For discussion **PWSC(2000-01)27**
on 24 May 2000

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 703 - BUILDINGS
Environmental Hygiene – Burial grounds, columbaria and crematoria
6NB – Replacement of cremators at the Kwai Chung Crematorium

Members are invited to recommend to Finance Committee the upgrading of **6NB** to Category A at an estimated cost of $137.6 million in money-of-the-day prices for the replacement of four existing cremators at the Kwai Chung Crematorium.

PROBLEM

The existing cremators at the Kwai Chung Crematorium have almost approached the end of their serviceable lives. Their performance is unsatisfactory and early replacement is necessary.

PROPOSAL

2. The Director of Architectural Services (D Arch S), with the support of the Secretary for the Environment and Food, proposes to upgrade **6NB** to Category A at an estimated cost of $137.6 million in money-of-the-day (MOD) prices to replace the four existing cremators at the Kwai Chung Crematorium by constructing four new ones with ancillary facilities such as staff offices, service halls, etc.

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PROJECT SCOPE AND NATURE

3. The scope of the works under **6NB** comprises construction of a cremation room housing four single cremators, a plant room, an office, a mortuary, two services halls, a pulverising room, a battery fork lift room, two concrete joss burners, a clergy room, store rooms, a refuse storage room and associated facilities. The total gross floor area of the project is 1 967 square metres. The proposed site (5 824 square metres) is at the lawn area within the site boundary of the Kwai Chung Crematorium adjacent to the existing columbarium.

4. The site plan is attached at Enclosure 1 for Members' reference. We plan to start the works in November 2000 for completion by April 2002.

JUSTIFICATION

Upgrading of the cremation facilities

5. The normal life span of cremators is about 15 years. The two twin cremators at the Kwai Chung Crematorium have been in use for about 20 years. Consequently, their performance is unsatisfactory and frequent repairs are required. During the past five years, the average repair and maintenance time for these cremators was about 70 days per year, which far exceeds the average of about 45 days. This has affected the provision of services to the public.

Improvement to surrounding environment

6. As cremators age, air pollution caused by their emissions increases. Moreover, the existing cremators are not equipped with secondary combustion chambers for complete combustion of flue gases. The installation of the new cremators will resolve this problem and significantly reduce any impact on the environment by adopting the best available control technology, including the installation of air filtering and monitoring systems, and the use of secondary combustion chambers to mitigate air emissions. The operation of the new cremators will be a specified process under the Air Pollution Control Ordinance and will satisfy the Best Practicable Means for incinerators of crematoria set by the Environmental Protection Department in order to obtain a licence for operation.

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Increasing demand for cremation services

7. In recent years, as a result of Government's continuing efforts in promoting cremation as against the traditional earth burial, the total number of cremations has been rising steadily at about 1 to 2 % per year. The percentage of cremations to the total number of deaths registered has risen from 47.1% in 1979, when the Kwai Chung Crematorium was commissioned, to 76.8% in 1999. Furthermore, due to the increase in overall population and change in demographic profile, it is anticipated that the number of deaths will increase from 33 387 (actual) in 1999 to 50 050 (projected) in 2009. New cremators are therefore required to meet this demand.

8. While we may, as a temporary measure, extend the operational hours of the existing cremators to cope with the increase in demand, it is not a long-term solution as operating cremators continuously for long hours will not only shorten their life span, but will also increase the frequency of breakdowns.

9. Because of the use of modern technology, the time for each cremation of new cremators can be shortened from the present 2½ hours to 1¼ hours. We will therefore be able to increase the number of cremation sessions from the current three to six every day to meet the demand.

FINANCIAL IMPLICATIONS

10. We estimate the capital cost of the project to be $137.6 million in MOD prices (see paragraph 12 below), made up as follows -

		$ million
(a)	Site formation	6.4
(b)	Building	29.1
(c)	Building services	8.6
(d)	Drainage and external works	14.0

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		$ million	
(e)	Supply and installation of cremators, exhaust gas filtering system and supporting equipment	56.0	
(f)	Furniture and equipment	0.1	
(g)	Consultants' fees	1.4	
(h)	Electrical and Mechanical Service Trading Fund (EMSTF)[1] charges for project management / contract administration	0.1	
(i)	Contingencies	11.4	
	Sub-total	127.1	(in December 1999 prices)
(j)	Provision for price adjustment	10.5	
	Total	137.6	(in MOD prices)

A breakdown by man months of the cost estimate for consultants' fee is at Enclosure 2.

