For discussion **PWSC(2001-02)67**
on 31 October 2001

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 709 – WATERWORKS
Water Supplies – Combined fresh/salt water supply
85WC – Water supply to South East Kowloon development, stage 1 - works

Members are invited to recommend to Finance Committee the upgrading of **85WC** to Category A at an estimated cost of $615.7 million in money-of-the-day prices for the construction of a fresh water service reservoir, the uprating of the existing Tai Wan salt water pumping station and the laying of fresh and salt water mains to support the South East Kowloon development.

PROBLEM

The existing water supply systems serving the east Kowloon area will not be able to cope with the additional fresh and salt water demands arising from the South East Kowloon Development (SEKD), the earliest population intake of which is scheduled for 2005.

PROPOSAL

2. The Director of Water Supplies (DWS), with the support of the Secretary for Works, proposes to upgrade **85WC** to Category A at an estimated cost of $615.7 million in money-of-the-day (MOD) prices for the construction of a fresh water service reservoir, the uprating of the existing Tai Wan salt water pumping station and the laying of fresh and salt water mains to support the South East Kowloon development.

/PROJECT .....

PROJECT SCOPE AND NATURE

3. The full scope of works under **85WC** that we propose to upgrade to Category A comprises -

(a) the construction of Diamond Hill No. 2 fresh water service reservoir with a capacity of 76 500 cubic metres (m^3);

(b) the uprating of the existing Tai Wan salt water pumping station from the existing capacity of 81 000 m^3 per day to 121 000 m^3 per day;

(c) the laying of about 3.4 kilometres (km) of fresh water trunk mains of 1 000 millimetres (mm) in diameter from Wang Tau Hom to the proposed Diamond Hill No. 2 fresh water service reservoir;

(d) the laying of about 1.2 km of fresh water distribution mains of 1 200 mm in diameter from the proposed Diamond Hill No. 2 fresh water service reservoir to the SEKD; and

(e) the laying of about 5.8 km of salt water mains of 800 mm in diameter from the existing Tai Wan salt water pumping station and Diamond Hill salt water service reservoir to the SEKD.

4. We plan to start the proposed works in April 2002 for completion by early 2005. A plan showing the proposed works is at Enclosure 1.

JUSTIFICATION

5. After relocating the Hong Kong International Airport in July 1998, the Kai Tak site with reclamation at Kai Tak Approach Channel, Kwun Tong Typhoon Shelter and Kowloon Bay will be used for urban development. Under the current proposal, the entire SEKD, together with some adjacent areas, will be developed in phases to accommodate a total population of about 250 000 upon full development by 2016. DWS forecasts that the planned developments and population build-up at South East Kowloon will ultimately increase the daily fresh water demand from the current level of 1 600 m^3 to 122 900 m^3 and the salt water demand from 560 m^3 to 31 600 m^3. The initial phase of the SEKD is concentrated mainly in the north apron of the former airport with the first intake of population scheduled for 2005[1]. /6. .....

---

[1] A related paper, PWSC(2001-02)64, for the upgrading of part of **469CL** under **Head 707** entitled "South East Kowloon development at Kai Tak Airport - early development package" is submitted for Members' consideration at this meeting.

6. The existing fresh water service reservoirs in the east Kowloon metropolitan area do not have spare capacity to cater for the SEKD. It is necessary to construct the Diamond Hill No. 2 fresh water service reservoir and to lay the associated water mains as proposed in paragraphs 3(c) and (d) above. The maximum capacity of the service reservoir that can be constructed on the site at Po Kong Village Road for the Diamond Hill No. 2 fresh water service reservoir is 76 500 m^3. This can cater for demand up to 2013 with an estimated mean daily fresh water demand of 90 000 m^3. We will plan to construct another fresh water service reservoir in Jordan Valley in future to cope with the estimated increase in fresh water demand beyond 2013.

7. At present, salt water supply for the east Kowloon areas is provided by the Tai Wan salt water pumping station. As the existing pumps at the pumping station are already running at full capacity, we propose to uprate its capacity by installing two additional pumps with a total capacity of 40 000 m^3 per day and laying the associated water mains as proposed in paragraph 3(e) above to cope with the ultimate salt water demand arising from the SEKD. We will use the existing Diamond Hill salt water service reservoir for the provision of storage to meet the daily fluctuations in demand.

FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the proposed works to be $615.7 million in MOD prices (see paragraph 9 below), made up as follows -

			$ million
(a)	Pipe materials		68.6
(b)	Mainlaying		217.2
	(i) traditional mainlaying method	180.9	
	(ii) trenchless construction method	36.3	
(c)	Construction of fresh water service reservoir		140.4
(d)	Uprating existing pumping station		53.0

/(e) .....

