

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 708 – CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT

Universities

The University of Hong Kong

54EG – Centennial Campus, phase 1

55EG – Centennial Campus, phase 2

Members are invited to recommend to the Finance Committee the upgrading of **54EG** and **55EG** to Category A at estimated costs of \$1,099.8 million and \$937.4 million respectively in money-of-the-day prices for the construction of Centennial Campus phases 1 and 2 by The University of Hong Kong at Pokfulam Road adjacent to its existing campus.

PROBLEM

The University of Hong Kong (HKU) needs additional space and facilities to support the implementation of the normative four-year undergraduate programme under the new academic structure for senior secondary education and higher education (i.e. the “3+3+4”) and to meet its existing teaching and research needs.

/PROPOSAL

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 **54EG** and **55EG** to Category A at estimated costs of \$1,099.8 million and \$937.4 million respectively in money-of-the-day (MOD) prices for the construction of the Centennial Campus phases 1 and 2 by HKU at Pokfulam Road adjacent to its existing campus.

PROJECT SCOPE AND NATURE

54EG – Centennial Campus, phase 1 (Block 1)

3. The scope of **54EG** comprises the construction of a 16-storey academic building (including podium structure), providing approximately 22 750 square metres (m²) in net operational floor area (NOFA). It will accommodate the following facilities –

- (a) classrooms of about 2 990 m² in NOFA;
- (b) teaching laboratories of about 5 750 m² in NOFA;
- (c) research laboratories of about 620 m² in NOFA;
- (d) office facilities of about 7 340 m² in NOFA;
- (e) library facilities of about 3 610 m² in NOFA;
- (f) study spaces/learning commons of about 1 130 m² in NOFA;
- (g) amenities areas of about 1 310 m² in NOFA (such as exhibition areas and recreation facilities); and
- (h) 30 covered parking spaces and one loading and unloading space.

55EG – Centennial Campus, phase 2 (Blocks 2 and 3)

4. The scope of **55EG** comprises the construction of two multi-storey academic buildings (15 and 16 storeys including podium structure), providing approximately 19 380 m² in NOFA. They will accommodate the following facilities –

/(a)

- (a) classrooms of about 2 550 m² in NOFA;
- (b) teaching laboratories of about 4 900 m² in NOFA;
- (c) research laboratories of about 530 m² in NOFA;
- (d) office facilities of about 6 250 m² in NOFA;
- (e) library facilities of about 3 070 m² in NOFA;
- (f) study spaces/learning commons of about 960 m² in NOFA;
- (g) amenities areas of about 1 120 m² in NOFA (such as exhibition areas and recreation facilities); and
- (h) 30 covered parking spaces and two loading and unloading spaces.

5. 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. HKU plans to commence the construction works in the third quarter of 2009 for completion in the third quarter of 2012.

JUSTIFICATION

6. The new academic structure for senior secondary education and higher education (i.e. the “3+3+4”) will be implemented starting from the 2009/10 academic year. The first cohort of senior secondary students will undergo a four-year undergraduate programme starting from the 2012/13 academic year. UGC-funded institutions, including HKU, will need to expand their campus space and facilities in order to accommodate the additional students under the new four-year undergraduate programme and to provide a suitable teaching and learning environment in support of the curriculum under the new academic structure.

7. Furthermore, the existing main campus of HKU has been in use for decades. With HKU's academic development over the years, it lacks adequate space to carry out its teaching and research activities. According to the results of the Review on Space and Accommodation Requirements of the UGC-funded institutions carried out by the UGC in 2006, HKU had an estimated space shortfall of more than 28 900m² by the 2007/08 academic year.

8. In order to relieve the existing campus space shortfall and to cater for the need for additional space arising from the implementation of “3+3+4”, HKU plans to construct a new Centennial Campus to provide the required additional space and facilities. This will provide the important additional space to support the University’s core functions of teaching and research as it moves into its second centenary.¹

9. The proposed Centennial Campus will be located at Pokfulam Road adjacent to the western part of HKU’s Main Campus. It will accommodate central classrooms, specialized teaching and research laboratories, modern inter-disciplinary and multi-disciplinary learning commons, amenities as well as associated facilities for the Faculties of Arts, Social Science and Law. The classrooms and laboratories will be equipped with multi-media systems to facilitate teaching, and facilities such as library and learning commons will provide resource centres and open study space for self-learning. These facilities will support various teaching modes to meet the needs of the future curriculum upon implementation of “3+3+4”.

