ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 704 – DRAINAGE

Environmental Protection – Sewerage and sewage treatment 401DS – Feasibility study on relocation of Sham Tseng sewage treatment works to caverns

Members are invited to recommend to the Finance Committee the upgrading of **401DS** to Category A at an estimated cost of \$39.2 million in money-of-the-day prices for carrying out a feasibility study on relocation of Sham Tseng sewage treatment works to caverns.

PROBLEM

We need to ascertain the feasibility for the relocation of Sham Tseng sewage treatment works (STSTW) 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 **401DS** to Category A at an estimated cost of \$39.2 million in money-of-the-day (MOD) prices for carrying out a feasibility study and the associated site investigation works on relocation of STSTW to caverns.

/PROJECT

PROJECT SCOPE AND NATURE

- 3. We propose to upgrade **401DS** to Category A, comprising
 - (a) detailed engineering feasibility study including relevant preliminary technical and impact assessments¹, preparation of an outline design of engineering works, formulation of implementation strategies and programmes etc. for relocation of STSTW to caverns and the associated works²;
 - (b) planning review with broad technical assessment of the future land use of the existing site of STSTW 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 3 .

A plan showing the study area for the relocated STSTW 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

1

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.

- (a) rehabilitation, modification or improvement of the upstream sewerage in relation to relocation of STSTW to caverns;
- (b) rehabilitation, modification or improvement of the existing submarine outfalls or construction of new outfalls for connecting with the relocated STSTW;
- (c) demolition of the existing STSTW; and
- (d) ancillary works.
- ³ Other investigations include topographical, tree, utility and environmental surveys etc.

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

² The associated works include –

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 STSTW, Sai Kung sewage treatment works (SKSTW) 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 STSTW is a primary sewage treatment works with a design daily sewage treatment capacity of about 17 000 cubic metres. Its relocation would potentially release the existing site of about 1.1 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 \$39.2 million in MOD prices (please see paragraph 9 below), broken down as follows –

\$ million

- 22.3
- (a) Consultants' fees for

 (i) detailed engineering
 17.6
 feasibility study on
 relocation of STSTW 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 STSTW 	1.9		
	(iii) PE and consultation exercises with relevant stakeholders	1.8		
	(iv) supervision of site investigation and other investigations	1.0		
(b)	Site investigation and other investigations	:	8.5	
(c)	Contingencies	, 	3.0	_
	Sub-total	3	3.8	(in September 2013 prices)
(d)	Provision for price adjustment	:	5.4	
	Total	3	9.2	(in MOD prices)

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.

Year	\$ million (Sept 2013)	Price adjustment factor	\$ million (MOD)
2014 - 2015	2.0	1.05450	2.1
2015 - 2016	11.3	1.11777	12.6
2016 - 2017	17.7	1.18484	21.0
2017 - 2018	2.8	1.25593	3.5
	33.8		39.2

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

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 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. STSTW, SKSTW 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. 13. CEDD consulted the relevant district councils as part of their Stage 2 PE exercise. On 28 May 2013, the Tsuen Wan District Council (TWDC) was consulted on the overall strategy on enhancing land supply and the relocation of STSTW to caverns. The TWDC had no objection in principle to the RCD in the district. They expressed concern on noise, traffic and blasting vibration issues arising from RCD as well as the impact on the nearby graveyards brought by the relocation of STSTW to caverns.

14. To further solicit support for carrying out the proposed feasibility study, the Drainage Services Department consulted the Community Building, Planning and Development Committee (CBPDC) of TWDC on 13 January 2014. CBPDC of TWDC had no objection to our proposal to proceed with the feasibility study. They expressed that local residents were concerned about the noise, blasting vibration, traffic and environmental issues as well as the after-use of the released site. They also requested that appropriate community and leisure facilities be provided at the released site to address the residents' needs. We will address the various public concerns on the relocation of STSTW 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 STSTW 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.

Page 7

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 **401DS** 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 22 jobs (5 for labourers and another 17 for professional/technical staff) providing a total employment of 425 man-months.

Development Bureau March 2014



401DS – Feasibility study on relocation of Sham Tseng sewage treatment works to caverns

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

Consultants' staff costs (Note 2)		Average MPS* Estimated salary Multij man-months point (^{Note}			Dier 1) Estimated fees (\$ million)	
(i)	Detailed engineering feasibility study on relocation of STSTW to caverns and the associated works	Professional Technical	94 106	38 14	2.0 2.0	12.7 4.9
(ii)	Planning review with broad technical assessment of the future land use of the existing site of STSTW	Professional Technical	10 12	38 14	2.0 2.0	1.3 0.6
(iii)	PE and consultation exercises with relevant stakeholders	Professional Technical	10 10	38 14	2.0 2.0	1.3 0.5
(iv)	Supervision of site investigation and other investigations	Professional Technical	5 7	38 14	2.0 2.0	0.7 0.3
					Total	22.3

* 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' 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.