For discussion **PWSC(2012-13)8**
on 18 April 2012

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 705 – CIVIL ENGINEERING
Civil Engineering – Land development
750CL – Study on long-term strategy for cavern development

Members are invited to recommend to Finance Committee the upgrading of **750CL** to Category A at an estimated cost of $40.4 million in money-of-the-day prices for carrying out a study on the long-term strategy for cavern development in Hong Kong.

PROBLEM

We need to further develop the cavern development initiative and actively explore the use of rock caverns so as to expand our land resources.

PROPOSAL

2. The Director of Civil Engineering and Development, with the support of the Secretary for Development, proposes to upgrade **750CL** to Category A at an estimated cost of $40.4 million in money-of-the-day (MOD) prices to engage consultants to undertake a study on the long-term strategy for cavern development in Hong Kong (the proposed Study).

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PROJECT SCOPE AND NATURE

3. The scope of **750CL** comprises –

(a) formulation of policy guidelines to facilitate cavern development for both public and private sectors;

(b) preparation of cavern master plans to reserve strategic areas for cavern development;

(c) formulation of a long-term strategy to systematically relocate existing government facilities to rock caverns;

(d) review of technical issues related to cavern development including cavern engineering, fire safety, environmental considerations, etc; and

(e) public engagement and consultation exercises with relevant stakeholders.

4. Subject to the funding approval of the Finance Committee (FC), we plan to commence the proposed Study in August 2012 for completion in October 2015.

JUSTIFICATION

5. Land is a scarce resource in Hong Kong. To support Hong Kong's social and economic development, there is a pressing need to adopt sustainable and innovative approaches to increase the land supply. One possible innovative approach is rock cavern development.

6. The benefits of rock cavern development are manifold. Systematic relocation of suitable existing government facilities to rock caverns could release surface sites for other developments, whereas reserving underground rock cavern space could accommodate future projects and expansion of facilities underground. Also, placing NIMBY ("not in my backyard") facilities in caverns could minimise any adverse impact on the environment and remove incompatible land uses.

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7. Cavern construction is an established technology. The Government has already carried out the necessary technical preparation work for rock cavern development in Hong Kong. Technical guidelines and standards on planning, investigation, design, construction, maintenance and fire safety provisions for rock cavern development have been published. There are also planning guidelines on rock cavern development in the Hong Kong Planning Standards and Guidelines. In fact, there have been successful local examples of accommodating facilities in rock caverns, including the Stanley sewage treatment works completed in 1995, as well as Island West refuse transfer station and Kau Shat Wan explosives depot both completed in 1997. Also, in 2009, the University of Hong Kong reprovisioned the Western salt-water service reservoirs in rock caverns to release the site for its Centennial Campus development.

8. In March 2011, the Civil Engineering and Development Department (CEDD) completed the study on "Enhanced Use of Underground Space in Hong Kong", which concluded that the geology and topographical setting of Hong Kong are very suitable for cavern development, and recommended some key initiatives for further study. In the 2011-12 Policy Address, the Administration undertook to explore actively the use of rock caverns to reprovision existing government facilities and release such sites for housing and other uses. To take forward the cavern initiative further, we need to carry out the proposed Study to formulate a long-term strategy for cavern development in Hong Kong. We will adopt a holistic approach in planning and implementing rock cavern development, so as to allow it to become a sustainable means for increasing land supply. We will also place emphasis on private sector involvement, which should be an integral part of the cavern initiative because many private facilities, such as storage, warehousing and data centres, can benefit from a stable and secure setting offered by rock caverns.

9. The study completed by CEDD in March 2011 also recommended a detailed feasibility study on relocation of the Sha Tin sewage treatment works (STSTW) to caverns. A separate funding application will be made for this feasibility study (PWSC(2012-13)7).

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FINANCIAL IMPLICATIONS

10. We estimate the cost of **750CL** to be $40.4 million in MOD prices (please see paragraph 11 below), broken down as follows –

			$ million	
(a)	Consultants' fees for		31.9	
	(i) formulation of policy guidelines	10.1		
	(ii) preparation of cavern master plans	5.0		
	(iii) formulation of a long-term strategy to systematically relocate existing government facilities to rock caverns	8.0		
	(iv) review of technical issues	5.0		
	(v) public engagement and consultation exercises with relevant stakeholders	3.8		
(b)	Contingencies		3.1	
		Sub-total	35.0	(in September 2011 prices)
(c)	Provision for price adjustment		5.4	
		Total	40.4	(in MOD prices)

Owing to insufficient in-house resources, we propose to engage consultants to undertake the proposed Study. A breakdown of the estimate for consultants' fees by man-months is at Enclosure.

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11. Subject to FC's approval, we will phase the expenditure as follows –

Year	$ million (Sept 2011)	Price adjustment factor	$ million (MOD)
2012 – 2013	5.0	1.05325	5.3
2013 – 2014	10.0	1.11118	11.1
2014 – 2015	12.0	1.17229	14.1
2015 – 2016	8.0	1.23677	9.9
	35.0		40.4

12. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2012 to 2016. Subject to funding approval, we will engage consultants to undertake the proposed consultancy on a lump sum basis with provision for price adjustment as the consultancy period will exceed 12 months.

