

## **ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE**

### **HEAD 708 – CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT**

#### **Medical Subventions**

#### **63MM – North Lantau Hospital, phase 1**

Members are invited to recommend to Finance Committee the upgrading of **63MM** to Category A at an estimated cost of \$2,482.0 million in money-of-the-day prices for the construction of North Lantau Hospital, phase 1.

### **PROBLEM**

There is at present no public hospital on Lantau Island. It is necessary to construct a public hospital in North Lantau to better meet the demand for hospital services in the area.

### **PROPOSAL**

2. The Director of Architectural Services, with the support of the Secretary for Food and Health, proposes to upgrade **63MM** to Category A at an estimated cost of \$2,482.0 million in money-of-the-day (MOD) prices for the construction of North Lantau Hospital (NLH), phase 1 located in Area 25, Tung Chung.

**/PROJECT .....**

**PROJECT SCOPE AND NATURE**

3. The scope of **63MM** includes the construction of a new hospital in North Lantau with the following facilities and services and a new road linking up Chui Kwan Drive and On Tung Street –

- (a) in-patient care services with 160 in-patient beds, including –
  - (i) 80 beds for acute care with specialties of medicine, surgery, orthopaedics and traumatology; and
  - (ii) 80 beds for extended care;
- (b) ambulatory care services including –
  - (i) an accident and emergency (A&E) department ;
  - (ii) specialist out-patient clinics with ten consultation rooms;
  - (iii) primary care clinics with eight clinic suites;
  - (iv) a day rehabilitation centre of 30 places; and
  - (v) an ambulatory surgery/day procedure centre with 20 day beds for general surgeries/procedures;
- (c) community care services including –
  - (i) community geriatric assessment service;
  - (ii) a psychiatric outreaching team;
  - (iii) community nursing service;
  - (iv) a patient resources centre;
  - (v) community health education; and
  - (vi) medical social service;

/(d) .....

- (d) diagnostic and treatment facilities to support in-patient and out-patient services, including emergency laboratory; blood bank; A&E radiology suite; computed tomography scanner; and ultrasound scanner;
- (e) support services including food services, pharmacy, mortuary, linen, procurement and supplies, transportation and portering, and engineering plants; and
- (f) administrative services including hospital administration, admissions, staff accommodation and medical records, etc.

4. A site plan showing the proposed development is at Enclosure 1. The block plan, the sectional plan and the perspective view (artist's impression) of the NLH phase 1 are at Enclosures 2 to 4. We plan to start construction works in January 2010 for completion in December 2012.

#### **JUSTIFICATION**

5. In accordance with general planning standard, an acute hospital will be planned for a district when the population of the district reaches 200 000. Apart from population growth, we also take into account the planning of other infrastructure and the demand for medical services arising from all economic activities in a district.

6. According to the 2006 Population By-census conducted by the Census and Statistics Department, the resident population in Lantau was about 100 000, including 72 000 in North Lantau New Town (covering Tung Chung). The population of Lantau is projected to increase to around 123 100 by 2015 and to around 220 000 in the long term upon full development of the new town.

7. To cope with the development of the North Lantau New Town and the population growth in the district, and considering that the Hong Kong International Airport and some major tourist facilities are situated in North Lantau, we have decided to develop a new hospital in North Lantau before the population in the district reaches the relevant level under the general planning standard.

/8. ....

8. The NLH is being taken forward in two phases. For phase 1, it will be a Government project to build a public hospital with 180 beds, which will be sufficient to meet the demand for public hospital services for the projected population of 123 100 on Lantau Island by 2015. To meet the long-term demand for hospital services on Lantau Island upon full development of the North Lantau New Town, the Government will provide an additional 170 beds under phase 2 of the NLH project. The opportunity is taken of the phase 2 development to explore the introduction of public-private-partnership (PPP) for the private sector to provide other medical facilities and services in the available area in addition to the 170 beds provided by the Government. In the event that PPP arrangement would not materialise for phase 2, we will still proceed with the development of phase 2 of NLH in due course as a Government project to provide the remaining 170 hospital beds required for meeting the long-term demand of the local community.

## FINANCIAL IMPLICATIONS

9. We estimate the capital cost of the project to be \$2,482.0 million in MOD prices (please see paragraph 11 below), broken down as follows –

	<b>\$ million</b>
(a) Site works	1.4
(b) Geotechnical works	59.2
(c) Piling and foundation works	115.3
(d) Building	889.7
(e) Building services	432.6
(f) Drainage	11.0
(g) External works	53.9
(h) New link road	20.3
(i) Soft landscape	12.5
(j) Additional energy conservation measures	29.3

/(k) .....

