

**For discussion
on 23 April 2003**

PWSC(2003-04)9

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 708 – CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT

Medical Subventions

48MM – Redevelopment of staff quarters for the establishment of a rehabilitation block at Tuen Mun Hospital

Members are invited to recommend to Finance Committee the upgrading of **48MM** to Category A at an estimated cost of \$1,031.4 million in money-of-the-day prices for the redevelopment of staff quarters for the establishment of a rehabilitation block at Tuen Mun Hospital.

PROBLEM

There is a pressing need to meet the increasing demand for rehabilitation services in the North West New Territories.

PROPOSAL

2. The Director of Architectural Services (D Arch S), with the support of the Secretary for Health, Welfare and Food, proposes to upgrade **48MM** to Category A at an estimated cost of \$1,031.4 million in money-of-the-day (MOD) prices to redevelop the Staff Quarters Blocks B and C of Tuen Mun Hospital (TMH) for the establishment of a rehabilitation block, and to conduct certain improvement works to the existing facilities in TMH.

/PROJECT

PROJECT SCOPE AND NATURE

3. The scope of **48MM** comprises -
- (a) refurbishment of Staff Quarters Block A for decanting the existing facilities in Staff Quarters Blocks B and C to Staff Quarters Block A;
 - (b) demolition of Staff Quarters Blocks B and C;
 - (c) construction of a 12-storey rehabilitation block with a construction floor area (CFA) of 56 352 square metres on the site of Staff Quarters Blocks B and C to accommodate -
 - (i) 512 convalescent / rehabilitation beds;
 - (ii) a day rehabilitation unit with a capacity of 155 places;
 - (iii) related integrated rehabilitation and social support facilities, including physiotherapy, occupational therapy, speech therapy, dietetics, medical social service, clinical psychology, prosthetics and orthotics, rehabilitation garden and resources / walk-in counselling centre;
 - (iv) other facilities, including radiology unit, pharmacy, electrophysiological studies unit, Red Cross school, health information and records office, staff canteen, mortuary, library, stores and a carpark with 174 spaces for use by hospital staff and visitors; and
 - (v) hospital administration and other facilities to be permanently reprovisioned from Staff Quarters Blocks B and C;
 - (d) construction of a link bridge across Tsing Lun Road connecting the ambulatory care centre in the main hospital compound and the proposed rehabilitation block; and

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- (e) improvement to the main hospital compound, including -
 - (i) installation of a wheelchair lift in the existing subway connecting the Main Block with the rehabilitation block site; and
 - (ii) addition of three passenger lifts and upgrading of existing lifts in the Main Block.

4. The site plans of TMH before and after the redevelopment project are at Enclosures 1 and 2 respectively. A three-dimensional perspective drawing of the proposed rehabilitation block is at Enclosure 3. We plan to start the construction works in May 2003 for completion in June 2007.

JUSTIFICATION

Strengthening the provision of rehabilitation facilities

Additional convalescent / rehabilitation beds

5. At present, the Hospital Authority (HA) provides medical services for Yuen Long and Tuen Mun districts through its New Territories West (NTW) hospital cluster, which comprises TMH, Pok Oi Hospital (POH), Castle Peak Hospital and Siu Lam Hospital. The NTW cluster has a provision of 1 671 general beds (or 1.58 general beds per 1 000 population), which is insufficient to meet the increasing needs of the cluster due to population growth. According to the latest projections of the Census and Statistics Department, the population in the NTW cluster will increase from 1 062 500 in 2002 to 1 216 800 in 2010, representing a 15% rise. The number of elderly people aged 65 and above in the NTW cluster will increase by 22% from 88 000 in 2002 to 107 500 in 2010. HA estimates that by 2010, the projected shortfall in the provision of general beds¹ in the NTW cluster will be in the region of 700 beds. At present, the cluster has only 266 convalescent / rehabilitation beds which is way below the territory-wide ratio of acute beds to convalescent / rehabilitation beds of 3 to 1.

