

For discussion  
on 6 May 2009

PWSC(2009-10)25

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

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

#### **Universities**

**The Hong Kong University of Science and Technology**

**13EL – 701-place student residences**

Members are invited to recommend to Finance Committee the upgrading of **13EL** to Category A at an estimated cost of \$201.3 million in money-of-the-day prices for the construction of 701-place student residences by The Hong Kong University of Science and Technology within its campus in Clear Water Bay.

#### **PROBLEM**

The Hong Kong University of Science and Technology (HKUST) needs additional hostel to meet the accommodation need of students.

#### **PROPOSAL**

2. The Secretary-General University Grants Committee (SG, UGC), on the advice of the University Grants Committee (UGC) and the Director of Architectural Services (D Arch S) as UGC's Technical Adviser, and with the support of the Secretary for Education, proposes to upgrade **13EL** to Category A at an estimated cost of \$201.3 million in money-of-the-day (MOD) prices for the construction of 701-place student residences by HKUST within the university campus.

**/PROJECT ....**

## PROJECT SCOPE AND NATURE

3. The scope of **13EL** comprises the construction of two eight-storey hostel blocks providing approximately 7 945 square metres (m<sup>2</sup>) in net operational floor area (NOFA). The following facilities will be provided by the project –

- (a) a total of 701 student hostel places and ancillary facilities of some 5 850 m<sup>2</sup>, including accommodation for wardens and tutors;
- (b) common facilities of some 1 895 m<sup>2</sup> in NOFA, including dining area with kitchen, multi-purpose room, gymnasium, study rooms, meeting rooms, common rooms, etc.;
- (c) supporting facilities of some 200 m<sup>2</sup> in NOFA, including management office, laundry and store; and
- (d) 30 open car parking spaces.

4. A site plan is at Enclosure 1. The view of the buildings (artist's impression), sectional plans and list of facilities are at Enclosures 2 to 4 respectively. HKUST plans to commence the construction works in the third quarter of 2009 for completion in the first quarter of 2012.

## JUSTIFICATION

5. Hostel life is an essential part of higher education - providing students with an environment conducive to learning, and allowing greater social interaction which enriches personal development as well as learning experience generally. Under existing policy, UGC-funded institutions are provided with publicly-funded student hostels calculated in accordance with the following criteria<sup>1</sup>: all undergraduate students should be given the opportunity to stay in student hostel for at least one year of their courses; all research postgraduates,

/non-local .....

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<sup>1</sup> The criteria are applicable to all UGC-funded institutions, except for the Lingnan University (which has been provided with hostel places for 50% of its full-time degree student population having regard to its remote location in Tuen Mun and its aspirations to develop itself into a relatively small, fully residential liberal arts institution) and the Hong Kong Institute of Education (which was provided with hostel places for 50% of its full-time degree student population projected at the time of establishment of the Institute having regard to the potential benefits that hostel life would bring to the quality of pre-service teacher education).

non-local students as well as undergraduate students whose daily travelling time exceeds four hours, should be provided with student hostel places. The Government will fund up to 75% of the capital cost of the approved level of publicly-funded student hostel provision, with the remainder to be met by the respective institutions using their own sources of private funding.

6. In addition to the above-mentioned standard hostel provision, the Administration decided in February 2006 to provide an additional 1 840 publicly-funded student hostel places to the UGC-funded sector to support institutions' increasing student exchange activities.

7. As at the 2007/08 academic year, and taking into account the additional hostel places for exchange activities, the approved publicly-funded hostel provision for HKUST is 3 738 places. Against its current provision of 3 006 publicly-funded hostel places, HKUST has a shortfall of 732 hostel places. To address this shortfall, HKUST proposes to construct two new publicly-funded hostel blocks (namely Hall 8 and Hall 9) in the eastern part of its campus.

