For discussion **PWSC(2001-02)108**
on 27 February 2002

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 708 - CAPITAL SUBVENTIONS AND MAJOR SYSTEMS AND EQUIPMENT
Universities
The Chinese University of Hong Kong
44EF - Stabilisation of slopes within the university campus, phase 11

Members are invited to recommend to Finance Committee the upgrading of **44EF** to Category A at an estimated cost of $120.9 million in money-of-the-day prices for repairs to sub-standard slopes within the campus of the Chinese University of Hong Kong.

PROBLEM

Stabilisation works are required for the sub-standard slopes within the campus of the Chinese University of Hong Kong (CUHK).

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 and Manpower, proposes to upgrade **44EF** to Category A at an estimated cost of $120.9 million in money-of-the-day (MOD) prices for CUHK to carry out stabilisation works to sub-standard slopes under CUHK's maintenance responsibility.

/PROJECT …..

PROJECT SCOPE AND NATURE

3. The proposed project comprises stabilisation works to 48 sub-standard slopes. Ten of these are the subject of Dangerous Hillside Orders (DHOs) from the Building Authority (BA) under the Buildings Ordinance (BO), which were previously included in Landslip Preventive Measures (LPM) Accelerated Programmes of the Geotechnical Engineering Office (GEO) of Civil Engineering Department. An understanding was reached with GEO in 1999 that in view of CUHK's relatively well organised and systematic approach in slope stabilisation works, GEO would no longer include slopes in the campus under their LPM Accelerated Programmes for surveys and assessments. Henceforth, there would be no or few DHOs forthcoming from the BA, and CUHK would need to conduct its own survey and assessment with the assistance of professional consultants. Against this background, the geotechnical consultants engaged by CUHK recommended stabilisation works to the other 38 slopes showing signs of distress and possible instability.

4. To soften the visual impact of the hard surface resulting from slope stabilisation works, CUHK will carry out landscaping and other environmental improvement works to the 48 slopes.

5. A site plan is at Enclosure 1. CUHK will group the slopes in six packages for implementation according to their locations and plans to commence stabilisation works in August 2002 for completion in December 2004.

JUSTIFICATION

6. Under the LPM Accelerated Programmes, the GEO conducts preliminary studies for pre-1977 man-made slopes to select sub-standard slopes which require further studies. On the recommendation of the GEO, and in accordance with the BO, the BA will issue a DHO for a private sub-standard slope to the person or institution responsible for slope maintenance. The BA has the statutory power to take prosecution action against the institution if it fails to comply with the requirements of the DHO. In case of emergency, the BA is also empowered to carry out works deemed necessary to obviate any imminent danger of slope failure, and seek recovery of the full costs from the institution responsible.

7. Non-government institutions are responsible for carrying out remedial works on sub-standard slopes under their maintenance responsibility. Under the existing arrangement, UGC-funded institutions may seek funding from Government for such works.

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8. To ensure the safety of students and staff, it is important that necessary remedial works for the 48 slopes referred to in paragraph 3 above are carried out in a timely manner. The approval of this proposal will ensure that financial resources are available for CUHK to undertake the necessary works as soon as practicable.

FINANCIAL IMPLICATIONS

9. SG, UGC, on the advice of D Arch S, recommends approval of the project at a cost of $120.9 million in MOD prices (see paragraph 11 below), made up as follows -

			$ million	
(a)	Stabilisation works		95.95	
(b)	Consultants' fees -		11.44	
	(i) Assessment of tenders	0.58		
	(ii) Contract administration	1.20		
	(iii) Site supervision	9.41		
	(iv) Out-of-pocket expenses	0.25		
(c)	Landscaping works and surface finishing works against erosion		6.31	
(d)	Contingencies		6.13	
	Sub-total		119.83	(in September 2001 prices)
(e)	Provision for price adjustment		1.07	
	Total		120.90	(in MOD prices)

10. A detailed breakdown of the estimate for consultants' fees by man-months is at Enclosure 2.

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

/**Year** …..

Year	$ million (Sept 2001)	Price adjustment factor	$ million (MOD)
2002 - 03	8.00	0.99700	7.98
2003 - 04	42.00	1.00398	42.17
2004 - 05	49.00	1.01101	49.54
2005 - 06	20.83	1.01808	21.21
	119.83		120.90

12. We derived the MOD estimates on the basis of the Government's latest forecast of trend labour and construction prices for the period 2002 to 2006. CUHK will deliver the works through a fixed-price lump-sum contract because it can clearly define the scope of works in advance, leaving little room for uncertainty.

13. The proposed project will not give rise to any additional annual recurrent expenditure.

PUBLIC CONSULTATION

14. Public consultation is not necessary as the proposed works which concerns safety will be carried out within the campus of CUHK.