10. The Centennial Campus development comprises two phases. Phase 1 will provide additional space of some 22 750 m² in NOFA and facilities to support “3+3+4” which include classrooms, study space, teaching and research laboratories, offices, libraries and amenity spaces arising from the increase in number of students. Phase 2 will provide additional space of some 19 380 m² in NOFA to partially relieve HKU’s existing space shortfall in academic and support facilities, and to improve the student learning environment. The two phases will be developed at the same time for better planning and efficiency.

11. As the Faculties of Arts, Social Sciences and Law in the existing campus will be relocated to the new Centennial Campus, HKU will allocate the existing campus space vacated by these three faculties to other faculties to meet their space needs.

/FINANCIAL

¹ HKU has adopted four planning principles in the design concept of the Centennial Campus: a learning community to support intellectual curiosity, social well-being and spiritual life of all its residents and visitors; a unique natural environment and heritage to seek a sustainable community; a unified campus to enrich and harmonise with the whole community; and an open and respected process to invite the stakeholders to share their views.

FINANCIAL IMPLICATIONS

12. The estimated costs of **54EG** and **55EG** are \$1,159.7 million and \$988.5 million respectively in MOD prices. HKU will contribute a total of \$111.0 million from its own sources of funding primarily to finance some enhanced facilities, such as additional circulation space, upgrading of external façade for sustainability purposes, and space for future expansion of energy conservation measures.

13. SG, UGC, on the advice of D Arch S, recommends capital funding of of \$1,099.8 million and \$937.4 million in MOD prices to be provided by the Government for **54EG** and **55EG** respectively (see paragraph 16 below), made up as follows –

		54EG \$ million	55EG \$ million
(a)	Demolition	9.4	8.0
(b)	Site formation and development	86.8	74.0
(c)	Slope works	30.7	26.1
(d)	Building	479.2	408.1
(e)	Building services	227.2	193.6
(f)	Drainage and external works	26.1	22.3
(g)	Additional energy conservation measures	8.8	7.5
(h)	Consultants' fees for –	34.8	30.5
	(i) tender assessment	1.5	1.3
	(ii) contract administration	15.9	14.3
	(iii) site supervision	17.1	14.7
	(iv) out-of-pocket expenses	0.3	0.2

/(i)

	54EG \$ million	55EG \$ million
(i) Furniture and equipment	53.1	45.2
(j) Contingencies	71.8	61.1
(k) Enhanced facilities ²	56.1	47.7
	<hr/>	<hr/>
Sub-total	1,084.0	924.1 (in September 2008 prices)
	<hr/>	<hr/>
(l) Provision for price adjustment	75.7	64.4
	<hr/>	<hr/>
Sub-total	1,159.7	988.5 (in MOD prices)
	<hr/>	<hr/>
(m) Less contribution by HKU ²	(59.9)	(51.1)
	<hr/>	<hr/>
Total	1,099.8 ³	937.4 (in MOD prices)
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14. HKU will engage consultants to undertake tender assessment, contract administration and site supervision of the project. A detailed breakdown of the estimate for consultants' fees by man-months is at Enclosure 5.

15. The construction floor area (CFA) of **54EG** and **55EG** is approximately 42 601 m² and 36 290 m² respectively, i.e. 78 891 m² in total (excluding 5 009 m² funded by HKU). The estimated construction unit cost for the proposed Centennial Campus, represented by the total building and building

/services

² The estimated cost of enhanced facilities to be funded by HKU is \$103.8 million in September 2008 prices or \$111.0 million in MOD prices.

³ For this “3+3+4” related project, the estimated cost expressed in September 2008 prices is \$1,027.9 million, representing an increase of 63.2% over the original estimated cost of \$630 million in September 2004 prices.

services costs of the two projects, is \$16,581 per m² of CFA (in September 2008 prices). A detailed account of the CFA vis-à-vis the construction unit cost 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 **20EH** “Baptist University Road campus development” of Hong Kong Baptist University (with an estimated construction unit cost of \$16,860 per m² of CFA in September 2008 prices).