13. The conduct of the proposed Study will not give rise to any additional recurrent expenditure.

PUBLIC CONSULTATION

14. During the course of the study on "Enhanced Use of Underground Space in Hong Kong", various professional bodies including the Hong Kong Institution of Engineers (HKIE), Hong Kong Institute of Planners (HKIP), Institute of Quarrying, Institute of Materials, Minerals and Mining, and Association of Geotechnical and Geoenvironmental Specialists were consulted. They supported the study to explore the use of underground space including rock cavern development. In the HKIE-HKIP Conference on Planning and Development of Underground Space held in Hong Kong in September 2011, local engineers and planners met and shared experiences with overseas counterparts and the planned development of underground space in Hong Kong was strongly supported.

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15. Key findings of the study were presented to the Panel on Development of the Legislative Council in May 2011, the Town Planning Board in July 2011, as well as the Land and Development Advisory Committee and its Planning Sub-committee in July and August 2011 respectively. There was also extensive media coverage on the subject. Based on the feedback of Government's consultative bodies and public response, members of the public are generally supportive of the initiative of relocating suitable government facilities (particularly NIMBY facilities) to rock caverns.

16. A two-stage Public Engagement (PE) exercise on "Enhancing Land Supply Strategy: Reclamation outside Victoria Harbour and Rock Cavern Development" was launched in November 2011 to gauge public views on increasing land supply by new and innovative ways including reclamation outside Victoria Harbour and rock cavern development. Opportunity was also taken to foster public understanding and acceptance of the proposal of accommodating government facilities in rock caverns. The Stage 1 PE was completed on 31 March 2012. Initial feedback regarding relocating suitable government facilities to rock caverns so as to release land for alternative use is generally positive. There were views expressed with respect to some identified sites that the capital investment should be weighed against public benefits such as improvements in the environment and releasing sites for housing development and community facilities.

17. We consulted the Legislative Council Panel on Development on the proposed Study on 27 March 2012. Members supported the proposed Study and suggested that public consultation should be conducted. We confirm that public consultation would be conducted as provided for in the proposed scope of the proposed Study.

ENVIRONMENTAL IMPLICATIONS

18. Rock cavern development is a designated project under the Environmental Impact Assessment Ordinance (EIAO) and shall follow the statutory requirements under the EIAO before its construction and operation. However, the proposed Study itself is not a designated project, and its scope does not involve conducting the environmental impact assessment under the EIAO. Statutory procedures under the EIAO will be followed in future to confirm the environmental impacts of the cavern developments and mitigation measures required.

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19. To integrate environmental consideration into the proposed Study, we will carry out a Strategic Environmental Assessment (SEA) as part of the proposed Study. The SEA would provide environmental information and input into different parts of the proposed Study, conduct assessments of different cavern development options and recommend possible mitigation measures from the environmental perspective.

20. The proposed Study will not include any works and will not generate any construction waste.

HERITAGE IMPLICATIONS

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

LAND ACQUISITION

22. The proposed Study will not require any land acquisition.

BACKGROUND INFORMATION

23. We included **750CL** in Category B in September 2011.

24. The proposed Study will not involve any tree removal or planting proposal.

25. We estimate that the proposed Study will create about 14 jobs for professional/technical staff, providing a total employment of 320 man-months.

Development Bureau
April 2012

Enclosure to PWSC(2012-13)8

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Breakdown of the estimates for consultants' fees (in September 2011 prices)

Consultants' staff costs (Note 2)			**Estimated man-months**	**Average MPS* salary point**	**Multiplier** (Note 1)	**Estimated fee ($ million)**
(i)	Formulation of policy guidelines	Professional	74.0	38	2.0	9.2
		Technical	22.0	14	2.0	0.9
(ii)	Preparation of cavern master plans	Professional	33.0	38	2.0	4.1
		Technical	22.0	14	2.0	0.9
(iii)	Formulation of a long-term strategy to systematically relocate existing government facilities to rock caverns	Professional	56.0	38	2.0	7.0
		Technical	24.0	14	2.0	1.0
(iv)	Review of technical issues	Professional	37.0	38	2.0	4.6
		Technical	10.0	14	2.0	0.4
(v)	Public engagement and consultation exercise with relevant stakeholders	Professional	25.0	38	2.0	3.1
		Technical	17.0	14	2.0	0.7
					Total	**31.9**

* MPS = Master Pay Scale

Notes

1. A multiplier of 2.0 is applied to the average MPS salary point to estimate the full staff costs including the consultants' overheads and profit as the staff will be employed in the consultants' offices. (As at now, MPS salary point 38 = $62,410 per month and MPS salary point 14 = $21,175 per month.)

2. The consultants' staff costs given above are only estimates prepared by the Director of Civil Engineering and Development. The actual man-months and fees will only be known when we have selected the consultants through the usual competitive fee bid system.