

For discussion  
on 8 April 2009

PWSC(2009-10)9

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

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

#### **Universities**

#### **City University of Hong Kong**

#### **24EJ – Academic and administration building**

Members are invited to recommend to Finance Committee the upgrading of **24EJ** to Category A at an estimated cost of \$888.5 million in money-of-the-day prices for the construction of the academic and administration building by the City University of Hong Kong within its campus in Kowloon Tong.

### **PROBLEM**

The City University of Hong Kong (CityU) 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” academic structure), to cater for additional senior year undergraduate places<sup>1</sup> allocated to CityU and to meet its existing teaching and research needs.

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<sup>1</sup> To provide more articulation opportunities for sub-degree graduates, the Administration has been creating additional publicly-funded senior year undergraduate places (i.e. Year 2 and Year 3) by phases in the UGC-funded sector. The total number of these places will reach 3 974 by the 2011/12 academic year.

**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 **24EJ** to Category A at an estimated cost of \$888.5 million in money-of-the-day (MOD) prices for the construction of the academic and administration building by CityU.

**PROJECT SCOPE AND NATURE**

3. The scope of **24EJ** comprises the construction of two interlinked blocks, i.e. a 20-storey high block and a five-storey low block, providing approximately 20 500 square metres (m<sup>2</sup>) in net operational floor area (NOFA). The following facilities will be provided by the project –

- (a) classrooms and lecture theatres of about 3 280m<sup>2</sup> in NOFA;
- (b) teaching and research laboratories of about 8 240m<sup>2</sup> in NOFA;
- (c) open laboratories of about 220m<sup>2</sup> in NOFA;
- (d) study space of about 1 270m<sup>2</sup> in NOFA;
- (e) office facilities of about 4 120m<sup>2</sup> in NOFA;
- (f) student / staff amenities and support facilities (e.g. canteen, student activities area) of about 3 370m<sup>2</sup> in NOFA;
- (g) 65 covered car parking spaces; and
- (h) pedestrian linkages<sup>2</sup>.

4. A site plan is at Enclosure 1. The view of the building (artist's impression), sectional plan and list of facilities are at Enclosures 2 to 4 respectively. CityU plans to start construction works in the third quarter of 2009 and complete such works in the third quarter of 2012.

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<sup>2</sup> Including a pedestrian passage and a footbridge as mentioned in paragraph 8 below.

**JUSTIFICATION**

5. The “3+3+4” academic structure 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. The UGC-funded institutions, including CityU, 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. In addition, extra space and facilities are required to accommodate the additional undergraduate senior year places of the University.

6. Furthermore, the existing campus of CityU has been in use for some 20 years. With CityU’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, CityU had an estimated space shortfall of around 4 300 m<sup>2</sup> by the 2007/08 academic year.

7. CityU plans to carry out the construction of the proposed academic and administration building within its campus to provide some 20 500 m<sup>2</sup> in NOFA to support the implementation of the “3+3+4” academic structure, to relieve the existing space shortfall, and to meet the space requirement of additional senior year undergraduate places. The development comprises a high-rise block located at an existing open carpark and a connecting low-rise block over an existing elevated service road and a nullah which runs beneath the site. The project will provide classrooms, lecture theatres, teaching and research laboratories, study space, offices and amenities. These facilities will also support the University’s mission to nurture and develop the talents of students and to create applicable knowledge in order to support social and economic advancement. In addition, study and amenity space will be provided to support informal and personal development of students through social, cultural and intellectual interaction among students and teachers.

8. The location of the proposed building is conducive to providing a convenient linkage between the main campus and a cluster of student hostel blocks across Cornwall Street. The project will hence include a pedestrian passage linking up the northern end of the low-rise block and the existing

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Cornwall Street footbridge, which in turn connects to the student hostel area. In addition, a footbridge will be built to connect the low-rise block to the adjacent Community College of CityU Building (CCCUB), which is under construction by CityU. Both the pedestrian passage and the footbridge will be funded by CityU by its own source of funding.

9. The project will provide a total of 65 covered car parking spaces, of which 36 are to compensate for the existing open car parking spaces that will be lost as a result of the construction of the high-rise block. CityU will fund the other 29 car parking spaces to meet the general needs of the university community.

**FINANCIAL IMPLICATIONS**

10. The estimated cost of the project is \$983.3 million in MOD prices. CityU will contribute about \$94.8 million in MOD prices from its own source of funding, primarily to support the site development costs, the costs of the pedestrian passage and the footbridge as mentioned in paragraph 8 above, and the provision of 29 car parking spaces as mentioned in paragraph 9 above.