11. The construction floor area of **6NB** is 2 405 square metres. The construction unit cost, represented by building and building services costs, is

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[1] Since the establishment of the EMSTF on 1 August 1996 under the Trading Funds Ordinance, government departments are charged for design and technical consultancy services for electrical and mechanical installations provided by EMSTF. Services rendered in this project include project management for contract administration for the provision of electrical and mechanical facilities for construction. The figures above are based on estimates prepared by the Director of Architectural Services. The actual cost for the service charges is subject to further discussion between the Government and the EMSTF.

$15,676 per square metre at December 1999 prices. The construction unit cost is comparable to that for similar government building projects.

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

Year	$ million (Dec 1999)	Price adjustment factor	$ million (MOD)
2000 - 01	7.5	1.00000	7.5
2001 - 02	64.4	1.04500	67.3
2002 - 03	35.8	1.10770	39.7
2003 - 04	15.4	1.17416	18.1
2004 - 05	4.0	1.24461	5.0
	127.1		137.6

13. We derived the MOD estimates on the basis of Government's latest forecast of trend labour and construction prices for the period 2000 to 2005. We will tender the works under a fixed-price lump-sum contract because the construction period will be shorter than 21 months and we can clearly define the scope of works in advance, leaving little room for uncertainty.

14. We estimate the additional annually recurrent expenditure for the project to be $2.8 million.

PUBLIC CONSULTATION

15. We consulted the former Kwai Tsing Provisional District Board in

January 1998 and the Food and Environmental Hygiene Committee of the Kwai Tsing District Council in April 2000. Members raised no objection to the project on both occasions.

16. On 20 April 2000, we consulted Members of the Legislative Council Sub-committee on Matters relating to Environmental Hygiene under the Panel on Environmental Affairs on the project. Members supported the project.

ENVIRONMENTAL IMPLICATIONS

17. The project is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance. Consultants engaged by ArchSD completed a Preliminary Environmental Review (PER) for the project in February 1998 and concluded that an Environmental Impact Assessment would not be necessary as the project would not cause any adverse environmental impacts to the surroundings. Having regard to the project profile, the Director of Environmental Protection is satisfied that the environmental impact of the project can meet the requirements of the Technical Memorandum on the EIA Process. The permission to apply directly for an environmental permit was granted on 17 May 2000. The design of the new cremators will adopt the best available control technology. The impact of aerial emissions from the new cremators will meet the relevant criteria and the project will have no long-term environmental impacts. We will provide secondary combustion chambers in the new cremators to mitigate air emissions and will terminate the operation of the existing cremators when the new ones come into operation. We will use fuel with sulphur content below 0.3% by weight. During construction, we will control noise, dust and site run-off nuisances through the implementation of mitigation measures in the relevant works contracts. These will include the use of silencers, mufflers, acoustic lining or shields for noisy construction activities, as well as frequent cleaning and watering of the site.

18. We estimate that some 800 cubic metres of public fill will be delivered to public filling areas and about 2 800 cubic metres of construction and demolition (C&D) materials will be disposed of at landfills. Ways of minimizing the generation of C&D materials were considered at the planning and design stage. We will require the contractor to implement necessary measures to minimize the generation of C&D materials and to reuse and recycle them. We will control the

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disposal of C&D materials to designated public filling facilities and/or landfills through a trip ticket system, and record the disposal, reuse and recycling of C&D materials for monitoring purposes.

