For discussion
on 10 January 2001

PWSC(2000-01)78

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 709 - WATERWORKS
Water Supplies - Salt water supplies
38WS - Extension of North Point low level salt water supply system

Members are invited to recommend to Finance Committee –

(a) the upgrading of part of **38WS**, entitled "Mainlaying for extension of North Point low level salt water supply system", to Category A at an estimated cost of $86.9 million in money-of-the-day prices; and

(b) the retention of the remainder of **38WS** in Category B.

PROBLEM

By 2004, the existing low level salt water supply system serving North Point, Quarry Bay and its adjoining areas will be unable to cope with the projected increase in flushing water demand arising from new developments and redevelopments[1] in the areas.

2. In addition, the trunk main for the existing supply system (which was designed in the 1950's) is a single-line configuration. As a result, emergency repairs to this trunk main may cause prolonged disruption of the salt water supply to the areas in question.

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[1] The types of planned developments in the concerned areas include public and private housing developments, commercial developments and redevelopment of existing residential buildings.

PROPOSAL

3. The Director of Water Supplies (DWS), with the support of the Secretary for Works, proposes to upgrade part of **38WS** to Category A at an estimated cost of $86.9 million in money-of-the-day (MOD) prices to extend salt water supplies to new developments and redevelopments in North Point and Quarry Bay areas and to improve the reliability of the existing system.

PROJECT SCOPE AND NATURE

4. The scope of works under **38WS** comprises –

(a) the construction of the proposed Quarry Bay salt water service reservoir with a capacity of 2 650 cubic metres (m^3);

(b) the laying of about 3 kilometres of salt water trunk mains of 200 to 600 millimetres in diameter, from the existing Quarry Bay salt water pumping station through Hoi Yu Street, Java Road, Wharf Road, City Garden Road, Fortress Hill Road and Tin Hau Temple Road to the existing North Point salt water service reservoir; and

(c) the laying of about 2.7 kilometres of salt water trunk mains of 400 millimetres in diameter, from the existing Quarry Bay salt water pumping station through Hoi Chak Street, King's Road, Mount Parker Road and Greig Road to the proposed Quarry Bay salt water service reservoir.

5. The part of **38WS** we now propose to upgrade to Category A comprises the works described in paragraphs 4(b) and (c) above. We plan to start the proposed mainlaying works in June 2001 for completion by end 2003. DWS is designing the Quarry Bay salt water service reservoir in-house. We intend to start the construction works for the reservoir in mid 2002 for completion in 2004. A site plan showing the proposed works is at Enclosure 1.

JUSTIFICATION

6. The existing salt water supply system serving the North Point and Quarry Bay areas is able to cope with a daily salt water demand of 30 000 m^3. Given the new developments and redevelopments in the areas, we envisage that the

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population will increase from the current level of 192 000 to 258 000 in 2004. Together with commercial requirements for flushing water, we expect that the total daily salt water demand will increase from 28 500m^3 at present to 36 900m^3 in 2004. Hence there will be a shortfall of 6 900m^3 per day in salt water supply by then.

7. The trunk main of the existing salt water supply system is a single-line configuration. Largely due to aging of the pipe, bursts and leaks have occurred on a number of occasions in recent years. This year alone there has been 60 incidents of bursts or leaks in the system. Very often, supply could only be resumed after prolonged repair periods due to the deep cover of the water mains, heavy traffic conditions in the areas concerned and the prevention of work at night to avoid noise disturbance. Such disruptions cause considerable inconvenience to the population at North Point and Quarry Bay.

8. To meet the projected growth in salt water demand in North Point and Quarry Bay areas up to 2004, we propose to expand the existing salt water system as detailed in paragraphs 4(a) to 4(c) above in stages. As we have completed the detailed design for the mainlaying works mentioned in paragraphs 4(b) and 4(c) above, we are now proposing the laying of about 5.7 kilometres of salt water trunk main in North Point and Quarry Bay areas. We intend to lay the proposed trunk mains in a way that they will form a ring-main system with the existing trunk main so as to improve the reliability of salt water supply in the areas concerned. When completed, either leg of the ring-main system will be able to deliver salt water from the pumping station to the consumers during periods when the other leg has to be shut down for repair. Similar ring-main systems are being implemented in other salt water supply areas in the territory.

FINANCIAL IMPLICATIONS

9. We estimate the capital cost of the project to be $86.9 million in MOD prices (see paragraph 10 below), made up as follows –

		$million
(a)	Pipe materials	7.8
(b)	Mainlaying	44.0
(c)	Pipe jacking	9.1
(d)	Consultants' fees	13.1
	(i) Construction stage	0.6

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		$million	
	(ii) Resident site staff costs	12.5	
(e)	Environmental mitigation measures	0.5	
(f)	Contingencies	7.4	
	Sub-total	81.9	(in September 2000 prices)
(g)	Provision for price adjustment	5.0	
	Total	86.9	(in MOD prices)

A breakdown by man-months of the estimate for consultants' fees and resident site staff costs is at Enclosure 2.