8. The two proposed hostel blocks will provide 302 double bedrooms and 97 single bedrooms with study space in each room, and shared bathrooms. A typical floor will provide accommodation for some 50 students with common space and pantry facilities. The ground floor of each block will house common and support facilities such as multi-purpose room, management office, study rooms, dining area with kitchen and laundry.

## **FINANCIAL IMPLICATIONS**

9. The total estimated cost of the project is \$268.4 million (in MOD prices). The Government will fund up to \$201.3 million, i.e. 75% of the construction cost. HKUST will contribute \$67.1 million through its private sources of funding for the remaining 25% of the construction cost.

10. SG, UGC, on the advice of D Arch S, recommends a capital funding of \$201.3 million in MOD prices to be provided by the Government (see paragraph 13 below), made up as follows –

/(a) .....

	<b>\$ million</b>	
(a) Site formation and development	19.0	
(b) Building	128.8	
(c) Building services	48.2	
(d) Drainage and external works	11.5	
(e) Additional energy conservation measures	2.4	
(f) Consultants' fees for –	4.0	
(i) tender assessment	0.4	
(ii) contract administration	3.5	
(iii) out-of-pocket expenses	0.1	
(g) Resident site staff costs	4.2	
(h) Furniture and equipment	17.7	
(i) Contingencies	<u>17.7</u>	
Sub-total	253.5	(in September 2008 prices)
(j) Provision for price adjustment	<u>14.9</u>	
Sub-total	268.4	(in MOD prices)
(k) Less contribution by HKUST	<u>(67.1)</u>	
Total	<u>201.3</u>	(in MOD prices)

11. HKUST will engage consultants to undertake tender assessment, contract administration and site supervision of the project. A detailed breakdown of the estimates for consultants' fees and resident site staff costs by man-months is at Enclosure 5.

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12. The construction floor area (CFA) of this project is approximately 14 090 m<sup>2</sup>. The estimated construction unit cost, represented by the building and building services costs, is \$12,562 per m<sup>2</sup> of CFA in September 2008 prices. A detailed account of the CFA vis-à-vis the construction unit cost of is at Enclosure 6. D Arch S considers the estimated construction unit cost reasonable, having regard to the current economic situation and prevailing construction prices, and comparable to those of similar projects such as 5EU “New academic block and student hostel” of Lingnan University (with an estimated construction unit cost of \$12,328 per m<sup>2</sup> of CFA in September 2008 prices for the student hostel).

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

Year	\$ million (Sept 2008)	Price adjustment factor	\$ million (MOD)	Contribution by	
				HKUST \$ million (MOD)	13EL \$ million (MOD)
2009 - 10	42.2	1.03500	43.7	43.7	-
2010 - 11	142.5	1.05570	150.4	23.4	127.0
2011 - 12	58.6	1.07681	63.1	-	63.1
2012 - 13	10.2	1.09835	11.2	-	11.2
	<u>253.5</u>		<u>268.4</u>	<u>67.1</u>	<u>201.3</u>

14. 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 2009 to 2013. HKUST will tender the works through a lump-sum contract because it can clearly define the scope of works in advance. The contract will provide for price adjustment to reflect market fluctuations in labour and material costs.

15. The project has no impact on tuition fees. In accordance with established practice, HKUST will operate these student hostels on a self-financing basis through charges levied on hostel places. The proposal has no additional recurrent implications on the Government.

/PUBLIC .....

## **PUBLIC CONSULTATION**

16. The project is located within the HKUST's campus. There are no residential developments nearby, and the project will not affect residents in the vicinity. HKUST has consulted its staff and students who expressed support to the project. The Sai Kung District Council was briefed on the Campus Development Plan during its visit to HKUST in February 2008, and a public exhibition of the proposed campus developments was held on campus since then till the end of November 2008. A link to the campus development plan has been posted on the main HKUST website.

