for consultants' fees and resident site staff costs  
(in September 2008 prices)**

		Estimated Man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fees (\$ million)
(a) Consultants' fees for contract administration (Note 2)	Professional	--	--	--	0.7
	Technical	--	--	--	0.2
				Sub-total	0.9
(b) Resident site staff costs (Note 3)	Professional	121	38	1.6	11.7
	Technical	419	14	1.6	13.3
				Sub-total	25.0
Comprising –					
(i) Consultants' fees for management of resident site staff					1.5
(ii) Remuneration of resident site staff					23.5
				<b>Total</b>	25.9

\* MPS = Master Pay Scale

**Notes**

1. A multiplier of 1.6 is applied to the average MPS point to estimate the cost of resident site staff supplied by the consultants. (As at 1 April 2008, MPS pt. 38 = \$60,535 per month and MPS pt. 14 = \$19,835 per month.)
2. The consultants' staff cost for the contract administration is calculated in accordance with the existing consultancy agreement. The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade part of 274DS to Category A.
3. We will only know the actual man-months and actual costs after completion of the construction works.

## 274DS –Yuen Long and Kam Tin sewerage, stage 3

**Breakdown of the land resumption and clearance costs****\$ million****Estimated land resumption cost 8.43**

(a) Agricultural Land Ex-gratia Compensation (including 13 lots of private land)

1,293.6m<sup>2</sup> @ \$6,520/ m<sup>2</sup> (Notes 1 and 2)

**Estimated clearance cost 1.22**

(a) Compensation for crops 0.26

(b) Ex-gratia compensation for miscellaneous permanent improvements to farms 0.03

(c) “Tun Fu” ceremonial fees 0.06

(d) Interest payment on various ex-gratia compensations for private land and contingency 0.87

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**Total costs**
**9.65**  
**(say 9.7)**
**Notes**

1 All the land to be resumed in the project 274DS is agricultural land within Compensation Zone “A”. As published in the Gazette, the ex-gratia compensation rate for this zone is the Basic Rate for agricultural land. The present Basic Rate for agricultural land 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 13 lots affected by the project 274DS 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.