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

Year	**$ million (Sept 2000)**	**Price adjustment factor**	**$ million (MOD)**
2001 – 2002	17.1	1.02550	17.5
2002 – 2003	40.2	1.05627	42.5
2003 – 2004	21.6	1.08795	23.5
2004 – 2005	3.0	1.12059	3.4
	81.9		86.9

11. We have derived the MOD estimates on the basis of the Government's latest forecast of trend labour and construction prices for the period 2001 to 2005. We will invite tenders for the works under a standard remeasurement contract because the quantities of the mainlaying works may vary with actual ground conditions. We will allow provision for price adjustment in the contract as the construction period will exceed 21 months.

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12. We estimate the annually recurrent expenditure arising from this project to be $245,000.

13. This phase of the project by itself would lead to an increase in water charges[2] by 0.05% in real terms by 2005.

PUBLIC CONSULTATION

14. We consulted the Works and Development Committee (WDC) of the Eastern District Council (EDC) on 5 October 2000. The WDC Members were briefed on the proposed works and the relevant traffic arrangements during the construction phase to alleviate the traffic impact identified in the Traffic Impact Assessment (TIA) Study. According to the TIA Study, the existing road junctions, road link and pedestrian footpath will have sufficient capacity to accommodate the traffic demand and no major adverse traffic impact will occur as a result of the construction works.

15. To further monitor the situation during the construction stage, we will establish a Working Group comprising DC Members and representatives from Transport Department, Drainage Services Department and Water Supplies Department to oversee traffic matters and fine-tune the traffic arrangements as necessary. The WDC supported the project.

16. We circulated an information paper on the project to Members of the LegCo Panel on Planning, Lands and Works on 24 November 2000. At the Panel meeting held on 4 December 2000, Members did not raise any questions on the project.

ENVIRONMENTAL IMPLICATIONS

17. The Director of Water Supplies completed a Preliminary Environmental Review (PER) of the project in September 1996. The PER concluded that the project would not give rise to environmental impacts that exceed established criteria. The Director of Environmental Protection vetted the PER and agreed that an Environmental Impact Assessment would not be necessary. For

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[2] The increase in water charges is calculated on the assumption that the demand remains static during the period from 2000 to 2005 and the amount of government subsidy to the waterworks operations is to be contained at the present level.

short term construction impacts, standard environmental pollution control measures[3] would be sufficient to mitigate the impacts. We have included the cost of implementing these mitigation measures in the project estimates ($0.5 million in September 2000 prices) and will incorporate these requirements into the works contracts for implementation.

18. We have considered optional levels and alignments of the proposed water mains at the planning and design stages with a view to minimizing the generation of construction and demolition (C&D) materials. We estimate that about 17 200m^3 of C&D materials will be generated by the project. Of these, about 10 940m^3 (63.6%) will be reused on site, 6 200m^3 (36.0%) will be reused as fill in public filling areas[4] and 60m^3 (0.4%) will be disposed of at landfills. We will require the contractor to implement necessary measures to minimize the generation of C&D materials and to reuse and recycle C&D materials as far as practicable. We will control the disposal of public fill and C&D waste at designated public filling facility and landfills respectively through a trip-ticket system. We will record the disposal, reuse and recycling of C&D materials for monitoring purposes.

LAND ACQUISITION

19. The proposed mainlaying works do not require any land acquisition.

BACKGROUND INFORMATION

20. We upgraded **38WS** to Category B in August 1997.

21. As regards the works which we now propose to upgrade to Category A, we have engaged consultants to complete the detailed design at a cost of $1.65 million and charged the cost to the block allocation under **Subhead 9100WX** "Waterworks, Studies and investigation for items in Category D of the Public Works Programme."

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[3] The standard pollution control measures include wheel washing facilities, de-silting traps, the use of silenced plant and other procedures as recommended in Environmental Protection Department's Recommended Pollution Control Clauses.

[4] A public filling area is a designated part of a development project that accepts public fill for reclamation purpose. Disposal of public fill in a public filling area requires a licence issued by the Director of Civil Engineering.

22. We estimate that the proposed works will create some 45 new jobs during the construction period. These comprise ten professional/technical staff and 35 labourers, totalling 970 man-months.

