For discussion **PWSC(2001-02)75**
on 14 November 2001

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 709 - WATERWORKS
Water Supplies – Combined fresh/salt water supply
96WC – Water supply to Pak Shek Kok reclamation area, Tai Po

Members are invited to recommend to Finance Committee -

(a) the upgrading of part of **96WC**, entitled "Water supply to Pak Shek Kok reclamation area, Tai Po – stage 1", to Category A at an estimated cost of $47.3 million in money-of-the-day prices; and

(b) the retention of the remainder of **96WC**, re-titled "Water supply to Pak Shek Kok reclamation area, Tai Po – stage 2", in Category B.

PROBLEM

There is no fresh or salt water supply to serve Science Park phases 2 and 3 and planned residential developments in the Pak Shek Kok reclamation area at Tai Po.

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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 **96WC** to Category A at an estimated cost of $47.3 million in money-of-the-day (MOD) prices for the extension of fresh and salt water supply to Science Park phases 2 and 3 and planned residential developments in the Pak Shek Kok reclamation area.

PROJECT SCOPE AND NATURE

3. The scope of works under **96WC** comprises-

(a) the construction of the Pak Shek Kok No. 2 fresh water service reservoir with a capacity of 7 500 cubic metres (m^3) and associated electrical and mechanical works;

(b) the laying of about 3.6 kilometres (km) of fresh water mains ranging from 600 millimetres (mm) to 700 mm in diameter between Pun Chun Yuen and Ha Wong Yi Au;

(c) the laying of about 5.4 km of fresh water distribution mains ranging from 150 mm to 600 mm in diameter in the Pak Shek Kok reclamation area; and

(d) the laying of about 3.5 km of salt water distribution mains ranging from 150 mm to 300 mm in diameter in the Pak Shek Kok reclamation area.

4. The part of **96WC** we now propose to upgrade to Category A comprises –

(a) the laying of about 1 km of fresh water mains in Ha Wong Yi Au (part of paragraph 3(b) above); and

(b) the laying of about 4.2 km of fresh water distribution mains and 2.4 km of salt water distribution mains in the Pak Shek Kok reclamation area (part of paragraphs 3(c) and 3(d) above).

We plan to commence construction in March 2002 for completion in phases before the end of 2006.

5. A site plan showing the full scope of works under **96WC** is at Enclosure 1.

JUSTIFICATION

6. The major developments in the Pak Shek Kok reclamation area include a Science Park and private housing. The Science Park is being developed in three phases. The first phase is under construction and will start operation in early 2002. The second and third phases are scheduled for operation in late 2004 and early 2007 respectively. As regards the planned private housing developments, we envisage that the population intake will commence in 2006. Upon full development by 2011, the population there will reach 10 600.

7. We project that the three phases of the Science Park and the private housing will generate a phased increase in daily fresh water demand from 900 m^3 in 2002, to 1 630 m^3 in 2004, further to 5 100 m^3 with the population intake in 2006, and eventually to 9 450 m^3 in 2011, together with daily salt water demand increasing from 410 m^3 in 2002 to 2 340 m^3 in 2011.

8. We will be able to meet part of the fresh water demand (up to 2006) by drawing from nearby water supply facilities and from additional facilities upon completion of current waterworks projects[1]. For demand beyond 2006, we need to construct a new Pak Shek Kok No. 2 fresh water service reservoir and lay the associated water mains as described in paragraphs 3(a) and (b) above. To tie in with the development in the reclamation area, we also need to lay fresh water distribution mains as described in paragraph 3(c) above.

9. For the salt water demand as projected in paragraph 7 above, the existing salt water supply system serving the northern part of Sha Tin has spare capacity and can cope with the projected demand up to 2011. We will extend the salt water supply to the reclamation area and lay salt water mains as described in paragraph 3(d) above.

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[1] The fresh and salt water supply to Science Park phase 1 development is to be provided under project **A30WC** "Water supply to Science Park phase 1" charged to block allocation **Subhead 9100 WX**. The works will be completed by end 2001.

The Pak Shek Kok fresh water service reservoir under **94WC** "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" has spare capacity which can cater for demand in the Pak Sek Kok reclamation area beyond 2002 and up to 2006. The project **94WC** was approved by Finance Committee for upgrading to Category A at an estimated cost of $100.5 million in MOD prices in June 1999.

10. DWS will undertake another waterworks project **245WF**[2] "Water supply to Tai Po South high level areas" in the vicinity. To avoid unnecessary repetitive road opening, we propose to incorporate the mainlaying works as described in paragraph 4(a) above into the works contract under **245WF.**

11. The Director of Territory Development (DTD) will undertake a reclamation project **658CL**[3] "Remaining engineering infrastructure works for Pak Shek Kok development". To avoid interface problems arising from two contractors working on the same site, we propose to incorporate the mainlaying works as described in paragraph 4(b) above into the works contract under **658CL**.

