

For discussion
on 25 March 2014

Legislative Council Panel on Development

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

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

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

PURPOSE

This paper seeks Members' support on the proposals to upgrade **401DS**, **402DS** and **195WC** to Category A at an estimated cost of \$39.2 million, \$40.6 million and \$46.0 million respectively in money-of-the-day (MOD) prices to carry out feasibility studies on relocation of Sham Tseng sewage treatment works (STSTW), Sai Kung sewage treatment works (SKSTW) and Diamond Hill fresh water and salt water service reservoirs (DHSRs) to caverns.

PROJECT SCOPE AND NATURE

2. The scope of **401DS** (the STSTW Study) and **402DS** (the SKSTW Study), which we propose to upgrade to Category A, comprises –

- (a) detailed engineering feasibility studies 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 and SKSTW to caverns and the associated works²;

¹ 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 –

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

- (b) planning review with broad technical assessment of the future land use of the existing sites of STSTW and SKSTW for the purpose of establishing business cases for the relocation proposals;
- (c) public engagement (PE) and consultation exercises with relevant stakeholders; and
- (d) site investigation and other investigations³.

Plans showing the study areas for the relocated STSTW and SKSTW are at **Enclosures 1** and **2** respectively.

3. The scope of **195WC** (the DHSRs Study), which we propose to upgrade to Category A, comprises –

- (a) a detailed engineering feasibility study including analysis and modification of water supply networks, relevant preliminary technical and impact assessments⁴, preparation of an outline design of engineering works, formulation of implementation strategies and programmes etc. for the relocation of DHSRs and the associated facilities⁵ to caverns and the related works⁶;
- (b) planning review with broad technical assessment of the future land use of the existing sites of DHSRs for the purpose of establishing a business case for the relocation proposal;
- (c) PE and consultation exercises with relevant stakeholders; and
- (d) site investigation and other investigations³.

A plan showing the study area for the relocated DHSRs is at **Enclosure 3**.

4. Subject to the funding approval of the Finance Committee (FC), the Drainage Services Department (DSD) plans to commence the STSTW Study and SKSTW Study in August 2014 for completion in August 2016. The Water Supplies

³ Other investigations include topographical, tree, utility and environmental surveys etc.

⁴ The preliminary technical and impact assessments cover geotechnical, environmental, drainage, traffic, waterworks, utilities, land requirement and land use aspects.

⁵ The associated facilities include the Diamond Hill Fresh Water and Salt Water Pumping Station and water mains.

⁶ Related works include –
(a) demolition of the existing structures including DHSRs and associated facilities; and
(b) modification of the existing supply zone of DHSRs and other related water supply zones.

Department (WSD) plans to commence the DHSRs Study in November 2014 for completion in November 2016.

JUSTIFICATION

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

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 the society without the involvement of major land resumption, which may often lead to social disruption and tension.

7. The 2011-12 Policy Address announced that the Government would adopt a multi-pronged approach, including reclamation and 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, SKSTW and 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 (m³) per day, while the SKSTW is a secondary sewage treatment works with a design daily capacity of about 8 000 m³. The Diamond Hill fresh water and salt water service reservoirs have a storage capacity of about 23 500 m³ and 21 800 m³ respectively. Their relocation would potentially release the existing sites of about 6.3 hectares⁷ (ha) in total for more beneficial and compatible land uses. The study has therefore recommended further detailed feasibility studies to identify and address the issues associated with the relocation proposals.

8. Due to inadequate in-house resources, we propose to engage consultants to conduct the three feasibility studies and supervise the associated site investigation works.

⁷ The existing sites of the STSTW, SKSTW and the DHSRs are about 1.1 ha, 2.2 ha and 3 ha in area respectively.

FINANCIAL IMPLICATIONS

9. We estimate the cost of the STSTW Study to be \$39.2 million in MOD prices, made up as follows –

		\$ million	
(a)	Consultants' fee for	22.3	
	(i) detailed engineering feasibility study on relocation of STSTW to caverns and the associated works	17.6	
	(ii) planning review with broad technical assessment of the future land use of the existing STSTW site	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	<u>33.8</u>	(in September 2013 prices)
(d)	Provision for price adjustment	<u>5.4</u>	
	Total	<u>39.2</u>	(in MOD prices)

10. We estimate the cost of the SKSTW Study to be \$40.6 million in MOD prices, made up as follows –

		\$ million	
(a)	Consultants' fee for	23.4	
	(i) detailed engineering feasibility study on relocation of SKSTW to	18.5	

