

**For discussion  
on 23 April 2012**

**Legislative Council  
Panel on Environmental Affairs**

- 272DS — Port Shelter sewerage, stage 2**  
**273DS — Port Shelter sewerage, stage 3**  
**331DS — Outlying Islands sewerage, stage 2 — South Lantau  
sewerage works**

**PURPOSE**

This paper seeks Members' support for our proposals to —

- (a) upgrade part of **272DS — Port Shelter sewerage, stage 2** to Category A at an estimated cost of \$107.1 million;
- (b) upgrade part of **273DS — Port Shelter sewerage, stage 3** to Category A at an estimated cost of \$183.5 million; and
- (c) upgrade part of **331DS — Outlying Islands sewerage, stage 2 — South Lantau sewerage works** to Category A at an estimated cost of \$30.0 million

in money-of-the-day (MOD) prices.

**PROJECT SCOPE**

**272DS — Port Shelter sewerage, stage 2**

2. The part of **272DS** that we propose to upgrade to Category A comprises the construction of —

- (a) about 9.5 kilometres (km) of sewers for eight unsewered areas, namely Kap Pin Long, Nam Shan, Pak Kong, San Uk, Sha Kok Mei, Tai Ping Village, Tai Shui Tseng and Wo Tong Kong; and
- (b) ancillary works.

————— A site plan showing the proposed works is at **Enclosure 1**.

### **273DS — Port Shelter sewerage, stage 3**

3. The part of **273DS** that we propose to upgrade to Category A comprises the construction of —

- (a) about 3.3 km of sewers for three unsewered areas, namely Lung Wo Tsuen, Pik Shui Sun Tsuen and the vicinity of Fei Ngo Shan Road;
- (b) about 3.6 km gravity trunk sewers from Shun Chi Street to Razor Hill Road and around Pik Shui Sun Tsuen;
- (c) one sewage pumping station (SPS) at Pik Shui Sun Tsuen;
- (d) about 900 metres (m) of twin rising mains at Pik Shui Sun Tsuen (in association with construction of the SPS in (c) above) and along sections of Clear Water Bay Road near Tseng Lan Shue and Pak Shek Wo; and
- (e) ancillary works.

————— A site plan showing the proposed works is at **Enclosure 2**.

### **331DS — Outlying Islands sewerage, stage 2 — South Lantau sewerage works**

4. The part of **331DS** that we propose to upgrade to Category A comprises —

- (a) a consultancy for implementation of sewerage works in South Lantau that includes —
  - (i) detailed design of sewers, treatment works and associated facilities for the collection, conveyance, treatment and disposal of sewage from six unsewered areas, namely Shui Hau, Tong Fuk, Cheung Sha, San Shek Wan, Pui O and Ham Tin;
  - (ii) impact assessment on drainage, geotechnical, waterworks, traffic and other aspects necessary for completion of the detailed design;
  - (iii) preparation of tender documents and assessment of tenders;
  - (iv) supervision of the site investigation, surveys and laboratory testing in (b) below; and
- (b) site investigation, surveys and laboratory testing in support

of the detailed design work and impact assessment.

A site plan showing the project boundary and locations of the abovementioned unsewered areas is at **Enclosure 3**.

## JUSTIFICATIONS

### **272DS — Port Shelter sewerage, stage 2**

### **273DS — Port Shelter sewerage, stage 3**

5. At present, sewage from a number of village areas in the Port Shelter catchment is often treated and disposed of by means of private on-site treatment facilities (such as septic tanks and soakaway (STS) systems). These facilities might however become ineffective in removing pollutants due to their proximity to watercourses<sup>1</sup> or inadequate maintenance. Sewage from these areas has therefore been identified as a source of water pollution to the receiving waters of Port Shelter.

6. The aforesaid situation will persist unless sewerage infrastructure is made available to collect and treat sewage from these areas properly. The Environmental Protection Department has formulated as a long-term measure a programme under the Port Shelter Sewerage Master Plan to expand the public sewerage in the Port Shelter catchment. The programme is divided into three stages for implementation. Stage 1 has been completed whereas Stages 2 and 3 are being implemented in phases.