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¹ General beds comprise acute beds and convalescent / rehabilitation beds. Infirmiry beds are not counted as general beds.

6. With an ageing population which is more prone to chronic illness and disability, and the increasing prevalence of chronic illnesses, there is increased demand for rehabilitation services. This shortfall will partly be addressed by **SME** “Redevelopment and Expansion of Pok Oi Hospital”, which the Finance Committee approved in July 2002 to upgrade POH to a modern acute general hospital and expand its capacity by providing 272 additional acute beds. To cope with the demand for rehabilitation services in the cluster, we propose to provide an additional 512 convalescent / rehabilitation beds at TMH to bring the ratio of acute beds to convalescent / rehabilitation beds in the NTW cluster in line with the territory-wide provision. With these additional beds, we can meet the balance of the projected shortfall of general beds in the NTW cluster by 2010.

Provision of day rehabilitation facilities

7. Day rehabilitation services can enhance continuity of care and reduce the need for in-patient services. At present, there are no designated day facilities providing integrated day rehabilitation services under one roof in the NTW cluster. We propose to set up a day rehabilitation unit at TMH to cater for the rehabilitation needs of patients suffering from various chronic illnesses, such as cardiac, neurological or respiratory illnesses. The proposed day rehabilitation unit will run day rehabilitation programmes to provide multi-disciplinary treatment for chronically ill patients, with particular emphasis on rehabilitation and allied health services. It will have a capacity of 155 day places, of which 105 are new day rehabilitation places. Another 50 geriatric day places² will be relocated to this day rehabilitation unit from the Main Block of TMH. We estimate that the unit will have an annual throughput of 2 700 patients and 40 000 attendances. Upon the relocation of the geriatric day places from the Main Block, TMH will separately renovate the vacated area for setting up an overflow ward to house 32 acute beds so as to relieve the congestion in other wards of the hospital.

Reprovisioning of existing facilities in Staff Quarters Blocks B and C

8. We propose to demolish Staff Quarters Blocks B and C and build a rehabilitation block on the site to accommodate 512 convalescent / rehabilitation beds, a day rehabilitation unit and related support and ancillary facilities. We also propose to permanently reprovision the hospital administration and other facilities

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² The annual throughput of the 50 geriatric day places is 750 patients and 12 500 attendances.

from Staff Quarters Blocks B and C to the new rehabilitation block to enhance operational efficiency. Staff Quarters Blocks B and C were constructed in the 1980s to provide 292 quarters and 48 quarters respectively for hospital staff. When HA took up the management responsibilities of public hospitals in 1991, it decided that no more residential accommodation should be provided to hospital staff, except for trainee quarters provided for student / trainee nurses, callrooms / overnight rooms for medical staff, and dormitory accommodation for minor staff. Staff Quarters Block B has since been converted for use as callrooms, overnight rooms, staff canteen and administration departments, while Staff Quarters Block C for storage. Some units of both blocks have been rented out to hospital staff. To enable the redevelopment project to proceed, HA will terminate the lease of the rented-out units. As for those hospital facilities currently accommodated in Staff Quarters Blocks B and C, they will be decanted to the existing premises of TMH in the interim pending eventual reprovisioning to the new rehabilitation block. With the closure of HA Nursing Schools, space is available in Staff Quarters Block A to house the reprovisioned facilities. In this connection, we need to alter the internal layout of Staff Quarters Block A for temporary accommodation of the hospital administration and other facilities to be reprovisioned from Staff Quarters Blocks B and C. Other basic refurbishment works to be carried out in Staff Quarters Block A include replacement / addition of building services (including electrical installations, air-conditioning / mechanical ventilation, fire services installations and plumbing / drainage installations) to meet the current statutory requirements and standards, and touching up and redecoration works. The total CFA of Staff Quarters Block A to be refurbished / altered for temporary accommodation of facilities to be reprovisioned from Staff Quarters Blocks B and C is 4 700 square metres. Upon completion of the project, HA will reprovision the decanted facilities in Staff Quarters Block A permanently to the new rehabilitation block, thereby taking up 7 238 square metres of CFA of the new block. HA will review how best to use Block A to provide public hospital services in the cluster upon permanent relocation of the decanted facilities to the proposed rehabilitation block.