		\$ million
	caverns and the associated works	
(ii)	planning review with broad technical assessment of the future land use of the existing SKSTW site	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	<u>3.1</u>
	Sub-total	<u>35.0</u> (in September 2013 prices)
(d)	Provision for price adjustment	<u>5.6</u>
	Total	<u>40.6</u> (in MOD prices)

11. We estimate the cost of the DHSRs Study to be \$46.0 million in MOD prices, made up as follows –

		\$ million
(a)	Consultants' fee for	26.4
(i)	detailed engineering feasibility study on relocation of DHSRs to caverns and the related works	20.9
(ii)	planning review with broad technical assessment of the future land use of the existing DHSRs sites	2.2
(iii)	PE and consultation exercises with relevant	2.0

		\$ million
stakeholders		
(iv)	supervision of site investigation and other investigations	1.3
(b)	Site investigation and other investigations	10.0
(c)	Contingencies	<u>3.6</u>
	Sub-total	40.0 (in September 2013 prices)
(d)	Provision for price adjustment	<u>6.0</u>
	Total	<u>46.0</u> (in MOD prices)

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 a 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 a 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 7, 14 and 28 May 2013, the Sai Kung District Council (SKDC), Wong Tai Sin District Council (WTSDC) and the Tsuen Wan District Council (TWDC) were consulted on the overall strategy on enhancing land supply and the relocation of SKSTW, DHSRs and STSTW to caverns respectively. Both the SKDC and TWDC had no objection in principle to the development of rock caverns in their districts. The WTSDC also supported the development of rock cavern in the district if it is proved to be feasible. However, the SKDC expressed concern on traffic and environmental issues caused by the RCD, while the TWDC expressed concern on noise, traffic and vibration issues arising from RCD. The TWDC also expressed their concern about the impact on the nearby graveyards brought by the relocation of STSTW to caverns.

14. To further solicit support for carrying out the three feasibility studies, we consulted the respective district councils again in early 2014. On 13 January 2014, DSD consulted the Community Building, Planning and Development Committee (CBPDC) of TWDC on the STSTW Study. CBPDC of TWDC had no objection to our proposal to proceed with the STSTW Study. They expressed that local residents were concerned about the noise, vibration, traffic and environmental issues as well as the after-use of the released site. They also requested that appropriate community and leisure facilities should be provided at the released site to address the residents' needs. In February 2014, WSD submitted an information paper to WTSDC on the scope and programme of the DHSRs Study and the plan to apply for funding to carry out the DHSRs Study. WTSDC members noted the proposal. On 4 March 2014, DSD consulted the SKDC regarding the SKSTW Study. SKDC had no objection to our proposal to proceed with the SKSTW Study. However, they expressed concern on traffic, environmental and odour issues as well as the after-use of the released site.

15. We will address the various public concerns on the relocation of STSTW, SKSTW and DHSRs to caverns in detail during the respective feasibility studies.

ENVIRONMENTAL IMPLICATIONS

16. The proposed development of STSTW, SKSTW and DHSRs in rock caverns are designated projects under the Environmental Impact Assessment (EIA) Ordinance (Chapter 499) requiring environmental permits for their construction and operation. However, the feasibility studies are not designated projects and will not cause any long-term environmental impacts. We have included in the project estimates the costs of implementing suitable pollution control measures to mitigate the short-term environmental impacts arising from the site investigation works.

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 projects.

HERITAGE IMPLICATIONS

18. The feasibility studies on relocation of STSTW, SKSTW and DHSRs to caverns 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 feasibility studies on relocation of the STSTW, SKSTW and DHSRs to caverns and the associated site investigation works will not require any land acquisition.

BACKGROUND INFORMATION

20. We upgraded **401DS, 402DS and 195WC** to Category B in September 2013.

21. The feasibility studies on relocation of STSTW, SKSTW and DHSRs and the associated site investigation works will not directly involve any tree removal or planting proposal. We will require the consultants to take into consideration the need for tree preservation during these studies.

22. We estimate that the STSTW Study will create about 22 jobs (5 for labourers and another 17 for professional/technical staff) providing a total employment of 425 man-months.

23. We estimate that the SKSTW Study will create about 23 jobs (5 for labourers and another 18 for professional/technical staff) providing a total employment of 440 man-months.

24. We estimate that the DHSRs Study will create about 27 jobs (6 for labourers and another 21 for professional/technical staff) providing a total employment of 500 man-months.