7. We now propose to upgrade part of **272DS** and **273DS** to Category A for further implementation of the remaining works under Stages 2 and 3 of Port Shelter sewerage respectively. The proposed works under **272DS** aim to provide public sewerage for eight unsewered areas around Sai Kung town centre, namely Kap Pin Long, Nam Shan, Pak Kong, San Uk, Sha Kok Mei, Tai Ping Tsuen, Tai Shui Tseng and Wo Tong Kong. The sewers to be laid under this project will be connected to the adjacent gravity trunk sewers. On the other hand, the proposed sewerage works under **273DS** cover three other unsewered areas, namely Lung Wo Tsuen, Pik Shui Sun Tsuen and the vicinity of Fei Ngo Shan

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<sup>1</sup> STS systems operate by allowing the effluent to percolate through gravels whereby pollutants are removed in a natural manner. However, if a STS system is located in an area where the ground water table is high, such as an area in proximity to watercourses, it will not function properly due to ineffective percolation.

Road. The proposed works in Pik Shui Sun Tsuen also entails the construction of one SPS for overcoming the topographical constraints along the sewer alignment. Gravity trunk sewers and twin rising mains will also be laid to connect these areas to the existing gravity trunk sewers as well as to cater for the provision of public sewerage for areas including Pak Shek Wo, Pik Uk Au and Tseng Lan Shue in subsequent phases of Stage 3 works.

8. Upon completion of the proposed works under **272DS** and **273DS**, sewage collected from the areas to be sewered will be diverted away to the Sai Kung sewage treatment works (STW), the Tseung Kwan O preliminary treatment works (PTW) and the Kwun Tong PTW for proper treatment and disposal. This will minimise the release of pollutants into the environment and bring about sustainable improvement to the water quality of Port Shelter.

9. Subject to funding approval of the Finance Committee (FC), Drainage Services Department (DSD) plans to commence construction of the proposed works under **272DS** and **273DS** in August 2012 for completion by August 2016. We will retain the remainders of **272DS** and **273DS** in Category B, which involve construction of about 30 km and 12 km of sewers for other unsewered areas in the Port Shelter catchment respectively. Funding for the remainders will be sought at a later stage after completion of the design and preparatory work.

### **331DS — Outlying Islands sewerage, stage 2 — South Lantau sewerage works**

10. There is at present no public sewerage in South Lantau and sewage is often treated and disposed of by means of private on-site treatment facilities. Similar to the situation at unsewered areas within the Port Shelter catchment, sewage generated in South Lantau has been identified as a source of water pollution to our southern waters. The discharge also affects the water quality at four public beaches on the southern coast of Lantau, namely Tong Fuk Beach, Upper Cheung Sha Beach, Lower Cheung Sha Beach and Pui O Beach.

11. In view of the above, public sewerage should be made available in South Lantau as a long-term measure to better protect the water quality of our southern waters and at the four public beaches. In 2008, a review of the sewerage scheme for South Lantau was completed and it recommended the provision of public sewerage for six unsewered areas, namely Shui Hau, Tong Fuk, Cheung Sha, San Shek Wan, Pui O and

Ham Tin. For the collection, conveyance, treatment and disposal of sewage generated from these areas, a schematic design comprising one secondary STW, six SPSs, one submarine outfall, gravity trunk sewers and rising mains along South Lantau Road as well as sewers within the unsewered areas mentioned above was also included in the review.

12. Based on the schematic design, DSD is conducting an assessment on the environmental implications of the proposed sewerage in South Lantau. DSD expects to complete the assessment in mid-2012 and seeks to commence the detailed design of the works thereafter. The impact on drainage, geotechnical, waterworks, traffic and other relevant aspects will be assessed whereas site investigation will also be carried out in support of such preparatory work.

13. Owing to insufficient in-house resources, DSD has proposed to employ consultants to undertake the preparatory work outlined in paragraph 4(a) above. Subject to funding approval of the FC, DSD plans to commence the proposed consultancy and site investigation in September 2012 for completion by September 2015. We will retain the remainder of **331DS**, i.e. the construction works under this project, in Category B. Funding of the remainder of **331DS** will be sought at a later stage after completion of the preparatory work to be carried out under the proposed consultancy.