16. Subject to approval, HKU will phase the expenditure as follows –

54EG – Centennial Campus, phase 1

Year	\$million (Sept 2008)	Price adjustment factor	\$million (MOD)	Contribution by HKU \$million (MOD)	54EG \$million (MOD)
2009-10	135.7	1.03200	140.0	59.9	80.1
2010-11	265.5	1.05264	279.5	-	279.5
2011-12	417.3	1.07369	448.1	-	448.1
2012-13	208.6	1.09517	228.5	-	228.5
2013-14	56.9	1.11707	63.6	-	63.6
	<hr/> 1,084.0 <hr/>		<hr/> 1,159.7 <hr/>	<hr/> 59.9 <hr/>	<hr/> 1,099.8 <hr/>

/55EG

55EG – Centennial Campus, phase 2

Year	\$million (Sept 2008)	Price adjustment factor	\$million (MOD)	Contribution by HKU \$million (MOD)	55EG \$million (MOD)
2009-10	115.7	1.03200	119.4	51.1	68.3
2010-11	226.4	1.05264	238.3	-	238.3
2011-12	355.7	1.07369	381.9	-	381.9
2012-13	177.8	1.09517	194.7	-	194.7
2013-14	48.5	1.11707	54.2	-	54.2
	<hr/> 924.1 <hr/>		<hr/> 988.5 <hr/>	<hr/> 51.1 <hr/>	<hr/> 937.4 <hr/>

17. 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 2014. HKU 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.

18. The project has no impact on tuition fees. The additional recurrent costs associated with this project will be funded by HKU. The proposal has no additional recurrent implications on the Government.

PUBLIC CONSULTATION

19. Since 2006, HKU has carried out an extensive consultation programme⁴ for stakeholders on its Centennial Campus project. Whilst most residents expressed support to the project, concerns on potential noise and visual impact of the new campus buildings were also raised. During consultations with

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⁴ Including meetings with stakeholders, discussion forums, workshops, exhibitions, newsletters, dedicated website, etc.

the Central and Western District Council in February 2007 and May 2008, members expressed their general support for the project and made suggestions on preservation of trees, preservation and reuse of graded historic buildings, building heights, development intensity, visual impact caused by façade material, noise issues during construction and public accessibility to campus facilities.

20. HKU has addressed the concerns collected through these consultations by reducing building heights and development intensity, using non-reflective façades, implementing a comprehensive landscape and planting proposal, enhancing greening on rooftops and building façades and preserving the three heritage buildings in-situ. HKU also held public exhibitions from August to November 2008 at four locations to raise public awareness of the Centennial Campus project. These exhibitions met with the general support of the community.

21. We submitted a paper on the project to the Legislative Council Panel on Education for discussion on 12 January 2009. Members did not raise any objection to the proposal.

ENVIRONMENTAL IMPLICATIONS

22. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). The project will not cause long-term environmental impact. HKU has included in the project estimates the cost for implementing suitable mitigation measures to control short-term environmental impacts.

23. During construction, HKU 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.

/24.

24. HKU has considered measures (e.g. adjusting the layout and orientation of the building and using the existing location of underground reservoir as part of the basement) in the planning and design stages to reduce the generation of construction waste where possible. In addition, HKU will require the contractor to reuse inert construction waste (e.g. use excavated materials for filling) on site or in other suitable construction sites as far as possible, in order to minimize the disposal of inert construction waste at public fill reception facilities⁵. HKU 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.

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

26. HKU estimates that the project will generate in total about 246 314 tonnes of construction waste. Of this, HKU will reuse about 34 484 tonnes (14.0%) of inert construction waste on site and deliver 194 588 tonnes (79.0%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, HKU will dispose of 17 242 tonnes (7.0%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfills is estimated to be \$7,409,126 for this project (based on a unit cost of \$27/ tonne for disposal at public fill reception facilities and \$125/ tonne⁶ at landfills).