11. SG, UGC, on the advice of D Arch S, recommends capital funding of \$888.5 million in MOD prices (see paragraph 14 below), made up as follows –

	<b>\$ million</b>
(a) Site formation and development	51.8
(b) Building	426.1
(c) Building services	206.6
(d) Drainage and external works	44.9
(e) Additional energy conservation measures	8.0

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	<b>\$ million</b>	
(f) Consultants' fees for –	28.2	
(i) tender assessment	1.0	
(ii) contract administration	19.9	
(iii) site supervision	6.5	
(iv) out-of-pocket expenses	0.8	
(g) Furniture and equipment	57.2	
(h) Contingencies	61.7	
(i) Enhanced facilities <sup>3</sup>	<u>32.0</u>	
Sub-total	916.5	(in September 2008 prices)
(j) Provision for price adjustment	66.8	
Sub-total	<u>983.3</u>	(in MOD prices)
(k) Less contribution by CityU	(94.8)	
Total	<u>888.5</u> <sup>4</sup>	(in MOD prices)

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<sup>3</sup> Including the footbridge, the pedestrian passage and the 29 car parking spaces as mentioned in paragraphs 8 and 9 above.

<sup>4</sup> The estimated capital funding to be contributed by the Government to the project expressed in September 2008 prices is \$824.9 million, representing an increase of 44.5% over the original estimated cost of \$571.0 million in September 2005 prices.

12. CityU will engage consultants to undertake tender assessment, contract administration and site supervision of the project. A detailed breakdown of the estimate for consultants' fees is at Enclosure 5.

13. The construction floor area (CFA) of the academic and administration building is 39 211 m<sup>2</sup> (excluding the car parking provision of 1 539 m<sup>2</sup> to be funded by CityU) The estimated construction unit cost, which comprises the building and building services costs, is \$16,136 per m<sup>2</sup> 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 m<sup>2</sup> of CFA in September 2008 prices).

14. Subject to approval, CityU will phase the expenditure as follow –

Year	\$ million (Sept 2008)	Price adjustment factor	\$ million (MOD)	Contribution By CityU \$ million	24EJ \$ million (MOD)
2009 – 10	73.0	1.03200	75.3	75.3	-
2010 – 11	156.3	1.05264	164.5	19.5	145.0
2011 – 12	461.8	1.07369	495.8	-	495.8
2012 – 13	188.8	1.09517	206.8	-	206.8
2013 – 14	36.6	1.11707	40.9	-	40.9
	916.5		983.3	94.8	888.5
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15. We have derived the MOD estimates on the basis of the Government's latest forecast of the trend rate of change in the prices of public sector building and construction output for the period 2009 to 2014. CityU will tender the works through lump-sum contracts because it can clearly define the scope of works in advance. The contracts will provide for price adjustment to reflect market fluctuations in labour and material costs.

16. The project has no impact on tuition fees. The additional recurrent costs associated with this project will be absorbed by CityU. The proposal has no additional recurrent implications on the Government.

## **PUBLIC CONSULTATION**

17. The project is located within CityU's campus. The Sham Shui Po District Council (SSPDC) was consulted in September 2008. Members of the SSPDC supported the development, and made some suggestions on the building design to ensure harmony with the surrounding environment, as well as the provision of greenery, etc. They also requested CityU to mitigate possible noise nuisance during the construction period. CityU has taken into account SSPDC's suggestions on the building design, and has undertaken to adopt appropriate noise mitigation measures in accordance with the relevant standards and guidelines. CityU presented the project to the staff and student representatives in April 2008 and no adverse comment was received. The project was also published in the "CityU Today" Magazine in February 2009 for the staff's and students' information. We submitted a paper on this project to the Legislative Council Panel on Education for discussion on 9 February 2009. Members did not raise any objection to the proposal.

## **ENVIRONMENTAL IMPLICATIONS**

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

19. During construction, CityU 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.

20. CityU has considered measures (e.g. the optimization of the foundation layout by suitable piling design and the use of metal hoarding frameworks and signboards so that these materials can be recycled and reused in other projects) in the planning and design stages to reduce the generation of construction waste where possible. In addition, CityU will require the contractor to reuse inert construction waste (e.g. excavated materials) 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>5</sup>. CityU 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. CityU 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. CityU will ensure that the day-to-day operations on site comply with the approved plan. CityU will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. CityU 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. CityU estimates that the project will generate in total about 42 000 tonnes of construction waste. Of these, CityU will reuse about 9 500 tonnes (22.6%) of inert construction waste on site and deliver 27 500 tonnes (65.5%) of inert construction waste to public fill reception facilities for

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<sup>5</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.



subsequent reuse. In addition, CityU will dispose of 5 000 tonnes (11.9%) 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 \$1,367,500 for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne<sup>6</sup> at landfills).

