

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

### **HEAD 709 – WATERWORKS**

#### **Water Supplies – Fresh water supplies**

#### **244WF – Water supply to Sha Tin development Area 56A**

Members are invited to recommend to Finance Committee the upgrading of **244WF** to Category A at an estimated cost of \$102.7 million in money-of-the-day prices for the provision of a water supply system to the planned housing developments at Area 56A in Kau To, Sha Tin.

### **PROBLEM**

There is no water supply to serve the planned housing developments at Area 56A in Kau To, Sha Tin.

### **PROPOSAL**

2. The Director of Water Supplies, with the support of the Secretary for Environmental, Transport and Works, proposes to upgrade **244WF** to Category A at an estimated cost of \$102.7 million in money-of-the-day (MOD) for provision of a water supply system to the planned low-density private housing developments at Area 56A in Kau To, Sha Tin.

### **PROJECT SCOPE AND NATURE**

3. The scope of the proposed works comprises –

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- (a) construction of a fresh water service reservoir with a capacity of 2 300 cubic metres (m<sup>3</sup>);
- (b) construction of a fresh water pumping station with an output of 4 000 m<sup>3</sup> per day; and
- (c) laying of about 4.3 kilometres long fresh water mains ranging from 150 millimetres (mm) to 400 mm in diameter along Tai Po Road and Lai Ping Road.

4. A site plan showing the proposed works is at Enclosure 1. Computer montages of the proposed works are shown at Enclosure 2.

### JUSTIFICATION

5. In September 1998, the then Territory Development Department completed the “Feasibility Study for Housing Sites in Sha Tin District” which established the feasibility of the planned housing developments and the associated government/institutional/community facilities at Areas 34 and 52 in Shui Chuen O, and the planned housing developments at Area 56A in Kau To, Sha Tin. Site formation works for these areas commenced in 2001 and completed in December 2003.

6. The planned low-density private housing developments at Area 56A are located at high level with a projected population of 6 300 by 2016. Currently, there is no water supply to the area. We need to construct and commission a new water supply system detailed at paragraph 3 above to meet the demand for fresh water and flushing<sup>1</sup> in the area.

7. We propose to engage consultants to supervise the construction of the service reservoir and the pumping station under paragraphs 3(a) and 3(b) due to insufficient in-house staff resources. As the proposed mainlaying works under paragraph 3(c) fall within the project boundaries of **177CL** – “Sha Tin New Town – remaining engineering works”<sup>2</sup>, we will incorporate the proposed mainlaying works into the roadworks contract under **177CL** to reduce road

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<sup>1</sup> The proposed water supply system is a small scale system and it would not be cost effective to implement a separate salt water supply system for flushing.

<sup>2</sup> A PWSC paper [PWSC(2005-06)4] seeking upgrading of **177CL** under Head 707 to Category A was endorsed at the PWSC meeting on 11 May 2005, and would be submitted to the Finance Committee for approval in June 2005. The scope of **177CL** includes construction of roadworks, elevated highway structures, retaining structures, slope stabilisation works, drainage and sewerage works, landscaping works and noise barriers at Areas 34 and 52 in Shui Chuen O and Area 56A in Kau To, Sha Tin.

openings and interface problems arising from two contractors working on the same site. We plan to commence the construction in January 2006 for completion by 2008 to tie in with the development and the programme for the roadworks under **177CL**.

## FINANCIAL IMPLICATIONS

8. We estimate the cost of the proposed works to be \$102.7 million in MOD prices (see paragraph 9 below), made up as follows –

	<b>\$ million</b>	
(a) Fresh water service reservoir	14.8	
(b) Fresh water pumping station	19.7	
(c) Mainlaying	46.3	
(d) Environmental mitigation measures	1.0	
(e) Consultants' fees	10.9	
(i) contract administration	1.0	
(ii) site supervision	9.9	
(f) Contingencies	9.3	
	<u>102.0</u>	(in September 2004 prices)
(g) Provision for price adjustment	0.7	
	<u>102.7</u>	(in MOD price)

\_\_\_\_\_ A breakdown of the estimates for the consultants' fees by man-months is at Enclosure 3.

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

Year	\$ million (Sept 2004)	Price adjustment factor	\$ million (MOD)
2005 – 06	2.6	1.00450	2.6
2006 – 07	33.3	1.00576	33.5
2007 – 08	36.0	1.00576	36.2
2008 – 09	15.2	1.00576	15.3
2009 – 10	9.9	1.00953	10.0
2010 – 11	5.0	1.02593	5.1
	102.0		102.7

10. 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 2005 to 2011. We will tender the proposed works under lump-sum contracts. We will provide for price adjustments in the contracts since the contract period will exceed 21 months.

11. The annual recurrent expenditure arising from the proposed works is about \$1.37 million.

12. The proposed works by itself will lead to an increase in production cost of water by 0.06% in real terms by 2011<sup>3</sup>.

## **PUBLIC CONSULTATION**

13. We consulted the Development and Housing Committee of the Sha Tin District Council on 30 October 2001 and 22 February 2005. The District Council supported the proposed works.

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<sup>3</sup> The increase in production cost of water is calculated at the present price level and on the assumption that the demand remains static during the period from 2005 to 2011.