17. We submitted a paper on the project to the Legislative Council Panel on Education for discussion on 9 March 2009. Members supported the project but requested that the possibility of increasing the number of hostel places be explored in order to fully meet HKUST's shortfall in publicly-funded places. A study by HKUST showed that, given the site and planning constraints, the most feasible way of achieving this increase would be by lengthening the footprint of the building onto the slope nearby. However, this would require a revised building design, additional tree-felling and significant geotechnical works, and hence the need to seek statutory approvals of the new plans. The attempt to increase the number of hostel places would entail a delay of six to nine months, which would not be desirable given the need for HKUST to meet the existing shortfall of hostel places as soon as possible. HKUST is exploring meeting the remaining shortfall by possible joint hostels with other UGC-funded institutions. The Administration provided HKUST's reply to Members on 24 April 2009.

## **ENVIRONMENTAL IMPLICATIONS**

18. This is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). The project will not cause long term environmental impact. HKUST has included in the project estimates the provisions required to implement suitable mitigation measures to control short term environmental impacts.

19. During construction, HKUST 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 linings or shields for noisy construction activities, frequent cleaning and watering of the site, and the provision of wheel-washing facilities.

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20. HKUST has considered measures (e.g. adjusting the building layout and foundation system to cope with the topography) in the planning and design stages to reduce the generation of construction waste where possible. In addition, HKUST 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 minimize the disposal of inert construction waste to public fill reception facilities<sup>2</sup>. HKUST will encourage the contractor to maximize the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimize the generation of construction waste.

21. HKUST 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. HKUST will ensure that the day-to-day operations on site comply with the approved plan. HKUST will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. HKUST 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.

22. HKUST estimates that the project will generate in total about 31 518 tonnes of construction waste. Of these, HKUST will reuse about 16 642 tonnes (52.8%) of inert construction waste on site and deliver 10 653 tonnes (33.8%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, HKUST will dispose of 4 223 tonnes (13.4%) 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 \$815,506 for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne<sup>3</sup> at landfills).

**/ENERGY .....**

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<sup>2</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.

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

## **ENERGY CONSERVATION MEASURES**

23. This project will adopt various forms of energy efficient features, including –

- (a) occupancy and daylight sensors for lighting control;
- (b) light-emitting diode (LED) type exit signs; and
- (c) automatic on/off switching of lighting and ventilation fan inside lifts.

24. For renewable energy technologies, HKUST will adopt solar park lighting in landscape area and solar hot water system.

25. For greening features, HKUST will adopt greening at open space, periphery retaining walls and rooftops.

26. The total estimated additional cost for adoption of the above features is around \$2.4 million (including \$0.8 million for energy efficient features), which has been included in the cost estimate of the project. The energy efficient features will achieve 5.3% energy savings in the annual energy consumption with a payback period of about 6.2 years.

## **HERITAGE IMPLICATIONS**

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

## **LAND ACQUISITION**

28. The project does not require any land acquisition.

**/BACKGROUND .....**



## BACKGROUND INFORMATION

29. Under existing procedures, UGC-funded institutions submit capital works proposals to the UGC annually. The UGC examines all these proposals carefully, with professional advice provided by D Arch S who acts as UGC's Technical Adviser, and refers those supported proposals to the Government for consideration of bidding of funds under the established mechanism. Having examined HKUST's proposal, SG, UGC has, in consultation with D Arch S, adjusted the project estimate proposed by HKUST to arrive at the project estimate set out in paragraph 10 above.

30. We upgraded **13EL** to Category B in March 2008. HKUST engaged consultants in May 2008 to carry out topographical survey, site investigation, and to prepare preliminary design, detailed design and tender documents at a total estimated cost of \$8.0 million. We have charged \$6.0 million to block allocation **Subhead 8100EX** "Alterations, additions, repairs and improvements to the campuses of the UGC-funded institutions". The remaining amount of \$2.0 million was funded by HKUST's private sources of funding. The consultants have completed topographical survey, site investigation, preliminary design and detailed design of the project. HKUST is finalizing the tender documents for the project.

