

## ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

### HEAD 709 -WATERWORKS

#### Water Supplies – Fresh water supplies

#### 249WF – Expansion of fresh water distribution system in Fanling West

Members are invited to recommend to Finance Committee the upgrading of **249WF** to Category A at an estimated cost of \$48.0 million in money-of-the-day prices for the expansion of the fresh water distribution system in Fanling West.

### PROBLEM

The existing fresh water distribution system serving the Fanling West areas<sup>1</sup> will be unable to cope with the anticipated increase in water demand by 2005.

### PROPOSAL

2. The Director of Water Supplies (DWS), with the support of the Secretary for Works, proposes to upgrade **249WF** to Category A at an estimated cost of \$48.0 million in money-of-the-day (MOD) prices for the expansion of the existing fresh water distribution system in Fanling West.

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<sup>1</sup> Fanling West areas cover Fanling Area 36, Kam Tsin, Lin Tong Mei and Lin Tong Mei Tsoi Yuen.

## PROJECT SCOPE AND NATURE

3. The scope of the works under **249WF** comprises the laying of about 6.4 kilometres (km) of fresh water mains ranging from 300 to 600 millimetres in diameter along Kwu Tung Road, Kam Hang Road, Kam Tsin Road, Castle Peak Road (Kwu Tung Section), Fan Kam Road and Po Kin Road in Fanling West.

4. We plan to start construction in June 2002 for completion in phases from late 2004 to mid 2005 to tie in with the developments in Fanling West. A site plan showing the scope of works under **249WF** is at Enclosure 1.

## JUSTIFICATION

5. Area 36 of Fanling is earmarked mainly for private and public housing developments, government, institution and community uses and local open space. The Director of Territory Development has substantially completed the site formation works under **651CL**<sup>2</sup> "Formation and servicing of Area 36, Fanling, phase 1" and **670CL**<sup>2</sup> "Formation and servicing of Area 36, Fanling, phase 2". The Director of Housing has commenced the first phase of the piling works for the public housing developments. We expect that the population intake for Area 36 will commence in late 2004. Together with planned low to medium density residential developments in other areas along Fan Kam Road, the present population of 12 200 in Fanling West is forecast to increase to 39 500 in 2005 and to 44 000 in 2009.

6. The existing fresh water distribution system serving Fanling West areas is capable of meeting a mean daily fresh water demand of about 7 500 cubic metres (m<sup>3</sup>) per day. With the planned developments and taking into account the requirement for fresh water for flushing, we project that the total daily fresh water demand will increase from the current level of 4 700 m<sup>3</sup> to 12 800 m<sup>3</sup> in 2005 and to 14 500 m<sup>3</sup> in 2009. To meet the projected shortfall from 2005 up to 2009, we plan to expand the existing fresh water distribution system in Fanling West as detailed in paragraph 3 above.

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<sup>2</sup> In November 1998, Finance Committee approved the upgrading of part of **476CL** to Category A as **651CL** at an estimated cost of \$89.7 million in MOD prices.

In April 2000, Finance Committee approved the upgrading of another part of **476CL** to Category A as **670CL** at an estimated cost of \$62.5 million in MOD prices.

7. About 0.4 km of the proposed water mains along Kam Tsin Road falls within the boundary of a proposed Category D roadworks project "Improvement of Access Road at Kam Tsin, Sheung Shui", scheduled to commence in early 2003 and complete in mid 2004. To avoid interface problems arising from two contractors working on the same site, we plan to incorporate this part of the mainlaying works into the roadworks contract to be managed by the Director of Highways (DHy).

## FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the proposed works to be \$48.0 million in MOD prices (see paragraph 9 below), made up as follows –

	<b>\$ million</b>	
(a) Mainlaying works by conventional method	42.2	
(b) Consultants' fees for the entrustment works	0.4	
(i) contract administration	0.1	
(ii) site supervision	0.3	
(c) Environmental mitigation measures	0.5	
(d) Contingencies	4.3	
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Sub-total	47.4	(in September 2001 prices)
(e) Provision for price adjustment	0.6	
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Total	48.0	(in MOD prices)
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— A breakdown of the estimates for consultants' fees by man-months is at Enclosure 2.

