For discussion **PWSC(2008-09)54**
on 15 December 2008

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 708 – CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT
Universities
The Chinese University of Hong Kong
49EF – Student amenity centre

Members are invited to recommend to Finance Committee the upgrading of **49EF** to Category A at an estimated cost of $206.5 million in money-of-the-day prices for the construction of a student amenity centre by The Chinese University of Hong Kong within its campus in Sha Tin.

PROBLEM

The Chinese University of Hong Kong (CUHK) 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").

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 **49EF** to Category A at an estimated cost of $206.5 million in money-of-the-day (MOD) prices for the construction of a student amenity centre by CUHK.

/PROJECT …..

PROJECT SCOPE AND NATURE

3. The scope of **49EF** comprises the construction of a cascading style building up to six storeys of some 4 120 square metres (m^2) in net operational floor area (NOFA) within the existing campus of CUHK. The building will accommodate the following student amenity facilities –

(a) 14 common rooms of about 530 m^2 in NOFA;

(b) 33 student service rooms of about 1 560 m^2 in NOFA ;

(c) a multi-purpose hall with two supporting assembly service rooms of about 590 m^2 in NOFA;

(d) a cafeteria with kitchen facilities of about 530 m^2 in NOFA;

(e) a display area with two preparation rooms of about 360 m^2 in NOFA;

(f) support facilities of about 550 m^2 in NOFA;

(g) 23 covered parking spaces and a loading and unloading space; and

(h) a footbridge linking the proposed building to the middle level of the campus.

4. A site plan is at Enclosure 1. The view of the building (artist's impression), sectional plan and the list of facilities are at Enclosures 2 to 4 respectively. CUHK plans to start the construction works in the second quarter of 2009 for completion in the third quarter of 2011.

JUSTIFICATION

5. 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 programmes starting from the 2012/13 academic year. The UGC-funded institutions, including CUHK, would need to expand their campus space and facilities in order to accommodate the additional students under the new four-year undergraduate programmes and to provide a suitable teaching and learning environment in support of the new academic structure.

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6. CUHK plans to carry out four capital works projects[1] to provide additional space and facilities of some 24 500 m^2 in net operational floor area (NOFA) in total to support the implementation of "3+3+4", one of which is to construct a student amenity centre of some 4 120 m^2 in NOFA. The project will provide additional space to meet the need for more amenity space arising from the increase in the number of students, to provide space for student unions and clubs for organizing activities, to provide premises for student counselling services, career development and planning, and to integrate amenities with learning so that students can gather and engage in group projects, academic discussions as well as multi-cultural activities.

7. The new student amenity centre will be located in the Chung Chi Campus, next to the existing Chung Chi Tang student canteen and the Lake Ad Excellentiam. The proposed facilities will include common rooms, student service rooms, a multi-purpose hall, cafeteria with kitchen, display area and support facilities. A linkage bridge is also provided to facilitate easier access to the Central Campus.

FINANCIAL IMPLICATIONS

8. SG, UGC, on the advice of D Arch S, recommends approval of the project at a cost of $206.5 million in MOD prices (see paragraph 11 below), made up as follows –

		$ million
(a)	Site formation and development	11.0
(b)	Building	92.9
(c)	Building services	40.2
(d)	Drainage and external works	15.6
(e)	Additional energy conservation measures	1.5

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[1] The other "3+3+4" capital works projects of CUHK include "An integrated teaching building", "Centralized general research lab complex (block 1) in Area 39" and "Extension to the existing University Library at Central Campus". CUHK is working on the project details and intends to submit funding proposals within 2009.

