

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 709 - WATERWORKS

Water Supplies - Combined fresh/salt water supply

86WC - Water supply to Pak Shek Kok, Tai Po - remaining works

Members are invited to recommend to Finance Committee -

- (a) the upgrading of part of **86WC**, entitled "Water supply to Pak Shek Kok, Tai Po - Pak Shek Kok fresh water service reservoir, Tai Po Kau fresh water pumping station and associated mainlaying" to Category A at an estimated cost of \$100.5 million in money-of-the-day prices; and
- (b) the retention of the remainder of **86WC** in Category B.

PROBLEM

By 2002, the existing water supply system serving Pak Shek Kok and its adjoining areas (Tai Po Areas 12(Part) and 39) will not be able to cope

/with

with the anticipated increase in water demand arising from the planned developments¹ in the areas.

PROPOSAL

2. The Director of Water Supplies (DWS), with the support of the Secretary for Works, proposes to upgrade part of **86WC** to Category A at an estimated cost of \$100.5 million in money-of-the-day (MOD) prices for the provision of additional waterworks facilities to extend fresh and salt water supplies to the new developments in Pak Shek Kok and its adjoining areas (Tai Po Areas 12(Part) and 39).

PROJECT SCOPE AND NATURE

3. The full scope of works under **86WC** comprises -
- (a) construction of a fresh water service reservoir with a capacity of 5 500 cubic metres;
 - (b) construction of a fresh water pumping station to cope with a demand of 5 500 cubic metres per day;
 - (c) laying of 6.5 kilometres of fresh water mains of sizes ranging from 200 to 600 millimetres in diameter in Pak Shek Kok; and
 - (d) laying of about 3.8 kilometres of salt water mains of sizes ranging from 150 to 300 millimetres in diameter in Pak Shek Kok.

4. The part of **86WC** we now propose to upgrade to Category A comprises -

- (a) works described in paragraphs 3(a) and 3(b) above;

/(b)

¹ The types of planned developments in the concerned area include medium to low density residential buildings, village type developments, an off-campus sports centre for the Hong Kong Institute of Education and expansion of the Chinese University of Hong Kong.

- (b) laying of about 2.3 kilometres of fresh water mains of 450 millimetres in diameter mainly between the proposed fresh water service reservoir and the proposed fresh water pumping station under the works in paragraph 3(c) above; and
- (c) laying of about 0.8 kilometres of salt water mains of 300 millimetres in diameter along Tolo Highway in Shatin under the works in paragraph 3(d) above.

JUSTIFICATIONS

5. The existing fresh water supply system serving Pak Shek Kok and its adjoining areas (Tai Po Areas 12(Part) and 39) has a capacity of about 1 370 cubic metres per day. Given the anticipated rapid development in the area, we envisage that the local population will increase in phases from 1 900 at present to 3 000 in 2002, to 3 700 in 2004 and to 12 300 in 2008. Together with the proposed off-campus sports centre for the Hong Kong Institute of Education, we expect that the daily fresh water demand will increase from the current level of 700 cubic metres to 1 400 cubic metres in 2002, to 1 500 cubic metres in 2004 and to 5 500 cubic metres in 2008. There will be a shortfall in fresh water supply from 2002 onwards. We, therefore, plan to expand the existing fresh water system to the area as detailed in paragraphs 3(a) to 3(c) above in phases to meet the projected growth in fresh water demand beyond 2002.

6. At present, there is no salt water supply in the areas and the residents there rely on fresh water for flushing. Therefore, we plan to extend the salt water supply to the area as detailed in paragraph 3(d) above to cope with the projected daily salt water demand of about 270 cubic metres in 2004 and 1 000 cubic metres in 2008.

7. The Director of Territory Development (DTD) will undertake a roadworks project under the proposed **496CL**² "Advance engineering infrastructure works for Pak Shek Kok development" which includes roadworks along Tolo Highway in Shatin. As the salt water mains mentioned in paragraph

/4(c)

4(c) above will fall within the project boundaries of **496CL**, to avoid unnecessary repetitive road opening and interface problems arising from two contractors working on the same site, we will incorporate this part of the works into the roadworks contracts under **496CL**.

