

For discussion
on 8 April 2014

PWSC(2014-15)5

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 709 – WATERWORKS

Water Supplies – Combined fresh/salt water supplies

195WC – Feasibility study on relocation of Diamond Hill fresh water and salt water service reservoirs to caverns

Members are invited to recommend to the Finance Committee the upgrading of **195WC** to Category A at an estimated cost of \$46 million in money-of-the-day prices for carrying out a feasibility study on relocation of Diamond Hill fresh water and salt water service reservoirs to caverns.

PROBLEM

We need to ascertain the feasibility for the relocation of Diamond Hill fresh water and salt water service reservoirs (DHSRs) to caverns in order to release the existing site for housing or other uses.

PROPOSAL

2. The Director of Water Supplies, with the support of the Secretary for Development, proposes to upgrade **195WC** to Category A at an estimated cost of \$46 million in money-of-the-day (MOD) prices for carrying out a feasibility study and the associated site investigation works on relocation of DHSRs to caverns.

/PROJECT

PROJECT SCOPE AND NATURE

3. We propose to upgrade **195WC** to Category A, comprising –
- (a) detailed engineering feasibility study including analysis and modification of water supply networks, relevant preliminary technical and impact assessments¹, preparation of an outline design of engineering works, formulation of implementation strategies and programmes etc. on relocation of DHSRs and the associated facilities² to caverns and the related works³;
 - (b) planning review with broad technical assessment of the future land use of the existing site of DHSRs for the purpose of establishing a business case for the relocation proposal;
 - (c) public engagement (PE) and consultation exercises with relevant stakeholders; and
 - (d) site investigation and other investigations⁴.

———— A plan showing the study area for the relocated DHSRs is at Enclosure 1.

4. Subject to funding approval of the Finance Committee, we plan to commence the proposed feasibility study in November 2014 for completion in November 2016.

JUSTIFICATION

5. There is a pressing need to increase land supply for various uses by sustainable and innovative approaches to support social and economic development. One practicable approach is rock cavern development (RCD).

/6.

¹ The preliminary technical and impact assessments cover geotechnical, environmental, drainage, traffic, waterworks, utilities, land requirement and land use aspects.

² The associated facilities include the Diamond Hill Fresh Water and Salt Water Pumping Station and water mains.

³ The related works include –
 (a) demolition of existing structures including DHSRs and associated facilities; and
 (b) modification of existing supply zone of DHSRs and other related water supply zones.

⁴ Other investigations include topographical, tree, utility and environmental surveys etc.

6. According to the findings of the study on “Enhanced Use of Underground Space in Hong Kong” completed by the Civil Engineering and Development Department (CEDD) in 2011, about two-third of the land in Hong Kong is suitable for RCD from topographical and geological perspectives. RCD has the benefit, among others, of providing land to meet the development needs of our society by relocation of existing facilities or accommodating new facilities.

7. The 2011-12 Policy Address announced that the Government would adopt a multi-pronged approach, including RCD, for expanding land resources. To take forward the initiatives, CEDD commissioned a feasibility study on increasing land supply by reclamation and RCD in July 2011. The study has identified three government facilities, viz. the DHSRs, Sham Tseng sewage treatment works (STSTW) and Sai Kung sewage treatment works (SKSTW), for relocating to caverns. The study has also broadly demonstrated that cavern schemes could be implemented to house these facilities. Specifically, the Diamond Hill fresh water and salt water service reservoirs have a storage capacity of about 23 500 and 21 800 cubic metres respectively. Their relocation would potentially release the existing site of about 3 hectares for more beneficial and compatible land uses. The study has therefore recommended further detailed feasibility study to identify and address the issues associated with the relocation proposal.

FINANCIAL IMPLICATIONS

8. We estimate the cost of the proposed feasibility study and the associated site investigation works to be \$46 million in MOD prices (please see paragraph 9 below), broken down as follows –

	\$ million
(a) Consultants’ fees for	26.4
(i) detailed engineering feasibility study on relocation of DHSRs and the associated facilities to caverns and the related works	20.9

/(ii)

9. Subject to funding approval, we will phase the expenditure as follows –

Year	\$ million (Sept 2013)	Price adjustment factor	\$ million (MOD)
2014 - 2015	5.0	1.05450	5.3
2015 - 2016	15.8	1.11777	17.7
2016 - 2017	16.0	1.18484	19.0
2017 - 2018	3.2	1.25593	4.0
	40.0		46.0

10. 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 2014 to 2018. We will engage consultants to undertake the proposed feasibility study on a lump sum basis with provision for price adjustments. We will deliver the proposed site investigation works under a standard re-measurement contract because the quantity of works involved may vary depending on actual ground conditions. The contract for site investigation works will provide for price adjustments.

11. The proposed feasibility study and associated site investigation works will not give rise to any recurrent consequences.