## ENERGY CONSERVATION MEASURES

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

- (a) water cooled chillers (fresh-water cooling tower);
- (b) heat wheel for heat energy reclaim of exhaust air;
- (c) automatic demand control of supply air;
- (d) occupancy and daylight sensors for lighting control;
- (e) light emitting diode (LED) type exit signs;
- (f) services-on-demand control for escalators (on-off control); and
- (g) automatic on-off switching of lighting and ventilation fan inside lifts.

24. For renewable energy technologies, this project will adopt photovoltaic system and solar park lighting.

25. For greening features, this project will provide greening on open spaces, communal courtyards and podium.

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<sup>6</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.

26. For recycled features, this project will include recycling of rainwater collection system for irrigation, cooling tower bleed-off water for flushing and air-conditioning condense water for air-conditioning make-up water.

27. The total estimated additional cost for adoption of the above features is around \$8.0 million. There will be about 10.7% savings in the annual energy consumption.

### **HERITAGE IMPLICATIONS**

28. 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 Monuments Office.

### **LAND ACQUISITION**

29. The project does not require any land acquisition.

### **BACKGROUND INFORMATION**

30. 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 CityU's proposal, SG, UGC has, in consultation with D Arch S, adjusted the project estimate proposed by CityU to arrive at the project estimate set out in paragraph 11 above.

31. We upgraded **24EJ** to Category B in August 2007<sup>7</sup>. CityU engaged consultants in February 2008 to carry out topographical survey, site investigation, preliminary design, detailed design and to prepare tender documents at a total estimated cost of \$18.8 million. We have charged \$15 million of the cost to block allocation Subhead **8100EX** “Alterations, additions, repairs and improvements to the campuses of UGC-funded institutions” and CityU contributed \$3.8 million to finance the remaining balance. The consultants have completed the topographical survey, site investigation, preliminary design and detailed design of the project. CityU is finalising the tender documents for this project.

32. The project will involve removal of 305 trees and transplanting of 80 trees within the project site. All trees to be removed are not important trees<sup>8</sup>. CityU will incorporate planting proposals, which will include an estimated quantity of 305 trees and shrubs planting, as part of the project. Greenery will be provided at the podium and trees will be planted along the Tat Chee Avenue as well.

33. CityU estimates that the project will create about 506 jobs (454 for labourers and another 52 for professional/technical staff) providing a total employment of 19 100 man-months.

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Education Bureau  
March 2009