			$ million	
(f)	Consultants' fees for –		5.4	
	(i) Tender assessment	0.4		
	(ii) Contract administration	2.1		
	(iii) Site supervision	2.7		
	(iv) Out-of-pocket expenses	0.2		
(g)	Furniture and equipment[2]		9.1	
(h)	Contingencies		13.2	
	Sub-total		188.9	(in September 2008 prices)
(i)	Provision for price adjustment		17.6	
	Total		206.5	(in MOD prices)

9. CUHK 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.

10. The construction floor area (CFA) of this project is approximately 7 990 m^2. The estimated construction unit cost, represented by the building and building services costs, is $16,658 per m^2 of CFA in September 2008 prices. A detailed account of the CFA vis-à-vis the construction unit cost is at Enclosure 6. The estimated construction unit cost is about 17% lower than similar projects for UGC-funded institutions such as **19EH** "School of Communication-cum-School of Creative / Visual Arts Building" of Hong Kong Baptist University (with an estimated construction unit cost of $20,128 per m^2 of CFA in September 2008 prices). D Arch S considers the estimated construction unit cost reasonable in view of the current economic situation and prevailing construction prices.

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[2] Based on a list of furniture and equipment submitted by CUHK.

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

Year	$ million (Sept 2008)	Price adjustment factor	$ million (MOD)
2008 - 09	5.0	1.00000	5.0
2009 - 10	51.7	1.04000	53.8
2010 - 11	60.9	1.08160	65.9
2011 - 12	43.5	1.12486	48.9
2012 - 13	20.6	1.16986	24.1
2013 - 14	7.2	1.21665	8.8
	188.9		206.5

12. 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 buildings and construction output for the period 2008 to 2014. CUHK 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.

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

PUBLIC CONSULTATION

14. As the project is located within the CUHK campus and there is no residential estate/housing in its immediate vicinity, it will not affect residents in the vicinity. CUHK has briefed and consulted its staff and students on various occasions including student assemblies and Campus Master Plan engagement meetings and forums. Concerns of staff and students have been clarified and addressed, e.g. the adoption of cascading style building to fit in with surrounding buildings and the provision of a student piazza. We circulated an information paper on this project to the Legislative Council Panel on Education on 4 November 2008. Members did not raise any objection to the proposal.

/ENVIRONMENTAL …..

ENVIRONMENTAL IMPLICATIONS

15. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). CUHK completed a Preliminary Environmental Review for the project in December 2005. The Director of Environmental Protection (DEP) agreed that with proper building orientation and layout design, the project would not have long-term environmental impact. CUHK has addressed these matters in the design of the project to the satisfaction of DEP.

16. CUHK has included in the project estimates the provisions required to implement suitable mitigation measures to control short-term environmental impacts to within established standards and guidelines. 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.

17. CUHK 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, CUHK 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 to public fill reception facilities[3]. CUHK 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.

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

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[3] 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.

19. CUHK estimates that the project will generate in total about 21 684 tonnes of construction waste. Of these, CUHK will reuse about 4 100 tonnes (18.9%) of inert construction waste on site and 8 900 tonnes (41.0%) of inert construction waste on other construction sites, and deliver 5 150 tonnes (23.8%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, CUHK will dispose of 3 534 tonnes (16.3%) 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 $580,800 for this project (based on a unit cost of $27/tonne for disposal at public fill reception facilities and $125/tonne[4] at landfills).

ENERGY CONSERVATION MEASURES

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

(a) water-cooled chillers (fresh-water cooling tower);

(b) automatic ventilation control for car park;

(c) light-emitting diode (LED) type exit signs;

(d) occupancy and daylight sensors for lighting control; and

(e) automatic lighting and ventilation control for lifts.

21. For renewable energy technologies, the project has adopted solar lightings and photovoltaic system at student plaza and landscape area.

22 For greening features, the project has adopted greening on podiums and rooftops to provide landscaped areas at different levels.

23. For recycled features, the project will include cooling tower bleed-off water for flushing.

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[4] 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^3), nor the cost to provide new landfills, (which is likely to be more expensive) when the existing ones are filled.

24. The total estimated additional cost for adoption of above features is around $1.5 million. These various provisions should reduce the energy requirements of the building by about 8.5%.