/ENERGY

⁵ 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 at public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

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 exiting landfill sites (which is estimated at \$90/m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

ENERGY CONSERVATION MEASURES

27. The project will adopt various forms of energy efficient features, including –

- (a) water cooled chillers and evaporative cooling towers;
- (b) automatic demand control of chilled water circulation system;
- (c) rotary heat wheel for primary air-handling units;
- (d) occupancy and daylight sensors for lighting control;
- (e) light-emitting diode (LED) type exit signs;
- (f) heat pump for space heating and dehumidification; and
- (g) automatic lighting and ventilation control for lifts.

28. For renewable energy technologies, the project will adopt a photovoltaic system for generation of electricity.

29. For greening features, the project will provide green roof for all the three buildings.

30. For recycled features, the project will include rainwater collection system to collect the rainwater for landscape irrigation.

31. The total estimated additional cost for adoption of the above features is around \$16.3 million. There will be about 10% energy savings.

HERITAGE IMPLICATIONS

32. The project will affect the following three graded historic buildings –

- (a) Elliot Pumping Station and Filters Senior Staff Quarters (Grade II Building);

/(b)

- (b) Elliot Pumping Station and Filters Workmen's Quarters (Grade III Building); and
- (c) Elliot Pumping Station and Filters Treatment Works Building (Grade III Building).

The locations of the three buildings are shown in Enclosure 1.

33. HKU has conducted a Heritage Impact Assessment (HIA). The Antiquities and Monuments Office (AMO) of the Leisure and Cultural Services Department has no objection to the HIA report and the proposed mitigation measures.

34. Regarding the preservation and adaptive reuse of the three graded historic buildings, HKU has formed a Working Group on Heritage to conduct consultation and to work out a detailed proposal. The Working Group arranged engagement workshops to consult students, staff and the public in October 2008. Currently, the Working Group is studying and reviewing possible options of adaptive reuse. HKU will carry out the required preservation works for the three graded historic buildings from its own sources of private funding.

LAND ACQUISITION

35. The project does not require any land acquisition.

BACKGROUND INFORMATION

36. 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 HKU's proposals, SG, UGC has, in consultation with D Arch S, adjusted the project estimates proposed by HKU to arrive at the project estimates set out in paragraph 13 above.

37. We upgraded **54EG** for phase 1 and **55EG** for phase 2 to Category B in July 2007. HKU engaged consultants in July 2007 to carry out site investigation,

/and

and to prepare preliminary design, detailed design and tender documents at an estimated cost of \$15.0 million for each project. These consultancies were charged to block allocation **Subhead 8100EX** “Alterations, additions, repairs and improvements to the campuses of the UGC-funded institutions”. The consultants have completed site investigation, preliminary design and detailed design of the projects. HKU is finalising the tender documents for the projects.

38. The projects will involve the removal of 161 common trees and transplanting of 41 trees, including 33 trees to be transplanted elsewhere and eight trees within the project site. All trees to be removed are not important trees⁷. HKU will incorporate planting proposals in the projects, which will include an estimated quantity of 478 trees and 2 700 shrubs.

39. HKU estimates that the projects will create about 675 jobs (600 for labourers and another 75 for professional/technical staff), providing a total employment of 23 200 man-months.

Education Bureau
February 2009

⁷ “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 or 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.