ENVIRONMENTAL IMPLICATIONS

15. CUHK completed a Preliminary Environmental Review (PER) for the project in October 2000. The PER concluded that the project would have no long-term environmental impact. The Director of Environmental Protection vetted the PER and agreed that an Environmental Impact Assessment would not be required.

16. During construction, CUHK will control noise, dust and site run-off nuisances to within established standards and guidelines through the implementation of mitigation measures in the relevant contracts. These include the use of silencers, mufflers, acoustic lining or shields for noisy construction activities, frequent cleaning and watering of the site, and the provision of wheel-washing facilities.

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17. At the planning and design stages, we have taken into consideration the site profile and contours against various stabilisation construction options with a view to minimising cutting and excavation. CUHK will use suitable excavated materials for filling within the site to minimise off-site disposal. To further minimise the generation of C&D materials, CUHK will encourage the contractors to use non-timber formwork and recyclable materials for temporary works. In addition, CUHK will require the contractor to use metal site hoardings and signboards so that these materials can be recycled or reused in other projects.

18. CUHK will require the contractor to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures to avoid, reduce, reuse and recycle C&D materials. CUHK will ensure that the day-to-day operations on site comply with the approved WMP. CUHK will control the disposal of public fill and C&D waste to designated public filling facilities and landfills respectively through a trip-ticket system. The contractor will be required to separate public fill from C&D waste for disposal at appropriate facilities. CUHK will record the disposal, reuse and recycling of C&D materials for monitoring purposes. CUHK estimates that the project will generate about 30 000 cubic metres (m^3) of C&D materials. Of these, CUHK will reuse about 19 500 m^3 (65%) on site, 7 500 m^3 (25%) as fill in public filling areas[1], and dispose of 3 000 m^3 (10%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be $375,000 for this project (based on a notional unit cost[2] of $125/$m^3$).

LAND ACQUISITION

19. The project does not require land acquisition.

/**BACKGROUND** …..

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[1] A public filling area is a designated part of a development project that accepts public fill for reclamation purposes. Disposal of public fill in a public filling area requires a licence issued by the Director of Civil Engineering.

[2] 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 are likely to be more expensive) when the existing ones are filled. The notional cost estimate is for reference only and does not form part of this project estimate.

BACKGROUND INFORMATION

20. 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. The UGC refers those supported proposals to the Government. 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 2 above. A comparison of the project estimate proposed by CUHK and the revised estimate recommended by the UGC and agreed by CUHK is at Enclosure 3.

21. There are over 250 registered slope features in the campus of CUHK. Since 1996, CUHK has been carrying out the required stabilisation works in phases. Major stability improvement works undertaken by CUHK are as follow -

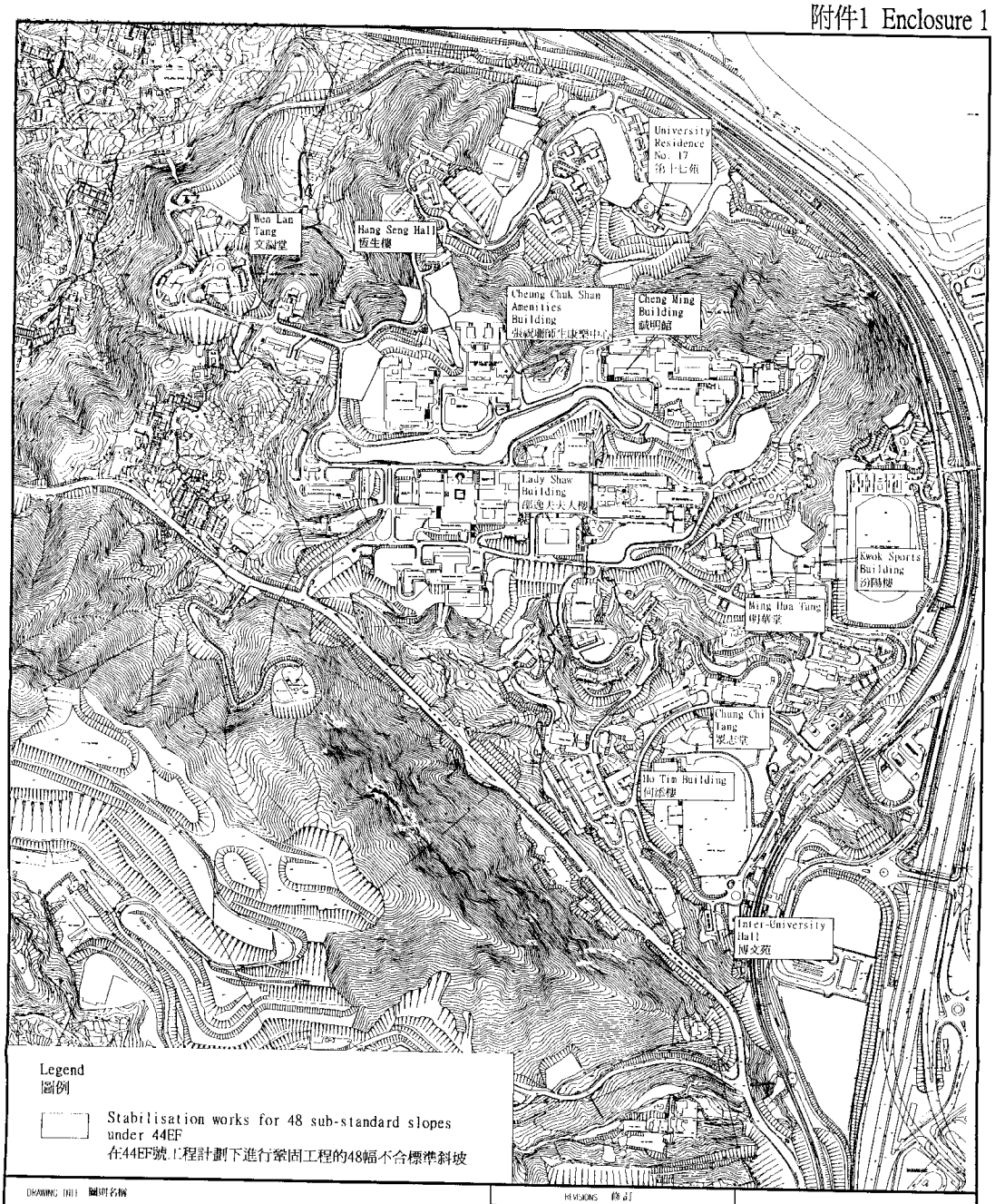
Project	Date of approval by Finance Committee	Number of slopes	Approved project estimate (in MOD prices) $ million	Expected date of completion
36EF	12 December 1997	16	75.30	May 2002
40EF	21 January 2000	21	53.17	December 2002