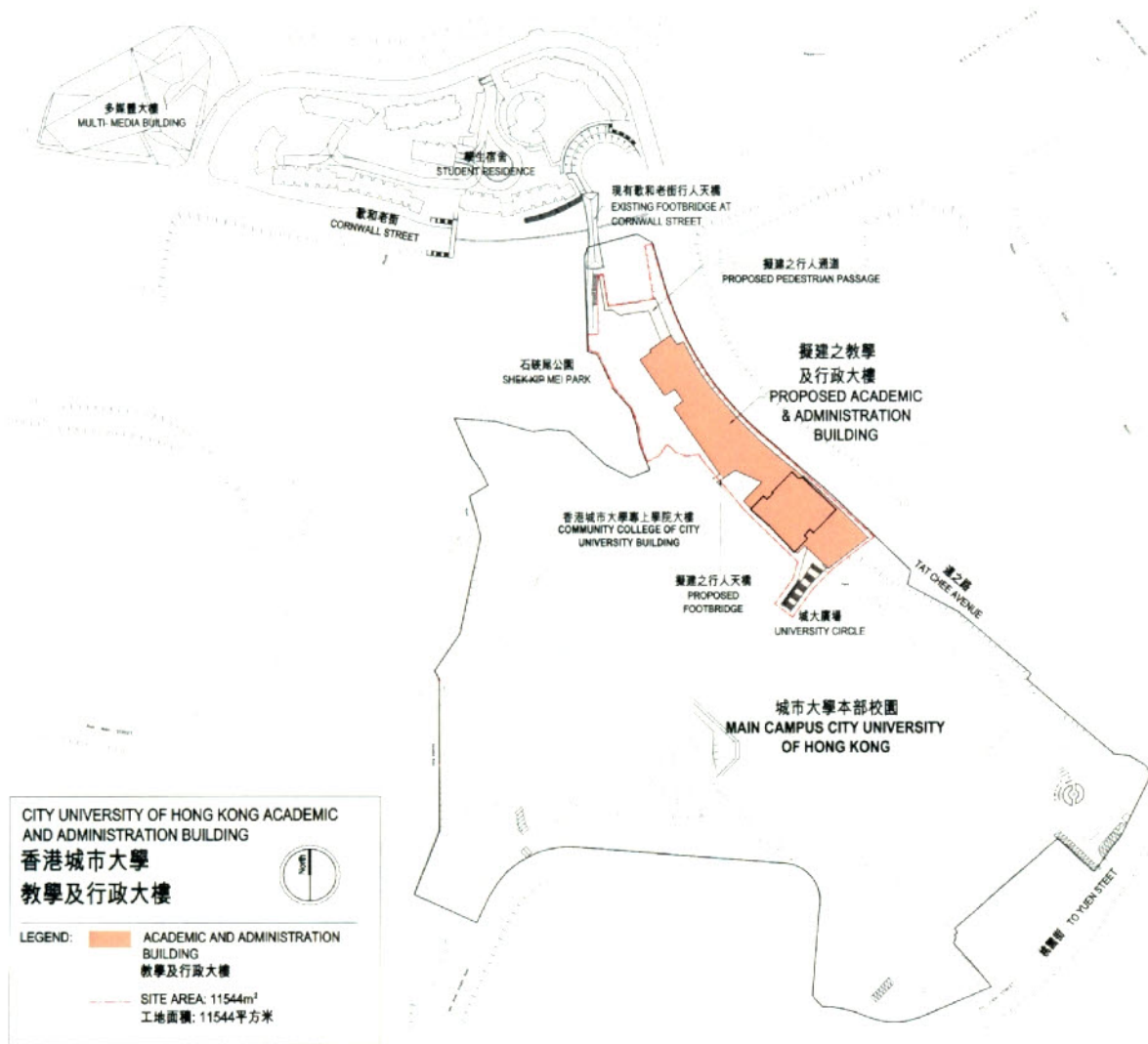
<sup>7</sup> CityU once planned a project, namely, 18EJ “Landmark Building” on part of the site for the academic and administration building. Capital funding of \$29.2 million (in MOD prices) for stage 1 of 18EJ on the pre-contract consultancy for the detailed design and preparation works was approved by the Finance Committee at its meeting on 10 May 2002 (PWSC(2002-03)10). However, 18EJ was subsequently discontinued and the site was planned for the development of **24EJ** having regard to the subsequent development of the implementation of the “3+3+4” academic structure. As regards the funding approved for stage 1 of 18EJ, CityU had only incurred an expense of around \$0.1 million.

<sup>8</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 –

- trees of 100 years old or above;
- 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;
- trees of precious or rare species;
- 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
- 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.

