

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 708 – CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT

Medical Subventions

62MM – Improvement of infection control provision for autopsy facilities in public hospitals

Members are invited to recommend to Finance Committee the upgrading of **62MM** to Category A at an estimated cost of \$68.4 million in money-of-the-day prices for the improvement of infection control provision for autopsy facilities in 11 public hospitals.

PROBLEM

The existing autopsy facilities in public hospitals are not up to the present day requirements in respect of infection control provision.

PROPOSAL

2. The Secretary for Health, Welfare and Food proposes to upgrade **62MM** to Category A at an estimated cost of \$68.4 million in money-of-the-day (MOD) prices for the improvement of infection control provision for autopsy facilities in 11 public hospitals.

/PROJECT

PROJECT SCOPE AND NATURE

3. The scope of **62MM** comprises the improvement of infection control provision for the existing autopsy facilities in 11 public hospitals¹ by –

- (a) upgrading the mechanical ventilation and air-conditioning systems;
- (b) reconfiguring the layout to segregate between “clean” workflows (i.e. activities prior to post-mortem examinations with no infection risk) and “dirty” workflows (i.e. post-mortem examinations and subsequent activities with potential infection risks) to avoid cross contamination;
- (c) replacing ceiling, wall and floor finishes which have become damaged or worn out over the years; and
- (d) installing or procuring appropriate equipment items such as ventilated autopsy tables, biological safety cabinets and hydraulic trolleys for lifting bodies, etc.

A list of the 11 public hospitals is at Enclosure 1. The works schedule for these 11 public hospitals is at Enclosure 2.

4. We plan to commence construction works in November 2005 for completion in March 2007. Works will commence in phases so that disruption to existing services is kept to a minimum. We will ensure adequate services be provided by hospitals within the same clusters at any given time.

JUSTIFICATION

5. The need for improvement of infection control provision for autopsy facilities in public hospitals arose in the wake of the Severe Acute Respiratory

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¹ There are all together 14 public hospitals under HA that have autopsy facilities. We have excluded three hospitals from the current proposal, namely, Princess Margaret Hospital, Caritas Medical Centre and Grantham Hospital. The autopsy caseload in Grantham Hospital was relatively low and its autopsy services have already been taken up by Queen Mary Hospital. The other two hospitals are undergoing redevelopment which already covers improvement works to their infection control provision for autopsy facilities.

Syndrome (SARS) outbreak in 2003 when the handling, storage and post-mortem examination of bodies carrying or likely to carry infective agents caused some major concerns. To ensure occupational health and safety for hospital personnel, we have reviewed the existing autopsy facilities against such international standards as the “*Guidelines for Environmental Infection Control in Health-Care Facilities*” published by the Centre for Disease Control and Prevention (CDC) of the United States and the “*Health Building Note 20: Mortuary and Post Mortem Room*” published by the Department of Health and Social Security of the United Kingdom, in terms of physical environment, workflow logistics, staff amenities as well as equipment.

6. The reference standards cover the following basic requirements -
- (a) The refrigerated body store should be kept at 4 °C, with facilities for regular cleansing and provision of hydraulic trolleys for the lifting of bodies.
 - (b) Lighting in all areas must provide adequate illumination for the nature of work to be carried out.
 - (c) Autopsy facilities should be physically segregated into “clean” and “dirty” areas. Where such physical segregation is not feasible within the existing building configuration, the workflow logistics should be arranged to minimise chances of cross contamination.
 - (d) All autopsy rooms should have –
 - (i) ventilation rate of at least 12 air changes per hour with air to be exhausted through high efficiency particulate air (HEPA) filters;
 - (ii) adjustable control for maintaining specified temperature range appropriate for staff working fully gowned up in personal protective equipment;
 - (iii) autopsy tables with downdraft or laminar airflow system whereby air is drawn away from the staff working at the tables;
 - /(iv)

- (iv) negative pressure relative to any adjacent areas such that air flows into and not out of the autopsy rooms;
 - (v) a sealed safety cabinet with sink and table-top spacious enough for dissection of specimens under proper air extraction;
 - (vi) adequate provision of exhaust hoods to minimise spreading of aerosols and dust generated by the use of oscillating saws; and
 - (vii) non-slip wall and floor surfaces which are robust enough to withstand regular cleaning, scrubbing and the application of disinfectants.
- (e) The autopsy facilities should have adequate provision for hosing down with running water or dowsing with appropriate disinfectants for work surfaces, instruments and equipment items.
- (f) There should be adequate shower facilities for staff immediately adjacent to the autopsy room to facilitate decontamination and maintenance of best practice for autopsy work. Where such provision is made impossible by physical constraints in existing buildings, appropriate workflow logistics should be put in place to ensure that decontamination may be carried out without risks of cross contamination.