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

Year	\$ million (Sept 2001)	Price adjustment factor	\$ million (MOD)
2002 – 2003	3.0	0.99700	3.0
2003 – 2004	14.0	1.00398	14.1
2004 – 2005	16.3	1.01101	16.5
2005 – 2006	7.8	1.01808	7.9
2006 – 2007	6.3	1.02521	6.5
	47.4		48.0

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 tender the proposed works under a remeasurement contract because the quantities of works may vary with actual ground conditions. We will provide price adjustment in the mainlaying contract because the contract period will exceed 21 months. We will incorporate part of the proposed mainlaying in Kam Tsin Road into Highways Department's (HyD's) roadworks contract on a remeasurement basis. We will not provide price adjustment in the roadworks contract because the contract period will not exceed 21 months.

11. The annual recurrent expenditure arising from this project is about \$0.26 million.

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

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<sup>3</sup> The increase in water charges is calculated on the assumption that the demand remains static during the period from 2002 to 2007 and the amount of government subsidy to the waterworks operations is to be contained at the present level.

## PUBLIC CONSULTATION

13. We consulted the District Development and Environmental Improvement Committee of the North District Council in July 2001. The Committee supported the project.

## ENVIRONMENTAL IMPLICATIONS

14. We completed a Preliminary Environmental Review (PER) for 249WF in December 1998. The PER concluded that the project would not have any long-term adverse environmental impacts. The Director of Environmental Protection has agreed that an Environmental Impact Assessment will not be required. We will control noise, dust and site run-off during construction through the implementation of mitigation measures<sup>4</sup>. We have included in the project the cost of implementing these mitigation measures (\$0.5 million in September 2001 prices) and will incorporate these requirements into the works contracts for implementation.

15. We have taken due consideration of the need to minimize the generation of construction and demolition (C&D) materials when planning and designing the alignments of the proposed water mains. To further minimize the generation of C&D materials, we will encourage the contractors to use steel instead of timber in formwork and temporary works. We estimate that about 8 740 m<sup>3</sup> of C&D materials will be generated by the project. Of these, about 6 190 m<sup>3</sup> (70.8%) will be reused on site, 2 530 m<sup>3</sup> (29.0%) will be reused as fill in public filling areas<sup>5</sup> and 20 m<sup>3</sup> (0.2%) will be disposed of at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be \$2,500 for this project (based on a notional unit cost<sup>6</sup> of \$125/m<sup>3</sup>).

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<sup>4</sup> The standard pollution control measures include wheel washing facilities, desilting traps, the use of silenced plant and other procedures as recommended in the Environmental Protection Department's Recommended Pollution Control Clauses.

<sup>5</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>6</sup> This 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/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.

16. We will require the contractors to submit waste management plans (WMP) with appropriate mitigation measures for approval. We will ensure that the day-to-day operations on site comply with the approved WMP. We will implement a trip-ticket system to control the proper disposal of C&D materials and will record the reuse, recycling and disposal of C&D materials for monitoring purposes.