## FINANCIAL IMPLICATIONS

14. We estimate the capital cost of the proposed works under **272DS** and **273DS** and the proposed consultancy and site investigation under **331DS** to be \$320.6 million in MOD prices made up as follow —

	\$ million (MOD)
(a) <b>272DS</b> — Port Shelter sewerage, stage 2 (part)	107.1
(b) <b>273DS</b> — Port Shelter sewerage, stage 3 (part)	183.5
(c) <b>331DS</b> — Outlying Islands sewerage, stage 2 — South Lantau sewerage works (part)	30.0
<b>Total</b>	<hr/> 320.6 <hr/>

15. We estimate that implementation of the proposed works under **272DS** and **273DS** and the proposed consultancy and site investigation under **331DS** will create 39 jobs (32 for labourers and another 7 for professional / technical staff), 63 jobs (51 for labourers and another 12 for professional / technical staff) and 15 jobs (5 for labourers and another 10 for professional / technical staff) respectively, providing a total employment of 4 730 man-months. Detailed breakdown is as follows —

<b>PWP item no.</b>	<b>( A )                      ( B )</b>		<b>( A ) + ( B )</b>	<b>( C )</b>
	<b>Numbers of jobs to be created for</b>	<b>professional / technical staff</b>		
	<b>labourers</b>		<b>Total number of jobs created</b>	<b>Employment in man-months</b>
<b>272DS (part)</b>	32	7	39	1 680
<b>273DS (part)</b>	51	12	63	2 690
<b>331DS (part)</b>	5	10	15	360
<b>Total</b>	<b>88</b>	<b>29</b>	<b>117</b>	<b>4 730</b>

## **PUBLIC CONSULTATION**

**272DS — Port Shelter sewerage, stage 2**

**273DS — Port Shelter sewerage, stage 3**

16. We consulted Sai Kung Rural Committee on the proposed works under **272DS** on 26 September 2001 and 25 October 2007. We also consulted the Housing and Environmental Hygiene Committee under Sai Kung District Council on 15 April 2008. Both committees supported the proposed works under **272DS**.

17. We consulted Hang Hau Rural Committee on the proposed works under **273DS** on 15 October 2001 and provided the Committee with updated information on the project in September 2007. The Housing and Environmental Hygiene Committee under Sai Kung District Council was also consulted on 15 April 2008. Both of them supported the proposed works under **273DS**. In addition, we consulted the Environment and Hygiene Committee (EHC) under Kwun Tong District

Council on 8 July 2009. Members of EHC were in general supportive of the proposed works under **273DS**.

18. We gazetted the proposed works under **272DS** in accordance with the Water Pollution Control (Sewerage) Regulation (WPC(S)R) under three schemes between December 2008 and July 2010. No objection was received and all the three schemes were subsequently authorised between May 2009 and November 2010.

19. We gazetted the proposed works under **273DS** in accordance with the WPC(S)R under four schemes between August 2009 and July 2011. For the scheme that covers the proposed gravity trunk sewers and twin rising mains along Clear Water Bay Road (Tseng Lan Shue Section), one objection concerning the impact of the proposed works on certain existing installations (including a well, two pump chambers, some chain-link fence and gate) and fruit trees near a piece of land was received. We have repeatedly explained to the objectors that since the piece of land concerned is located over 50 m from the proposed works area, the proposed works would not pose the purported adverse impact. The objection nevertheless remained unresolved and the Chief Executive-in-Council authorised the scheme without modification on 13 March 2012. The notice of authorisation was gazetted on 13 April 2012. No objection was received in respect of the other three schemes and the proposed works were authorised between November 2009 and November 2011.

### **331DS — Outlying Islands sewerage, stage 2 — South Lantau sewerage works**

20. We consulted South Lantau Rural Committee and the Tourism, Agriculture, Fisheries and Environmental Hygiene Committee under Islands District Council on 3 August 2010 and 18 July 2011 respectively. Both committees supported the provision of sewerage in South Lantau in principle.

