

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

### **HEAD 709 – WATERWORKS**

#### **Water Supplies – Salt water supplies**

#### **36WS – Ring mains for Cha Kwo Ling salt water supply system**

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **36WS**, entitled “Ring mains for Cha Kwo Ling salt water supply system – advance mainlaying in Cha Kwo Ling Road”, to Category A at an estimated cost of \$25.6 million in money-of-the-day prices; and
- (b) the retention of the remainder of **36WS** in Category B.

### **PROBLEM**

The existing Cha Kwo Ling salt water supply system commissioned in 1960, being a single feed system, does not provide a stable supply of salt water to the residents in eastern Kowloon areas.

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## PROPOSAL

2. The Director of Water Supplies (DWS), with the support of the Secretary for Works, proposes to upgrade part of **36WS** to Category A at an estimated cost of \$25.6 million in money-of-the-day (MOD) prices to improve the performance and reliability of Cha Kwo Ling salt water supply system.

## PROJECT SCOPE AND NATURE

3. The scope of works under **36WS** comprises the laying of about 7 kilometres of salt water trunk mains ranging from 600 to 1 200 millimetres (mm) in diameter mainly along Cha Kwo Ling Road, Tseung Kwan O Road, Sau Mau Ping Road, Kai Lim Road, Tsui Ping Road, Hip Wo Street, Hong Ning Road and Chun Wah Road.

4. The part of **36WS** we now propose to upgrade to Category A comprises the laying of about 820 metres (m) of a trunk main of 1 200 mm in diameter along Cha Kwo Ling Road. We plan to start the proposed mainlaying works in November 2002 for completion in mid-2006. A site plan showing the entire scope of works under **36WS** is at Enclosure 1.

## JUSTIFICATION

5. Cha Kwo Ling salt water supply system was commissioned in 1960 to supply sea water to eastern Kowloon areas for flushing. The system comprises Cha Kwo Ling salt water pumping station, four salt water service reservoirs, trunk mains and distribution mains. The trunk mains deliver water from the pumping station to the service reservoirs and to the consumers via the distribution mains. At present, each service reservoir is basically served by one single trunk main which also serves for distribution purpose. Largely due to aging of the mains, bursts and leaks have occurred frequently in recent years. In 2001, there were about 160 incidents of bursts or leaks in the system. Since the system is operated on a single-line configuration, shut down of the trunk mains for operation and maintenance will lead to widespread suspension of the salt water supply. Moreover, supply very often can only be resumed after prolonged repairs due to the deep cover of the water main, heavy traffic, and restrictions on night work. The suspension of salt water supply will cause considerable inconvenience to the population in eastern Kowloon areas.

6. To improve the reliability of the salt water supply, we propose to lay the trunk mains as described in paragraph 3 above in order to provide each service reservoir with an additional trunk main. This will turn the single-line configuration of the trunk mains into a ring-main system, under which water can circulate from one trunk main to the other trunk main in the same ring. As a result, even when a section of the ring mains is shut down, the ring main system will ensure uninterrupted water supply to the majority of residents who are outside the supply area of the shut-down section.

7. The laying of about 820 m of a trunk main of 1 200 mm in diameter along Cha Kwo Ling Road under **36WS** has interfaces with the laying of sewers along the same road by the Director of Drainage Services (D of DS) under **326DS** “Central and East Kowloon sewerage, sewage treatment and disposal – advance housing-related works”<sup>1</sup>. D of DS will entrust the sewerage works to the Housing Authority (HA). To avoid interface problems which may arise from two contractors working on the same site, we will also entrust the mainlaying works to HA so that the mainlaying works will be carried out under the same contract for the sewerage works. To tie in with the implementation of the sewerage works under **326DS**, we now propose to upgrade the mainlaying works to Category A as mentioned in paragraph 4 above.

## FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the project to be \$25.6 million in MOD prices (see paragraph 9 below), made up as follows –

	<b>\$ million</b>
(a) Laying of salt water trunk main by conventional method	19.4
(b) Consultants’ fees	3.5
(i) contract administration	0.7
(ii) site supervision	2.8

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<sup>1</sup> A related paper, PWSC(2002-03)26, for upgrading **326DS** under **Head 704** to Category A is also submitted for Members' consideration at this meeting.

		<b>\$ million</b>	
(c)	Environmental mitigation measures	0.3	
(d)	HA's on-cost <sup>2</sup>	0.5	
(e)	Contingencies	2.3	
	Sub-total	26.0	(in September 2001 prices)
(f)	Provision for price adjustment	(0.4)	
	Total	25.6	(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 –

<b>Year</b>	<b>\$ million (Sept 2001)</b>	<b>Price adjustment factor</b>	<b>\$ million (MOD)</b>
2002 – 2003	0.1	0.98625	0.1
2003 – 2004	4.6	0.98378	4.5
2004 – 2005	8.5	0.98378	8.4
2005 – 2006	8.5	0.98378	8.4
2006 – 2007	4.3	0.98378	4.2
	26.0		25.6

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<sup>2</sup> There is a standard arrangement for the Government to pay HA a 2% on-cost for administrative and supervision works (i.e., on items 8(a) to (c)), which HA undertakes for the Government on an entrustment basis.

10. We have derived the MOD estimates on the basis of the Government's latest forecast of trend labour and construction prices for the period 2002 to 2007. We will incorporate the proposed mainlaying works into HA's contract on a remeasurement basis because the quantities of works may vary with actual ground conditions. Since the contract period will exceed 21 months, we will provide for price adjustments in the contract.