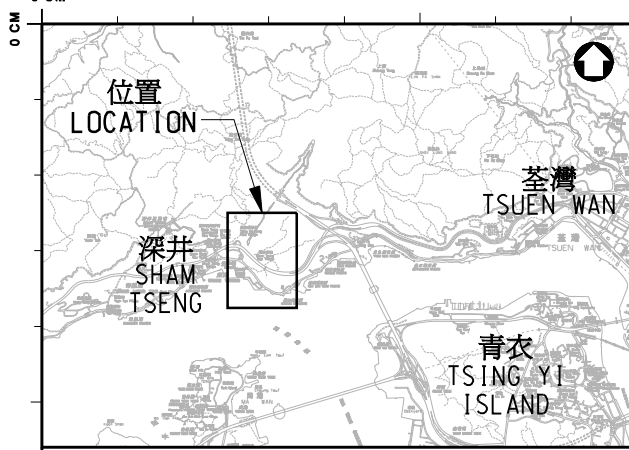
WAY FORWARD

25. Members are invited to support the proposal for upgrading **401DS, 402DS and 195WC** to Category A. Subject to the support of this Panel, we will seek the support of the Public Works Subcommittee in April 2014 with a view to seeking funding approval from the FC in May 2014.

**Development Bureau
Drainage Services Department
Water Supplies Department
March 2014**

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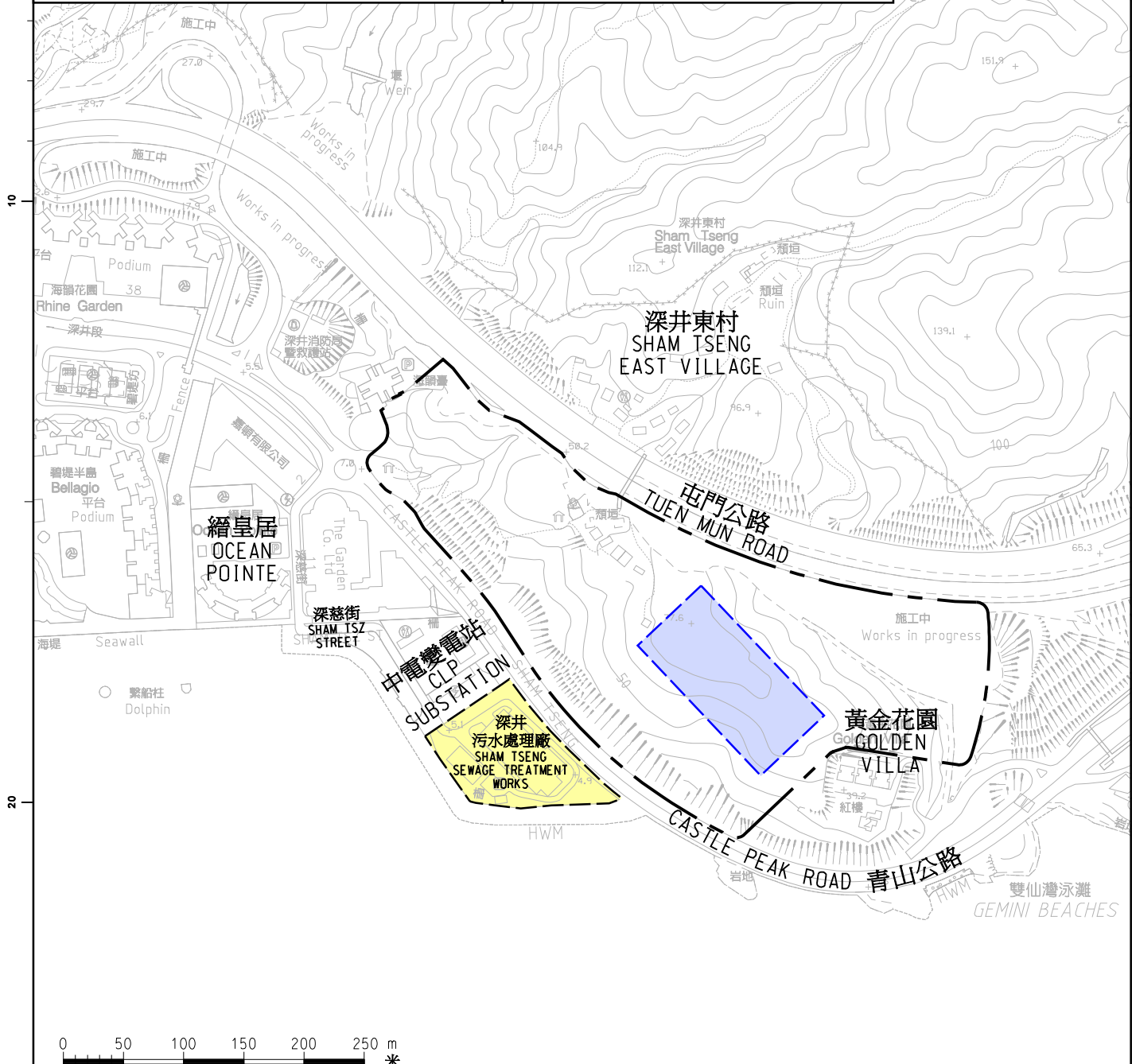