LAND ACQUISITION

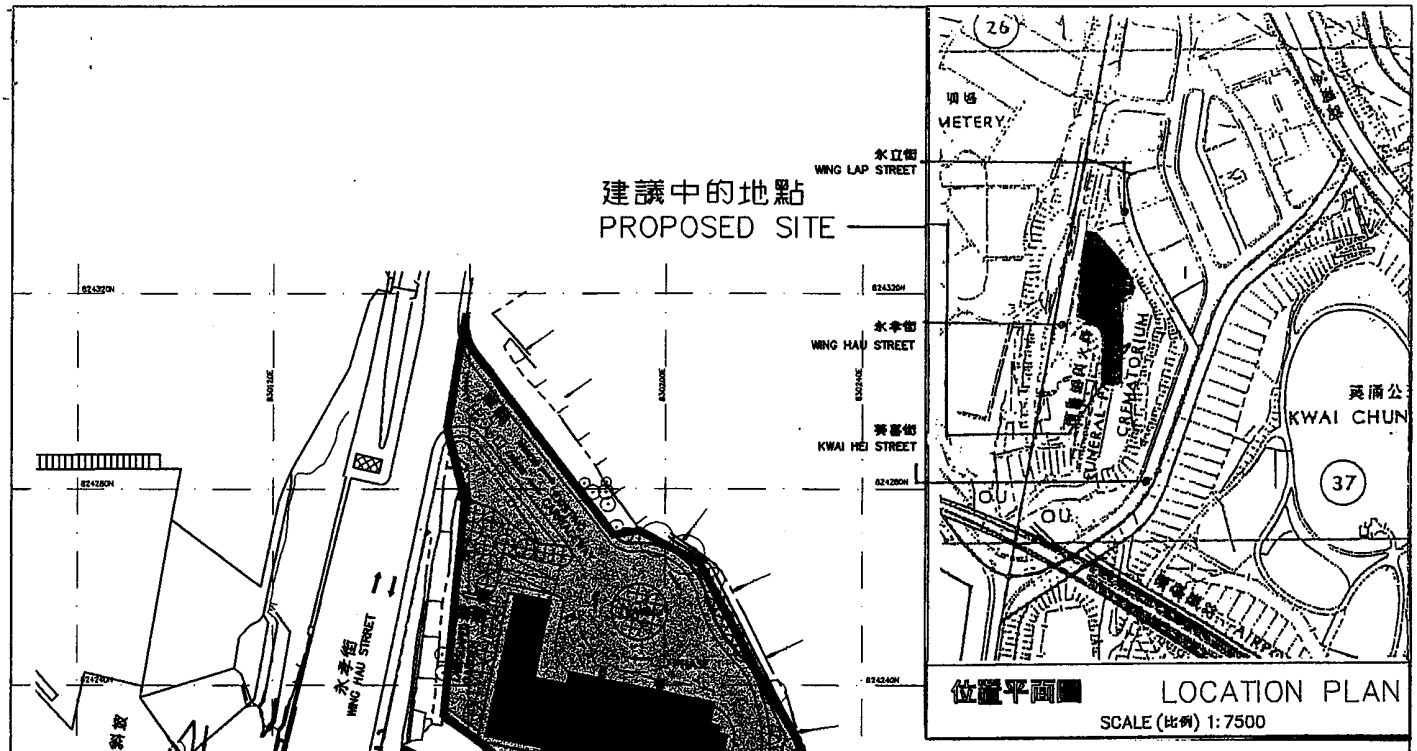
19. The project does not require any land acquisition.