² A related paper, PWSC(1999-2000)23, for the upgrading of **496CL** under **Head 707** to Category A is also submitted for Members' endorsement at this meeting. DTD plans to start the roadworks in October 1999 for completion in June 2001.

FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the project to be \$100.5 million in MOD prices (see paragraph 9 below), made up as follows -

	\$ million	
(a) Service reservoir	39.1	
(b) Pumping station	15.9	
(c) Pipe materials	5.1	
(d) Mainlaying	23.7	
(e) Consultants' fees	0.1	
(f) Resident site staff cost	0.4	
(g) Contingencies	8.4	
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Sub-total	92.7	(at December 1998 prices)
(h) Provision for price adjustment	7.8	
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Total	100.5	(in MOD prices)
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A breakdown by man months of the estimate for consultants' fees and resident site staff cost is at the Enclosure.

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

/1999

Year	\$ million (Dec 1998)	Price adjustment factor	\$ million (MOD)
1999 - 2000	6.3	1.02625	6.5
2000 - 01	38.3	1.06217	40.7
2001 - 02	40.3	1.09934	44.3
2002 - 03	5.8	1.13782	6.6
2003 - 04	2.0	1.17765	2.4
	92.7		100.5

10. We derived the MOD estimates on the basis of the Government's latest forecast of trend labour and construction prices for the period 1999 to 2004. We will incorporate the proposed salt water mains into DTD's roadworks contract on a lump sum basis. We will tender the works described in paragraphs 4(a) and (b) under remeasurement contracts because the works involve extensive underground works, the quantities of which are subject to variation during construction to suit the actual site conditions. We will provide price adjustment in the contracts because the contract periods will exceed 21 months.

11. We estimate the additional annually recurrent expenditure to be \$873,000.

12. This project by itself would lead to an increase in water charges by a maximum of 0.07% in real terms by 2004³.

/PUBLIC

³ The increase on water charges is calculated on the assumption that the water demand remains static during the period from 1998 to 2004 and the amount of Government subsidy in the waterworks operations is to be contained at the present level.

PUBLIC CONSULTATION

13. We consulted the Sha Tin Provisional District Board and Tai Po Provisional District Board on 30 June 1998 and 7 July 1998 respectively. The two Provisional District Boards supported the proposed works.

14. We consulted the Tai Po Rural Committee (TPRC) on 9 July 1998. The TPRC supported raised no objections to the proposed works. Subsequently, the village representatives of Yuen Chau Tsai Village at that time raised a strong objection to the construction of the proposed pumping station on the ground that burials in the neighbouring traditional burial ground might be adversely affected. We consulted TPRC again on 9 March 1999. The TPRC supported upheld its original position of maintaining no objections to the proposed works.

ENVIRONMENTAL IMPLICATIONS

15. The Director of Environmental Protection vetted the Preliminary Environmental Review (PER) conducted by DWS in July 1995. The PER concluded that the project would have no long term environmental impact and no Environmental Impact Assessment is required. We will control noise, dust and site run-off during construction to comply with established standards and guidelines through the implementation of mitigation measures in relevant contracts. We have included in the project estimates the cost to implement suitable mitigation measures to control short term environmental impacts.

LAND ACQUISITION

16. The project requires clearance of government land. The clearance will only affect crops with no households involved. We will charge the land clearance costs estimated at \$1.5 million to **Head 701** - Land Acquisition.

BACKGROUND INFORMATION

17. We upgraded **86WC** to Category B in September 1996.

18. In December 1997, Finance Committee approved the upgrading of part of **86WC** to Category A as **87WC** "Water Supply to Pak Shek Kok, Tai Po - advance mainlaying along Yau King Lane" at an estimate cost of \$24.2 million in MOD prices. The scope of works of **87WC** comprises the laying of about 1.6 kilometres of fresh water mains and 0.5 kilometre of salt water mains in Pak Shek Kok and its adjoining areas. We commenced the works in January 1998 for completion in 2001.

19. In November 1998, Finance Committee approved the upgrading of another part of **86WC** to Category A as **93WC** "Water supply to Pak Shek Kok, Tai Po - advance mainlaying along Tolo Highway" at an estimate cost of \$18.2 million in MOD prices. The scope of works of **93WC** comprises the laying of about 0.1 kilometre of fresh water main and 2.4 kilometres of salt water mains along Tolo Highway. We commenced the works in March 1999 for completion in late 2001.