HERITAGE IMPLICATIONS

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

LAND ACQUISITION

26. The project does not require any land acquisition.

BACKGROUND INFORMATION

27. 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 for bidding of funds under the established mechanism. Having examined CUHK's proposal, SG, UGC has, in consultation with D Arch S, adjusted the project estimate proposed by CUHK to arrive at the project estimate set out in paragraph 8 above.

28. We upgraded **49EF** to Category B in April 2006. CUHK engaged consultants in December 2007 to carry out site investigation, and to prepare preliminary design, detailed design and tender documents at a total estimated cost of $4.3 million. 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 project. CUHK is finalising the tender documents for the project.

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29. The project will involve the removal of 66 common trees and transplanting 15 trees. All the 15 trees subject to transplant, including three important trees[5], will be transplanted within the campus during the implementation of the project. A summary of important trees affected is at Enclosure 7. CUHK will incorporate a planting proposal as part of the project, including estimated quantities of 89 trees, 750 annuals and 300m^2 grassed area within the campus.

30. CUHK estimates that the project will create about 125 jobs (111 for labourers and another 14 for professional/technical staff) providing a total employment of 3 300 man-months.

Education Bureau
December 2008

[5] "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.

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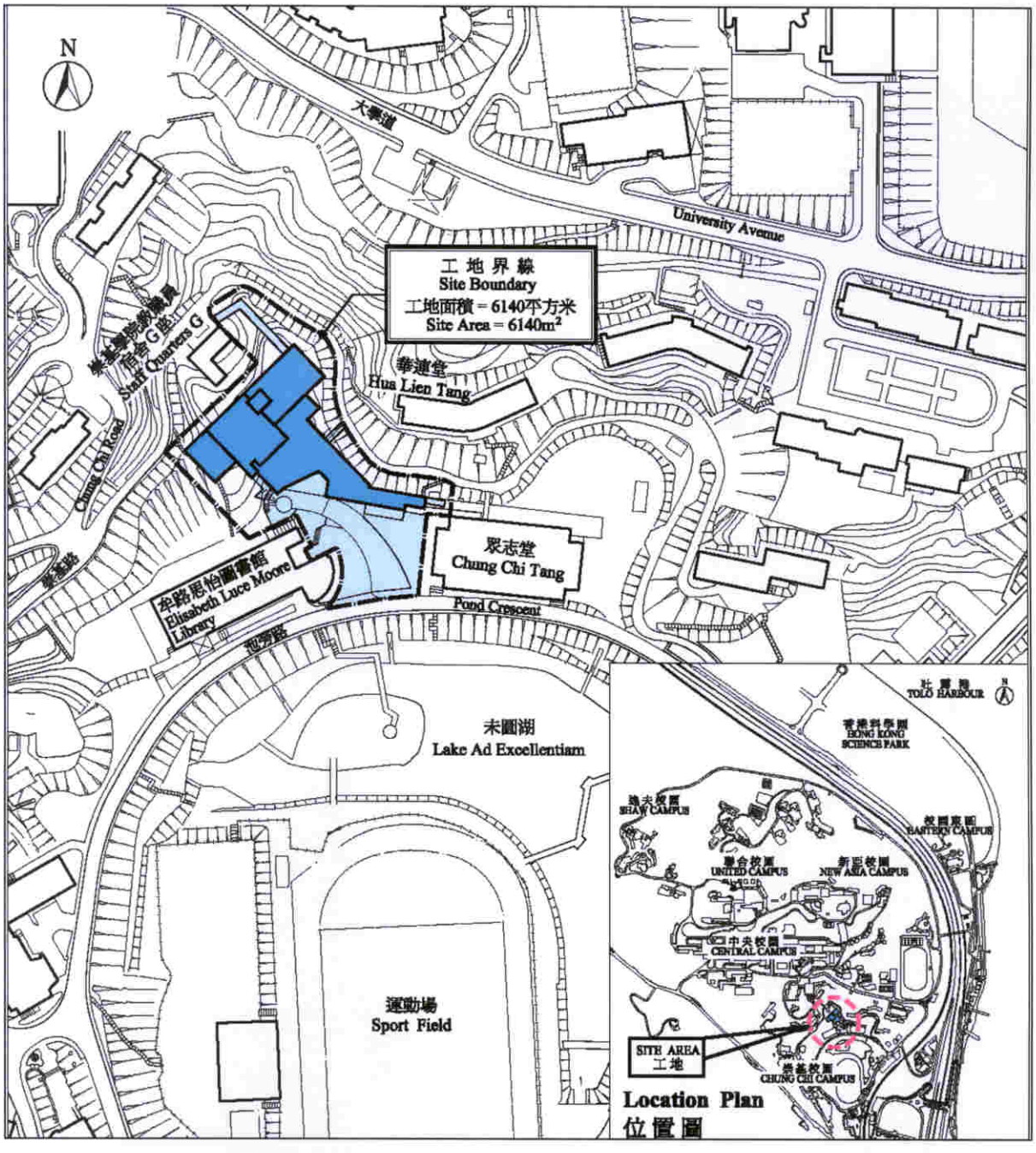
49EF – Student amenity centre
香港中文大學
49EF – 學生活動中心