Link bridge

9. The site where the proposed rehabilitation block is situated is physically separated from the main hospital compound by Tsing Lun Road and the Light Rail Transit. We propose to construct a link bridge to connect the proposed rehabilitation block with the ambulatory care centre in the main hospital compound. The operation of the proposed rehabilitation block relies heavily on the support of existing medical staff and ancillary support services in the main hospital compound.

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The link bridge will facilitate sharing of staff and major facilities in departments such as X-ray, pathology, medical electronics, and prosthetics and orthotics in the main hospital compound to meet the operational needs of the rehabilitation block. In terms of public access, the main hospital compound is well served by public transport while the proposed rehabilitation block is not. The link bridge provides patients and visitors with easy access from the main hospital compound to the rehabilitation block. The link bridge is also the shortest route connecting the rehabilitation block and the ambulatory care centre. It reduces the commuting time for hospital staff who have an operational need to commute between the ambulatory care centre and the rehabilitation block. The projected daily pedestrian traffic for the proposed link bridge is about 5 000 trips.

Improvement to existing facilities in TMH

10. At present, there is a subway connecting the staff quarters site and the Main Block of TMH. Notwithstanding the construction of a link bridge connecting the proposed rehabilitation block with the ambulatory care centre in the main hospital compound, the subway provides the most direct access between the proposed rehabilitation block and the Main Block of TMH. A detour using the link bridge would more or less double the commuting distance between the proposed rehabilitation block and the Main Block. We envisage that hospital staff, patients and visitors commuting between the proposed rehabilitation block and the Main Block of TMH will make use of the subway. There are however flights of narrow steps with steep gradient in the subway. At present, there are no facilities to enable disabled persons to use the subway. In line with the spirit of the Disability Discrimination Ordinance (Cap. 487) which advocates the provision of appropriate facilities to facilitate access to any premises by disabled persons, we propose to install a wheelchair lift in the subway for use by disabled persons.

11. The Main Block is at present served by eight bed / passenger lifts. Severe queuing for lift service is often experienced at the ground floor level. An on-site survey conducted in 2002 revealed that up-trip traffic at the ground floor level alone accounted for nearly 50% of the total lift traffic load of the Block. The waiting time is around 4 minutes on average but can be up to 15 minutes during peak hours. The existing lifts in the Main Block of TMH also experience frequent breakdowns. There were 148 lift breakdowns (or 12.3 breakdowns per month) in 2002, compared to 92 for 2001 (or a monthly average of 7.7). As the Main Block houses essential services (with operating theatres on the second to fifth floors, and

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the Intensive Care Unit on the eighth floor), availability of reliable and speedy lift service is essential for the operation of the hospital. We therefore propose to install three additional passenger lifts, and upgrade the existing lifts in the Main Block to improve its lift service.

FINANCIAL IMPLICATIONS

12. We estimate the total cost of this project to be \$1,031.4 million in MOD prices, made up as follows –

	<i>\$ Million</i>			
	<i>Rehabi -litation Block (1)</i>	<i>Staff Quarters Block A (2)</i>	<i>Other existing facilities (3)</i>	<i>Total (4)</i>
(a) Site works and demolition	6.5			6.5
(b) Site formation	32.9			32.9
(c) Piling	103.2			103.2
(d) Link bridge ³	15.0			15.0
(e) Improvement works to existing facilities in TMH			25.0	25.0
(i) Wheelchair lift				
(ii) Addition and upgrading of lifts in Main Block			1.5 18.5	
(iii) Installation of a new vacuum insulated evaporator (VIE) tank ⁴			5.0	
				/(f)

³ The design, construction and site supervision of the link bridge will be executed by the Highways Department, including engagement of consultants for the design and site supervision of the link bridge.