	<b>\$ million</b>	
(k) Furniture and equipment (F&E) <sup>1</sup>	400.0	
(l) Consultants' fees	15.7	
(i) quantity surveying services	6.7	
(ii) risk management	3.0	
(iii) management of resident site staff	6.0	
	<hr/>	
(m) Remuneration of resident site staff	56.0	
(n) Contingencies	209.7	
	<hr/>	
Sub-total	2,306.6	(in September 2009 prices)
(o) Provision for price adjustment	175.4	
	<hr/>	
Total	2,482.0	(in MOD prices)
	<hr/>	

10. We will engage consultants to undertake quantity surveying services, risk management and site supervision of the project. A detailed breakdown of the estimates for the consultants' fees and resident site staff costs by man-months is at Enclosure 5. The construction floor area (CFA) of this project is 48 978 square metres (m<sup>2</sup>). The estimated construction unit cost, represented by the building and the building services costs, is \$26,998 per m<sup>2</sup> of CFA in September 2009 prices. We consider this unit cost reasonable as compared with other similar hospital projects.

/11. ....

---

<sup>1</sup> Based on an indicative list of furniture and equipment items and their estimated prices. An indicative list of the major F&E items is at Enclosure 6.

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

Year	\$ million (Sept 2009)	Price adjustment factor	\$ million (MOD)
2010 – 11	200.0	1.02000	204.0
2011 – 12	450.0	1.04040	468.2
2012 – 13	650.0	1.06121	689.8
2013 – 14	350.0	1.08243	378.9
2014 – 15	330.0	1.11220	367.0
2015 – 16	326.6	1.14557	374.1
	2,306.6		2,482.0

12. We have derived the MOD estimates 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 2010 to 2016. The project will be delivered through a design-and-build contract. We intend to award the contract on a lump-sum basis because we can clearly define the scope of the works in advance. The contract will provide for price adjustments.

13. The Hospital Authority (HA) has assessed the requirements for F&E for this project, and estimates the F&E costs to be \$400.0 million. The proposed F&E provision represents 28.8% of the total construction cost<sup>2</sup> of the project. An indicative list of major F&E items (costing \$1 million or above per item) to be procured for the project is at Enclosure 6.

14. We estimate the annual recurrent expenditure arising from the project to be \$300.0 million.

**/PUBLIC .....**

---

<sup>2</sup> Represented by the building, building services, drainage and external works costs.

## PUBLIC CONSULTATION

15. We consulted the Islands District Council (IDC) on 14 April 2008. Members supported the proposed project. Upon the suggestion of the IDC, the project has included the construction of a new road which will link up Chui Kwan Drive and On Tung Street to facilitate the commutation of residents in the area in future.

16. We consulted the Legislative Council Panel on Health Services on 8 June 2009. Members of the Panel supported the project.

## ENVIRONMENTAL IMPLICATIONS

17. This is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We have engaged a consultant to carry out a Preliminary Environmental Review (PER). The PER, completed in 2008, concluded that the project would not have long-term adverse environmental impact and that further environmental studies would not be necessary.

18. 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 contracts. These include the use of silencers, mufflers, acoustic lining or shields and the building of barrier wall for noisy construction activities, frequent cleaning and watering of the site, and the provision of wheel-washing facilities.

19. We have considered measures in the planning and design stages to reduce the generation of construction waste where possible (e.g. using metal site hoardings and signboards so that they can be recycled or reused in other projects and adopting repetitive/modular design to enable reuse of formwork). In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste at public fill reception facilities<sup>3</sup>. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

/20. ....

---

<sup>3</sup> Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

20. We will also require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively through a trip-ticket system.

21. We estimate that the project will generate in total about 77 300 tonnes of construction waste. Of these, we will reuse about 8 200 tonnes (11%) of inert construction waste on site and deliver 56 400 tonnes (73%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 12 700 tonnes (16%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be \$3.1 million for this project (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne<sup>4</sup> at landfills).

## ENERGY CONSERVATION MEASURES

22. This project has adopted various forms of energy efficient features, including –

- (a) high efficiency air-cooled chiller with heat recovery function/oil free centrifugal compressor;
- (b) automatic demand control of chilled water circulation system;
- (c) automatic demand control of supply air;
- (d) demand control of fresh air supply with carbon dioxide sensors;
- (e) automatic demand control for ventilation fans in car park;

/(f) .....