Site Plan 工地平面圖



The Chinese University of Hong Kong
49EF – Student amenity centre
香港中文大學
49EF – 學生活動中心

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

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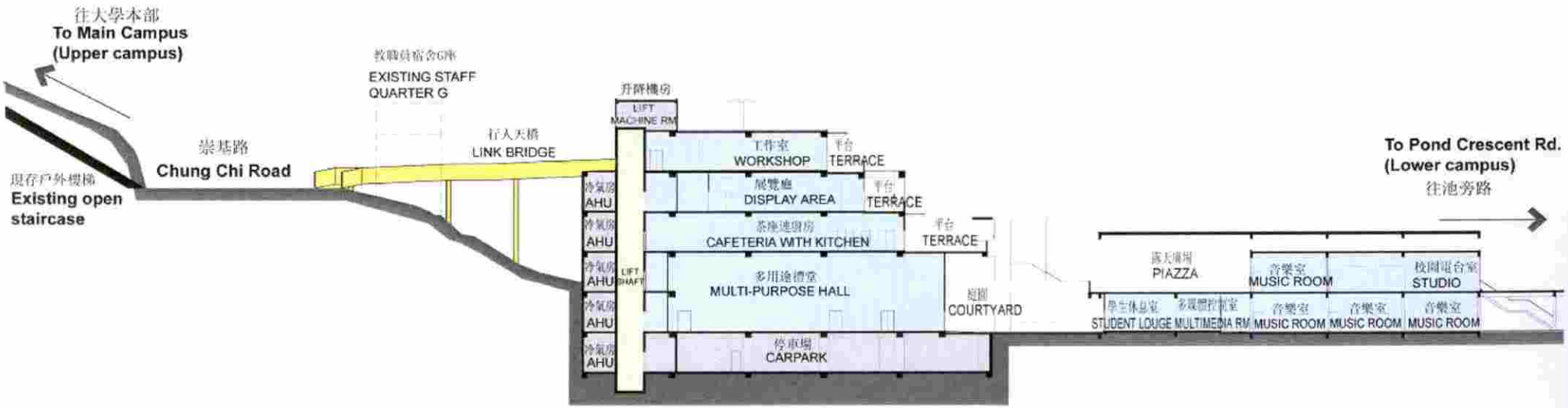
Sectional Plan 截面圖



The Chinese University of Hong Kong
49EF – Student amenity centre

List of facilities

	Quantity	NOFA (m^2)
I. Student amenities		
(a) Common Room	14	527
(b) Student Service Room	33	1560
(c) Multi-purpose hall and assembly service room	3	588
(d) Display room and preparation room	3	363
(e) Cafeteria with kitchen	1	529
II. Support facilities	-	553
Total	54	4 120