⁴ A new VIE tank is required to cope with the increased demand for oxygen supply for the entire hospital. The cost of procuring the VIE tank has been included in item (j).

	<i>\$ Million</i>			<i>Total</i> (4)
	<i>Rehabi- -litation Block</i> (1)	<i>Staff Quarters Block A</i> (2)	<i>Other existing facilities</i> (3)	
(f) Relocation works and service diversion			5.0	5.0
(g) Building	446.7	11.8		458.5
(h) Building services	222.3	8.8		231.1
(i) Drainage and external works	20.0			20.0
(j) Furniture and equipment (F&E) ⁵	118.0			118.0
(k) Consultancy fees for	3.9			3.9
(i) design and site supervision of link bridge ³	2.8			
(ii) supervision of demolition works	1.1			
(l) Contingencies				89.7
			Sub-total	1,108.8
				(in Sept. 2002 prices)
(m) Provisions for price adjustment				(77.4)
			Total	1,031.4
				(in MOD prices)
				/Item

⁵ Based on an indicative list of F&E items and their estimated prices.

Item (c)(1) above is for piling works in connection with the construction of the new rehabilitation block, including construction of large diameter bored piles. Item (g)(1) is for builder's works in connection with the construction of the new rehabilitation block. The works involve superstructure construction, plumbing/drainage installations, provision of finishes/fittings/fixtures, landscaping and other associated works (including all necessary temporary works). Item (h)(1) is for building services works in connection with the construction of the new rehabilitation block, including provision of electrical installations, air-conditioning/mechanical ventilation, fire services installations, two emergency generator sets, a hot water supply system, lifts, medical gas pneumatic tube installations, and other associated works. A breakdown of the estimate for the consultants' fees by man-months is at Enclosure 4. The CFA of the new rehabilitation block is 56 352 square metres. The estimated construction unit cost, represented by building and building services costs, is \$11,872 per square metre of CFA in September 2002 prices. The unit cost is comparable to that for other similar hospital projects.

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

Year	\$ million (Sept 2002)	Price adjustment factor	\$ million (MOD)
2003 – 04	15.0	0.94300	14.1
2004 – 05	110.0	0.93003	102.3
2005 – 06	320.0	0.93003	297.6
2006 – 07	320.0	0.93003	297.6
2007 – 08	250.0	0.93003	232.5
2008 – 09	75.0	0.93003	69.8
2009 – 10	18.8	0.93003	17.5
	1,108.8		1,031.4

14. We have derived the MOD estimates on the basis of the Government's latest forecast of trend labour and construction prices for the period 2003 to 2010. We will deliver the demolition, piling and site formation works through a fixed-price lump-sum contract as the contract period will be less than 21 months and we can clearly define the scope of works in advance, leaving little room for uncertainty. We will deliver the superstructure works through a lump-sum contract with provision for price fluctuation as the contract period will exceed 21 months.

15. HA has assessed the requirements for F&E for this project, and estimates the F&E cost to be \$118 million. The proposed F&E provision, which represents 17.1% of the total construction cost⁶ of the project, is broadly comparable to that for projects of similar nature and scope. A list of major F&E items (costing \$1 million or above per item) to be procured for the project is at Enclosure 5.

16. We estimate the additional annual recurrent expenditure arising from the project to be \$580 million. With the implementation of the population-based funding mechanism, the provision of recurrent funding will no longer be facility-based. No separate resources will therefore be provided to HA to cover the recurrent consequences arising from this project.

PUBLIC CONSULTATION

17. HA consulted the Social Service Committee of the Tuen Mun District Council in May 2000. Members of the Committee supported the proposed project, and urged the Government to expedite the construction of the proposed rehabilitation block to strengthen the provision of rehabilitation services in Tuen Mun.