20. We have substantially completed the detailed design work for the Pak Shek Kok fresh water service reservoir, Tai Po Kau fresh water pumping station and fresh water mains using in-house resources. We plan to start the proposed works in October 1999 for completion in by end 2001.

21. As regards the salt water mains which we now propose to incorporate into DTD's roadworks contracts under **496CL**, we have engaged consultants to complete the detailed design at a cost of \$200,000 and charged the cost to block allocation **Subhead 9100WX** "Waterworks, studies and investigation for items in Category D of the Public Works Programme". We plan to start the proposed mainlaying works in October 1999 for completion in June 2001 to tie in with the roadworks programme under **496CL**.

22. We will continue with the detailed design for the remaining works under the project with a target to start construction in September 2001 for completion in March 2004.

86WC - Water Supply to Pak Shek Kok, Tai Po - remaining works**Breakdown of estimates for consultants' fees**

Consultants' staff costs			Estimated man months	Average MPS* salary point	Multiplier factor	Estimated fee (\$ million)
(a)	Contract administration	Professional	0.4	40	2.4	0.06
		Technical	0.2	16	2.4	0.01
(b)	Preparation of as-built drawings	Professional	0.1	40	2.4	0.02
		Technical	0.2	16	2.4	0.01
(c)	Resident site staff cost	Professional	2.0	40	1.7	0.21
		Technical	5.3	16	1.7	0.19
Total consultants' staff costs						0.50

* MPS = Master Pay Scale

Notes

- (1) A multiplier factor of 2.4 is applied to the average MPS point to arrive at the full staff costs including the consultants' overheads and profit, as the staff will be employed in the consultants' offices (at 1.4.98, MPS pt. 40 = \$62,780 p.m. and MPS pt. 16 = \$21,010 p.m.). A multiplier factor of 1.7 is applied to the average MPS in the case of site staff supplied by the consultants.
- (2) The figures given above are based on estimates prepared by the Director of Water Supplies. The consultancy works for this project will be included as part of the overall consultancy agreement for **496CL**. We will know the actual consultants' fees upon finalisation of the account of the works contract.

(PWSC0137/WIN5)

