

LegCo Panel on Health Services

**56MM - Enhancement of infection control facilities
in the public hospital system (Batch A) –
Increase in approved project estimate**

Purpose

This paper seeks to inform Members of the proposal to increase the approved project estimate of the project 56MM “Enhancement of infection control facilities in the public hospital system”.

Background

2. The original scope of **56MM** comprises modification of 50 wards in six public hospitals, namely, Pamela Youde Nethersole Eastern Hospital (PYNEH), Prince of Wales Hospital (PWH), Princess Margaret Hospital (PMH), Queen Elizabeth Hospital (QEH), Queen Mary Hospital (QMH) and Tuen Mun Hospital (TMH), to provide the standard facilities required for isolation rooms, where such facilities are not previously provided, by -

- (a) creation of negative pressure gradient with air flowing from “clean” zones (e.g. ward corridors) to “dirty” zones (e.g. patient rooms);
- (b) provision of 100% fresh air supply at no less than 12 air changes per hour;
- (c) installation of low level exhaust for better air flow pattern;
- (d) installation of high efficiency particulate air (HEPA) filter for filtering out droplets and aerosols;
- (e) air-tight construction for patient rooms to prevent cross contamination;
- (f) addition of doors to close off existing open cubicles;

- (g) provision of en-suite toilet / shower facilities in ward cubicles where existing building structure and building services installation permit; and
- (h) provision of infection control facilities for hospital staff, such as gowning / de-gowning areas, changing rooms, shower facilities and clinical wash-hand basins.

The original scope and nature of works of the six public hospitals is set out at Enclosure 1. In addition, there would also be additional isolation beds in the Intensive Care Units.

Present position and justifications for increase in approved project estimate

3. The project was planned and has to be completed within an extremely tight timeframe. In the submission made to the Public Works Subcommittee on 2 July 2003 for **56MM**, we mentioned that we accepted HA's preliminary cost estimate for the works involved in the six hospitals as the control figure for **56MM** given the extremely tight timeframe for completion of the works required in the event of a resurgence of SARS later in the year. In tandem with the process of seeking funding approval from the Finance Committee, Director of Architectural Services (D Arch S), as the works agent for **56MM**, will deploy in-house staff resources to develop the detailed user requirements and detailed cost estimates to satisfy himself the extent to which HA's preliminary cost estimates are correct. We further mentioned that whilst we had not been able to adhere to the usual sequential approach with the Controlling Officer (i.e. D Arch S for **56MM**) having vetted the preliminary cost estimates before seeking funding approval from the Finance Committee, we are satisfied that concurrent processing is the only way forward to achieve the target project delivery date. In the course of developing the detailed user requirements and detailed cost estimates, we had to adjust the scope of works for each hospital according to the actual site configurations and site constraints. In some cases, the works had to be carried out in a larger area than originally estimated. The construction floor area (CFA) of **56MM** is therefore increased from 28 200 square metres (m²) by 416 m² to 28 616 m². We have also attempted to make the best use of hospital space to provide more bed head services so that the isolation rooms, when used as general wards in normal times, can accommodate a larger number of patients. The supporting systems have also been designed to cater for a larger number of patients who may use these isolation rooms when there is no infectious disease outbreak. We estimate the additional funding to provide the additional bed head services and other associated facilities to be \$5.2 million in MOD prices.

4. In the course of the works, ArchSD has also encountered unforeseeable problems that require additional expenditure to resolve. The building conditions of some of the wards, particularly those in PWH, TMH and Block F of QEH where no major refurbishment works have been carried out before, were neither satisfactory nor fit for conversion into isolation rooms. These problems included concrete spalling, water penetration and pipeworks which were at the end of their serviceable life. Most of these problems were not discernable while the wards were in active use; some could only be identified when works had actually started. Urgent repair and rectification works for these wards would be necessary before the conversion works could begin. Furthermore, ArchSD also found that the capacity of the power supply in TMH and PYNEH was insufficient to support the new air-conditioning and ventilation systems in the isolation wards. In addition, the chilled water supply in four of the six hospitals, namely, PWH, PMH, QMH and TMH, was also inadequate to support these systems. These problems were not apparent before developing the detailed user requirements. We therefore have to incur additional expenditure to enlarge the capacity of the power and chilled water supply in the hospitals concerned by adding transformers, generator sets and chillers. We estimate the additional funding required for the unforeseeable repair, rectification and major alteration works to be \$48.1 million in MOD prices.

5. To facilitate the carrying out of the works under 56MM, we have to arrange decanting of the existing hospital wards. As most of the hospital services provided by these wards are essential, ArchSD has to carry out necessary diversion works for building services such as plumbing and drainage as well as medical gas and hot water supply systems to ensure that the existing hospital services can continue to be provided elsewhere in the hospital. The services diversion costs for PWH, QEH and TMH would be particularly high due to the need to re-route essential building services including the fire sprinkler systems, automatic fire alarm systems and medical gas supply systems. As all six hospitals are major acute hospitals, we have faced considerable difficulties in arranging decanting in one go without affecting the existing hospital services. ArchSD has therefore had to conduct the improvement works in phases and in some occasions, to carry out works at night in order to suit the operational needs of the hospitals concerned and to expedite the completion of the works. This in turn leads to extra costs and time for carrying out the works under 56MM. We estimate the additional funding required for the decanting and services diversion works to be \$14.8 million in MOD prices.