FINANCIAL IMPLICATIONS

12. We estimate the capital cost of the project to be $47.3 million in MOD prices (see paragraph 13 below), made up as follows -

			$ million	
(a)	Mainlaying works by conventional method		39.3	
(b)	Consultants' fees for		3.0	
	(i) contract administration	0.2		
	(ii) site supervision	2.8		
(c)	Environmental mitigation measures		0.4	
(d)	Contingencies		4.2	
	Sub-total		46.9	(in September 2001 prices)
(e)	Provision for price adjustment		0.4	
	Total		47.3	(in MOD prices)

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

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2 On 31 October 2001, the Public Works Subcommittee endorsed the upgrading of **245WF** to Category A at an estimated cost of $59.6 million in MOD prices.

3 A related paper, PWSC(2001-02)73, for upgrading part of **658CL** under **Head 707** to Category A is also submitted for Members' consideration at this meeting.

13. 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	24.9	1.00398	25.0
2004 – 2005	14.3	1.01101	14.5
2005 – 2006	3.4	1.01808	3.5
2006 – 2007	1.3	1.02521	1.3
	46.9		47.3

14. 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 in the Pak Shek Kok reclamation area into DTD's contract on a lump sum basis. We will implement the mainlaying works in Ha Wong Yi Au on a remeasurement basis because the quantities of works may vary with actual ground conditions. The contracts will provide for price adjustments because the contract periods will exceed 21 months.

15. The annual recurrent expenditure arising from this project is about $0.2 million.

16. The project by itself would lead to an increase in water charges by 0.02 % in real terms by 2007[4].

PUBLIC CONSULTATION

17. We consulted the Environment and Works Committee of the Tai Po District Council on 13 July 2001 on the project, in particular the works we now propose to upgrade to Category A. The Committee supported the proposed works.

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18. We consulted the Development and Housing Committee of the Sha Tin District Council on 31 October 2000 on the proposed mainlaying works in the reclamation area. The Committee supported the proposed works.

ENVIRONMENTAL IMPLICATIONS

19. DWS completed a Preliminary Environmental Review (PER) for **96WC** in March 1998. 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[4]. We have included in the project estimate the cost of implementing these mitigation measures ($400,000 in September 2001 prices) and will incorporate these requirements into the relevant works contracts.

20. We have taken due consideration of the need to minimize the generation of construction and demolition (C&D) materials when designing and planning the alignments of the proposed water mains. We estimate that the project will generate about 2 880 m^3 of C&D materials. Of these, about 1 130 m^3 (39.2%) will be reused on site, 1 640 m^3 (57.0%) will be reused as fill in public filling areas[5] and 110 m^3 (3.8%) will be disposed of at landfill sites. The notional cost of accommodating C&D waste at landfill sites is estimated to be $13,750 for this project (based on a notional unit cost[6] of $125/$m^3$).

21. We will require the contractors to submit a waste management plan for approval. We will ensure that the day-to-day operations on site comply with the approved waste management plan. 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 disposal, reuse and recycling of C&D materials for monitoring purposes.

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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.