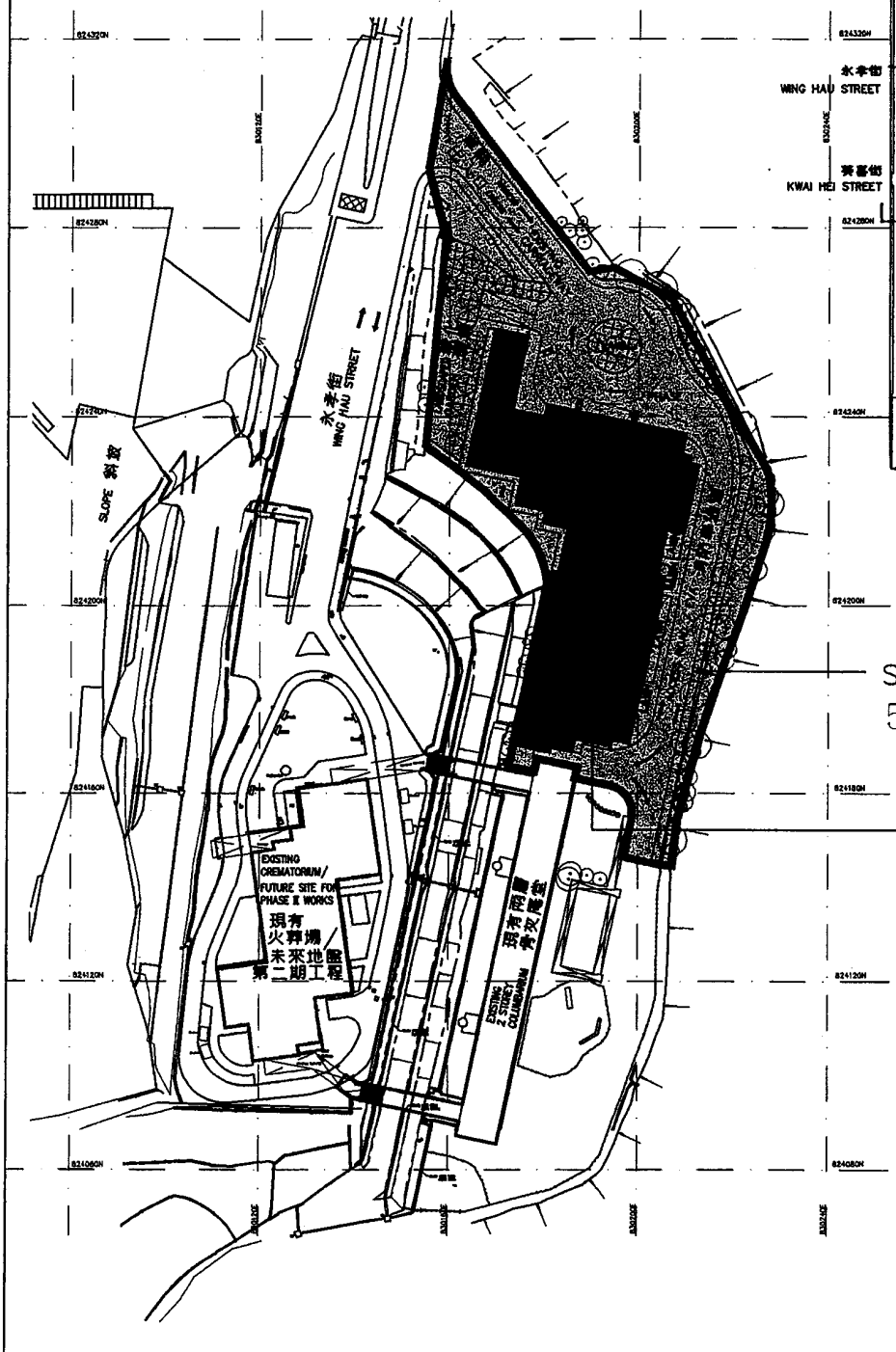
BACKGROUND INFORMATION

20. We upgraded **6NB** to Category B in September 1998. In January 1999, we employed term contractors to carry out site investigation and topographical survey and engaged consultants to carry out environmental studies, to prepare sketch plans, detailed design and tender documentation for the project at a total cost of $2.5 million. We charged this amount to block allocation **Subhead 3100GX** "Project feasibility studies, minor investigations and consultants' fees for items in Category D of the Public Works Programme". Term contractors have completed the site investigation and topographical survey. Consultants have also completed the environmental studies, sketch plans and the detailed design of the project. They are now preparing tender documents for the works.

21. We estimate that the proposed works will create some 100 new jobs with a total of 1 530 man months, comprising five professional/technical staff and 95 labourers.

Environment and Food Bureau
May 2000





Title : 6NB 更換葵涌火葬場的火化爐 REPLACEMENT OF CREMATORS AT THE KWAI CHUNG– CREMATORIUM	**Drawn by :** William Chan	**Date :** 04/2000	**Drawing No. :** N\nt9835\dwa4A
	Approved by : Johnny Lee	**Date :** 04/2000	**Scale :** 1 : 1500
	Office : Architectural Branch		建築署 ARCHITECTURAL SERVICES DEPARTMENT

Enclosure 2 to PWSC (2000-01)27

6NB – Replacement of cremators at the Kwai Chung Crematorium

DETAILS OF CONSULTANTS' FEES

Breakdown of estimates of consultants' fees

Category of works/items		Estimated man months	Average MPS* salary point	Multiplier factor	Estimated fee ($ million)
(I) Contract administration					
(a) Architectural discipline	Professional	7.3	40	2.4	1.1
	Technical	5.9	16	2.4	0.3
					———
	Total consultants' staff costs				1.4
					———

*** MPS = Master Pay Scale**

Notes

1. A multiplier factor of 2.4 is applied to the average MPS point to arrive at the full staff costs including the consultants' overheads and profit, as the staff will be employed in the consultants' offices. (At 1.4.1999, MPS point 40 = $62,780 p.m. and MPS point 16 = $21,010 p.m.).

2. The consultants' fees for the work during the construction stage formed an optional part of the lump sum price quoted by the consultants selected for preparing pre-contract preparatory works mentioned in paragraph 20 of the paper. Subject to Members' approval to upgrade **6NB** to Category A, the Director of Architectural Services will direct the necessary works to be carried out.