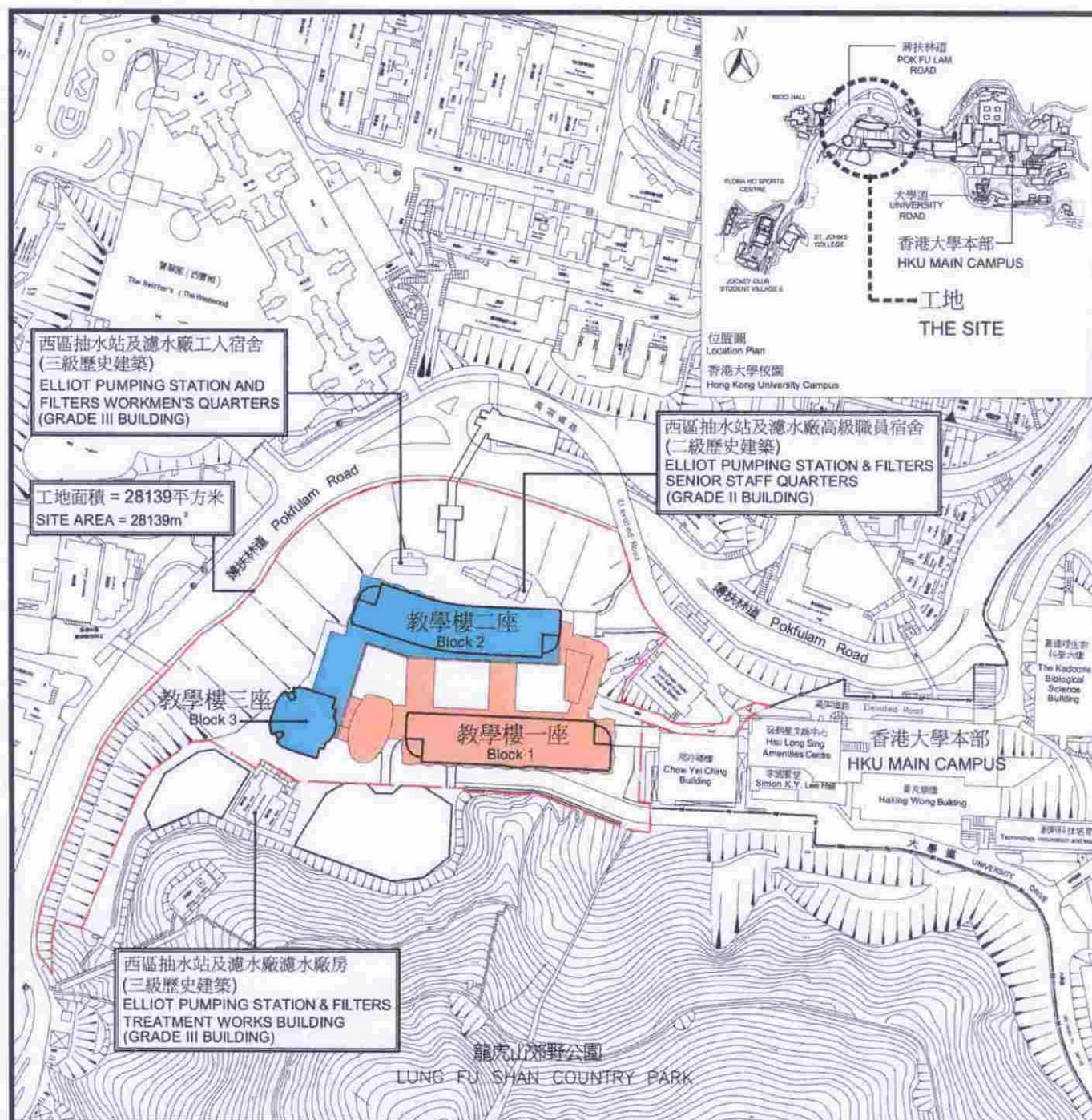
The University of Hong Kong
54EG – Centennial Campus, phase 1
55EG – Centennial Campus, phase 2

香港大學

54EG – 百周年校園第1期

55EG – 百周年校園第2期

Site plan 工地平面圖



Centennial Campus (Phase I)
香港大學百周年校園 (第一期)

Centennial Campus (Phase II)
香港大學百周年校園 (第二期)

The University of Hong Kong
54EG – Centennial Campus, phase 1
55EG – Centennial Campus, phase 2

香港大學

54EG – 百周年校園第1期

55EG – 百周年校園第2期

外觀構思圖

View of the buildings (Artist's impression)



The University of Hong Kong
54EG – Centennial Campus, phase 1
香港大學
54EG – 百周年校園第1期

Sectional Plan 截面圖

教學樓一座
Block 1



The University of Hong Kong
55EG – Centennial Campus, phase 2
香港大學
55EG – 百周年校園第2期