**City University of Hong Kong**  
**24EJ – Academic and administration building**  
香港城市大學  
24EJ – 教學及行政大樓

**Site Plan 工地平面圖**



**City University of Hong Kong**  
**24EJ – Academic and administration building**  
香港城市大學  
24EJ – 教學及行政大樓

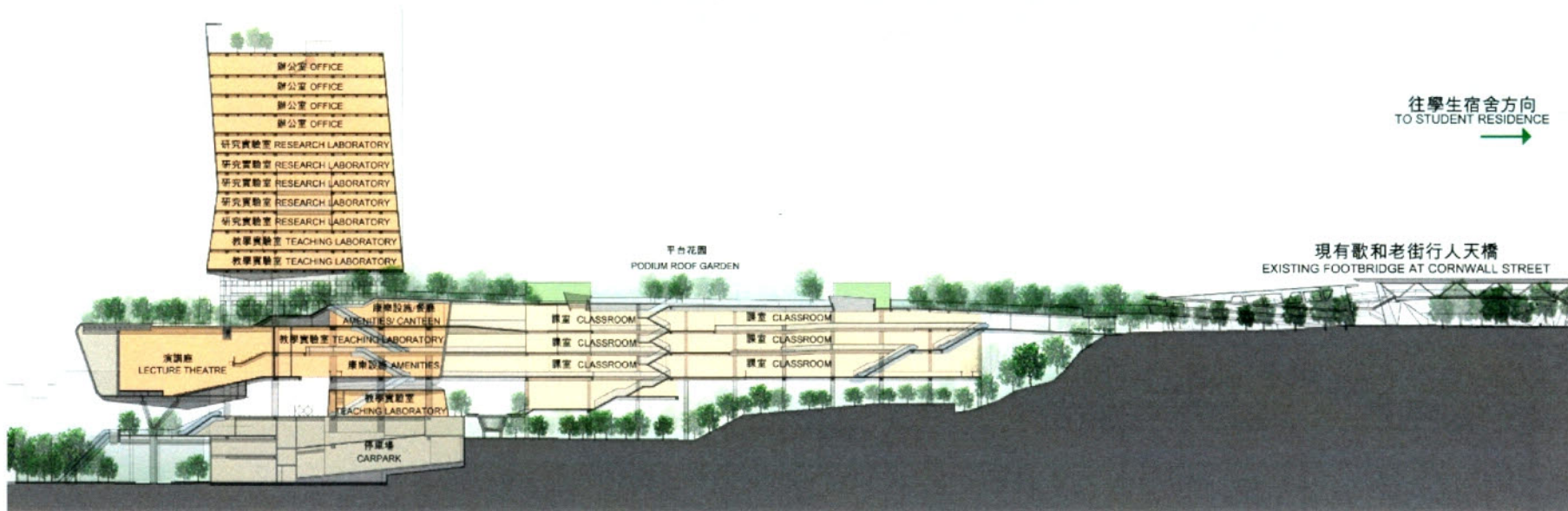
**View of the building from Tat Chee Avenue (Artist's impression)**  
從達之路望向教學行政大樓的外觀構思圖





City University of Hong Kong  
24EJ – Academic and administration building  
香港城市大學  
24EJ – 教學及行政大樓

Sectional Plan 截面圖



**Enclosure 4 to PWSC(2009-10)9**

**City University of Hong Kong  
24EJ – Academic and administration building**

**List of facilities**

<b>Facilities</b>	<b>Estimated floor area in net operational floor area (NOFA) (m<sup>2</sup>)</b>
(a) Classroom facilities	3 280
(b) Teaching and research laboratories	8 240
(c) Open laboratories	220
(d) Study space	1 270
(e) Offices	4 120
(f) Amenities and support facilities	3 370
Total	<hr/> 20 500 <hr/>

**Enclosure 5 to PWSC(2009-10)9**

**City University of Hong Kong  
24EJ – Academic and administration building**

**Breakdown of the estimate for consultants' fees**<sup>(Note 1)</sup>

		Estimated man- months	Average MPS* salary point	Multiplier (Note 2)	Estimated fee (\$ million)
(a) Consultants' fees <sup>(Note 3)</sup>					
(i) Tender assessment	Professional	–	–	–	1.0
(ii) Contract administration	Professional	–	–	–	19.9
(b) Site supervision <sup>(Note 4)</sup>					
	Professional	12.4	38	1.6	1.2
	Technical	167.0	14	1.6	5.3
(c) Out of pocket expenses <sup>(Note 5)</sup>					
Lithography and other direct expenses		–	–	–	0.8
<b>Total</b>					28.2

\* MPS = Master Pay Scale

**Notes**

1. Having examined the consultants' fees estimated by CityU, the Director of Architectural Services considers the figures acceptable.
2. A multiplier of 1.6 is applied in respect of site supervision staff to be employed by CityU. (As at 1 April 2008, MPS point 38 = \$60,535 per month, and 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 **24EJ**. The assignment will only be executed subject to Finance Committee's approval to upgrade **24EJ** to Category A.
4. CityU will know the actual man-months and actual costs for site supervision only after completion of the construction works.

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5. 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(2009-10)9

The City University of Hong Kong  
24EJ – Academic and administration building

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

(a)	Breakdown of CFA	Estimated floor area (m <sup>2</sup> )
		<b>Total</b>
	Net operational floor area (NOFA)	20 500
	Circulation areas and toilets	14 760
	Mechanical and electrical plants	2 040
	Parking area <sup>9</sup>	1 911
	CFA	<u>39 211</u>
(b)	NOFA / CFA ratio	52.3%
(c)	Estimated construction unit cost (represented by the building and building services costs)	\$16,136 per m <sup>2</sup> of CFA (in September 2008 prices)

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<sup>9</sup> Excluding the parking area of 1 539m<sup>2</sup> in CFA for 29 car parking spaces to be funded by CityU.