31. The project will involve the removal of 82 trees and transplanting of 80 trees within the campus. All trees to be removed are not important trees<sup>4</sup>. HKUST will incorporate a planting proposal, which includes estimated quantities of 211 trees, 4 643 shrubs, 95 m<sup>2</sup> grassed area and 4 487 m<sup>2</sup> hydro-seeded area, as part of the project.

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<sup>4</sup> "Important trees" refer to trees in 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 tree, tree as landmark of monastery of heritage monument, and trees in memory of an important person 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 m (measured at 1.3 m above ground level) or with height / canopy spread equal or exceeding 25 m.

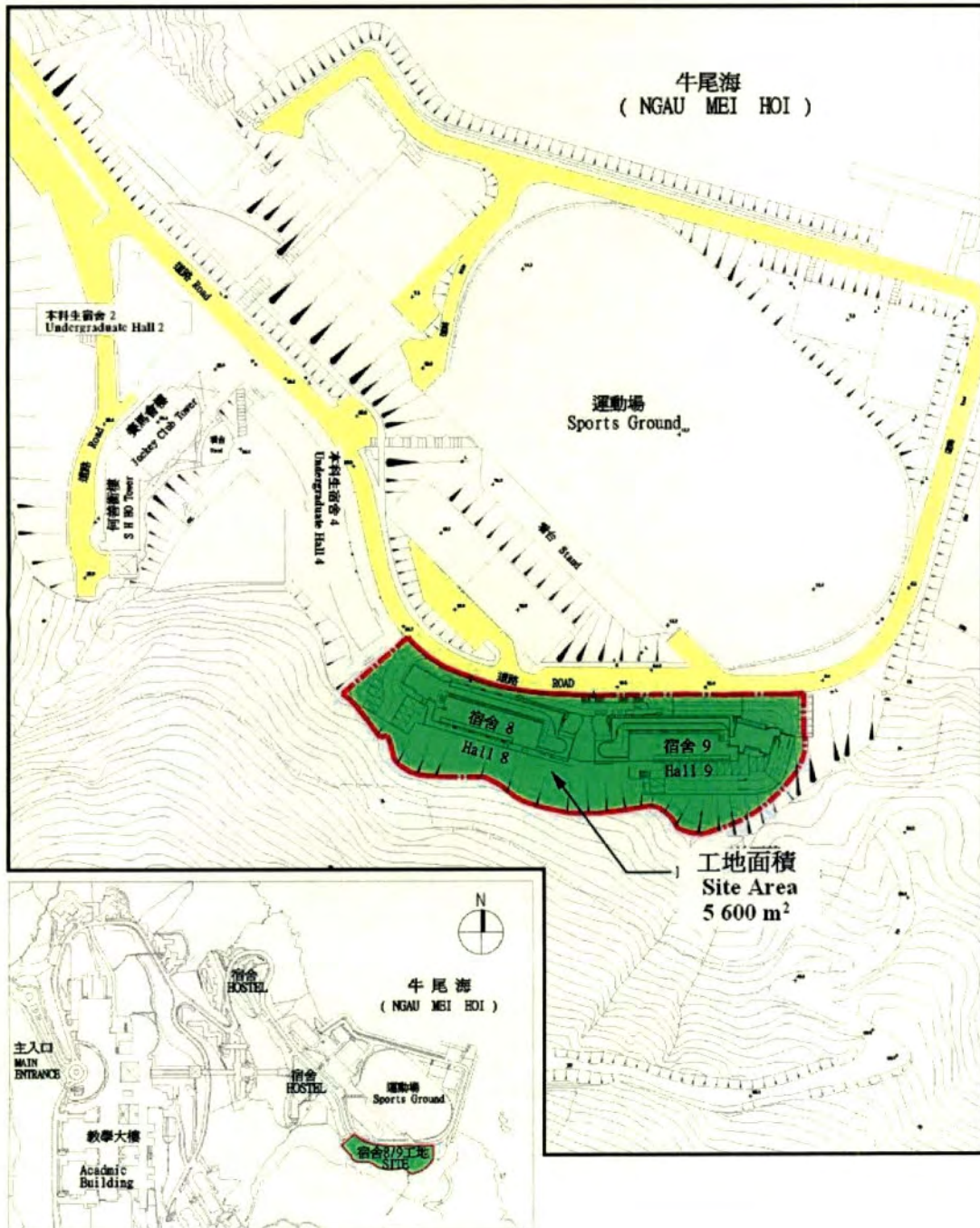
32. HKUST estimates that the project will create about 128 jobs (114 for labourers and another 14 for professional/ technical staff) providing a total employment of 3 450 man-months.

