For discussion **PWSC(2007-08)72**
on 9 January 2008

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 709 – WATERWORKS
Water Supplies – Fresh water supplies
326WF - Integration of Lion Rock high level fresh water primary service reservoirs and Tseung Kwan O fresh water primary service reservoir

Members are invited to recommend to Finance Committee the upgrading of **326WF** to Category A at an estimated cost of $159.7 million in money-of-the-day prices for improving the reliability of fresh water supply to Kwun Tong and Tseung Kwan O areas.

PROBLEM

Fresh water supply to the majority of the Kwun Tong and Tseung Kwan O areas will be disrupted if Pak Kong water treatment works has to be wholly or partially shut down temporarily in case of emergency.

PROPOSAL

2. The Director of Water Supplies (DWS), with the support of the Secretary for Development, proposes to upgrade **326WF** to Category A at an estimated cost of $159.7 million in money-of-the-day (MOD) prices for improving the reliability of fresh water supply to Kwun Tong and Tseung Kwan O areas.

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PROJECT SCOPE AND NATURE

3. The scope of works under **326WF** comprises integration of Lion Rock high level fresh water primary service reservoirs[1] with Tseung Kwan O fresh water primary service reservoir by -

(a) laying of about 1.4 kilometres of fresh water mains with diameter ranging from 600 millimetres (mm) to 1 400 mm in Jordan Valley, Sau Mau Ping and Tseung Kwan O new town; and

(b) providing a fresh water pumping station at Shum Wan Shan of a capacity at 350 000 m^3/day.

A site plan showing the proposed works is at Enclosure 1.

4. We plan to start the proposed works in May 2008 for completion in December 2010. We will supervise the proposed works using in-house staff.

JUSTIFICATION

5. At present, fresh water in Kwun Tong and Tseung Kwan O areas is supplied by Tseung Kwan O fresh water primary service reservoir and its associated secondary service reservoirs. These service reservoirs are fed by Pak Kong water treatment works. If Pak Kong water treatment works has to be wholly or partially shut down temporarily in case of emergency, fresh water supply to the majority of the Kwun Tong and Tseung Kwan O areas will be disrupted, affecting a population of about 1 080 000.

6. To enhance the reliability of the supply system, we plan to integrate Tseung Kwan O fresh water primary service reservoir with Lion Rock high level fresh water primary service reservoirs, which are fed by Sha Tin water treatment works.

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[1] Lion Rock high level fresh water primary service reservoirs comprise Lion Rock high level fresh water primary service reservoir and Lion Rock high level no. 2 fresh water primary service reservoir.

7. To cater for the proposed integration of the two service reservoirs, we need to provide additional installations, which will include primarily a pumping station of a capacity at 350 000 m^3/day at Shum Wan Shan and the associated water mains. When the proposed works are completed, water supply to the Kwun Tong and Tseung Kwan O areas can be provided from Sha Tin water treatment works via Tseung Kwan O fresh water primary service reservoir. This arrangement will ensure a much more reliable supply even under emergency situations. The integrated system will be able to cater for the projected fresh water demand in Kwun Tong and Tseung Kwan O areas in 2015.

FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the proposed works to be $159.7 million in MOD prices (see paragraph 9 below), made up as follows -

		$ million	
(a)	Mainlaying	40.4	
(b)	Pumping station	39.3	
(c)	Electrical and mechanical works	61.9	
(d)	Environmental mitigation measures	2.3	
(e)	Contingencies	11.7	
	Subtotal	155.6	(in September 2007 prices)
(f)	Provision for price adjustment	4.1	
	Total	159.7	(in MOD prices)

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

Year	$million (Sept 2007)	Price adjustment factor	$million (MOD)
2008-2009	8.7	1.00750	8.8
2009-2010	52.0	1.01758	52.9
2010-2011	71.0	1.02775	73.0
2011-2012	13.2	1.03803	13.7
2012-2013	10.7	1.05619	11.3
	155.6		159.7

10. We have derived the MOD estimates 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 2008 to 2013. We will tender the proposed works on a remeasurement basis because of the extensive underground works which are subject to variation during construction to suit the actual site conditions. Since the contract period will exceed 21 months, we will provide for price adjustments in the contract.

