

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

### **HEAD 704 – DRAINAGE**

#### **Environmental Protection – Sewerage and sewage treatment**

#### **402DS – Feasibility study on relocation of Sai Kung sewage treatment works to caverns**

Members are invited to recommend to the Finance Committee the upgrading of **402DS** to Category A at an estimated cost of \$40.6 million in money-of-the-day prices for carrying out a feasibility study on relocation of Sai Kung sewage treatment works to caverns.

### **PROBLEM**

We need to ascertain the feasibility for the relocation of Sai Kung sewage treatment works (SKSTW) to caverns in order to release the existing site for housing or other uses.

### **PROPOSAL**

2. The Director of Drainage Services, with the support of the Secretary for Development, proposes to upgrade **402DS** to Category A at an estimated cost of \$40.6 million in money-of-the-day (MOD) prices for carrying out a feasibility study and the associated site investigation works on relocation of SKSTW to caverns.

**/PROJECT .....**

## PROJECT SCOPE AND NATURE

3. We propose to upgrade **402DS** to Category A, comprising –
- (a) detailed engineering feasibility study including relevant preliminary technical and impact assessments<sup>1</sup>, preparation of an outline design of engineering works, formulation of implementation strategies and programmes etc. for relocation of SKSTW to caverns and the associated works<sup>2</sup>;
  - (b) planning review with broad technical assessment of the future land use of the existing site of SKSTW 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 investigations<sup>3</sup>.

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

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

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<sup>1</sup> The preliminary technical and impact assessments cover sewage and sludge treatments, sewerage, geotechnical, environmental, drainage, traffic, waterworks, utilities, land requirement and land use aspects.

<sup>2</sup> The associated works include –

- (a) rehabilitation, modification or improvement of the upstream sewerage in relation to relocation of SKSTW to caverns;
- (b) rehabilitation, modification or improvement of the existing submarine outfalls or construction of new outfalls for connecting with the relocated SKSTW;
- (c) demolition of the existing SKSTW; and
- (d) ancillary works.

<sup>3</sup> 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. The benefits of RCD are manifold. Placing NIMBY (“not-in-my-backyard”) facilities such as sewage treatment works in caverns could remove incompatible land uses and improve the living environment of the local community. It could also provide 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 SKSTW, Sham Tseng sewage treatment works (STSTW) and Diamond Hill fresh water and salt water service reservoirs (DHSRs), for relocating to caverns. The study has also broadly demonstrated that cavern schemes could be implemented to house these facilities. Specifically, the SKSTW is a secondary sewage treatment works with a design daily capacity of about 8 000 cubic metres. Its relocation would potentially release the existing site of about 2.2 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 \$40.6 million in MOD prices (please see paragraph 9 below), broken down as follows –

		\$ million
(a)	Consultants’ fee for	23.4
	(i) detailed engineering	18.5
	feasibility study on	
	relocation of SKSTW to	
	caverns and the	
	associated works	

/(ii) .....

		\$ million	
	(ii) planning review with broad technical assessment of the future land use of the existing site of SKSTW	1.9	
	(iii) PE and consultation exercises with relevant stakeholders	1.8	
	(iv) supervision of site investigation and other investigations	1.2	
(b)	Site investigation and other investigations	8.5	
(c)	Contingencies	3.1	
		<hr/>	
	Sub-total	35.0	(in September 2013 prices)
(d)	Provision for price adjustment	<hr/> 5.6	
		<hr/>	
	Total	40.6	(in MOD prices)
		<hr/>	

Due to inadequate in-house resources, we propose to engage consultants to conduct the feasibility study and supervise the associated site investigation works. A detailed breakdown of the estimates for the consultants' fees by man-months is at Enclosure 2.

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

Year	\$ million (Sept 2013)	Price adjustment factor	\$ million (MOD)
2014 – 2015	2.0	1.05450	2.1
2015 – 2016	11.4	1.11777	12.7
2016 – 2017	18.7	1.18484	22.2
2017 – 2018	2.9	1.25593	3.6
	<hr/> 35.0 <hr/>		<hr/> 40.6 <hr/>

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 tender the proposed site investigation works under a standard re-measurement contract because the quantity of works involved may vary depending on the 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. SKSTW, STSTW and DHSRs, 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.

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13. CEDD consulted the relevant district councils as part of their Stage 2 PE exercise. On 7 May 2013, the Sai Kung District Council (SKDC) was consulted on the overall strategy on enhancing land supply and the relocation of SKSTW to caverns. The SKDC had no objection in principle to the RCD in the district. They expressed concern on traffic and environmental issues caused by the RCD.