#### **LAND ACQUISITION**

17. The proposed works do not require land acquisition.

#### **BACKGROUND INFORMATION**

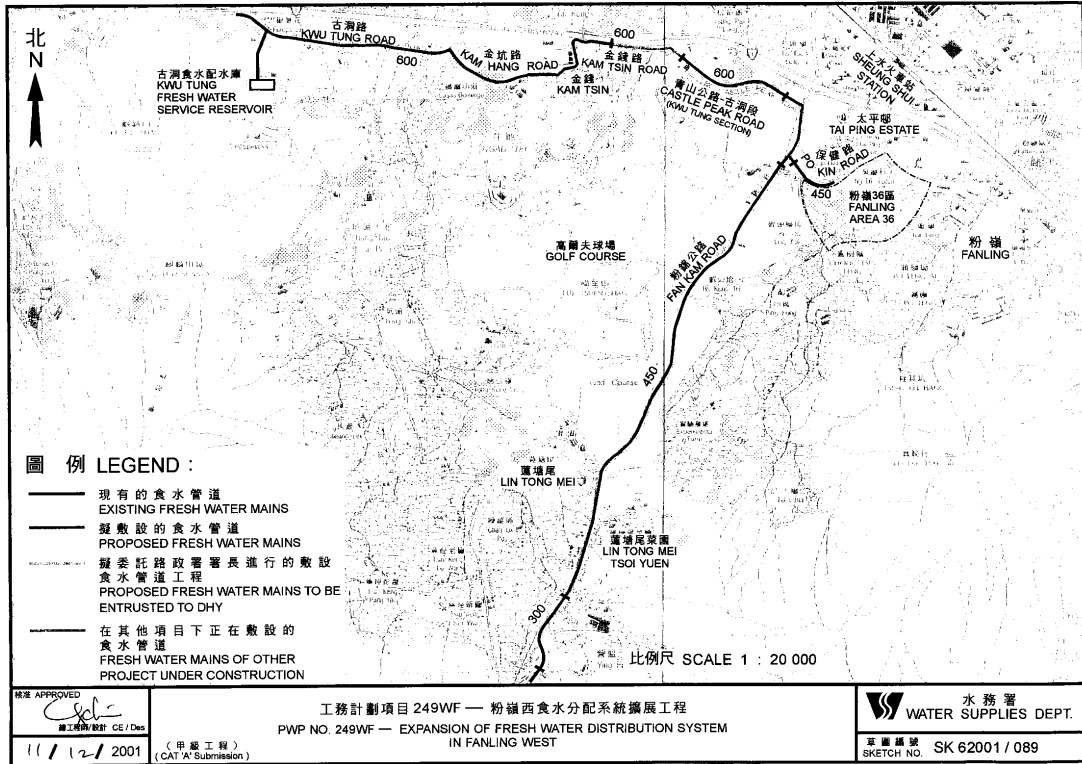
18. We upgraded **249WF** to Category B in March 2000.

19. We have employed the service of HyD's consultant to complete the detailed design of the part of the mainlaying works along Kam Tsin Road. The consultant's design fee at \$0.28 million is chargeable to the block allocation under **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme".

20. Regarding the remaining works under **249WF**, DWS has substantially completed the detailed design using in-house resources.

21. We estimate that the project will create some 25 jobs comprising five professional/technical staff and 20 labourers, totalling 710 man-months.

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Works Bureau  
December 2001



核准 APPROVED  
 總工程師/設計 CE / Des  
 11/12/2001

工務計劃項目 249WF — 粉嶺西食水分配系統擴展工程  
 PWP NO. 249WF — EXPANSION OF FRESH WATER DISTRIBUTION SYSTEM  
 IN FANLING WEST

水務署  
 WATER SUPPLIES DEPT.  
 草圖編號 SK 62001 / 089  
 SKETCH NO.

附件 1 ENCLOSURE 1

**249WF – Expansion of fresh water distribution system in Fanling West**

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

Consultants' staff costs			Estimated man- months	Average MPS* salary point	Multiplier	Estimated fee (\$ million)
(a)	Contract administration	Professional	0.5	38	2.4	0.07
		Technical	0.6	14	2.4	0.03
(b)	Site supervision by resident site staff of the consultants	Professional	1.2	38	1.7	0.12
		Technical	5.3	14	1.7	0.18
<b>Total consultants' staff costs</b>						<b>0.40</b>

\* MPS = Master Pay Scale

**Notes**

1. A multiplier of 2.4 is applied to the average MPS point to estimate the full staff costs including the consultants' overheads and profit, as the staff will be employed in the consultants' offices. A multiplier of 1.7 is applied to the average MPS point in the case 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 figures given above are based on estimates prepared by the Director of Water Supplies. The consultancy works for this project have been included as part of the Consultancy Agreement No. CE47/96 titled "Rural Planning and Improvement Strategy Minor Rural Improvement Works, Package 5". The assignment will only be triggered subject to the Finance Committee's approval for upgrading **249WF** to Category A.