---

<sup>4</sup> 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 m<sup>3</sup>), nor the cost to provide new landfills (which is likely to be more expensive), when the existing ones are filled.



- (f) heat wheels/heat pipes for heat energy reclaim of exhaust air;
- (g) T5 energy efficient fluorescent tubes with electronic ballast and lighting control by occupancy sensors;
- (h) light-emitting diode (LED) type exit signs;
- (i) heat pump for domestic hot water/space heating/dehumidification;
- (j) services-on-demand control for escalator (on/off control);
- (k) automatic on/off switching of lighting and ventilation fan inside the lift; and
- (l) building energy management system for large installations.

23. For renewable energy technologies, we will install photovoltaic system and solar hot water system to provide renewable energy for environmental benefits.

24. For green features, we will provide landscape in the appropriate areas at various levels as far as practicable such as podium and roof for environmental and amenity benefits.

25. For recycled features, we will adopt rain water and condensate water recycling system for irrigation purpose.

26. The total estimated additional cost for adoption of the energy conservation measures is around \$29.3 million (including \$15.1 million for energy efficient features), which has been included in the cost estimate of the project. The energy efficient features will achieve 11.5% energy savings in the annual energy consumption with a payback period of about 6.6 years.

## HERITAGE IMPLICATIONS

27. The project will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

## LAND ACQUISITION

28. The project does not require any land acquisition.

## BACKGROUND INFORMATION

29. We upgraded **63MM** to Category B in September 2005. We have engaged consultants to carry out minor site investigation works including Preliminary Natural Terrain Hazards Study, Geological Study, PER, Traffic Impact Assessment, utility mapping, Ecological Impact Assessment, Drainage Impact Assessment, Sewerage Impact Assessment, topographical and tree survey, and employed a term contractor to carry out ground investigation works. We also appointed a consultant to prepare tender documents. The total cost of the above consultancy services and site investigation works is \$3.0 million. We have charged this amount to block allocation **Subhead 8100MX** "Hospital Authority – improvement works, feasibility studies, investigations and pre-contract consultancy services for building projects". All the above consultancy services and site investigation works have been completed.

30. The proposed works will involve removal of 33 trees including 30 trees to be felled and three trees to be replanted within the site. All trees to be removed are not important trees<sup>5</sup>. We will incorporate planting proposals as part of the project, including an estimated quantity of 50 trees and 12 000 shrubs/groundcovers/climbers.

/31. ....

---

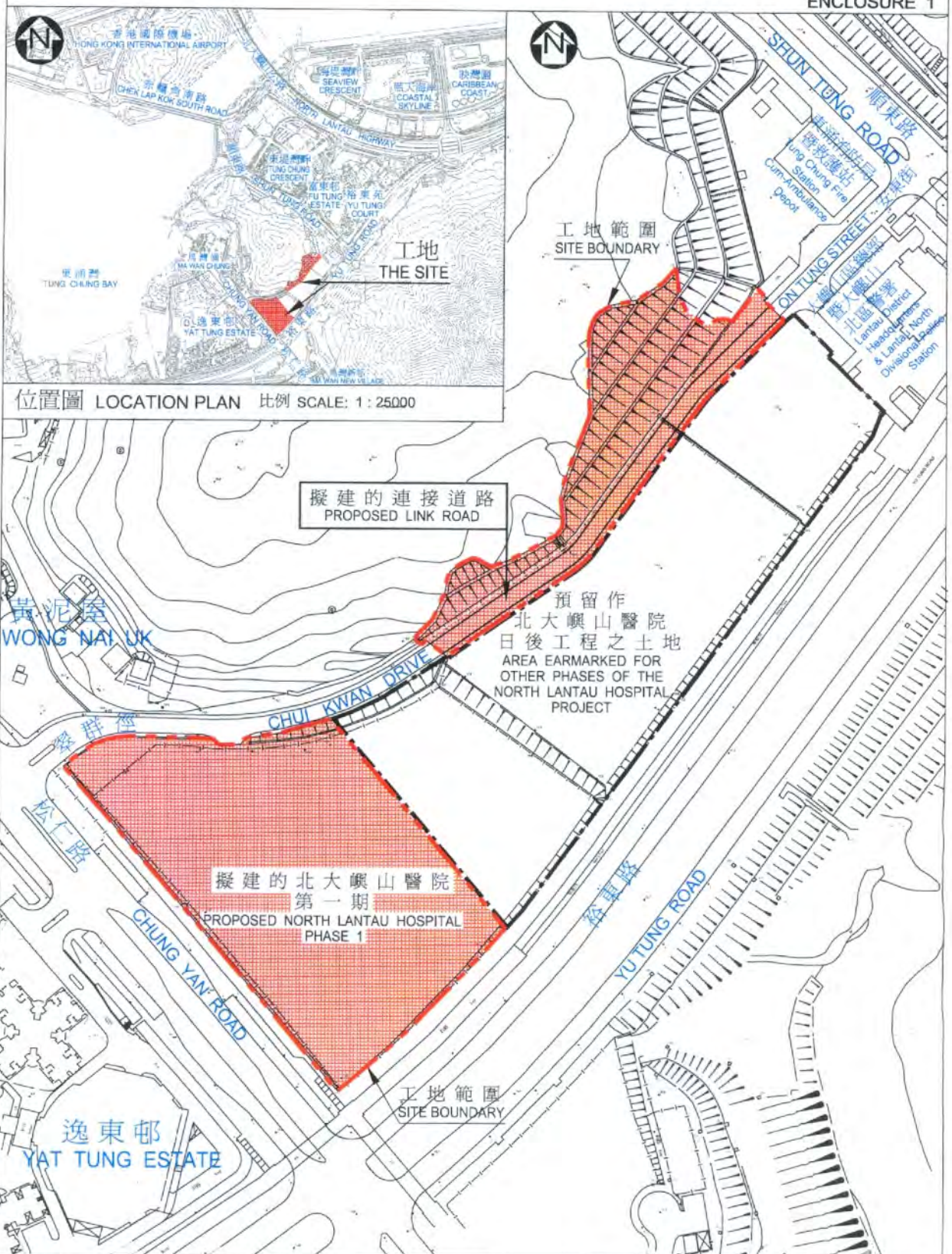
<sup>5</sup> "Important trees" refer to trees on the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –