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LEGEND 圖例：

PROPOSED WORKS UNDER PROJECT 86WC TO BE UPGRADED TO CATEGORY 'A'
在 86WC 項目下擬提升為甲級工程

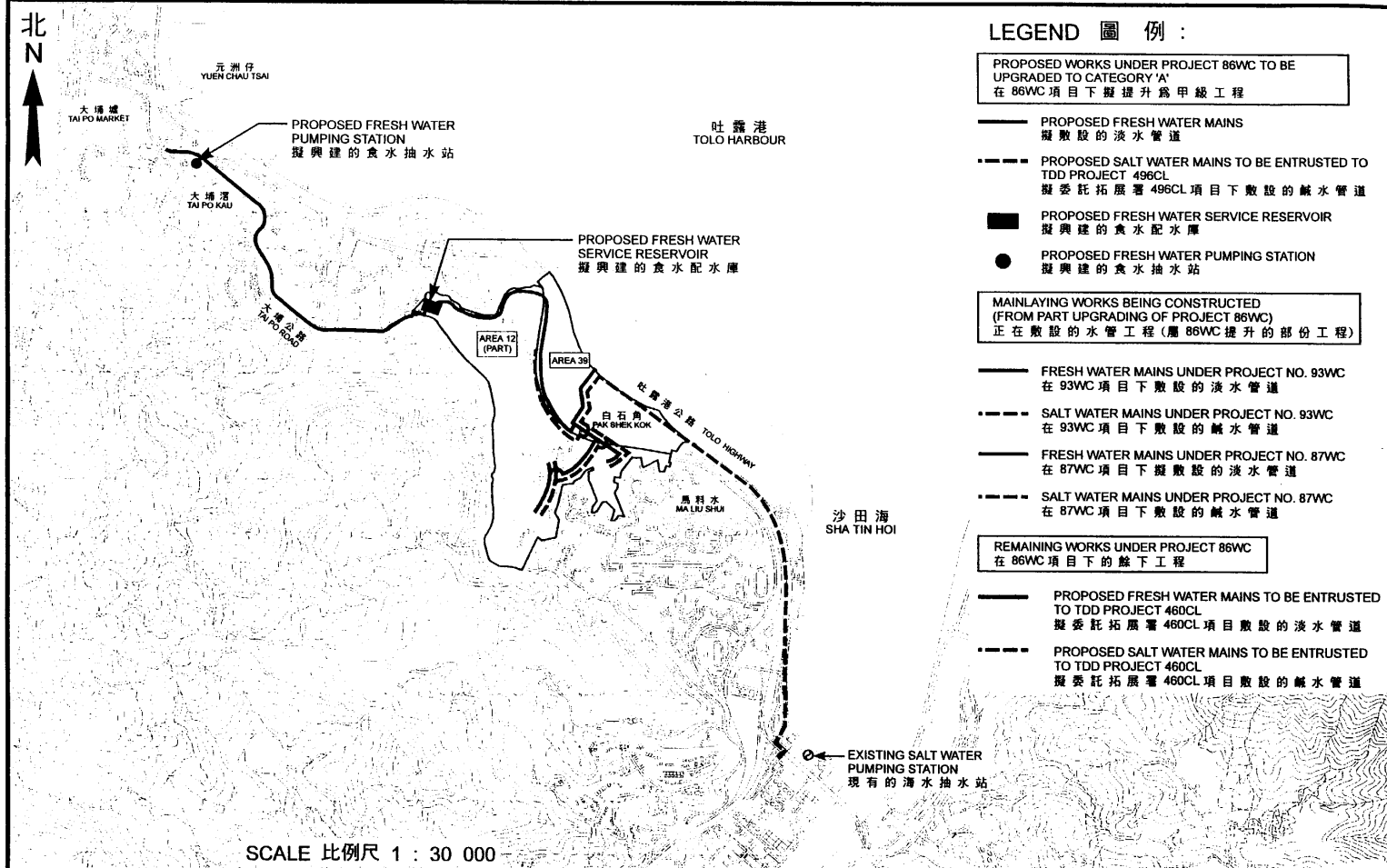
- PROPOSED FRESH WATER MAINS
擬敷設的淡水管道
- - - PROPOSED SALT WATER MAINS TO BE ENTRUSTED TO TDD PROJECT 496CL
擬委託拓展署 496CL 項目下敷設的鹹水管道
- PROPOSED FRESH WATER SERVICE RESERVOIR
擬興建的食水配水庫
- PROPOSED FRESH WATER PUMPING STATION
擬興建的食水抽水站

MAINLAYING WORKS BEING CONSTRUCTED
(FROM PART UPGRADING OF PROJECT 86WC)
正在敷設的水管工程(屬 86WC 提升的部份工程)

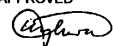
- FRESH WATER MAINS UNDER PROJECT NO. 93WC
在 93WC 項目下敷設的淡水管道
- - - SALT WATER MAINS UNDER PROJECT NO. 93WC
在 93WC 項目下敷設的鹹水管道
- FRESH WATER MAINS UNDER PROJECT NO. 87WC
在 87WC 項目下擬敷設的淡水管道
- - - SALT WATER MAINS UNDER PROJECT NO. 87WC
在 87WC 項目下擬敷設的鹹水管道

REMAINING WORKS UNDER PROJECT 86WC
在 86WC 項目下的餘下工程

- PROPOSED FRESH WATER MAINS TO BE ENTRUSTED TO TDD PROJECT 460CL
擬委託拓展署 460CL 項目敷設的淡水管道
- - - PROPOSED SALT WATER MAINS TO BE ENTRUSTED TO TDD PROJECT 460CL
擬委託拓展署 460CL 項目敷設的鹹水管道



SCALE 比例尺 1 : 30 000

APPROVED

 CE / Des
 23 / 3 / 99

PWP ITEM NO. 86WC – WATER SUPPLY TO PAK SHEK KOK, TAI PO - REMAINING WORKS LAYOUT PLAN
 工務計劃項目第 86WC 號 – 大埔白石角供水計劃 – 餘下工程分佈圖
 (CAT 'A' SUBMISSION) (甲級工程)

WATER SUPPLIES DEPT.
 HONG KONG
 SKETCH NO. 03799 / 042