11. We estimate the annual recurrent expenditure arising from this project to be about $517,000.

12. The project by itself will lead to an increase in production cost of water by 0.09% in real terms by 2013.[2]

PUBLIC CONSULTATION

13. We consulted the Traffic and Transport Committee of the Kwun Tong District Council on the proposed works on 6 September 2007. The Committee supported the proposed works.

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[2] The increase in production cost of water is calculated at the present price level and on the assumption that the water demand remains static during the period from 2007 to 2013.

14. We consulted the Legislative Council Panel on Development on the proposed works by circulation of an information paper on 20 November 2007. Members raised no objection to the proposal.

ENVIRONMENTAL IMPLICATIONS

15. The proposal is not a designated project under the Environmental Impact Assessment Ordinance (Cap 499). We carried out a Preliminary Environmental Review (PER) in January 2007 and concluded that the project would have no long-term environmental adverse impacts.

16. 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 site, provision of wheel-washing facilities to reduce emission of fugitive dust, and use of silenced construction plant to reduce noise generation. The incorporation 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. Due to the close proximity of the proposed works to several landfill sites, we will incorporate passive control systems in the design of the proposed works and follow the standard guidelines for development close to landfills during construction, operation and maintenance to avoid the landfill gas hazard. We have included $2.3 million (in September 2007 prices) in the project estimates for implementation of the environmental mitigation measures.

17. We have considered the alignment of the water mains, the layout and foundation level of the proposed pumping station in the planning and design stages to reduce the generation of construction waste where possible. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste to public fill reception facilities[3]. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

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[3] Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

18. We will also require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively through a trip ticket system.

19. We estimate that the project will generate in total about 19 600 tonnes of construction waste. Of these, we will reuse about 6 400 tonnes (32.7%) of inert construction waste on site and deliver 12 800 tonnes (65.3%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 400 tonnes (2.0%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be about $400,000 for this project (based on a unit cost of $27/tonne for disposal at public fill reception facilities and $125/tonne at landfills[4]).

HERITAGE IMPLICATIONS

20. This project will not affect any heritage site, i.e. all declared monuments, graded buildings and sites of archaeological interests.

TRAFFIC IMPACTS

21. To minimise possible disruption to traffic at Jordan Valley North Road, Choi Ha Road, Sau Mau Ping Road and Tsui Lam Road during construction, we have completed traffic impact assessment which concluded that the proposed works would not cause unacceptable traffic impact. During construction, we will maintain smooth traffic flow as far as possible through implementing temporary traffic management schemes and display notice boards on site to explain the reason of temporary traffic arrangements and the expected completion date of the concerned section of works. In addition, we will set up telephone hotlines for public enquiries or complaints. We will arrange to carry out construction works in busy road sections in non-peak hours.

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[4] 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 is likely to be more expensive) when the existing ones are filled.

LAND ACQUISITION

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

BACKGROUND INFORMATION

23. We included **326WF** in Category B in October 2004.

24. We have substantially completed the detailed design for the proposed works using in-house resources.

25. Of the 359 trees within the project boundary, we will preserve 323 trees. The proposed construction works will involve the removal of 36 trees including 30 trees to be felled, 3 trees to be transplanted elsewhere and 3 trees to be transplanted within the project site. All trees to be removed are not important trees[5]. We have adjusted the alignment of new water mains to keep the felling of trees to a minimum. We will incorporate planting proposals as part of the project, including estimated quantities of 59 trees.

26. We estimate that the proposed works will create about 90 jobs (78 for labourers and another 12 for professional/technical staff) providing a total employment of 2 400 man-months.