PUBLIC CONSULTATION

12. A two-stage PE exercise on "Enhancing Land Supply Strategy: Reclamation outside Victoria Harbour and Rock Cavern Development" was completed by CEDD in June 2013. During the Stage 1 PE conducted from November 2011 to March 2012, there was general support for a multi-pronged approach, including the use of RCD for enhancing land supply. Based on the public views received, the site selection criteria were formulated and subsequently three potential government facilities, viz. DHSRs, STSTW and SKSTW, were selected for public consultation in the Stage 2 PE, which was conducted from March to June 2013. The report of the PE was released in January 2014 and uploaded to the project website. Throughout the PE exercise, there was general public support on adopting RCD as a means for enhancing land supply.

13. CEDD consulted the relevant district councils as part of their Stage 2 PE exercise. On 14 May 2013, the Wong Tai Sin District Council (WTSDC) was consulted on the overall strategy on enhancing land supply and the relocation of DHSRs to caverns. The WTSDC supported the development of rock cavern in the district if it is proved to be feasible. In February 2014, Water Supplies Department submitted an information paper to WTSDC on the scope and programme of the feasibility study and the plan to apply for funding to carry out the study. WTSDC members noted the proposal.

14. We consulted the Legislative Council Panel on Development on 25 March 2014. Members generally supported submission of the current funding proposal to the Public Works Subcommittee and requested for supplementary information on details of preliminary technical and financial feasibility assessments of the relocation proposal. The requested supplementary information is at Enclosure 3.

ENVIRONMENTAL IMPLICATIONS

15. The proposed development of DHSRs in rock caverns is a designated project under the Environmental Impact Assessment Ordinance (Chapter 499) requiring an environmental permit for its construction and operation. However, the proposed feasibility study is not a designated project and will not cause any long-term environmental impacts. We have included in the project estimate the cost of implementing suitable pollution control measures to mitigate the short-term environmental impacts arising from the site investigation works.

16. The proposed site investigation works will only generate very little construction waste. We will require the consultants to fully consider measures to minimise the generation of construction waste and to reuse/recycle construction waste as much as possible in the future implementation of the construction project.

HERITAGE IMPLICATIONS

17. The proposed feasibility study and the associated site investigation works 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

LAND ACQUISITION

18. The proposed feasibility study and the associated site investigation works will not require any land acquisition.

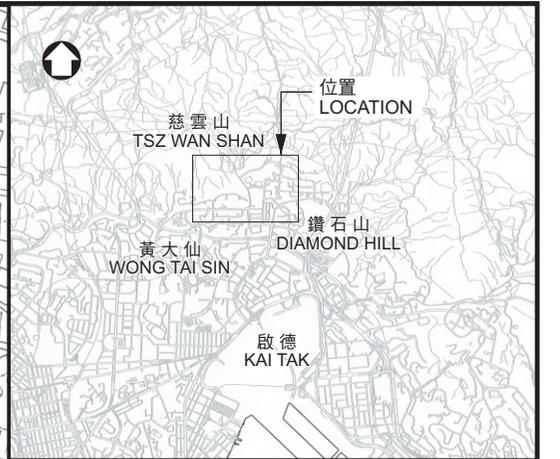
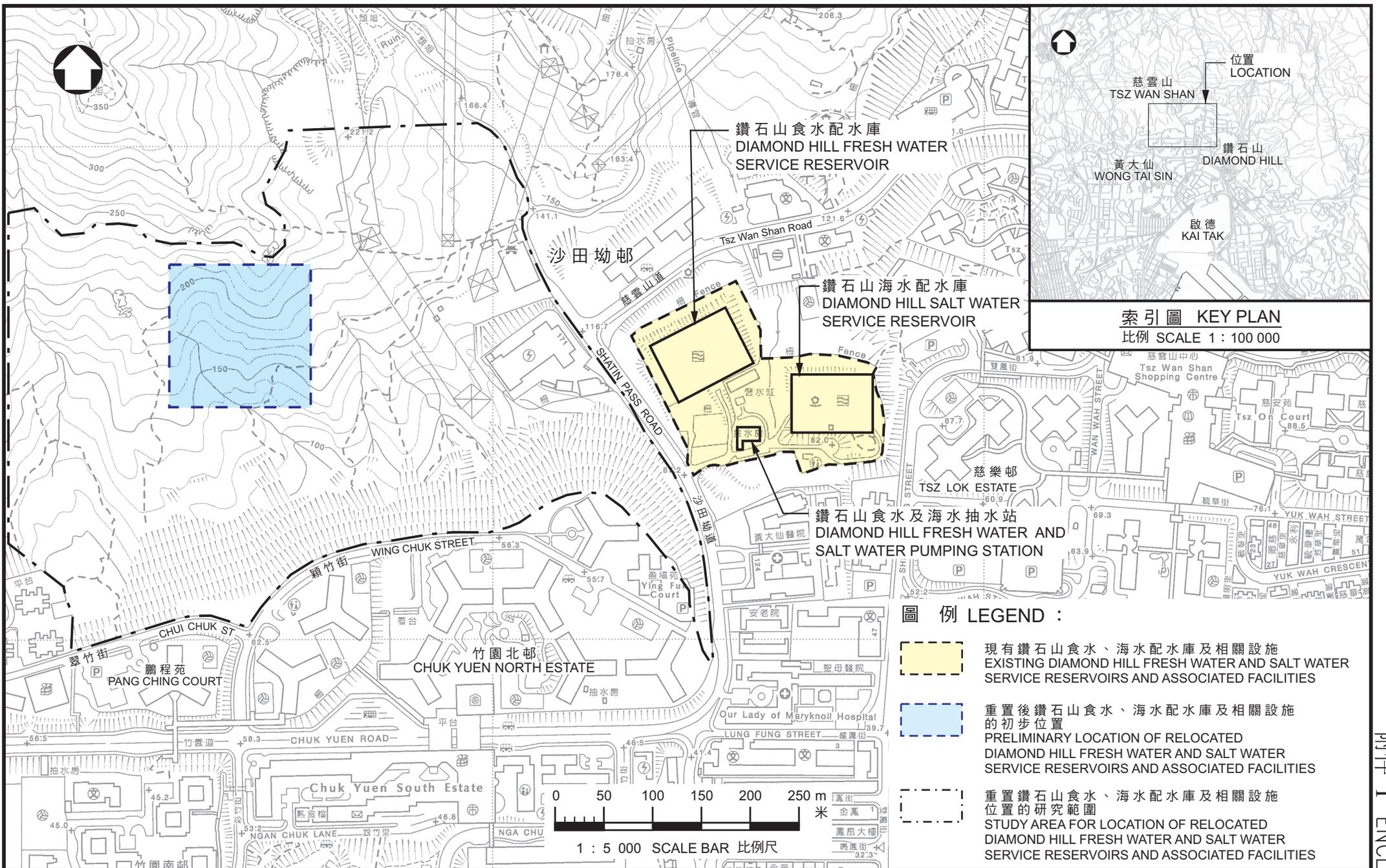
BACKGROUND INFORMATION