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Education Bureau  
April 2009

The Hong Kong University of Science and Technology  
13EL – 701-place student residences  
香港科技大學  
13EL – 701 個宿位的學生宿舍

Site Plan 工地平面圖



**The Hong Kong University of Science and Technology**  
**13EL – 701-place student residences**  
香港科技大學  
13EL – 701 個宿位的學生宿舍

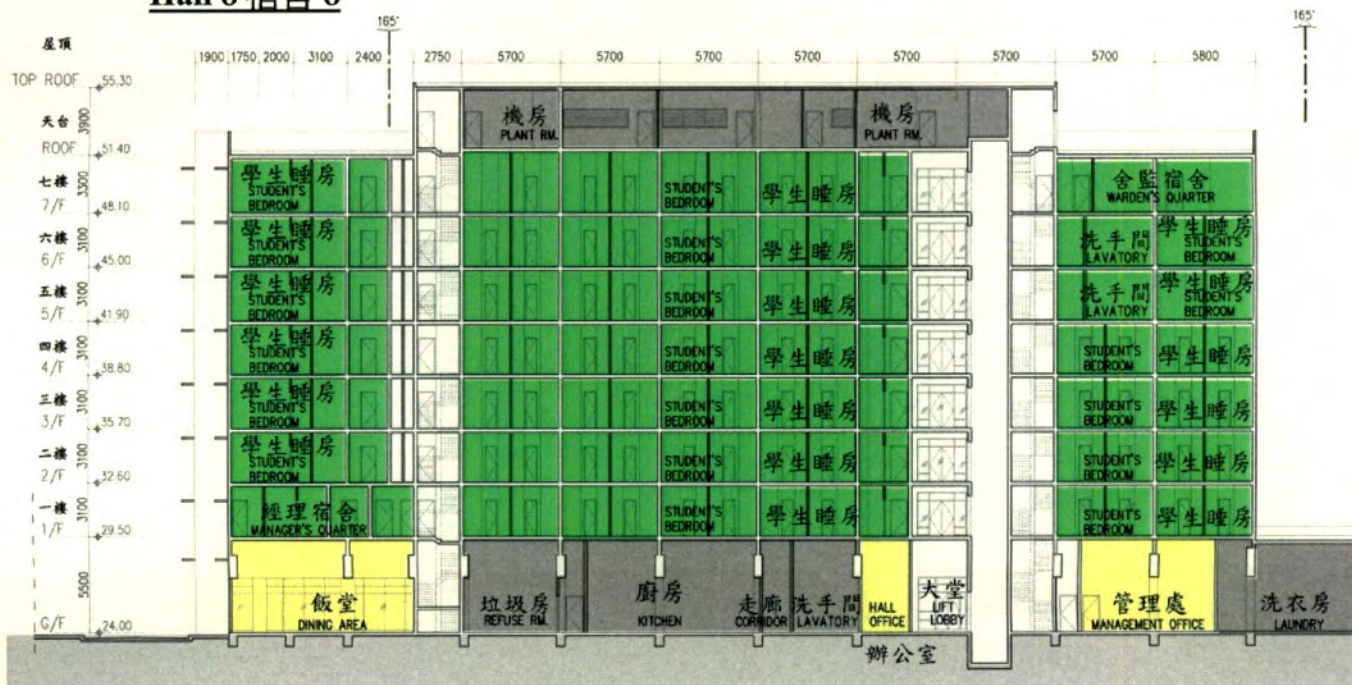
**View of the building (artist's impression) 外觀構思圖**