14. We consulted the LegCo Panel on Planning, Lands and Works on the proposed works by circulation of an information paper in May 2005. Members have not raised any objection to the proposed works.

## **ENVIRONMENTAL IMPLICATIONS**

15. This is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We carried out a Preliminary Environmental Review (PER) in April 1999 and the findings concluded that the works would not have adverse long term environmental impact. For short term environmental impacts during construction, we will control noise, dust and site run-off within established standards and guidelines through implementation of environmental mitigation measures, such as frequent watering of the site, provision of wheel-washing facilities to reduce emission of fugitive dust and the use of silenced construction plant to reduce noise generation. The implementation of noise control measures into the pumping station design such as provision of acoustic louvers, silencers, dampers and noise absorptive lining, and limiting the sound power level of the equipment, will reduce the operational noise impact to within acceptable level. We have included \$1.0 million (in September 2004 prices) in the project estimate for implementation of these mitigation measures.

16. We will require the contractor to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures to avoid, reduce, reuse and recycle construction and demolition (C&D) materials, including the allocation of areas for waste segregation. We will require the contractor to carry out on-site sorting of C&D materials to recover the inert portion, reusable and recyclable materials. We will ensure that the day-to-day operations on site comply with the approved WMP. We will control the disposal of public fill and C&D waste to designated public filling facilities and landfills respectively through a trip-ticket system. We will require the contractors to separate public fill from C&D waste for disposal at appropriate facilities. We will record the disposal, reuse and recycling of C&D materials for monitoring purposes.

17. We have taken due consideration of the need to minimise C&D materials during the planning and design stages. We have optimised the design of site levels and layouts of the proposed works and will reuse suitable excavated material for filling within site to minimise off-site disposal. We estimate that the proposed works will generate about 9 200 m<sup>3</sup> of C&D materials. Of these, we will reuse about 5 400 m<sup>3</sup> (58.7%) on site, reuse about 3 700 m<sup>3</sup> (40.2%) as

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fill in public filling areas<sup>4</sup> and dispose of about 100 m<sup>3</sup> (1.1%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be \$12,500 for this project (based on a notional unit cost<sup>5</sup> of \$125/m<sup>3</sup>).

## TRAFFIC IMPLICATIONS

18. To reduce road openings and interface problems arising from two contractors working on the same site, we will incorporate the proposed mainlaying works under paragraph 3(c) into the roadworks contract under **177CL**. We have carried out traffic impact assessment which shows that there will be no significant impact on the traffic. Temporary traffic arrangements will be implemented to minimise impacts on traffic during construction. Moreover, trenchless<sup>6</sup> method will be used to lay the watermains across Tolo Highway thereby avoiding disruption to the busy route.

## LAND ACQUISITION

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

## BACKGROUND INFORMATION

20. We upgraded **244WF** to Category B in October 1999.

21. We engaged consultants to carry out the detailed design and necessary site investigation for the proposed works described in paragraph 3 above at an estimated cost of \$2.2 million under **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme". The consultants completed the detailed design in May 2005. We aim to start the construction in January 2006 for completion in 2008.

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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 and Development.

<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.

<sup>6</sup> Trenchless method refers to the use of pipe-jacking, micro-tunnelling or boring techniques to construct underground pipelines without opening up the road surface along the alignment of the pipelines.

22. The proposed works will involve removal of 59 trees including 46 trees to be felled and 13 trees to be transplanted. All trees to be removed are not important trees<sup>7</sup>. We will incorporate planting proposals as part of the project, including estimated quantities of 46 trees, 1 660 shrubs and 875 square metres of grassed area.

23. We estimate that the proposed works will create about 75 jobs (60 for labourers and another 15 for professional/technical staff) providing a total employment of 1 850 man-months.

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Environment, Transport and Works Bureau  
May 2005

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<sup>7</sup> Important trees include trees on the Register of Old and Valuable Trees, and any other trees which meet one or more of the following criteria:

- (a) trees over 100 years old;
- (b) trees of cultural, historical or memorable significance;
- (c) trees of precious or rare species;
- (d) trees of outstanding form; or
- (e) trees with trunk diameter exceeding one metre (measured at one metre above ground level).

## Enclosure 3 to PWSC(2004-05)16

### 244WF - Water supply to Sha Tin development Area 56A

#### Breakdown of estimates for consultants' fees

Consultants' staff costs			Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated Fee (\$ million)
(a)	Contract administration (Note 2)	Professional	-	-	-	0.7
		Technical	-	-	-	0.3
(b)	Site supervision by resident site staff of the consultants	Professional	60	38	1.6	5.2
		Technical	163	14	1.6	4.7
<b>Total</b>						10.9

\* MPS = Master Pay Scale

#### Notes

1. A multiplier factor of 1.6 is applied to the average MPS point to arrive at the cost of resident site staff supplied by the consultants. (As at 1 January 2005, MPS pt. 38 = \$54,255 per month and MPS pt. 14 = \$18,010 per month).
2. The consultants' fees for contract administration is estimated in accordance with the existing Agreement No. CE81/2001(W) "Water supply to housing development in Area 56A, Sha Tin and water supply for the intensification and extension of Tseung Kwan O New Town – Tseung Kwan O east low level No. 2 fresh water service reservoir – design and construction". The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade 244WF to Category A.