18. We consulted the Legislative Council Panel on Health Services on the project on 21 January 2003. Members supported the proposed project.

/ENVIRONMENTAL

⁶ Represented by building, building services, and drainage and external works costs for the rehabilitation block.

ENVIRONMENTAL IMPLICATIONS

19. D Arch S completed a Preliminary Environmental Review (PER) in February 2000. The PER concluded and the Director of Environmental Protection agreed that the project will not have long-term environmental impact and that an Environmental Impact Assessment would not be necessary.

20. We have engaged a registered asbestos consultant to conduct an investigation for the presence of asbestos-containing materials (ACM) in Blocks A, B and C. The investigation has concluded that these premises are free from ACM. During construction, we will control noise, dust and site run-off nuisances to within established standards and guidelines through the implementation of mitigation measures in the relevant contract. These include the use of silencers, mufflers, acoustic lining or shields for noisy construction activities, frequent cleaning and watering of the site, and the provision of wheel-washing facilities.

21. At the planning and design stages, we have considered measures to reduce the generation of construction and demolition (C&D) materials. D Arch S has introduced 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. We will use suitable excavated materials for filling within the site to minimise off-site disposal. In addition, we will require the contractor to use metal site hoardings and signboards so that these materials can be recycled or reused in other projects.

22. We estimate that the project will generate about 78 000 cubic metres (m³) of C&D materials. Of these, we will reuse about 3 000m³ (3.8%) on site and 37 000m³ (47.4%) as fill in public filling areas⁷, deliver 30 000 m³ (38.5%) to the recycling plant at Tuen Mun Area 38 for production of recycled aggregates, and dispose of 8 000m³ (10.3%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be \$1.0 million for this project (based on a

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⁷ 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.

notional unit cost⁸ of \$125/m³).

23. D Arch S will require the contractor to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures to avoid, reduce, reuse and recycle C&D materials. D Arch S will ensure that the day-to-day operations on site comply with the approved WMP. D Arch S will control the disposal of public fill and C&D waste to designated public filling facilities and landfills respectively through a trip-ticket system. D Arch S will require the contractor to separate public fill from C&D waste for disposal at appropriate facilities. D Arch S will record the disposal, reuse and recycling of C&D materials for monitoring purposes.

LAND ACQUISITION

24. The proposed works do not require land acquisition.

BACKGROUND INFORMATION

25. TMH is an acute general hospital with 1 722 beds as at end of 2002. Opened in 1990, it now runs an Accident & Emergency Department and provides a wide spectrum of inpatient, specialist outpatient and ambulatory care services. Its clinical specialties include medicine, surgery, orthopaedics and traumatology, obstetrics and gynaecology, neurosurgery, paediatrics, neonatology, ear, nose and throat, ophthalmology, intensive / coronary care, mentally handicapped and psychiatry. It is a designated specialised service centre for clinical toxicology, clinical oncology and nuclear medicine. On project completion, TMH will have a capacity of 2 234 hospital beds.

26. We upgraded **48MM** to Category B in April 2001. We engaged consultants to complete a PER and an asbestos survey in December 1998 and

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⁸ 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.


February 2002 respectively, and employed a term contractor to carry out site investigations in December 2001 at a total cost of \$1.2 million. We charged this amount to block allocation **Subhead 8100MX** “Hospital Authority – improvement works, feasibility studies, investigations and pre-contract consultancy services for building projects”. The consultants have completed the PER and asbestos survey, and the term contractor has completed the site investigations. D Arch S has completed the detailed design of the project and is preparing the tender documentation with in-house staff resources.

27. We estimate that the project will create some 740 jobs comprising ten professional staff, 30 technical staff and 700 labourers, totalling 15 900 man-months.