Sectional Plan 截面圖

教學樓二座
Block 2

屋面
ROOF

十二樓
12/F

十一樓
11/F

十樓
10/F

九樓
9/F

八樓
8/F

七樓
7/F

六樓
6/F

五樓
5/F

四樓
4/F

三樓
3/F

二樓
2/F

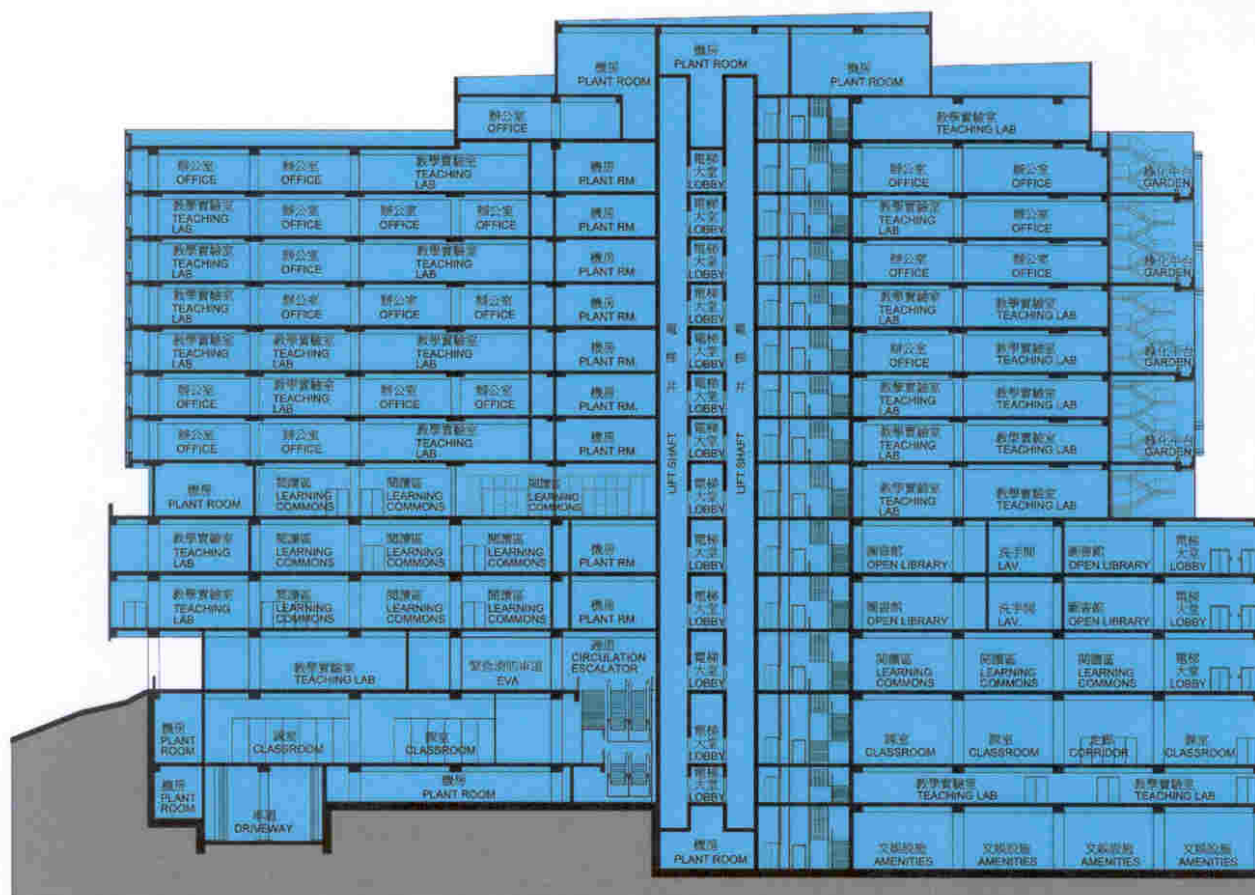
一樓
1/F

地下
G/F

地下層
LG

地下一層
LG1

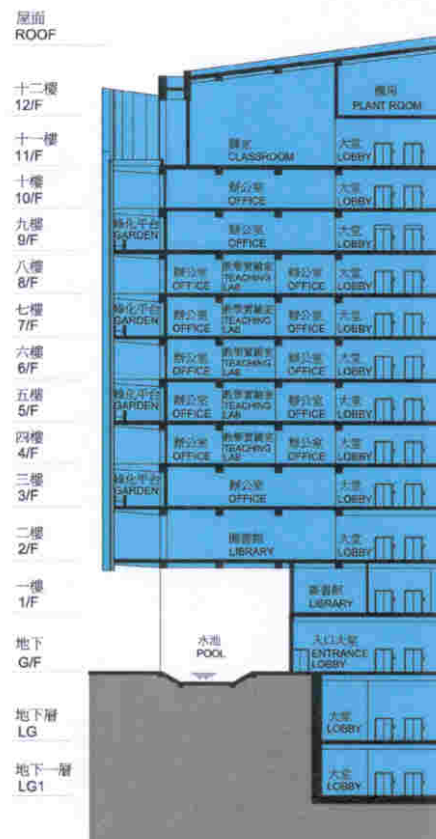
地下二層
LG2



The University of Hong Kong
55EG – Centennial Campus, phase 2
香港大學
55EG – 百周年校園第2期

Sectional Plan 截面圖

教學樓三座
Block 3



Enclosure 4 to PWSC(2008-09)70

**The University of Hong Kong
54EG – Centennial Campus, phase 1
55EG – Centennial Campus, phase 2**

List of facilities

Facilities	Estimated floor area in net operational floor area (NOFA) (m²)		
	54EG	55EG	Total
(a) Classrooms	2 994	2 549	5 543
(b) Teaching laboratories	5 749	4 898	10 647
(c) Research laboratories	618	526	1 144
(d) Office facilities	7 341	6 253	13 594
(e) Library facilities	3 608	3 074	6 682
(f) Study space	1 130	963	2 093
(g) Staff/student amenities	1 310	1 116	2 426
Total	22 750	19 379	42 129

Enclosure 5 to PWSC(2008-09)70

The University of Hong Kong 54EG - Centennial Campus, phase 1 55EG - Centennial Campus, phase 2

Breakdown of the estimate for consultants' fees ^(Note 1)

			Estimated man- months	Average MPS* salary point	Multiplier ^(Note 2)	Estimated fees (\$ million)
(a) Consultants' fees ^(Note 3)						
(i)	Tender assessment	Professional	—	—	—	2.8
(ii)	Contract administration	Professional	—	—	—	30.2 ^(Note 4)
(b) Site supervision ^(Note 5)						
		Professional	142	38	1.6	13.8
		Technical	567	14	1.6	18.0
(c) Out-of-pocket expenses ^(Note 6)						
	Lithography and other direct expenses					0.5
Total						65.3

* MPS = Master Pay Scale

Notes