索引圖 KEY PLAN

比例 SCALE 1 : 100 000

圖例 LEGEND:

-  現有深井污水處理廠
EXISTING SHAM TSENG SEWAGE TREATMENT WORKS
-  重置後深井污水處理廠的初步位置
PRELIMINARY LOCATION OF RELOCATED SHAM TSENG SEWAGE TREATMENT WORKS
-  重置深井污水處理廠位置的
研究範圍
STUDY AREA FOR LOCATION OF RELOCATED SHAM TSENG SEWAGE TREATMENT WORKS

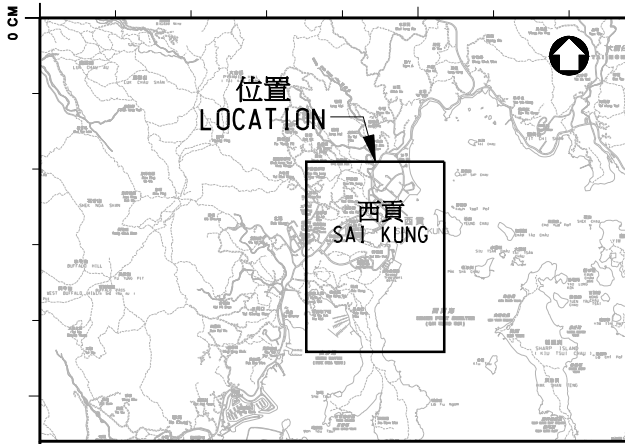


<p>圖則名稱 drawing title 工務工程計劃項目第401DS號 - 搬遷深井污水處理廠往岩洞的 可行性研究 PWP ITEM NO. 401DS - FEASIBILITY STUDY ON RELOCATION OF SHAM TSENG SEWAGE TREATMENT WORKS TO CAVERNS</p>	繪畫 drawn	L. L. LIU	日期 date	17 MAR 2014	<p>圖則編號 drawing no. DCM/2013/068</p>	<p>簡簽 initial 如圖示 AS SHOWN</p>	
	核對 checked	K. H. YAU	日期 date	17 MAR 2014			
	批核 approved	W. Y. CHAN	日期 date	17 MAR 2014	保留版權 COPYRIGHT RESERVED		
	部門 office	顧問工程管理部 CONSULTANTS MANAGEMENT DIVISION			 <p>香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION</p>		

