**For Discussion** **PWSC(2001-02)70**
**on 31 October 2001**

# ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

**HEAD 709 - WATERWORKS**
**Water Supplies – Fresh water supplies**
**245WF – Water supply to Tai Po South high level areas**

Members are invited to recommend to Finance Committee the upgrading of **245WF** to Category A at an estimated cost of $59.6 million in money-of-the-day prices for the expansion of the fresh water supply system to the Tai Po South high level areas.

## PROBLEM

By 2004, the existing fresh water supply system serving the Tai Po South high level areas will be unable to cope with the anticipated increase in water demand arising from planned developments[1] in these areas.

## PROPOSAL

2. The Director of Water Supplies (DWS), with the support of the Secretary for Works, proposes to upgrade **245WF** to Category A at an estimated cost of $59.6 million in money-of-the-day (MOD) prices for the expansion of the fresh water supply system to the Tai Po South high level areas.

**/PROJECT .....**

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[1] Mainly low to medium density residential and village type developments.

## PROJECT SCOPE AND NATURE

3. The scope of works under **245WF** comprises -

(a) the construction of the Sheung Wong Yi Au No. 2 fresh water service reservoir with a storage capacity of 3 700 cubic metres ($m^3$), increasing the capacity from 3 300 $m^3$ (provided by the existing Sheung Wong Yi Au fresh water service reservoir) to 7 000 $m^3$;

(b) the extension of the existing Ha Wong Yi Au fresh water pumping station and uprating its capacity from 6 300 $m^3$ per day to 12 600 $m^3$ per day[2];

(c) the laying of about 2.3 kilometres (km) of fresh water mains of 400 millimetres (mm) in diameter connecting the existing Ha Wong Yi Au fresh water pumping station to the proposed fresh water service reservoir; and

(d) the laying of about 1.5 km of fresh water mains ranging from 200 mm to 400 mm in diameter between Shan Tong New Village and San Uk Ka.

4. We plan to start construction in March 2002 for completion by end 2004. A site plan showing the proposed works is at the Enclosure.

## JUSTIFICATION

5. The existing fresh water supply system serving the Tai Po South high level areas is capable of meeting a mean daily fresh water demand of about 5 300 $m^3$ per day. With the planned developments, the present population of 12 000 in these areas is forecast to increase to 13 900 in 2004 and to 17 200 in

/2011. .....

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[2] The increase in capacity of the pumping station is higher than the capacity of the proposed service reservoir because it has to cater for the peak demands during the day.

2011. Taking into account the requirement for fresh water for flushing, we project that the total daily fresh water demand will increase from the current level of 4 900 $m^3$ to 5 900 $m^3$ in 2004 and 7 900 $m^3$ in 2011. To meet the projected shortfall from 2004 up to 2011, we plan to expand the existing fresh water supply system to the Tai Po South high level areas as detailed in paragraphs 3(a) to (d) above.

## FINANCIAL IMPLICATIONS

6. We estimate the capital cost of the project to be $59.6 million in MOD prices (see paragraph 7 below), made up as follows -

| | | | **$ million** | |
|---|---|---|---|---|
| (a) | Construction of Sheung Wong Yi Au No. 2 fresh water service reservoir | | 18.4 | |
| (b) | Uprating of Ha Wong Yi Au pumping station | | 6.2 | |
| | (i) civil works | 2.0 | | |
| | (ii) electrical and mechanical works | 4.2 | | |
| (c) | Mainlaying using traditional mainlaying method | | 28.6 | |
| (d) | Environmental mitigation measures | | 0.5 | |
| (e) | Contingencies | | 5.4 | |
| | Sub-total | | 59.1 | (in September 2001 prices) |
| (f) | Provision for price adjustment | | 0.5 | |
| | Total | | 59.6 | (in MOD prices) |

/7. .....

7. 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 | 21.4 | 1.00398 | 21.5 |
| 2004-2005 | 21.5 | 1.01101 | 21.7 |
| 2005-2006 | 5.9 | 1.01808 | 6.0 |
| 2006-2007 | 5.3 | 1.02521 | 5.4 |
| | 59.1 | | 59.6 |

8. We have derived the MOD estimate 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 works on a remeasurement basis because the quantities of works may vary with actual ground conditions. We have carried out ground investigation to gather detailed information on soil components and the alignment of existing utilities in order to reduce uncertainties. The contract will provide for price adjustments because the contract period will exceed 21 months.

9. The recurrent expenditure arising from this project is about $1.3 million per annum.

10. This project by itself will lead to an increase in water charges by 0.05% in real terms by 2007[3].

**/PUBLIC .....**

[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

11. We consulted the Environment and Works Committee of the Tai Po District Council on 18 May 2001 and the Tai Po Rural Committee on 12 June 2001 on the project. Both Committees supported the proposal.

## ENVIRONMENTAL IMPLICATIONS

12. We completed a Preliminary Environmental Review (PER) for **245WF** in July 1998. The PER concluded that the project would not have any long-term adverse environmental impacts. The Director of Environmental Protection agrees that an Environmental Impact Assessment will not be required. We have designed the service reservoir and pumping station extension such that the level of noise during their operation will comply with the established criteria, standards and guidelines. For short term impacts during the construction stage, standard environmental pollution control measures[4] would be sufficient to mitigate the impacts. We have included in the project estimate the cost of implementing these mitigation measures ($0.5 million in September 2001 prices) and will incorporate these requirements into the works contract.