Works Bureau
December 2000

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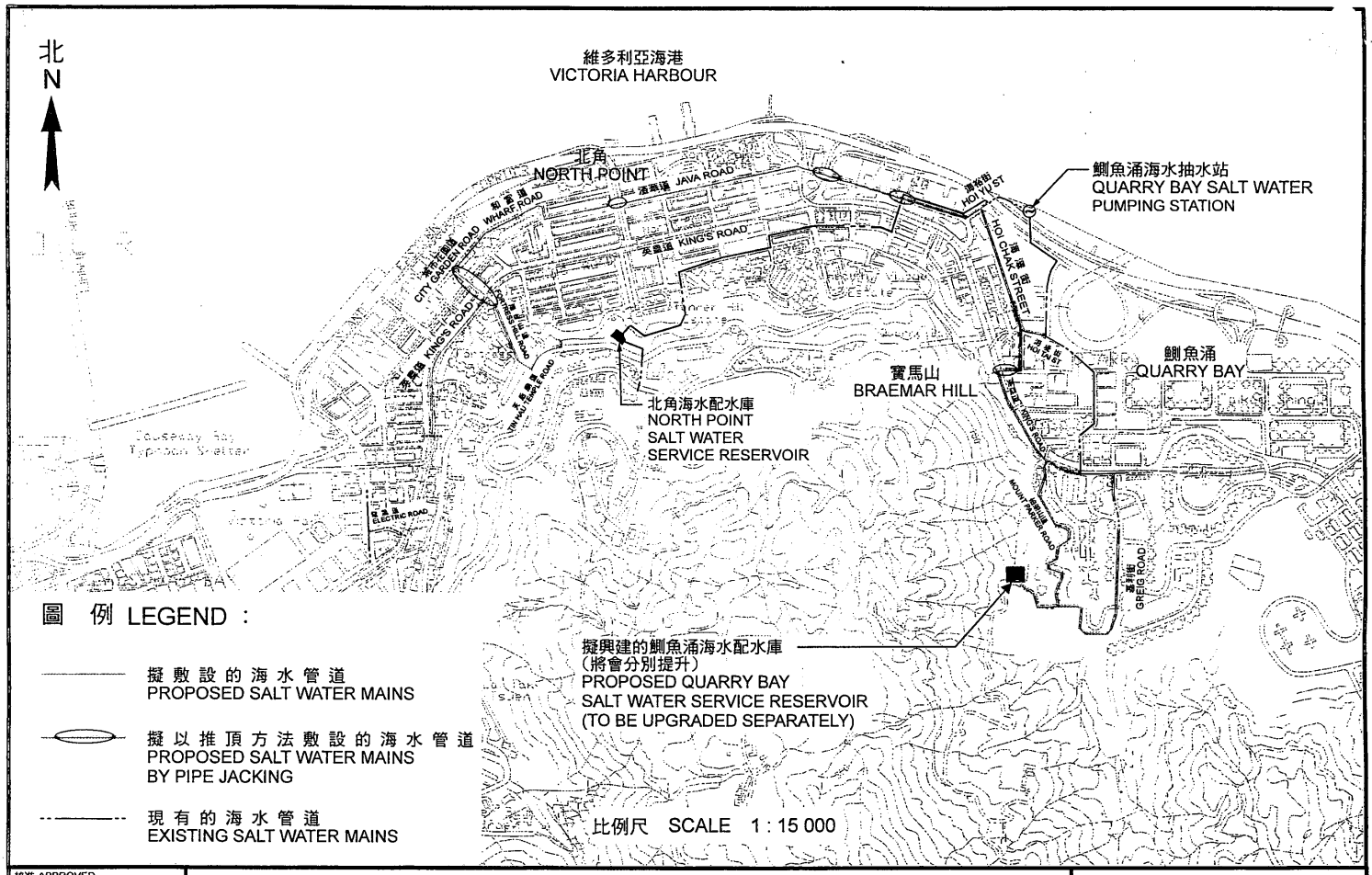

核准 APPROVED 總工程師/顧問工程管理 CE/CM 5 / 12 / 2000	擴建北角下海水供應系統 水管敷設工程 (甲級工程) (CAT 'A' Submission) MAINLAYING FOR EXTENSION OF NORTH POINT LOW LEVEL SALT WATER SUPPLY SYSTEM	水務署 WATER SUPPLIES DEPT. 草圖編號 SKETCH NO. SK 62000 / 117

Enclosure 1 附件 1

Enclosure 2 to PWSC(2000-01)78

38WS - Extension of North Point low level salt water supply system

Breakdown of estimates for consultants' fees

Consultants' Staff Cost			Estimated man-months	Average MPS Salary Point	Multiplier factor	Estimated Fee ($million)
(a)	Consultants' fees for construction stage	Professional	3	38	2.4	0.4
		Technical	4	14	2.4	0.2
(b)	Site supervision by resident site staff employed by consultants	Professional	40	38	1.7	3.9
		Technical	265	14	1.7	8.6
					Total consultants' staff costs	13.1

* MPS = Master Pay Scale

Notes

1. A multiplier factor of 2.4 is applied to the average MPS point to arrive at the indicative full staff costs including the consultants' overheads and profit, as the staff will be employed in the consultants' office. (At 1.4.2000, MPS pt. 38 = $57,525 per month and MPS pt. 14 = $19,055 per month). A multiplier factor of 1.7 is applied to the average MPS point in the case of site staff supplied by the consultants.

2. The above figures are based on estimates prepared by the Director of Water Supplies. The consultancy works for this project will be included as part of the Consultancy Agreement No. CE 113/98 "Mainlaying for Extension of North Point Low Level Salt Water Supply System – Design and Construction". The assignment will only be triggered subject to Finance Committee's agreement to upgrade **38WS** to Category A as proposed.