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


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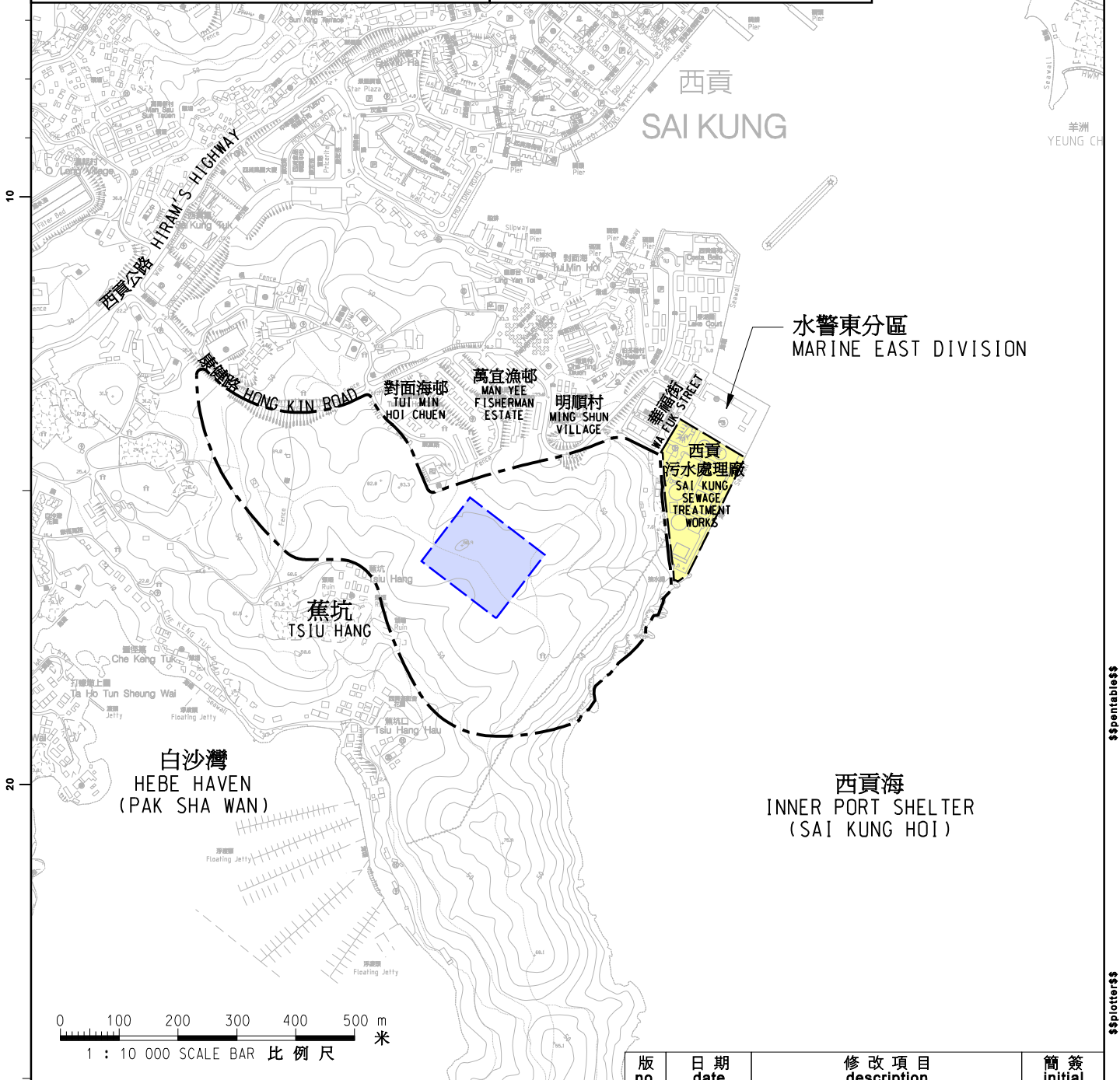
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索引圖 KEY PLAN
比例 SCALE 1 : 100 000

圖例 LEGEND:

-  現有西貢污水處理廠
EXISTING SAI KUNG SEWAGE TREATMENT WORKS
-  重置後西貢污水處理廠的初步位置
PRELIMINARY LOCATION OF RELOCATED SAI KUNG SEWAGE TREATMENT WORKS
-  重置西貢污水處理廠位置的
研究範圍
STUDY AREA FOR LOCATION OF RELOCATED SAI KUNG SEWAGE TREATMENT WORKS