1. Having examined the consultants' fees estimated by HKU, 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 cost of site supervision staff to be employed by HKU. (As at 1 April 2008, MPS point 38 = \$60,535 per month and MPS point 14 = \$19,835 per month.)

/3.

3. The consultants' fees for tender assessment and contract administration are devised in accordance with the existing consultancy agreements obtained through competitive tendering for the design and construction of **54EG** and **55EG**. The assignment will only be executed subject to Finance Committee's approval to upgrade **54EG** and **55EG** to Category A.
4. Including \$1.7 million for consultants' fees for landslide remedial works which are subject to actual return of consultancy tender.
5. HKU will know the actual man-months and actual costs for site supervision only after completion of the construction works.
6. Out-of-pocket expenses are the actual costs incurred. The consultants are not entitled to any additional payment for the overheads or profit in respect of these items.

Enclosure 6 to PWSC (2008-09)70

The University of Hong Kong 54EG - Centennial Campus, phase 1 55EG - Centennial Campus, phase 2

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

(a) Breakdown of CFA⁸

	Estimated floor area (m²)
Net operational floor area (NOFA)	42 129
Circulation areas and toilets	26 061
Mechanical and electrical plants	6 889
Parking area	3 812
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Total	78 891
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(b) NOFA / CFA ratio 53.4%

(c) Estimated construction unit cost \$16,581 per m² of CFA
(represented by the building and building (in September 2008 prices)
services costs)

⁸ Excluding 5 009 m² of CFA for additional space for circulation and future expansion of energy conservation measures funded by HKU.