The Chinese University of Hong Kong
49EF – Student amenity centre

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

			Estimated man-months	Average MPS* salary point	Multiplier (Note 2)	Estimated fees ($ million)
(a) Consultants' staff costs (Note 3)						
	(i) Tender assessment	Professional	–	–	–	0.3
		Technical	–	–	–	0.1
	(ii) Contract administration	Professional	–	–	–	1.5
		Technical	–	–	–	0.6
(b) Site supervision (Note 4)		Technical	85	14	1.6	2.7
(c) Out-of-pocket expenses (Note 5)						
	Lithography and other direct expenses					0.2
					Total	5.4

* MPS = Master Pay Scale

Notes

1. Having examined the consultants' fees estimated by CUHK, D Arch S considers the figures acceptable.

2. A multiplier of 1.6 is applied to the average MPS point to estimate the staff costs for contract staff employed by CUHK direct on the project. (As at 1 April 2008, MPS point 14 = $19,835 per month.)

3. The consultants' staff costs 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 **49EF**. The assignment will only be executed subject to Finance Committee's approval to upgrade **49EF** to Category A.

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4. CUHK will only know the actual man-months and actual costs for site supervision after completion of the construction works.

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(2008-09)54

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

(a) Breakdown of CFA

	Estimated floor area (m^2)
Net operational floor area (NOFA)	4 120
Circulation areas and toilets	2 630
Mechanical and electrical plants	510
Parking area	730
Total	7 990

(b) NOFA / CFA ratio — 51.6%

(c) Estimated construction unit cost (represented by the building and building services costs) — $16,658 per m^2 of CFA (in September 2008 prices)

Enclosure 7 to PWSC(2008-09)54

Summary of "Important Trees" involved in 49EF – Student amenity centre
The Chinese University of Hong Kong

Tree no.	Tree species (Botanical Name)	Tree size			Form[2] (Good/ Fair/ Poor)	Health condition (Good/ Fair/ Poor)	Amenity value (High/ Medium/ Low)	Survival rate after transplanting (High/ Medium/ Low)	Recommendation (Retain/ Transplant/ Fell)	Remarks
		Overall height (m)	Trunk[1] diameter (mm)	Average crown spread (m)						
T1059	Aquilaria Sinensis 土沉香	4	140	3	Fair	Fair	Medium	Low	Transplant within the site	1. Rare species 2. The tree is located within the footprint of building block and cannot be retained.
T1075	Aquilaria Sinensis 土沉香	5	135	3	Fair	Fair	Medium	Not applicable	Retain	1. Rare species
T1089	Aquilaria Sinensis 土沉香	7	230	7	Fair	Fair	Medium	Medium	Transplant within the site	1. Rare species 2. The tree is located within the footprint of building block and cannot be retained.

Tree no.	Tree species (Botanical Name)	Tree size			Form[2] (Good/ Fair/ Poor)	Health condition (Good/ Fair/ Poor)	Amenity value (High/ Medium/ Low)	Survival rate after transplanting (High/ Medium/ Low)	Recommendation (Retain/ Transplant/ Fell)	Remarks
		Overall height (m)	Trunk[1] diameter (mm)	Average crown spread (m)						
T1351	Aquilaria Sinensis 土沉香	5	150	3	Fair	Fair	Medium	Not applicable	Retain	1. Rare species
T1347	Rhodoleia Championii 紅苞木 (吊鐘王)	2	95	2	Fair	Fair	Medium	Medium	Transplant within the site	1. Rare species 2. The tree is located within the footprint of building block and cannot be retained.

[1] Trunk diameter of a tree refers to its diameter at breast height (i.e. measured at 1.3m above ground level).

[2] Form of tree will take account of the overall tree size, shape, and any special feature.