22. Consultants employed by CUHK have completed the stability assessment and the detailed design under three phases for a total of 48 sub-standard slopes at an estimated cost of $15 million each phase, funded under block allocation **Subhead 8100EX** "Alternations, additions, repairs and improvements to the campuses of the UGC-funded institutions". Funding for the corresponding stabilisation works for these 48 slopes is the subject of this submission.

23. CUHK estimates that the proposed works under **44EF** will create some 105 jobs, with a total of 2 794 man-months, comprising ten professional staff, 15 technical staff and 80 labourers.

Education and Manpower Bureau
February 2002

附件1 Enclosure 1



DRAWING TITLE 圖則名稱

44EF-
Stabilisation of slopes
within the university campus, phase 11

大學校園內的斜坡鞏固工程第11期

REVISIONS 修訂

No.	Description	Date

Campus Development Office, CUHK
香港中文大學 校園發展處

Drawn by 製圖	T. CHAN	Date 日期	15-01-02
Checked by 審核	F. WONG	Scale 比例	1 : 8000
CAD Ref 電腦記錄	252/SW-43A	Drawing No. 圖號	252/SS-43A

The Chinese University of Hong Kong
44EF - Stabilisation of slopes within the university campus, phase 11

Breakdown of the estimate for consultants' fees

			Estimated man-months	Average MPS* salary point	Multiplier	Estimated fee ($ million)
(a)	**Consultants' staff costs**					
(i)	Assessment of tenders	Professional	3.0	38	2.4	0.43
		Technical	3.2	14	2.4	0.15
(ii)	Contract administration	Professional	7.0	38	2.4	1.01
		Technical	4.0	14	2.4	0.19
(iii)	Site supervision by resident site staff	Professional	64.0	38	1.7	6.57
		Technical	85.5	14	1.7	2.84
					Sub-total	11.19
(b)	**Out-of-pocket expenses**					
	Lithography and other direct expenses					0.25
					Total	11.44

* **MPS = Master Pay Scale**

Notes

1. A multiplier of 2.4 is applied to the average MPS point to arrive at the full staff costs including the consultants' overheads and profit, as the staff will be employed in the consultants' offices. A multiplier factor of 1.7 is applied in the case of site staff supplied by the consultants. (At 1 April 2001, MPS point 38 is $60,395 per month and MPS point 14 is $19,510 per month.)

2. 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.

3. The figures given above are based on estimates prepared by CUHK. D Arch S has examined the figures and considered them reasonable.

Enclosure 3 to PWSC(2001-02)108

A comparison of the project estimate proposed by CUHK with the estimate recommended by UGC

$ million (in Sept 2001 prices)

Project	Amount proposed by CUHK	Amount recommended by UGC	Amount of reduction
CUHK - Stabilisation of slopes within the university campus, phase 11	129.43	119.83	9.60

Note

The net reduction of $9.6 million results from trimming the estimate on consultants' fees.