			$ million	
(e)	Consultants' fees for		69.0	
	(i) contract administration	2.1		
	(ii) site supervision	66.9		
(f)	Environmental mitigation measures		5.0	
(g)	Contingencies		55.0	
		Sub-total	608.2	(in September 2001 prices)
(h)	Provision for price adjustment		7.5	
		Total	615.7	(in MOD prices)

Owing to insufficient in-house staff resources, DWS proposes to engage consultants to carry out the construction supervision. A breakdown of the estimates for the consultants' fees by man-months is at Enclosure 2.

---

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

Year	**$ million (Sept 2001)**	**Price adjustment factor**	**$ million (MOD)**
2002 – 2003	56.6	0.99700	56.4
2003 – 2004	135.4	1.00398	135.9
2004 – 2005	186.2	1.01101	188.3
2005 – 2006	110.0	1.01808	112.0
2006 – 2007	100.0	1.02521	102.5
2007 – 2008	20.0	1.03239	20.6
	608.2		615.7

/10. .....

10. 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 2008. We will tender the proposed works under standard remeasurement contracts because the quantities of the mainlaying works and bulk excavation for the service reservoir may vary with actual ground conditions. The contracts will provide for price adjustments because the contract periods will exceed 21 months.

11. The recurrent expenditure arising from this project is about $8 million per annum.

12. This project by itself would lead to an increase in water charges by about 0.37% in real terms by 2007[2].

PUBLIC CONSULTATION

13. We consulted the Kowloon City District Council and the Wong Tai Sin District Council on 28 December 2000 and 6 February 2001 respectively. Members of both District Councils supported the project in principle. We will monitor the traffic situation during the construction stage by establishing a Working Group comprising District Council Members and representatives from relevant Government departments to alleviate the impact of the works on traffic. To avoid repetitive road excavation works and adverse impact on traffic, we will interface the works under this project with the water mains replacement and power cable laying projects which will be carried out in the area around the same time.

14. We consulted the Legislative Council Panel on Planning, Lands and Works on **85WC** on 5 March 2001**.** Members had no objections to the project.

ENVIRONMENT IMPLICATIONS

15. DWS completed a Preliminary Environmental Review (PER) in January 2001. The PER concluded, and the Director of Environmental Protection agreed, that the project would have no long-term adverse environmental impact and no further detailed environmental impact assessment would be necessary. For short-term construction impacts, standard pollution control measures[3] would be

/sufficient .....

---

[2] The increase in water charges is calculated on the assumption that the water demand remains static during the period from 2001 to 2007 and the amount of government subsidy to the waterworks operations is to be contained at the present level.

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

sufficient to mitigate the impacts. We have included $5 million (in September 2001 prices) in the project estimate for implementing these mitigation measures and will incorporate these requirements into the works contracts for implementation.

16. At the planning and design stages, we have considered optimum levels and alignments of the proposed water mains and service reservoir with a view to minimizing the generation of construction and demolition (C&D) materials. We estimate that about 150 000 m^3 of C&D materials will be generated by the project. Of these, about 34 000 m^3 (23%) will be reused on site, 60 000 m^3 (40%) will be processed as concrete aggregate, 45 000 m^3 (30%) will be reused as fill in public filling areas[4] and 11 000 m^3 (7%) will be disposed of at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be $1.375 million for this project (based on a notional unit cost[5] of $125/$m^3$).

17. We will require the contractors to submit waste management plans (WMPs) for approval. The WMPs 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 WMPs. We will require the contractors to reuse the excavated material as filling material on site or on other construction sites as far as possible to minimize the disposal of public fill to public filling facilities. To further minimize the generation of C&D materials, we will encourage the contractors to use non-timber formwork and recyclable material for temporary works. We will control the disposal of public fill and C&D waste to designated public filling 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.

LAND ACQUISITION

18. The project does not require land acquisition.

/BACKGROUND .....

---

[4] 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.

[5] 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 the project estimate.