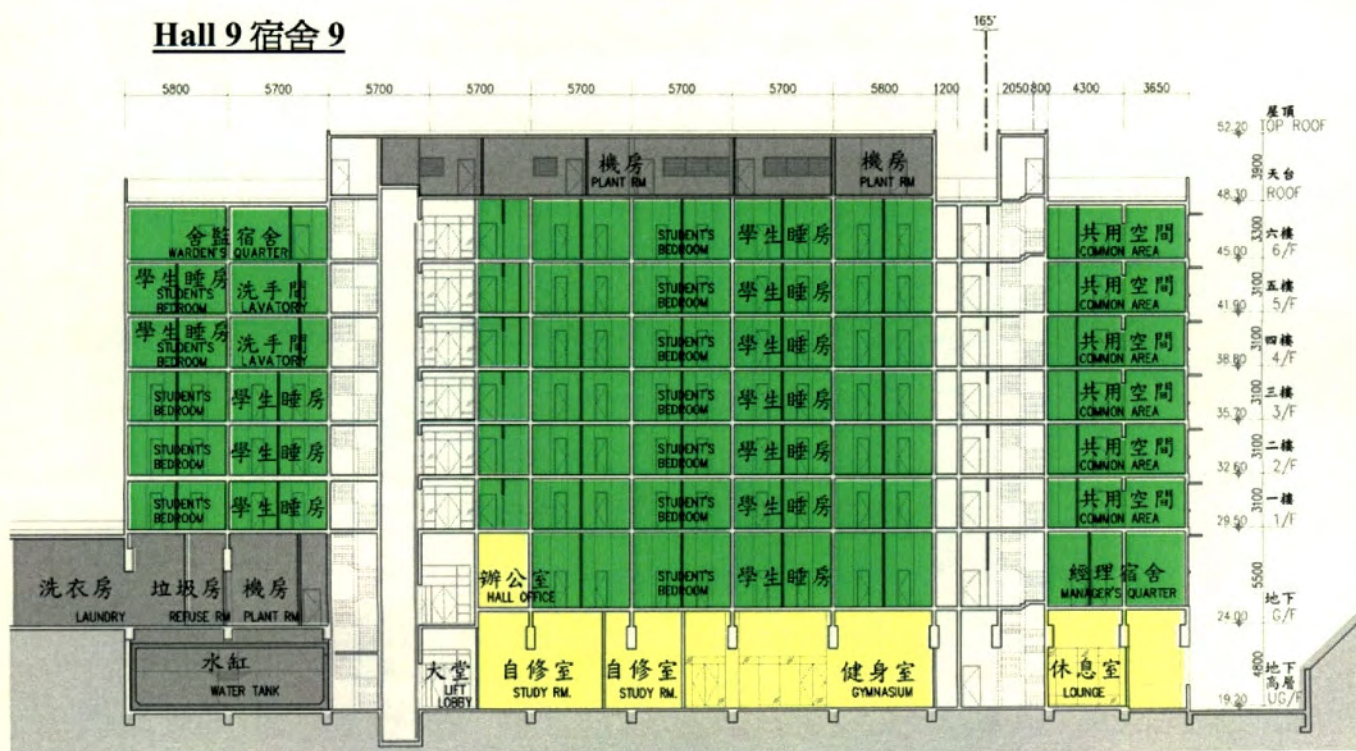
The Hong Kong University of Science and Technology  
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 香港科技大學  
 13EL – 701 個宿位的學生宿舍