14. To further solicit support for carrying out the proposed feasibility study, the Drainage Services Department consulted the SKDC on 4 March 2014. SKDC had no objection to our proposal to proceed with the feasibility study. However, they expressed concern on traffic, environmental and odour issues as well as the after-use of the released site. We will address the various public concerns on the relocation of SKSTW to caverns in detail during the feasibility study.

15. 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**

16. The proposed development of SKSTW in rock caverns is a designated project under the Environmental Impact Assessment (EIA) 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.

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17. 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**

18. 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 ACQUISITION**

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

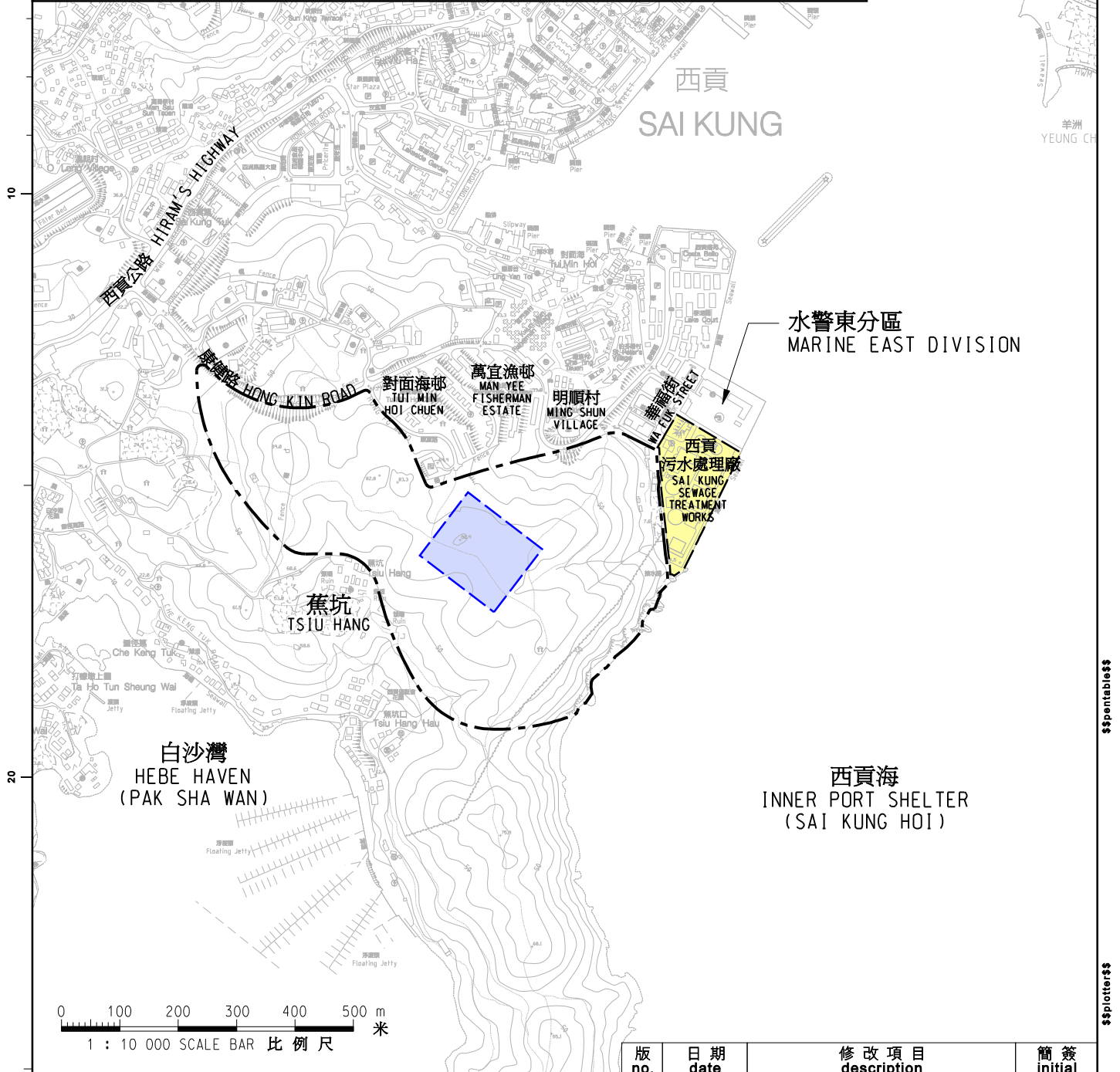
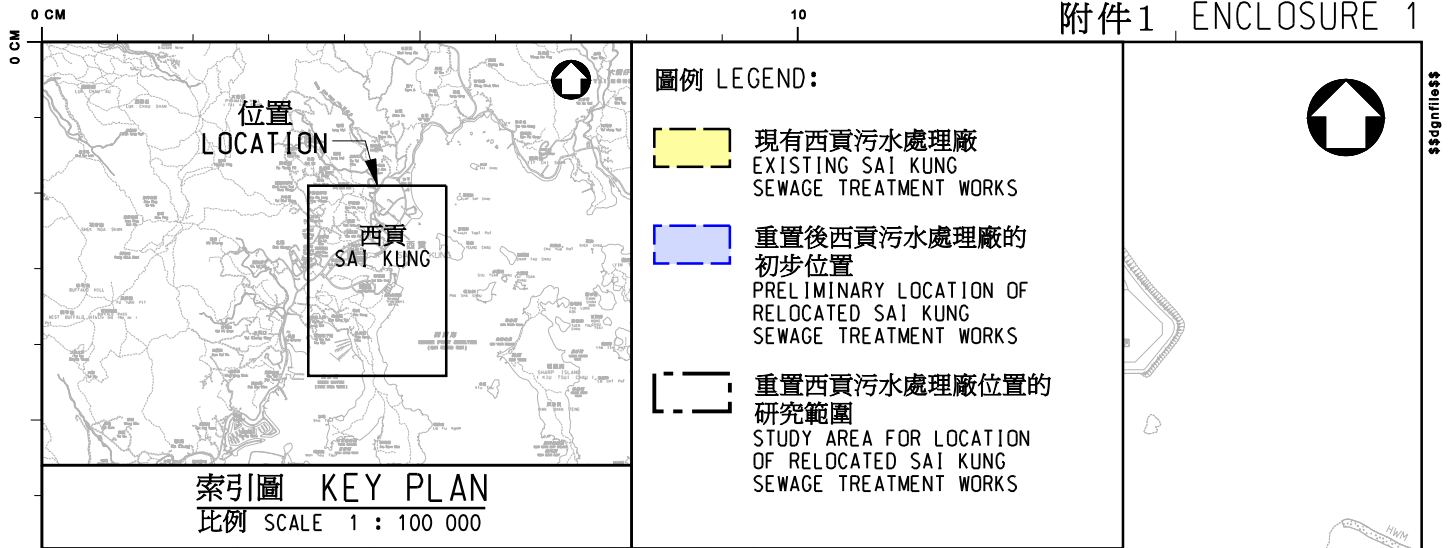
## **BACKGROUND INFORMATION**