Health, Welfare and Food Bureau
April 2003




位置圖 LOCATION PLAN
比例 SCALE : 10000

6048M 重建屯門醫院職員宿舍 為康復大樓 Redevelopment of Staff Quarters for the Establishment of a Rehabilitation Block of Tuwen Mun Hospital	drawn by 繪圖 M.F. LEUNG	date 日期 03-10-02	drawing no. 圖號 5782-P01	scale 比例 1:2000
	approved 校核 Y.O. CHAU	date 日期 03-10-02	 ARCHITECTURAL SERVICES DEPARTMENT 建築部	
	office 辦事處 ARCHITECTURAL BRANCH 建築設計處			



位置圖 LOCATION PLAN
比例 SCALE : 10000


E0400M 重建屯門醫院職員宿舍 為康復大樓 Redevelopment of Staff Quarters for the Establishment of a Rehabilitation Block at Tuen Mun Hospital	drawn by 林	date 03-10-02	drawing no. 5782-P02	scale 1:2000
	approved 葉	date 03-10-02	 ARCHITECTURAL SERVICES DEPARTMENT	
office 建築	ARCHITECTURAL BRANCH 建築設計			



從東面望向康復大樓(模擬圖)
View of the New Rehabilitation Block from East Direction (Artist's Impression)



供病人使用的休憩花園(模擬圖)
View of one of the Rehabilitation Gardens (Artist's Impression)

8048M 重建屯門醫院職員宿舍 為康復大樓 Redevelopment of Staff Quarters for the Establishment of a Rehabilitation Block at Tuen Mun Hospital	draws by 繪圖	date 日期	drawing no. 圖號	scale 比例
	M.F. LEUNG / K.K. CHEN	20-03-03	6603/SK-1	N.T.S.
	approved 審核	date 日期	 ARCHITECTURAL SERVICES DEPARTMENT 建築署	
	Y.D. CHAU	20-03-03		
	office 辦事處	ARCHITECTURAL BRANCH 建築設計處		

Enclosure 4 to PWSC(2003-04)9

**48MM – Redevelopment of staff quarters for the establishment of a
rehabilitation block at Tuen Mun Hospital**

Breakdown of estimate for consultants' fees

Consultants' staff cost		Estimated man- months	Average MPS* salary point	Multiplier	Estimated fee (\$million)
(a) Design and site supervision of link bridge	Professional	12.5	38	2.0	1.4
	Technical	35.5	14	2.0	1.4
(b) Supervision of demolition works	Professional	9.0	38	2.0	1.0
	Technical	3.0	14	2.0	0.1
				Total	3.9

*MPS = Master Pay Scale

Notes

- (1) A multiplier of 2.0 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. (At 1 October 2002, MPS point 38 is \$57,730 per month and MPS point 14 is \$19,195 per month.)
- (2) The figures given above are based on estimates prepared by the Director of Architectural Services. We will only know the actual man-months and actual fees when we have selected the consultants through the usual competitive bidding system.

Enclosure 5 to PWSC(2003-04)9

**48MM – Redevelopment of staff quarters for the establishment of a
rehabilitation block at Tuen Mun Hospital**

Furniture and equipment items with unit cost of \$1 million or more

Item description	Qty	Unit cost (\$ million)	Total cost (\$ million)
Echocardiographic system	1	2.500	2.500
General radiography system with digital capability	1	4.200	4.200
Heavy duty electric mobile shelving system	1	1.000	1.000
Lung function test system	1	1.100	1.100
Mobile fluoroscopic equipment	1	1.700	1.700
Motion analysis laboratory	1	2.000	2.000
Private automatic branch exchange (PABX) system and digital enhanced communication technology (DECT) system	1	3.800	3.800
Security system	1	3.800	3.800
Vacuum insulated evaporator (VIE) tank*	1	1.500	1.500
Ultrasound scanner with colour Doppler	1	2.700	2.700

* A new VIE tank is required to cope with the increased demand for oxygen supply for the entire hospital.