7. We have identified in the existing autopsy facilities of the public hospitals deficiencies of varying degrees in meeting the requirements. Generally speaking, they are poorly lit and ventilated, with worn or damaged internal finishes that are prone to harbouring dust, bacteria, or fungi. Pathogens and contaminants released during autopsies cannot be removed at source due to the absence of effective means of extraction. Provision of showering facilities for decontamination is inadequate, and lacking for treatment of emergencies in case of accidental exposures to contaminants or chemicals. Lifting bodies onto and off autopsy tables or trolleys manually without the assistance of any mechanical device is undesirable from the occupational health point of view. As a result, the staff working in mortuaries have to exercise caution in their work. Improvement works are therefore required to be carried out to rectify such deficiencies. This would ensure that the infection control facilities in the mortuaries are in line with international benchmarks, thus providing a healthier working environment in the existing autopsy facilities of public hospitals.

8. If no improvements are to be made to these infection control provision and facilities, the health of staff handling the storage and post-mortem examination of bodies will be at stake. A single incident of infection may lead to community outbreak of an infectious disease. With the threat of pandemic influenza lurking in the horizon, we need to heighten our preparedness in all aspects.

FINANCIAL IMPLICATIONS

9. Hospital Authority (HA), in consultation with the Director of Architectural Services, estimates the cost of the proposed works to be \$68.4 million in MOD prices (see paragraph 10 below), made up as follows –

	\$ million	
(a) Building	22.7	
(b) Building services	26.8	
(c) Furniture and Equipment (F&E) ²	8.0	
(d) Consultants' fees for contract administration	3.4	
(e) Site supervision	0.9	
(f) Contingencies	6.2	

Sub-total	68.0	(in September 2004 prices)
(g) Provision for price adjustment	0.4	

Total	68.4	(in MOD prices)

A breakdown of the project estimate by hospital is at Enclosure 2. A breakdown of the estimate for consultants' fees is at Enclosure 3.

² Based on indicative list of F&E items and their estimated prices.

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

Year	\$ million (Sept 2004)	Price adjustment factor	\$ million (MOD)
2005 – 2006	17.0	1.00450	17.1
2006 – 2007	41.0	1.00576	41.2
2007 – 2008	10.0	1.00576	10.1
Total	68.0		68.4

11. We have derived the MOD estimate 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 2005 to 2008. The total construction floor areas (CFA) covered by the proposed improvement works are around 3 200 square metres (m²). The estimated construction unit cost, represented by building and building services costs, is around \$15 469 / m² of CFA in September 2004 prices. The unit cost is considered reasonable for the nature of the works to be carried out. HA will engage professional consultants through competitive bidding in line with prevailing government procedures. HA intends to award the contract on a fixed-price lump-sum basis as the scope of works can be clearly defined in advance. The contract will not provide for price adjustments because the contract period will not exceed 21 months.

12. HA has assessed the requirements for F&E for this project, and estimates the F&E costs to be \$8.0 million. The proposed F&E provision, which represents 16.2% of the total construction cost³ of the project, is broadly comparable to that for projects of similar nature and scope.

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³ Represented by the building and building services costs.

13. HA estimates the annual recurrent expenditure upon completion of the project to be around \$9.3 million.

PUBLIC CONSULTATION

14. We consulted the Legislative Council Panel on Health Services at its meeting on 17 May 2005. Members supported the proposed project but requested that the works schedule and project estimate of each of the 11 public hospitals be set out in the submission to PWSC. Such information is now provided in Enclosure 2.

ENVIRONMENTAL IMPLICATIONS

15. This is not a designated project under the Environmental Impact Assessment Ordinance and will not cause long-term adverse environmental impact. During construction, HA will control noise, dust and site run-off nuisances to within established standards and guidelines through the implementation of mitigation measures in the relevant contracts. These include the use of silencers, mufflers, acoustic lining or shields for noisy construction activities, frequent cleaning and watering of the site and, where applicable, the provision of wheel-washing facilities. These mitigation measures will be adequate to curb negative environment impacts on sensitive hospital users (e.g patients) to within acceptable level.