LAND ACQUISITION

22. The project does not require land acquisition.

BACKGROUND INFORMATION

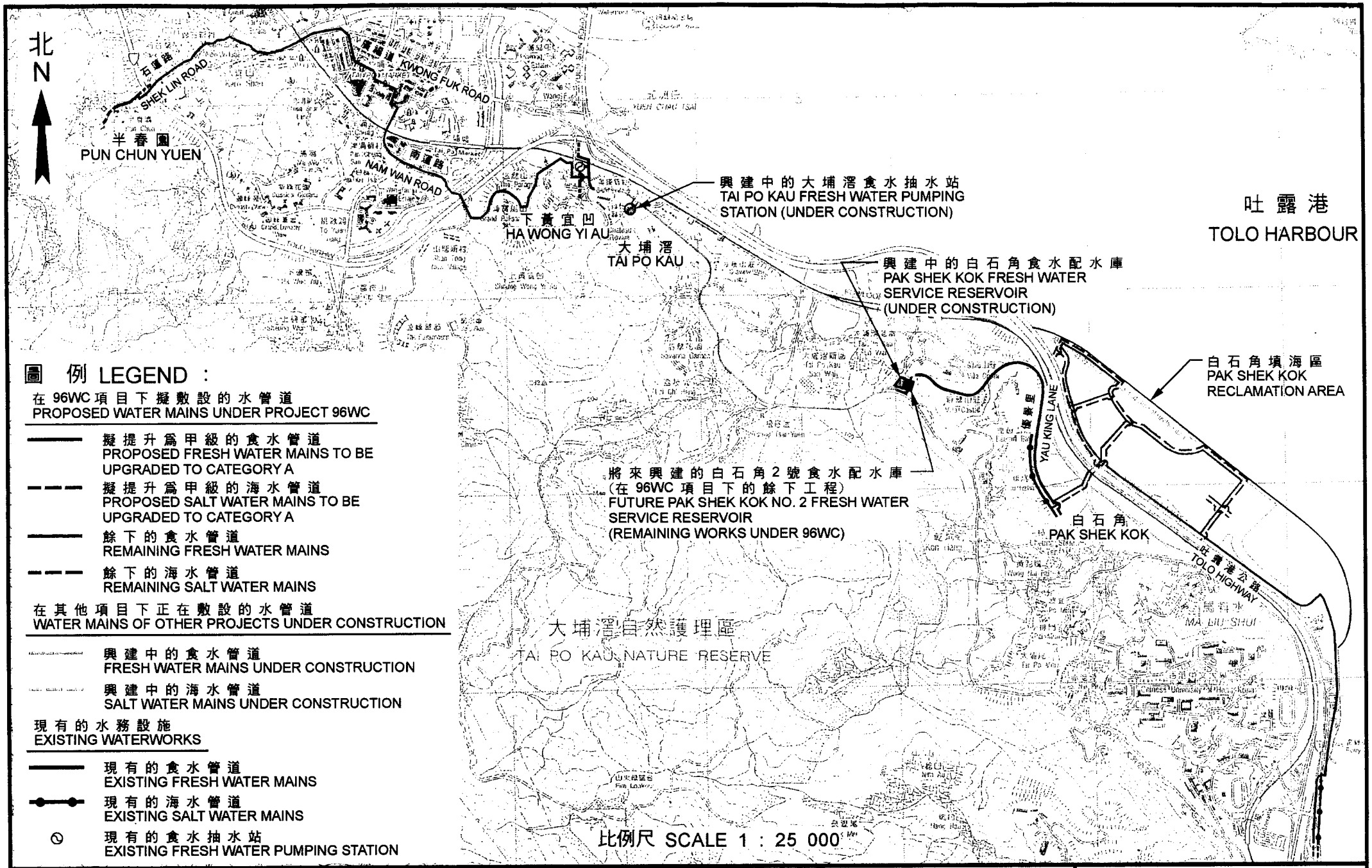
23. We upgraded **96WC** to Category B in November 1999. The estimated cost of the whole project is about $135.4 million (in September 2001 prices). We are continuing with detailed design of the remaining works under **96WC** with a view to commencing construction in mid 2003 for completion by end 2006. These works are estimated to cost $ 88.5 million (in September 2001 prices).

24. Regarding the mainlaying works we now propose for upgrading to Category A, we have completed the detailed design of the works in Ha Wong Yi Au using in-house staff resources and that of the works in Pak Shek Kok reclamation area by employing the service of the Territory Development Department's consultants. The consultants' design fee at $220,000 for the latter works is chargeable to the block allocation under **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme".

25. We estimate that the project will create some 25 jobs comprising five professional/technical staff and 20 labourers, totalling 685 man-months.

Works Bureau
November 2001

(pwsc96wc.doc)



核准 APPROVED

總工程師/設計 CE / Des

31 / 11 / 2001

工務計劃項目第96WC號 — 大埔白石角填海區供水計劃

P.W.P. ITEM NO. 96WC — WATER SUPPLY TO PAK SHEK KOK RECLAMATION AREA, TAI PO

（甲級工程）
(CAT 'A' Submission)

水務署
WATER SUPPLIES DEPT.

草圖編號 SKETCH NO. SK 62001 / 077

REF. 62001-077.CDR

附件 1 ENCLOSURE 1

96WC – Water supply to Pak Shek Kok reclamation area, Tai Po

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	1.0	38	2.4	0.14
		Technical	1.2	14	2.4	0.06
(b)	Site supervision by resident site staff of the consultants	Professional	15.0	38	1.7	1.54
		Technical	38.0	14	1.7	1.26
				Total consultants' staff costs		3.00

* 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 Agreement No. CE24/99 "Design and Construction of the Remaining Engineering Infrastructure Works for Pak Shek Kok Development". The assignment will only be triggered subject to the Finance Committee's approval for upgrading **96WC** to Category A.