BACKGROUND INFORMATION

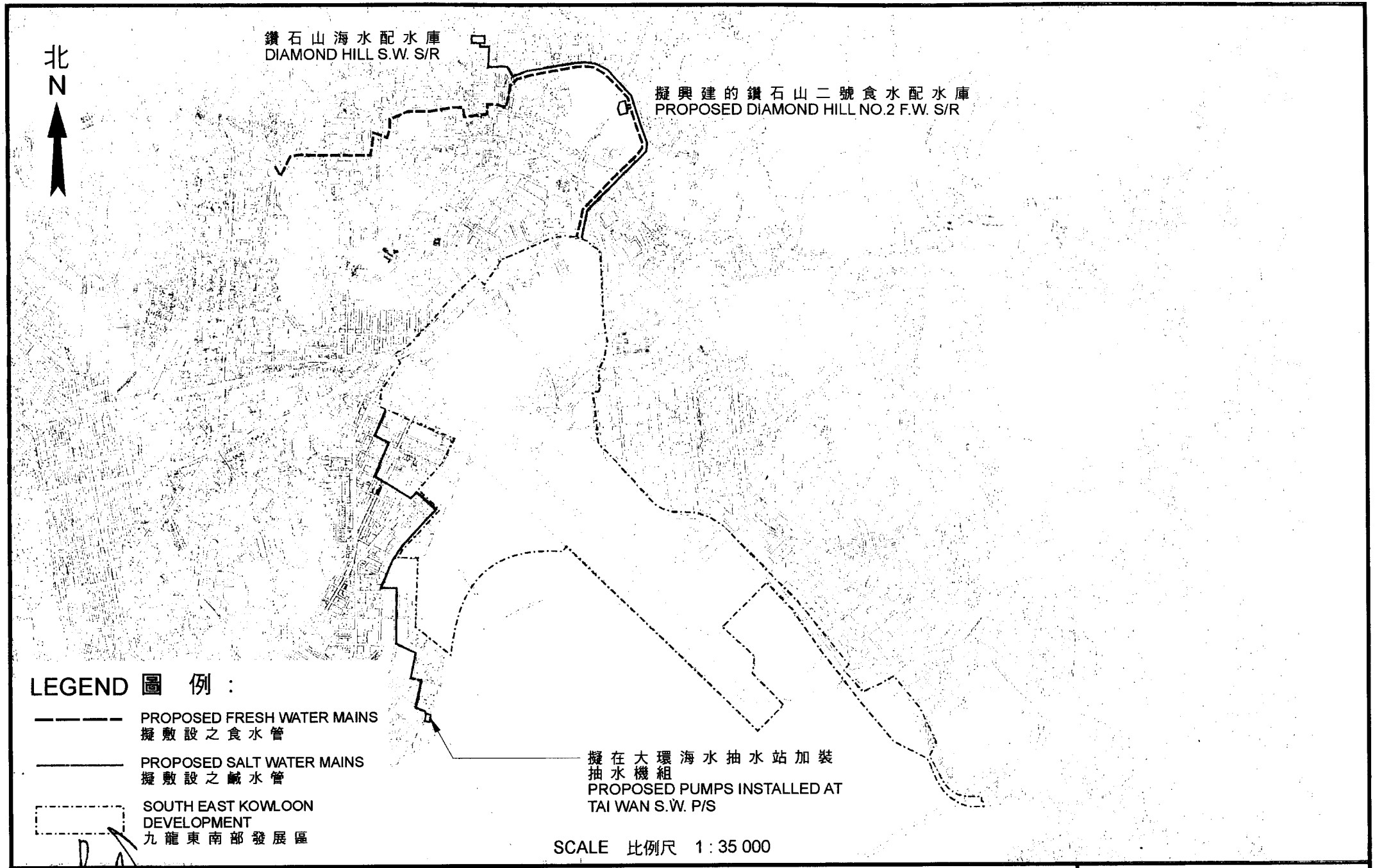
19. We admitted **469CL** "Kai Tak Airport early development" to Category B in September 1996 under **Head 707**. Subsequently, the Director of Territory Development and DWS agreed to remove from **469CL** the proposed works on providing fresh and salt water supply to the proposed developments in South East Kowloon and to implement these separately as **85WC** entitled "Service reservoir and associated waterworks to serve Kai Tak Airport early development package" under **Head 709**.

20. In February 1998, Finance Committee approved the upgrading of part of **85WC** to Category A as **89WC** "Water supply to South East Kowloon development, stage 1 – site investigation and detailed design" at an estimated cost of $30 million to engage consultants to undertake detailed design for the works and the retention of the remainder of **85WC** in Category B, retitled "Water supply to South East Kowloon development, stage 1 - works". The consultants have carried out the site investigation and substantially completed the detailed design.

21. We estimate that the project will create some 205 jobs comprising 25 professional/technical staff and 180 labourers, totalling 6 275 man-months.

Works Bureau
October 2001

(pwsc85wcvf.doc)



核准 APPROVED

總工程師/工程管理部 CE/PM

23/10/2001

（甲級工程）
(CAT 'A' Submission)

工務計劃項目第9085WC號 — 九龍東南部發展區供水計劃第1階段 - 工程

P.W.P. ITEM NO. 9085WC — WATER SUPPLY TO SOUTH EAST KOWLOON DEVELOPMENT, STAGE 1 - WORKS

水務署
WATER SUPPLIES DEPT.

草圖編號 SKETCH NO. SK 62000 / 162

REF. 620162.CDR

附件 1 ENCLOSURE 1

85WC – Water supply to South East Kowloon development, stage 1 - works

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	11	38	2.4	1.59
		Technical	11	14	2.4	0.52
(b)	Site supervision by resident site staff of the consultants	Professional	217	38	1.7	22.28
		Technical	1345	14	1.7	44.61
					Total consultants' staff costs	**69.00**

* 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 above 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 21/98 "Water Supply to South East Kowloon Development, Stage 1 – Design and Construction". The assignment will only be triggered subject to Finance Committee's approval for upgrading **85WC** to Category A.