Development Bureau
December 2007

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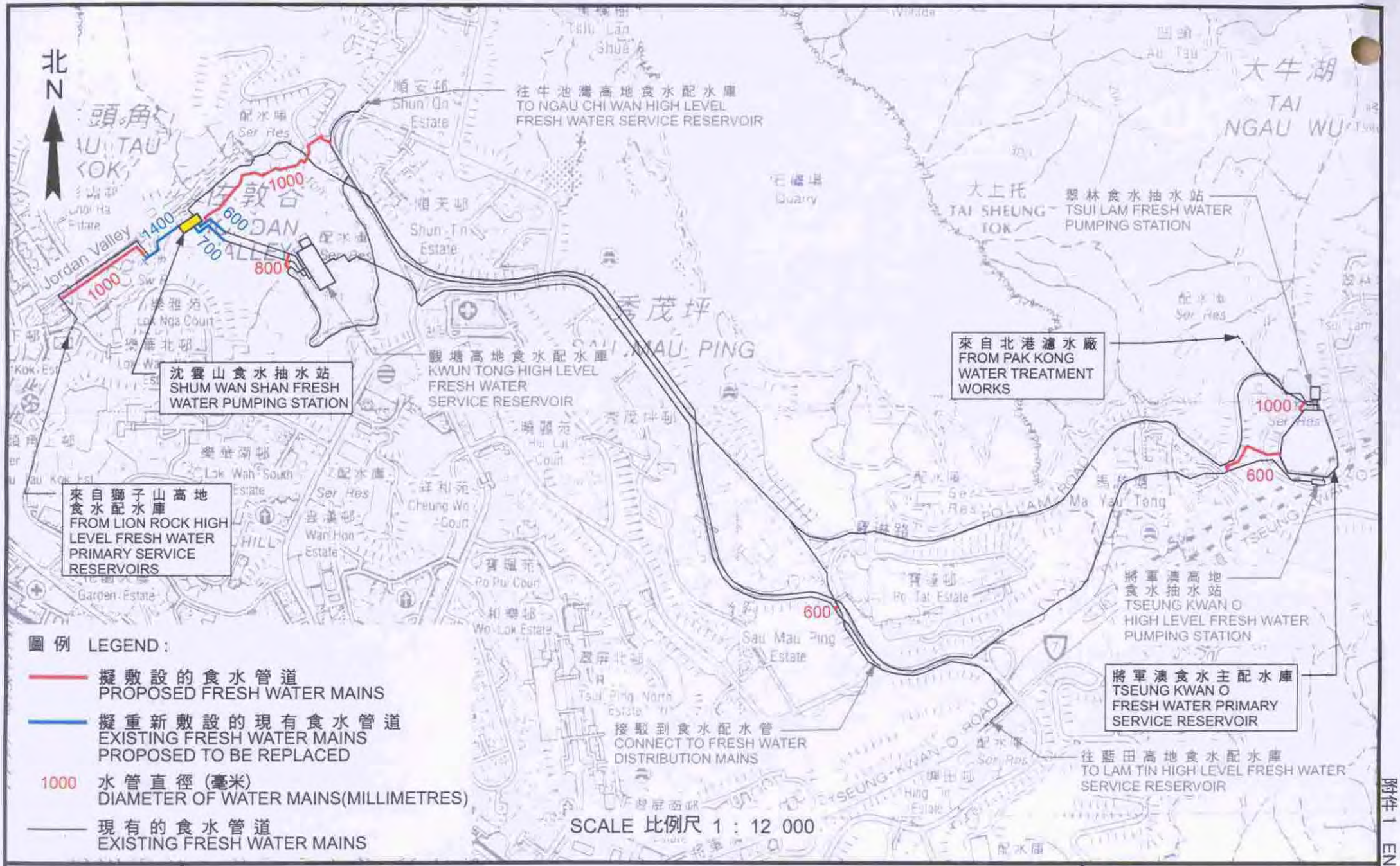
[5] An "important tree" refers to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria:-

(a) trees of 100 years old or above;
(b) trees of cultural, historical or memorable significance e.g. Fung Shui tree, tree as landmark of monastery or heritage monument, and trees in memory of an important person or event;
(c) trees of precious or rare species;
(d) trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
(e) trees with trunk diameter equal or exceeding 1.0 metre (m) (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.



核准 APPROVED

總工程師/設計 CE / DES

31 / 12 / 2007

工務計劃項目第 9326WF 號 — 連接獅子山高地食水主配水庫及將軍澳食水主配水庫的工程

P.W.P. ITEM NO. 9326WF — Integration of Lion Rock high level fresh water primary service reservoirs and Tseung Kwan O fresh water primary service reservoir

（甲級工程）
(CAT 'A' Submission)

水務署
WATER SUPPLIES DEPT.

草圖編號 SKETCH NO. SK 62007 / 076

REF: SK62007-076.CDR

附件 1 ENCLOSURE 1