

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 709 – WATERWORKS

Water Supplies – Salt water supply

45WS – Salt water supply for Northwest New Territories

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **45WS**, entitled "Salt water supply for Northwest New Territories – stage 1", to Category A at an estimated cost of \$188.0 million in money-of-the-day prices; and
- (b) the retention of the remainder of **45WS** in Category B.

PROBLEM

There is at present no salt water supply system to provide salt water for flushing in the Northwest New Territories (NWNT) area.

PROPOSAL

2. The Director of Water Supplies, with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade part of **45WS** to Category A at an estimated cost of \$188.0 million in money-of-the-day (MOD) prices for implementation of the stage 1 works of salt water supply to NWNT.

/PROJECT

PROJECT SCOPE AND NATURE

3. The part of **45WS** that we now propose to upgrade to Category A comprises –
- (a) laying of approximately 8.4 kilometres (km) of salt water mains of 1 000 millimetres (mm) in diameter along Castle Peak Road from Tsing Fat Street, Lok On Pai to Fu Tei, Tuen Mun; and
 - (b) construction of an intermediate booster chlorination plant¹ at Tuen Mun water treatment works.

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

4. We plan to commence the proposed works in December 2007 for completion in December 2010.

JUSTIFICATION

5. At present, Tuen Mun East areas and Tin Shui Wai with a population of 525 000 are supplied with temporary mains fresh water for flushing (TMF). We estimate that about 44 000 cubic metres of fresh water is used per day for flushing purpose in these areas. We have conducted a review on the flushing water supply in NWNT and concluded that it would be more cost-effective to use salt water for flushing as compared with TMF. To save the precious fresh water and to provide a more economical flushing water supply, we propose the implementation of a salt water supply system in NWNT.

6. To reduce the number of concurrent road opening sections along Castle Peak Road and to minimise the inconvenience caused to the public, we propose to implement **45WS** in two stages. The proposed works set out at paragraph 3 above is the first stage of works under **45WS**.

/FINANCIAL

¹ The purpose of the intermediate booster chlorination plant is to provide a continuous disinfection to the salt water. The plant will liberate hypo-chlorite (a disinfectant) through electrolysis of the sodium chloride present in salt water within the supply system.

FINANCIAL IMPLICATIONS

7. We estimate the cost of the proposed works to be \$188.0 million in MOD prices (see paragraph 8 below), made up as follows –

	\$million	
(a) Mainlaying along Castle Peak Road from Tsing Fat Street, Lok On Pai to Fu Tei, Tuen Mun	160.0	
(b) Construction of an intermediate booster chlorination plant at Tuen Mun water treatment works	5.3	
(c) Environmental mitigation measures	1.7	
(d) Contingencies	17.0	
Sub-total	184.0	(in September 2006 prices)
(e) Provision for price adjustment	4.0	
Total	188.0	(in MOD prices)

8. Subject to approval, we will phase the expenditure as follows –

Year	\$ million (Sep 2006)	Price Adjustment Factor	\$ million (MOD)
2007 – 2008	0.9	0.99900	0.9
2008 – 2009	17.8	1.00649	17.9
2009 – 2010	81.0	1.01656	82.3
2010 – 2011	65.6	1.02672	67.4
2011 – 2012	11.3	1.03699	11.7
2012 – 2013	7.4	1.05514	7.8
	184.0		188.0

9. 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 2007 to 2013. We will implement the mainlaying works under a re-measurement contract because the quantities of works are subject to variation to suit the actual underground conditions. The contract will provide for price adjustment as the contract period will exceed 21 months.

10. We estimate the annual recurrent expenditure arising from this project to be about \$0.8 million.

11. The proposed works by itself would lead to an increase in production cost of water by 0.17% in real terms by 2013².

PUBLIC CONSULTATION

12. We consulted the Environment, Hygiene and District Development Committee of the Tuen Mun District Council regarding the proposed works on 16 March 2007. The Committee supported the proposed works.

13. We circulated to the Legislative Council Panel on Planning, Lands and Works an information paper on the proposed works on 14 May 2007. Members raised no objection to the proposal.