11. We estimate the additional annual recurrent expenditure arising from this project to be about \$51,000.

12. The project by itself will lead to an increase in water charges by 0.02 % in real terms by 2007<sup>3</sup>.

### **PUBLIC CONSULTATION**

13. We consulted the Kwun Tong District Council on 26 February 2002. The Council supported the proposed works.

### **ENVIRONMENTAL IMPLICATIONS**

14. DWS completed a Preliminary Environmental Review (PER) for 36WS in December 1996. The PER concluded that the project would not have any long-term adverse environmental impacts. The Director of Environmental Protection vetted the PER and agreed that an Environmental Impact Assessment would not be required. We will control noise, dust and site run-off during construction through the implementation of mitigation measures. These include the use of silenced plant, desilting traps, and the provision of wheel washing facilities. We have included the cost of implementing these mitigation measures (\$0.3 million) in the project estimate and will incorporate these requirements into the works contract for implementation.

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<sup>3</sup> The increase in water charges is calculated on the assumption that the water demand remains static during the period from 2001 to 2007 and the amount of government subsidy to the waterworks operations is to be contained at the present level.

15. We have given due consideration to the need to minimise the generation of construction and demolition (C&D) materials in designing and planning the alignments of the proposed water mains. We estimate that about 6 800 cubic metres (m<sup>3</sup>) of C&D materials will be generated by the project. Of these, about 4 130 m<sup>3</sup> (60.7%) will be reused on site, 2 500 m<sup>3</sup> (36.8%) will be reused as fill in public filling areas<sup>4</sup> and 170 m<sup>3</sup> (2.5%) will be disposed of at landfill sites. The notional cost of accommodating C&D waste at landfill sites is estimated to be \$21,250 for this project (based on a notional unit cost<sup>5</sup> of \$125/m<sup>3</sup>).

16. We will require the contractor to submit a waste management plan (WMP) for approval. We will ensure that the day-to-day operations on site comply with the approved WMP. We will control the disposal of public fill to designated public filling facility and the disposal of C&D wastes at designated landfill sites through a trip-ticket system. We will record the reuse, recycling and disposal of C&D materials for monitoring purposes.

## LAND ACQUISITION

17. The project does not require land acquisition.

## BACKGROUND INFORMATION

18. We upgraded **36WS** to Category B in August 1997.

19. Regarding the mainlaying works we now propose for upgrading to Category A, we have engaged HA's consultants to complete the detailed design at a cost of about \$1 million, charged to the block allocation **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme". The detailed design work commenced in December 2001 and is scheduled for completion in May 2002.

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<sup>4</sup> A public filling area is a designated part of a development project that accepts public fill for reclamation purposes. Disposal of public fill in a public filling area requires a licence issued by the Director of Civil Engineering.

<sup>5</sup> 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/m<sup>3</sup>), nor the cost to provide new landfills (which are likely to be more expensive) when the existing ones are filled. The notional cost estimate is for reference only and does not form part of this project estimate.

20. We are continuing with the detailed design of the remaining works under **36WS** with a view to commencing construction in late 2003 for completion by mid-2007.

21. We estimate that the proposed works will create nine jobs comprising two professional/technical staff and seven labourers, totalling 340 man-months.

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Works Bureau  
May 2002

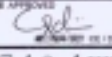
(pwc36wsfin.doc)




圖例 LEGEND :

- 擬議升級至第一類工程的海水管線  
PROPOSED SALT WATER MAIN TO BE  
UPGRADED TO CATEGORY A
- 餘下的海水管線  
REMAINING SALT WATER MAINS
- - - 現有的海水管線  
EXISTING SALT WATER MAINS

比例尺 SCALE 1 : 20 000

SK APPROVED  
  
 7/3/2002

工程計劃項目第30WS號 — 東區海水供應系統擴建供水管線工程  
 P.W.P. ITEM NO 30WS — RING MAINS FOR CHA KWO LING SALT WATER SUPPLY SYSTEM  
 (專業工程師)  
 (Civil W. Subordinate)

 水務處  
 WATER SUPPLIES DEPT.  
 專業編號  
 SKETCH NO. SK 62001/156

附件 1 ENCLOSURE 1



**Enclosure 2 to PWSC(2002-03)24**

**36WS – Ring mains for Cha Kwo Ling salt water supply system**

**Breakdown of the estimates for the consultants' fees**

Consultants' staff costs			Estimated man- months	Average MPS* salary point	Multiplier <sup>(Note 1)</sup>	Estimated fee (\$ million)
(a)	Contract administration <sup>(Note 2)</sup>	Professional	3.0	–	–	0.4
		Technical	5.5	–	–	0.3
(b)	Site supervision by resident site staff of the consultants <sup>(Note 3)</sup>	Professional	12.0	38	1.7	1.2
		Technical	48.0	14	1.7	1.6
<b>Total consultants' staff costs</b>						3.5

\* MPS = Master Pay Scale

**Notes**

1. A multiplier of 1.7 is applied to the average MPS point to estimate the cost of resident site staff supplied by the consultants. (As at 1.4.2001, MPS pt. 38 = \$60,395 per month and MPS pt. 14 = \$19,510 per month.)
2. The consultants' staff cost for contract administration is calculated in accordance with the consultancy agreement between the Director of Housing and the consultants for the design and construction of the project **36WS**.
3. The consultants' staff cost for site supervision is based on estimates prepared by the consultants of the Housing Authority. We will know the actual man-months and actual costs only after the completion of the construction works.