19. We upgraded **195WC** to Category B in September 2013.

20. The proposed feasibility study and the associated site investigation works will not directly involve any tree removal or planting proposals. We will require the consultants to take into consideration the need for tree preservation during the study.

21. We estimate that the proposed feasibility study and the associated site investigation works will create about 27 jobs (6 for labourers and another 21 for professional/technical staff) providing a total employment of 500 man-months.

Development Bureau
March 2014



索引圖 KEY PLAN
比例 SCALE 1 : 100 000

核准 APPROVED

R. Lam
總工程師/工程管理 CE / PM

1013 / 2014

工務工程計劃項目第195WC號 – 搬遷鑽石山食水及海水配水庫往岩洞的可行性研究
PWP ITEM NO. 195WC — FEASIBILITY STUDY ON RELOCATION OF DIAMOND HILL FRESH WATER AND SALT WATER SERVICE RESERVOIRS TO CAVERNS

水務署
WATER SUPPLIES DEPARTMENT

草圖編號 SKETCH NO. SK 62013 / 135

附件 1 ENCLOSURE 1

195WC - Feasibility study on relocation of Diamond Hill fresh water and salt water service reservoirs to caverns

Breakdown of the estimates for consultants' fees (in September 2013 prices)

Consultants' staff costs (Note 2)		Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)	
(i)	Detailed engineering	Professional	110	38	2.0	14.8
	feasibility study on relocation of DHSRs and the associated facilities to caverns and the related works	Technical	130	14	2.0	6.1
(ii)	Planning review with broad technical assessment of the future land use of the existing site of DHSRs	Professional	11	38	2.0	1.5
		Technical	14	14	2.0	0.7
(iii)	PE and consultation exercises with relevant stakeholders	Professional	10	38	2.0	1.3
		Technical	14	14	2.0	0.7
(iv)	Supervision of site investigation and other investigations	Professional	5	38	2.0	0.7
		Technical	13	14	2.0	0.6
Total					26.4	

* MPS = Master Pay Scale

Notes

1. A multiplier of 2.0 is applied to the average MPS point to estimate the full staff costs, including the consultants' overheads and profit, as the staff will be employed in the consultants' office. (As at now, MPS point 38 = \$67,370 per month and MPS point 14 = \$23,285 per month.)
2. The actual man-months and fees will only be known when we have selected the consultants through the usual competitive bidding system.

Preliminary assessments on the technical and financial feasibility of the three relocation projects to caverns

The on-going feasibility study on increasing land supply by reclamation and rock cavern development commissioned by the Civil Engineering and Development Department commissioned in July 2011 focused on the technical and engineering aspects of the three relocation proposals, viz. the proposed relocation of STSTW, SKSTW and DHSRs to caverns. A broad technical assessment has been conducted for each of the relocation proposals in the following aspects –

- (a) specific requirements of the facilities to be relocated;
- (b) infrastructure requirements;
- (c) implementation and construction aspects; and
- (d) assessments on geotechnical and traffic conditions, and impact on environment and local community for both the released site and the potential cavern site.

The preliminary results broadly demonstrate that the three relocation proposals are feasible from engineering point of view.

2. The above study, having considered the rough order of cost, potential land values of released sites, potential social benefits for providing land for housing and community facilities, and improvement to the environment, suggested that there is a case for carrying out further studies on the feasibility of the three relocation proposals.