20. We upgraded **402DS** to Category B in September 2013.

21. 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.

22. We estimate that the proposed feasibility study and the associated site investigation works will create about 23 jobs (5 for labourers and another 18 for professional/technical staff) providing a total employment of 440 man-months.

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<b>圖則名稱 drawing title</b> 工務工程計劃項目第402DS號 - 搬遷西貢污水處理廠往岩洞的 可行性研究 PWP ITEM NO. 402DS - FEASIBILITY STUDY ON RELOCATION OF SAI KUNG SEWAGE TREATMENT WORKS TO CAVERNS	<b>繪畫 drawn</b> SIGNED L. L. LIU	<b>日期date</b> 17 MAR 2014	<b>圖則編號 drawing no.</b> DCM/2013/069	<b>比例 scale</b> 如圖示 AS SHOWN	
	<b>核對 checked</b> SIGNED K. H. YAU	<b>日期date</b> 17 MAR 2014			
	<b>批核 approved</b> SIGNED W. Y. CHAN	<b>日期date</b> 17 MAR 2014	<b>保留版權 COPYRIGHT RESERVED</b>		
	<b>部門 office</b> 顧問工程管理部 <b>CONSULTANTS MANAGEMENT DIVISION</b>			香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	

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**402DS – Feasibility study on relocation of  
Sai Kung sewage treatment works 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 fees (\$ million)
(i)	Detailed engineering feasibility study on relocation of SKSTW to caverns and the associated works	Professional	99	38	2.0	13.3
		Technical	111	14	2.0	5.2
(ii)	Planning review with broad technical assessment of the future land use of the existing SKSTW site	Professional	10	38	2.0	1.3
		Technical	12	14	2.0	0.6
(iii)	PE and consultation exercises with relevant stakeholders	Professional	10	38	2.0	1.3
		Technical	10	14	2.0	0.5
(iv)	Supervision of site investigation and other investigations	Professional	6	38	2.0	0.8
		Technical	8	14	2.0	0.4
					<b>Total</b>	<b>23.4</b>

\* 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 consultant's offices. (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.