- (a) trees of 100 years old or above;
- (b) trees of cultural, historical or memorable significance; e.g. Fung Shui trees, trees as landmark of monastery or heritage monument, and trees in memory of important persons or event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- (e) trees with trunk diameter equal or exceeding 1.0 metre (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.

31. We estimate that the proposed works will create about 1 070 jobs (1 000 for labourers and another 70 for professional/technical staff) providing a total employment of 35 000 man-months.

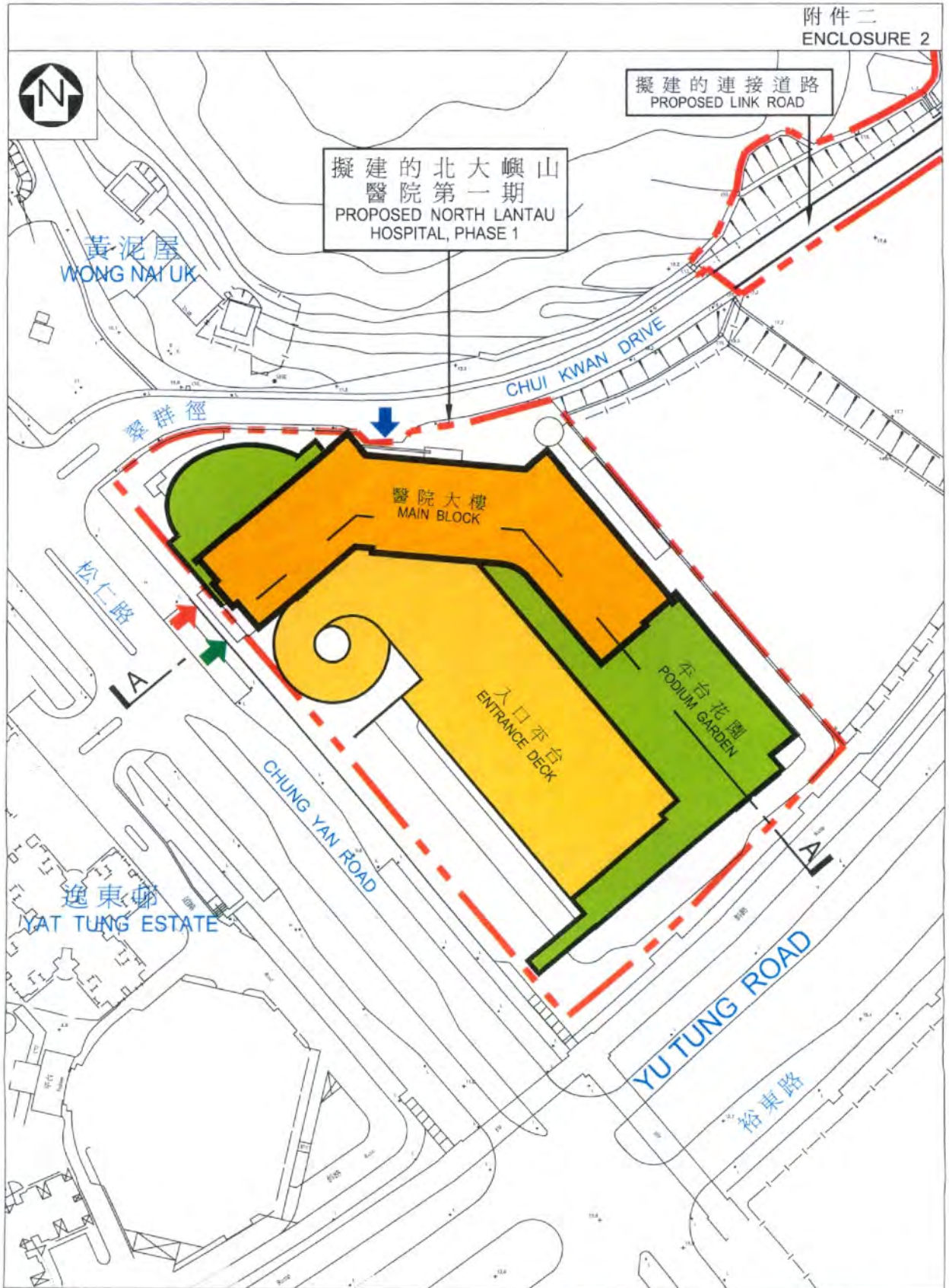
-----

Food and Health Bureau  
November 2009



位置圖 LOCATION PLAN 比例 SCALE: 1: 25000

<p><b>63 MM</b> 北大嶼山醫院第一期 NORTH LANTAU HOSPITAL, PHASE 1</p>	<p>drawn by 繪圖 K.C. LEUNG</p>	<p>date 日期 09/09</p>	<p>drawing no. 編號 6178/XA001</p>	<p>scale 比例 1: 2500</p>
	<p>approved 覆核 Y.O. CHAU</p>	<p>date 日期 09/09</p>	<p><b>ARCHITECTURAL SERVICES DEPARTMENT 建築署</b></p>	
	<p>office 辦事處 PROJECT MANAGEMENT BRANCH 工程策劃管理處</p>			



63 MM

北大嶼山醫院第一期  
NORTH LANTAU HOSPITAL,  
PHASE 1

樓宇位置圖  
BLOCK PLAN

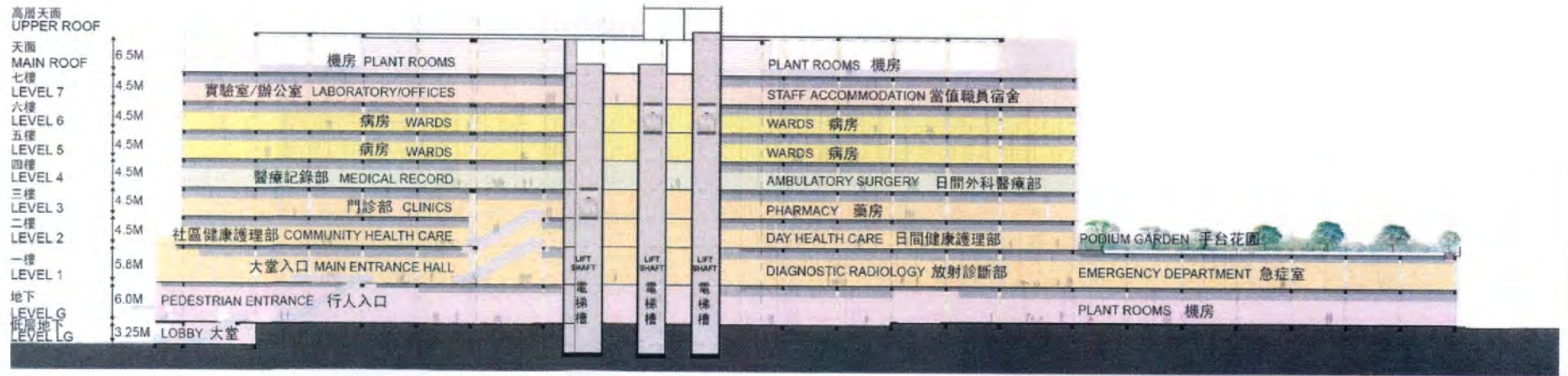
scale 比例 1 : 1500

LEGENDS:

↑ 車輛出入口  
MAIN VEHICULAR  
INGRESS / EGRESS

↑ 緊急車輛出入口  
EMERGENCY  
INGRESS / EGRESS

↑ 行人出入口  
PEDESTRIAN ENTRANCE



63 MM  
北大嶼山醫院第一期  
NORTH LANTAU HOSPITAL, PHASE 1

剖面圖 A-A  
SECTION A-A

scale 比例  
N.T.S



63 MM  
北大嶼山醫院第一期  
NORTH LANTAU HOSPITAL, PHASE 1

從南面望向醫院的構思圖  
PERSPECTIVE VIEW FROM SOUTHERN DIRECTION (ARTIST'S IMPRESSION)

**Enclosure 5 to PWSC(2009-10)75**

**63MM –North Lantau Hospital, phase 1**

**Breakdown of estimates for consultants’ fees and resident site staff costs  
(in September 2009 prices)**

		<b>Estimated man-months</b>	<b>Average MPS* salary point</b>	<b>Multiplier (Note 1)</b>	<b>Estimated fee (\$ million)</b>
(a) Consultants’ fees for					
(i) quantity surveying services <sup>(Note 2)</sup>	Professional	–	–	–	3.0
	Technical	–	–	–	3.7
				Sub-total	<hr/> 6.7
(ii) risk management	Professional	18	38	1.6	1.7
	Technical	40	14	1.6	1.3
				Sub-total	<hr/> 3.0
(b) Resident site staff costs <sup>(Note 3)</sup>	Professional	227	38	1.6	22.0
	Technical	1260	14	1.6	40.0
				Sub-total	<hr/> 62.0
Comprising –					
(i) Consultants’ fee for management of resident site staff					6.0
(ii) Remuneration of resident site staff					56.0
				<b>Total</b>	<hr/> <b>71.7</b> <hr/>

\* MPS = Master Pay Scale

**Notes**

1. A multiplier of 1.6 is applied to the average MPS point to estimate the cost of resident site staff supplied by the consultants. (As at 1 April 2008, MPS point 38 = \$60,535 per month and MPS point 14 = \$19,835 per month.)
2. The consultants’ staff cost for quantity surveying services is calculated in accordance with the existing consultancy agreement for the provision of quantity surveying services for **63MM**. The assignment will only be executed subject to Finance Committee’s approval to upgrade **63MM** to Category A.
3. The actual man-months and actual costs will only be known after completion of the construction works.



**63MM – North Lantau Hospital, phase 1**

**Indicative list of furniture and equipment items  
with unit cost of \$1 million or more**

<b>Item description</b>	<b>Quantity</b>	<b>Unit cost (\$ million)</b>	<b>Total cost (\$ million)</b>
Holmium Laser	1	1.100	1.100
Portable Ultrasound Scanner	1	1.100	1.100
Anaesthetic Clinical Information System	1	3.080	3.080
Digital Radiography System	1	6.000	6.000
Digital Radiography System (A&E)	1	6.000	6.000
Computed Tomography System	1	15.000	15.000
Fluoro / Angiographic Unit	1	15.000	15.000
Picture Archiving & Communication System	1	8.000	8.000
Radiography, Conventional (Trauma Room)	2	1.300	2.600
Computed Radiography System	1	2.400	2.400
Mobile C-arm	1	2.000	2.000
Ultrasound Scanner	1	2.000	2.000
Chemistry System	2	1.400	2.800
Haematology System	1	1.800	1.800
Prescription Dispensing System	1	2.795	2.795

<b>Item description</b>	<b>Quantity</b>	<b>Unit cost (\$ million)</b>	<b>Total cost (\$ million)</b>
Automatic Tablet Dispensing & Packaging System	1	2.023	2.023
Tunnel Dishwashing System, Flight type	1	1.400	1.400
Cold Body Storage System	1	3.140	3.140
Telecommunication System	1	3.185	3.185
3G Communication System	1	2.420	2.420
Video-conferencing System	1	2.060	2.060
Vacuum Insulated Evaporators Tank	1	1.740	1.740
Electronic Display System	1	1.010	1.010
Electrical-driven Mobile Shelving System	1	1.480	1.480
CCTV System	1	1.570	1.570
Carpark Management System	1	1.328	1.328
Intercom System	1	2.854	2.854
Public Address System	1	1.989	1.989