Sectional Plan 剖面圖

Hall 8 宿舍 8



Hall 9 宿舍 9



**Enclosure 4 to PWSC(2009-10)25**

**The Hong Kong University of Science and Technology  
13EL – 701-place student residences**

**List of facilities**

	<b>No. of Unit</b>	<b>Estimated floor area in net operational floor area (NOFA) (m<sup>2</sup>)</b>	<b>Hall 8 (m<sup>2</sup>)</b>	<b>Hall 9 (m<sup>2</sup>)</b>
<b>(A) Living accommodation</b>				
1. Double bedroom	302	4 495	2 322	2 173
2. Single bedroom	97	776	392	384
3. Warden's quarter	2	220	110	110
4. Manager's quarter	2	121	65	56
5. Tutor's room	12	150	75	75
6. Domestic staff room	4	90	44	46
	<b>Sub-total</b>	<b>5 852</b>	<b>3 008</b>	<b>2 844</b>
<b>(B) Common space</b>				
1. Common room	13	364	196	168
2. Common area	16	607	320	287
3. Dining area with kitchen	1	296	296	-
4. Meeting room	2	102	32	70
5. Multi-purpose room	1	151	151	-
6. Lounge	1	95	-	95
7. Gymnasium	1	151	-	151
8. Study room	4	103	-	103
9. Hall office	2	26	13	13
	<b>Sub-total</b>	<b>1 895</b>	<b>1 008</b>	<b>887</b>
<b>(C) Support</b>				
1. Management office	1	50	50	-
2. Laundry	1	72	-	72
3. Refuse room and store	17	76	43	33
	<b>Sub-total</b>	<b>198</b>	<b>93</b>	<b>105</b>
	<b>Total</b>	<b>7 945</b>	<b>4 109</b>	<b>3 836</b>

**Enclosure 5 to PWSC(2009-10)25**

**The Hong Kong University of Science and Technology  
13EL – 701-place student residences**

**Breakdown of the estimates for consultants' fees and resident site staff costs  
(in September 2008 prices) <sup>(Note 1)</sup>**

		Estimated man- months	Average MPS* salary point	Multiplier <small>(Note 2)</small>	Estimated fees (\$ million)
(a) Consultants' fees <sup>(Note 3)</sup>					
(i) Tender assessment	Professional	–	–	–	0.4
(ii) Contract administration	Professional	–	–	–	3.5
(iii) Out-of-pocket expenses					0.1 <sup>(Note 4)</sup>
(b) Resident site staff costs	Technical	133	14	1.6	4.2
					<small>(Note 5)</small>
Total					8.2

\* MPS = Master Pay Scale

**Notes**

1. Having examined the consultants' fees and resident site staff costs estimated by HKUST, the Director of Architectural Services considers the figures acceptable.
2. A multiplier of 1.6 is applied to the average MPS point to estimate the costs for resident site staff to be employed by HKUST. (As at 1 April 2009, MPS point 14 = \$19,835 per month.)
3. The consultants' fees for tender assessment and contract administration are calculated in accordance with the existing consultancy agreements obtained through competitive tendering for the design and construction of **13EL**. The assignment will only be executed subject to Finance Committee's approval to upgrade **13EL** to Category A.

/4. ....

4. Out-of-pocket expenses are the actual costs incurred, including lithography and other direct expenses. The consultants are not entitled to any additional payment for the overheads or profit in respect of these items.
5. HKUST will know the actual man-months and actual costs for resident site staff only after completion of the construction works.



**The Hong Kong University of Science and Technology  
13EL – 701-place student residences**

**Breakdown of the construction floor area (CFA) vis-à-vis the construction unit cost**

(a) Breakdown of CFA

	<b>Estimated floor area (m<sup>2</sup>)</b>
Net operational floor area (NOFA)	7 945
Circulation areas and toilets	3 380
Mechanical and electrical plants	2 765
CFA	<hr/> 14 090 <hr/>

(b) NOFA / CFA ratio 56.4%

(c) Estimated construction unit cost (represented by the building and building services costs) \$12,562 per m<sup>2</sup> of CFA  
(in September 2008 prices)