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1 : 10 000 SCALE BAR 比例尺

版 no.	日期 date	修改項目 description	簡簽 initial
	17 MAR 2014		
核對 checked	日期 date	圖則編號 drawing no.	比例 scale
	17 MAR 2014	DCM/2013/069	如圖示 AS SHOWN
批核 approved	日期 date	保留版權 COPYRIGHT RESERVED	
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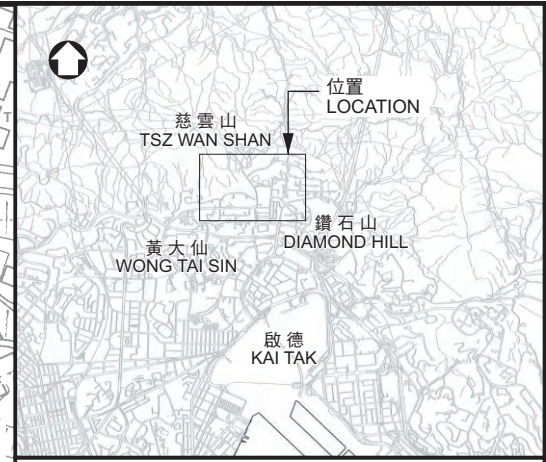
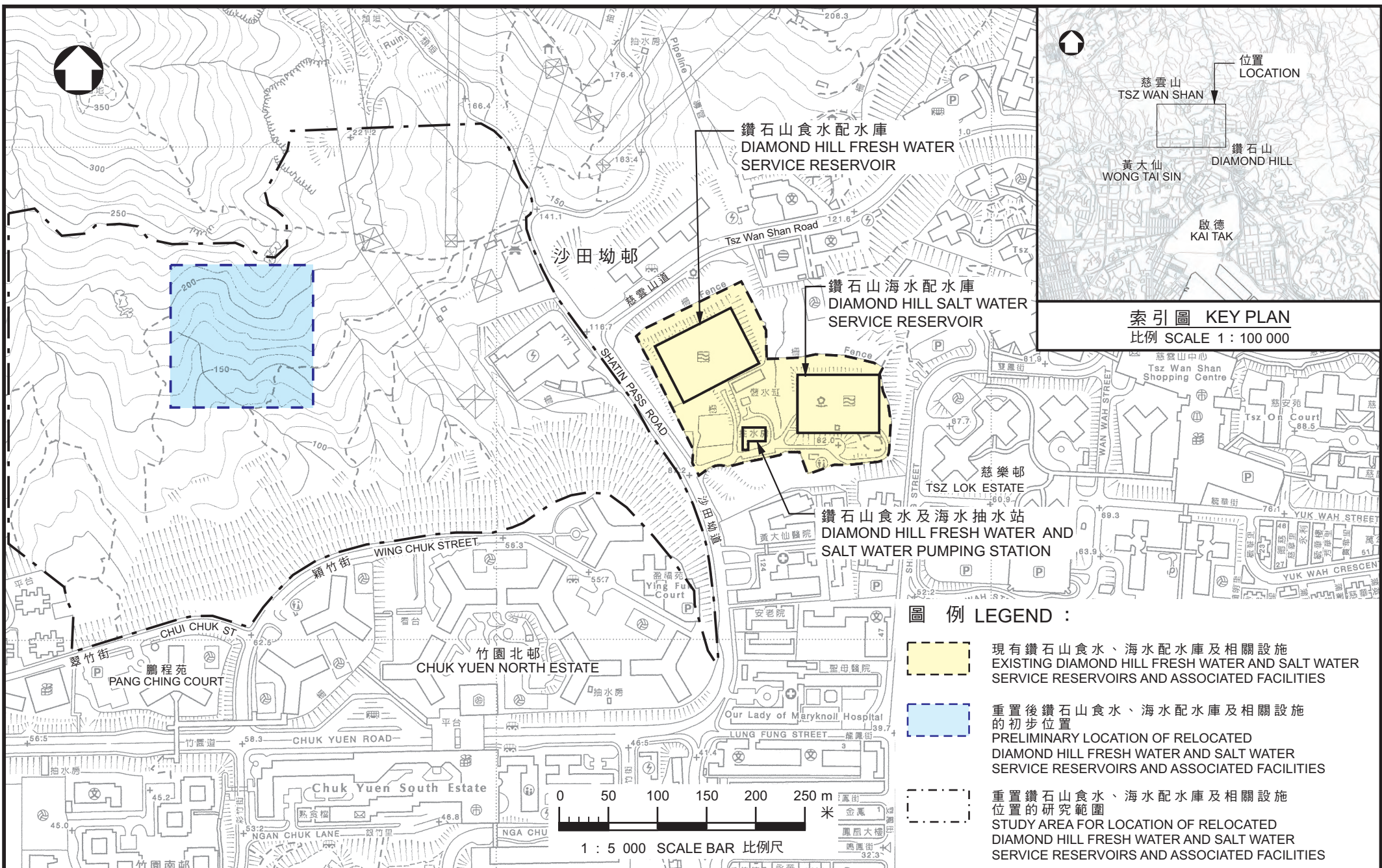
圖則名稱 drawing title
工務工程計劃項目第402DS號
- 搬遷西貢污水處理廠往岩洞的
可行性研究
PWP ITEM NO. 402DS
- FEASIBILITY STUDY ON
RELOCATION OF SAI KUNG SEWAGE
TREATMENT WORKS TO CAVERNS

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核准 APPROVED

總工程師/工程管理 CE / PM

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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
P.W.P. 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 / 134

附件 3 ENCLOSURE 3