16. At the planning and design stages, HA has considered measures to reduce the generation of construction and demolition (C&D) materials⁴. HA will use more prefabricated building elements into the project design to reduce temporary formwork and construction waste. These include dry-wall partitioning and proprietary fittings and fixtures. In addition, HA will require the contractors to use metal site hoardings and signboards so that these materials can be recycled or reused in other projects.

17. HA will also require the contractors to submit a waste management

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⁴ No contaminated C&D materials will be generated in this project.

plan (WMP) for approval. The WMP will include appropriate mitigation measures to avoid, reduce, reuse and recycle C&D materials. HA will ensure that the day-to-day operations on site comply with the approved WMP. HA will control the disposal of public fill and C&D waste to designated public filling facilities and landfills respectively through a trip-ticket system. HA will require the contractors to separate public fill from C&D waste for disposal at appropriate facilities and to record the disposal, reuse and recycling of C&D materials for monitoring purposes. HA estimates that the project will generate about 1 000 cubic metres (m³) of C&D materials. Of these, HA will reuse about 500 m³ (50%) as fill in public filling areas⁵ and dispose of about 500 m³ (50%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be \$62 500 for this project (based on a notional unit cost⁶ of \$125/m³).

LAND ACQUISITION

18. The proposed project does not require land acquisition.

BACKGROUND INFORMATION

19. We upgraded **62MM** to Category B in November 2004. HA engaged professional consultants in February 2005 to carry out detailed design work and prepare tender documents at a cost of \$3.3 million. HA charged the consultancy fee to block allocation Subhead **8100MX** "Hospital Authority – improvement works, feasibility studies, investigations and pre-contract consultancy services for building projects". The consultants have substantially completed the detailed design work and are preparing the tender document.

20. The proposed works will not involve any tree removal or planting proposals.

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⁵ 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.

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 per m³), 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.

21. We estimate that the proposed project will create about 80 jobs (72 for labourers and another eight for professional/technical staff), providing a total employment of 1 120 man-months.

Health, Welfare and Food Bureau
May 2005

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List of public hospitals covered under the project scope

- 1) Alice Ho Miu Ling Nethersole Hospital
- 2) Kwong Wah Hospital
- 3) North District Hospital
- 4) Pamela Youde Nethersole Eastern Hospital
- 5) Prince of Wales Hospital
- 6) Queen Elizabeth Hospital
- 7) Queen Mary Hospital
- 8) Tseung Kwan O Hospital
- 9) Tuen Mun Hospital
- 10) United Christian Hospital
- 11) Yan Chai Hospital

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Breakdown of works schedule and project estimate by hospital

Hospital	Cost Estimate (\$ million in Sept 2004 prices)	Scheduled Works Period
Alice Ho Miu Ling Nethersole Hospital	7.0	Nov 2005 to Apr 2006
Pamela Youde Nethersole Eastern Hospital	6.6	
Kwong Wah Hospital	6.0	
United Christian Hospital	5.1	
Queen Mary Hospital	6.9	May 2006 to Aug 2006
Queen Elizabeth Hospital	6.0	
North District Hospital	5.8	
Tseung Kwan O Hospital	5.1	
Prince of Wales Hospital	7.6	Sep 2006 to Dec 2006
Tuen Mun Hospital	6.3	
Yan Chai Hospital	5.6	
Total	68.0	

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Breakdown of estimates for consultants' fees^(Note 1)

Consultants' staff costs			Estimated man-months	Average MPS* salary point	Multiplier ^(Note 2)	Estimated fees (\$ million)
Tender Documentation						
(a)	Architectural	Professional	7	38	2.0	0.8
		Technical	19	14	2.0	0.7
(b)	Building services	Professional	7	38	2.0	0.8
		Technical	19	14	2.0	0.7
(c)	Structural engineering	Professional	1	38	2.0	0.1
		Technical	3	14	2.0	0.1
(d)	Quantity surveying	Professional	1	38	2.0	0.1
		Technical	3	14	2.0	0.1
Total consultants' staff costs						3.4

* MPS = Master Pay Scale

Notes

1. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement entitled "*Pre-contract Consultancy Services for the Improvement of Infection Control Provisions for Autopsy Facilities in Public Hospitals*". The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade **62MM** to Category A.
2. A multiplier of 2.0 is applied to the average MPS point to arrive at the full staff costs for the staff employed by the consultants. The staff costs include the consultants' overheads and profit. (As at 1 January 2005, MPS point 38 = \$54,255 per month and MPS point 14 = \$18,010 per month.)