ENVIRONMENTAL IMPLICATIONS

14. This is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We completed a Preliminary Environmental Review for the proposed works in April 2007 which concluded that the proposed works would not have any long-term environmental impacts. We will incorporate the implementation of standard pollution measures to mitigate short-term construction impacts in the works contracts.

15. For short-term impacts during construction, we will control noise, dust and site run-off within established standards and guidelines through the

/implementation

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.

implementation of mitigation measures, such as the use of temporary noise barriers and silenced construction plant to reduce noise generation and water-spraying to reduce emission of fugitive dust. We have included about \$1.7 million (in September 2006 prices) in the project estimate for implementation of these mitigation measures.

16. We have considered the alignment of the mainlaying, the layout and foundation level of the proposed intermediate booster chlorination plant in the detailed design to reduce the generation of construction and demolition (C&D) materials where possible. In addition, we will require the contractors to reuse inert C&D materials (e.g. excavated soil) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of C&D materials to public fill reception facilities³. We will encourage the contractors to maximise the use of recycled or recyclable C&D materials, as well as the use of non-timber formwork to further minimise the generation of construction waste.

17. We will also require the contractors to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures to avoid, reduce, reuse and recycle C&D materials. We will ensure that the day-to-day operations on site comply with the approved WMP. We will control the disposal of public fill and C&D waste to public fill reception facilities and landfills respectively through a trip-ticket system. We will require the contractors to separate public fill from C&D waste for disposal at appropriate facilities and will record the disposal, reuse and recycling of C&D materials for monitoring purposes.

18. We estimate that the proposed works will generate about 67 445 tonnes of C&D materials. Of these, we will reuse about 45 320 tonnes (67.2%) on site and deliver about 21 520 tonnes (31.9%) to public fill reception facilities for subsequent reuse. In addition, we will dispose of about 605 tonnes (0.9%) at landfills. The total cost for accommodating C&D materials at public fill reception facilities and landfill sites is estimated to be about \$0.7 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tones at landfills⁴).

/TRAFFIC

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

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/m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

TRAFFIC IMPACTS

19. We have completed the traffic impact assessment for the proposed works 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 to minimise impacts on traffic during construction. We will display notice boards on site to explain the temporary traffic arrangements and to show 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 carry out construction works in busy road sections during non-peak hours. At road junctions where traffic impact may be significant or crossing the Light Rail routes is unavoidable, we will employ trenchless method as far as practicable.

20. We will also establish a Traffic Management Liaison Group (TMLG) under the works contracts to discuss, scrutinise and agree on the proposed temporary traffic management measures. We will invite representatives from Transport Department, Hong Kong Police Force, Highways Department, the relevant District Offices and public transport operators to attend the TMLG and every temporary traffic arrangement has to be agreed by the TMLG before implementation. The TMLG will also take into account all relevant factors such as site restrictions, existing/future traffic conditions, pedestrian safety, access to buildings/shop fronts, and provision of emergency vehicle access in considering the temporary traffic arrangements.

LAND ACQUISITION

21. The proposed works does not require any land resumption.

BACKGROUND INFORMATION

22. In October 2004, we included **45WS** in Category B of the Public Works Programme.

23. We have substantially completed the design of the proposed works as set out in paragraph 3 above. We will supervise the proposed works using in-house staff.