Proposal

6. Based on the additional funding required in paragraphs 3, 4 and 5 above, D Arch S considers it necessary to increase the approved project estimate

of **56MM** from \$287.2 million by \$68.1 million to \$355.3 million in MOD prices. A breakdown for the proposed increase of \$68.1 million is as follows -

Additional requirements	Amount (\$ million)	% of the total increased amount
(a) Increase in CFA	5.2	7.7
(b) Repair, rectification and alteration works	48.1	70.6
(c) Decanting and services diversion works	14.8	21.7
	Total	100.0
	68.1	(in MOD prices)

----- A comparison of the cost breakdown of the approved project estimate and the revised project estimate (both in MOD prices), together with reasons leading to the proposed increase in the approved project estimate, are set out at Enclosure 2.

Advice sought

7. Members are requested to note the content of the paper.

Health, Welfare and Food Bureau
Architectural Services Department
December 2003

Enclosure 1

56MM – Enhancement of infection control facilities in the public hospital system (Batch A) – Increase in approved project estimate

Hospital

Scope of works

PYNEH	Alteration and addition (A&A) works in five wards and the Accident & Emergency (A&E) Department, covering a total Construction Floor Area (CFA) of around 4 500 m ² to provide - <ul style="list-style-type: none">• 50 beds for confirmed SARS patients• 72 beds for suspected SARS patients• infection control / isolation facilities in A&E Department
PWH	Conversion / A&A works in six wards, covering a CFA of around 3 500 m ² to provide - <ul style="list-style-type: none">• 48 beds for confirmed SARS patients• 60 beds for suspected SARS patients
PMH	Conversion of 12 wards covering a CFA of around 5 500 m ² to provide - <ul style="list-style-type: none">• 108 beds for confirmed SARS patients• 84 beds for suspected SARS patients• nine Intensive Care Unit (ICU) beds
QEH	Conversion / A&A works in 11 wards, covering a CFA of around 5 500 m ² to provide - <ul style="list-style-type: none">• 36 beds for confirmed SARS patients• 124 beds for suspected SARS patients• infection control / isolation facilities in ICU
QMH	Conversion / A&A works in six wards and Operating Theatre (OT) suite, covering a total CFA of around 3 200 m ² to provide - <ul style="list-style-type: none">• 54 beds for confirmed SARS patients• 46 beds for suspected SARS patients• 10 ICU beds• one negative-pressure OT
TMH	A&A works in ten wards and the A&E Department, covering a total CFA of around 6 000 m ² to provide - <ul style="list-style-type: none">• 48 beds for confirmed SARS patients• 141 beds for suspected SARS patients• infection control / isolation facilities in emergency observation and pre-admission ward, the A&E Department, ICU and High Dependency Unit (HDU)

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A comparison of the approved project estimate (in MOD prices) and the revised project estimate (in MOD prices) is as follows –

		Approved Estimate (in MOD prices) \$ million	Revised Estimate (in MOD prices) \$ million
(a)	Building	156.7	183.2
(b)	Building services	104.5	158.4
(c)	Contingencies	<u>26.0</u>	<u>13.7</u>
	Total	<u>287.2</u>	<u>355.3</u>

2. **As regards (a) (Building)**, the total increase of \$26.5 million includes –

- (i) an increase of \$3.7 million due to increase in CFA;
- (ii) an increase of \$12.5 million due to repair/rectification works to fix spalled concrete, water penetration, defective services pipeworks; and associated builder's works for the additional building services alteration works mentioned in paragraph 3 below, such as the provision of new transformer rooms; and
- (iii) an increase of \$10.3 million due to the additional costs incurred arising from the lack of buffer space in hospitals and the need to carry out the works in phases; services diversion and connection/disconnection; and night work required to suit hospitals' operational needs and decanting programme.

3. **As regards (b) (Building Services)**, the total increase of \$53.9 million includes –

- (i) an increase of \$2.5 million due to increase in CFA;
- (ii) an increase of \$44.0 million due to the upgrading of power supply to support the new air-conditioning and mechanical ventilation systems, including the addition of transformers; and provision of air-conditioning chillers; and

- (iii) an increase of \$7.4 million due to the additional costs incurred arising from the lack of buffer space in hospitals and the need to carry out the works in phases; services diversion and connection/disconnection; and night works required to suit hospitals' operational needs and decanting programme.

4. **As regards (c) (Contingencies)**, the decrease of \$12.3 million represents a reduced requirement for contingencies upon completion of the alteration and addition works for PYNEH and PWH, and for part of the wards in PMH, TMH, QEH and QMH by end of October 2003.