13. At the planning and design stages of this project, we have taken due consideration in designing the layouts of the proposed service reservoir and pumping station extension and the levels and alignments of water mains to minimize the generation of construction and demolition (C&D) materials. To further minimize the generation of C&D materials, we will encourage the contractor to use steel instead of timber for formwork and temporary works. We estimate that about 6 500 $m^3$ of C&D materials will be generated by the project. Of these, about 940 $m^3$ (14.5%) will be reused on site, 5 500 $m^3$ ( 84.6% ) will be reused as fill in public filling areas[5] and 60 $m^3$ (0.9%) will be disposed of at

/landfills .....

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[4] 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.

landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be $7,500 for this project (based on a notional unit cost[6] of $125/$m^3$).

14. We will require the contractor to submit a waste management plan (WMP) for approval. We will ensure that the day-to-day operations on site comply with the approved WMP. We will implement a trip-ticket system to control the proper disposal of C&D materials and will record the reuse, recycling and disposal of C&D materials for monitoring purposes.

## LAND ACQUISITION

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

## BACKGROUND INFORMATION

16. We upgraded **245WF** to Category B in November 1999.

17. DWS has completed the detailed design for the proposed works using in-house resources.

18. We estimate that the proposed works will create some 35 jobs comprising five professional/technical staff and 30 labourers, totalling 670 man-months.

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Works Bureau
October 2001

(pwsc245wfvf.doc)

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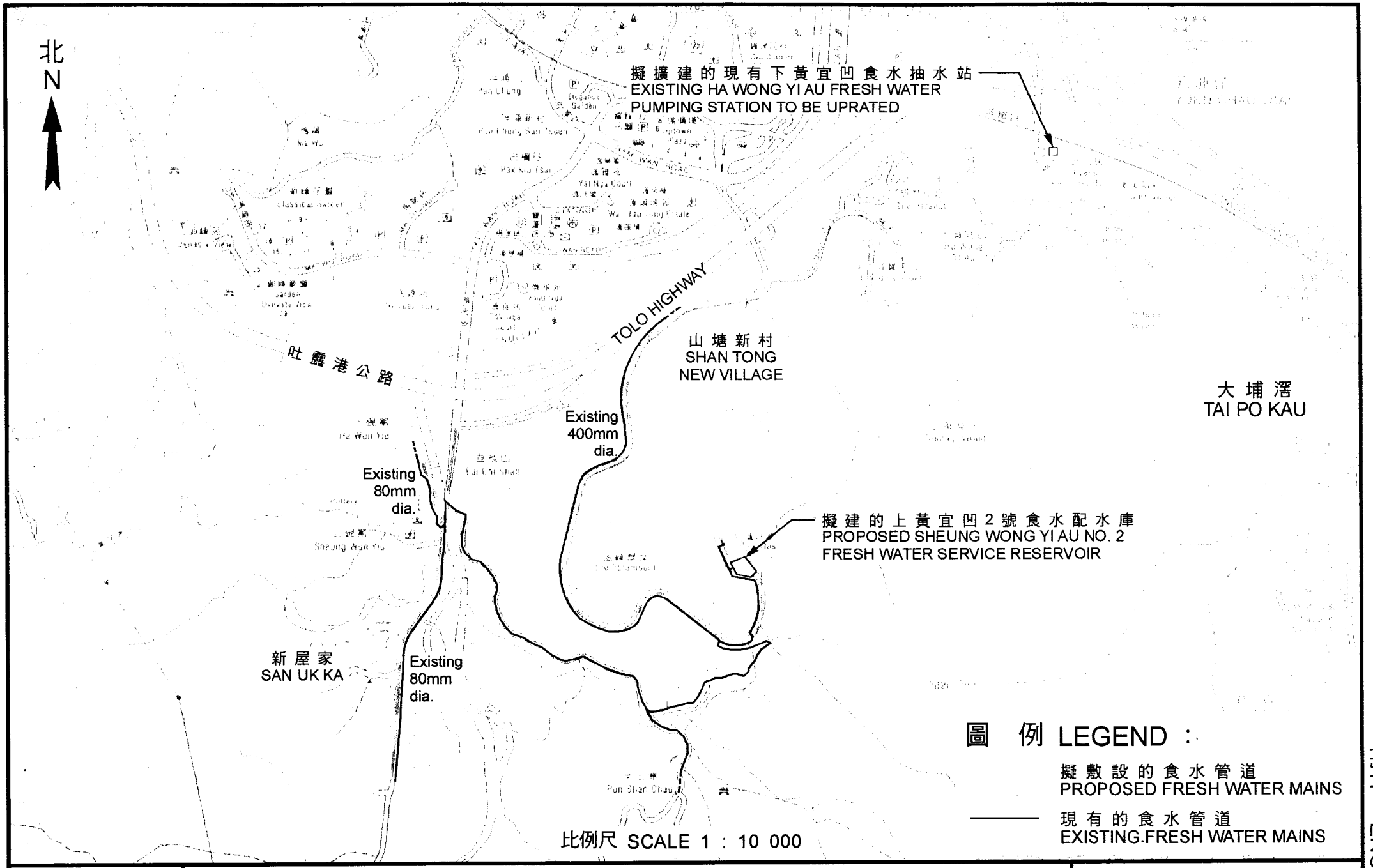
[6] This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at $90/$m^3$), nor the cost to provide new landfills (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.




核准 APPROVED

總工程師/設計 CE / Des

8 / 10 / 2001

（甲級工程）
( CAT 'A' Submission )

工務計劃第245WF號 — 大埔南高地供水計劃
P.W.P. NO. 245WF — WATER SUPPLY TO TAI PO SOUTH HIGH LEVEL AREAS

水務署
WATER SUPPLIES DEPT.

草圖編號 SKETCH NO. SK 62001 / 079

REF. 62001-079.CDR

附件 ENCLOSURE