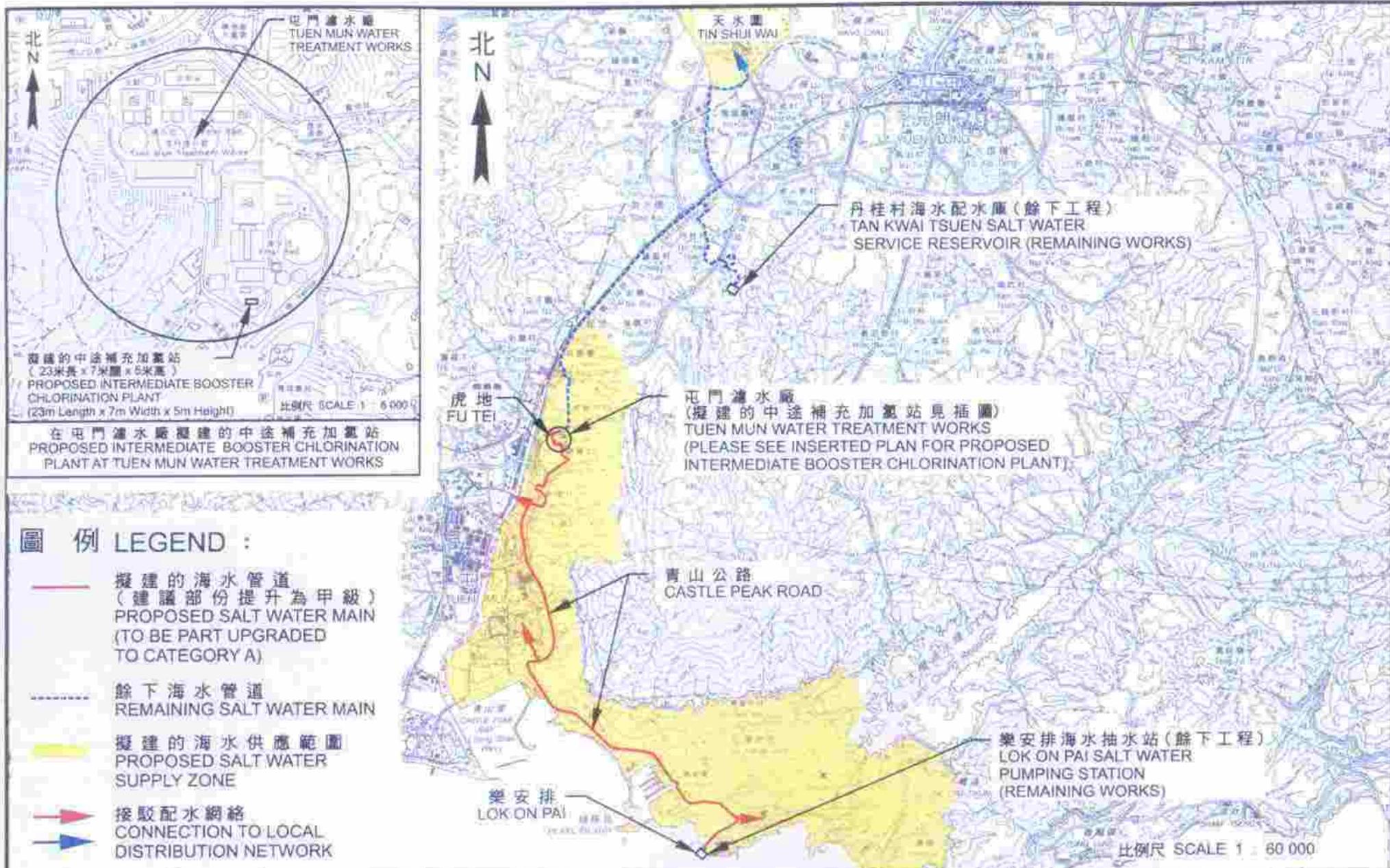
24. We will continue with the detailed design of the remaining works under stage 2, comprising mainly the construction of a salt water pumping station

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at Lok On Pai and a salt water service reservoir at Tan Kwai Tsuen and laying of approximately 8.4 km of salt water mains between Tuen Mun water treatment works and Tin Shui Wai, with a view to commencing the construction works in late 2008 for completion in 2012. On completion of the remaining works, the salt water supply system will be commissioned to provide salt water for flushing to the planned supply zones.

25. The proposed works will not involve any tree removal or planting proposal.

26. We estimate that the proposed works will create about 95 jobs (82 for labourers and another 13 for professional/technical staff) providing a total employment of 3 100 man-months.



核准 APPROVED

 總工程師/副總工程師 CE/DES

7/15/2007

(「甲級工程」)
(「CAT 'A' Submission」)

新工務計劃項目 45WS 號 - 新界西北區海水供水計劃
P.W.P. New Item 45WS - Salt water supply for North West New Territories

 水務署
WATER SUPPLIES DEPT.

草圖編號 SK 62006 / 122
SKETCH NO.

附件
Enclosure