For discussion **PWSC(2001-02)81**
on 28 November 2001

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 709 - WATERWORKS
Water Supplies - Fresh water supplies
243WF – Water supply to Sha Tin development areas 34 and 52

Members are invited to recommend to Finance Committee the upgrading of **243WF** to Category A at an estimated cost of $58.9 million in money-of-the-day prices for the provision of fresh water supply to Sha Tin Areas 34 and 52.

PROBLEM

There is no water supply to serve planned developments in Sha Tin development areas 34 and 52 (Areas 34 and 52).

PROPOSAL

2. The Director of Water Supplies (DWS), with the support of the Secretary for Works, proposes to upgrade **243WF** to Category A at an estimated cost of $58.9 million in money-of-the-day (MOD) prices for the provision of fresh water supply to the planned developments in Sha Tin Areas 34 and 52. The planned developments include public and private housing and government, institution and community facilities.

PROJECT SCOPE AND NATURE

3. The full scope of the works under **243WF** that we propose to upgrade to Category A comprises -

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(a) the construction of a fresh water pumping station with a capacity of 11 000 cubic metres (m^3) per day[1];

(b) the construction of a fresh water service reservoir with a capacity of 9 200 m^3; and

(c) the laying of about 2.8 kilometres of fresh water mains ranging from 300 to 600 millimetres in diameter.

4. We plan to start construction in early 2002 for completion by March 2005. A site plan showing the scope of works under **243WF** is at Enclosure 1.

JUSTIFICATION

5. On 25 May 2001, the Finance Committee approved the upgrading of part of **177CL**[2] as **685CL** "Site formation at Areas 34 and 52 in Shui Chuen O and Area 56A in Kau To, Sha Tin" to Category A at an estimated cost of $452.3 million in MOD prices for site formation and associated engineering infrastructure works. The Director of Territory Development started construction of the works under **685CL** in October 2001 and will complete these in early 2004.

6. The works at Areas 34 and 52 are essential for the development of public and private housing, an indoor recreation centre, a primary school and a secondary school. We expect an initial population of 8 200 in the area in 2005, reaching 17 000 upon full development in 2008. Taking into account the requirement for fresh water for flushing, we estimate that these developments will generate a phased increase in daily fresh water demand from 2 900 m^3 in 2005 to 6 500 m^3 in 2008. To cope with these demands, we propose to provide fresh water supply facilities as detailed in paragraph 3 above.

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[1] The capacity of the proposed pumping station is greater than the storage capacity of the proposed service reservoir because the pumping station has to cater for the peak demand during the day whereas the service reservoir will be replenished from time to time in the course of the day.

[2] The remainder of **177CL** "Sha Tin New Town – remaining engineering works" remains in Category B.

7. The mainlaying works in Areas 34 and 52 fall within the roadwork boundary of TDD's project **177CL**. To avoid interface problems arising from two contractors working on the same site, we plan to incorporate the mainlaying works described in paragraph 3(c) above into the roadwork contract under **177CL**.

FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the project to be $58.9 million in MOD prices (see paragraph 9 below), made up as follows -

		$ million		
(a)	Fresh water service reservoir		24.3	
(b)	Fresh water pumping station		10.4	
	(i) civil works	5.6		
	(ii) mechanical and electrical works	4.8		
(c)	Mainlaying works by conventional method		16.1	
(d)	Consultants' fees for mainlaying works on		1.6	
	(i) contract administration	0.4		
	(ii) site supervision	1.2		
(e)	Environmental mitigation measures		0.6	
(f)	Contingencies		5.3	
	Sub-total		58.3	(in September 2001 prices)
(g)	Provision for price adjustment		0.6	
	Total		58.9	(in MOD prices)

A breakdown of the estimates for the consultants' fees by man-months is at Enclosure 2.

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

Year	$ million (Sept 2001)	Price adjustment factor	$ million (MOD)
2002 – 2003	5.0	0.99700	5.0
2003 – 2004	17.5	1.00398	17.6
2004 – 2005	26.2	1.01101	26.5
2005 – 2006	5.8	1.01808	5.9
2006 – 2007	3.8	1.02521	3.9
	58.3		58.9

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 service reservoir and the pumping station works under a lump sum contract and incorporate the mainlaying works into TDD's roadwork contract on a lump sum basis. The contracts will provide for price adjustments because the contract periods will exceed 21 months.

11. The annual recurrent expenditure arising from this project is about $1.77 million.

12. The project by itself would lead to an increase in water charges by 0.05% in real terms by 2007[3].

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3 The increase in water charges is calculated on the assumption that the water 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 Development and Housing Committee of the Sha Tin District Council on 27 June 2000. The Committee supported the proposed works.

ENVIRONMENTAL IMPLICATIONS

14. DWS completed a Preliminary Environmental Review (PER) for **243WF** in July 1999. The PER concluded that the project would not have 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[4] and have included $0.6 million (in September 2001 prices) in the project estimate for implementing these mitigation measures.

15. We have taken due consideration of the need to minimize the generation of construction and demolition (C&D) materials when designing and planning the levels, orientations, dimensions and alignments of the proposed service reservoir, pumping station, and water mains. We estimate that the project will generate about 2 630 m^3 of C&D materials. Of these, we will reuse about 570 m^3 (21.7%) on site, 2 000 m^3 (76.0%) as fill in public filling areas[5] and dispose of 60 m^3 (2.3%) at landfills. We estimate the notional cost of accommodating C&D waste at landfill sites to be $7,500 for this project (based on a notional unit cost[6] of $125/$m^3$).

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4 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.

5 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.

6 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^3$), 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 will comply with the approved WMP. We will control the reuse of C&D materials as fill at designated public filling areas and the disposal of C&D waste at designated landfills through a trip-ticket system. We will record the disposal, reuse and recycling of C&D materials for monitoring purposes.

LAND ACQUISITION

17. The project does not require land acquisition.

BACKGROUND INFORMATION

18. We upgraded **243WF** to Category B in November 1999.

19. We have completed the detailed design of the service reservoir and the pumping station using in-house resources. We have substantially completed the detailed design of the mainlaying works by employing the service of TDD's consultants. The design fee of $490,000 is chargeable to the block allocation under **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme".

20. We estimate that the project will create some 30 jobs comprising five professional/technical staff and 25 labourers, totalling 750 man-months.

Works Bureau
November 2001

243WF – Water supply to Sha Tin development areas 34 and 52

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	2.1	38	2.4	0.3
		Technical	2.0	14	2.4	0.1
(b)	Site supervision by resident site staff of the consultants	Professional	6.0	38	1.7	0.6
		Technical	18.0	14	1.7	0.6
			Total consultants' staff costs			**1.6**

* 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 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. CE15/77 – Sha Tin New Town Development Stage II. The assignment will only be triggered subject to the Finance Committee's approval for upgrading **243WF** to Category A.