## **HERITAGE IMPLICATIONS**

21. Both the proposed works under **272DS** and **273DS** and the proposed consultancy and site investigation under **331DS** 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. We have to resume two private agricultural lots and part of five private agricultural lots (about 279 square metres in total) for carrying out the proposed works under **272DS**. The land resumption and clearance will not affect any households or structures. Both the proposed works under **273DS** and the proposed consultancy and site investigation under **331DS** do not require any land acquisition.

## **ENVIRONMENTAL IMPLICATIONS**

### **272DS — Port Shelter sewerage, stage 2**

### **273DS — Port Shelter sewerage, stage 3**

23. The proposed sewerage works at Pik Shui Sun Tsuen under **273DS** constitute a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) and an Environmental Permit (EP) is required for its construction and operation. Having regard to the project profile prepared and submitted by DSD, the Director of Environmental Protection was satisfied that the environmental impacts of the works concerned could meet the requirements of the Technical Memorandum on Environmental Impact Assessment Process. With the consent of the Secretary for the Environment, the permission to apply directly for an EP was granted on 23 November 2011 and the EP was issued on 20 December 2011. DSD shall implement the mitigation measures as set out in the EP and comply with the conditions therein accordingly.

24. As regards the proposed works under **272DS** and other proposed works under **273DS**, they are not designated projects under the EIAO. DSD completed an Environmental Study that covers these sewerage works in December 2010 and it was concluded that, with the implementation of appropriate mitigation measures, these sewerage works would not have long-term adverse environmental impacts.

25. For short-term environmental impacts during construction, we will control noise, dust and site run-off to levels within established standards and guidelines through implementation of environmental



mitigation measures, such as the use of silenced construction equipment and noise barriers to reduce noise generation, water-spraying to reduce emission of fugitive dust, and proper treatment of site run-off before discharge. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good site practices will be properly implemented on site. We have included sums of \$1.7 million and \$3.1 million<sup>2</sup> (in September 2011 prices) in the project estimates of the proposed works under **272DS** and **273DS** respectively for implementation of the necessary environmental mitigation measures.

26. At the planning and design stages, we have considered ways to reduce the generation of construction waste where possible. For example, in addition to the need for meeting the hydraulic and traffic requirements, we have also designed the alignment of the proposed sewers in such a manner that excavation and demolition of existing structures will be minimised. In addition, we will require the contractors to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible in order to minimise the disposal of inert construction waste at public fill reception facilities (PFRF)<sup>3</sup>. We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

27. At the construction stage, we will require the contractors to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractors to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste at PFRF and landfills respectively through a trip-ticket system.

28. We estimate that the proposed works will generate about 85 800 tonnes of construction waste in total (55 770 tonnes and 30 030 tonnes for the proposed works under **272DS** and **273DS** respectively).

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<sup>2</sup> This amount also covers the cost of employing an independent checker to audit the implementation of mitigation measures in relation to the proposed works at Pik Shui Sun Tsuen for fulfilling the relevant condition under the EP.

<sup>3</sup> PFRF are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in PFRF requires a licence issued by the Director of Civil Engineering and Development.

Of these, we will reuse 64 650 tonnes (75%) of inert construction waste on site and deliver another 20 400 tonnes (24%) to PFRF for subsequent reuse. We will dispose of the remaining 750 tonnes (1%) of non-inert construction waste at landfills. The total costs for accommodating construction waste at PFRF and landfill sites are estimated to be about \$0.42 million and \$0.22 million for the proposed works under **272DS** and **273DS** respectively (based on a unit cost of \$27 per tonne for disposal at PFRF and \$125 per tonne<sup>4</sup> at landfills).

### **331DS — Outlying Islands sewerage, stage 2 — South Lantau sewerage works**

29. The proposed consultancy and site investigation under **331DS** is not a designated project under the EIAO. The proposed consultancy will not cause any adverse environmental impacts. We shall implement suitable mitigation measures to control any short-term environmental impacts arising from site investigation and surveys.

30. The site investigation works will only generate an insignificant quantity of construction waste. We will require the consultants to fully consider measures to minimise the generation of construction waste and to reuse or recycle such waste as much as possible when carrying out site investigation.

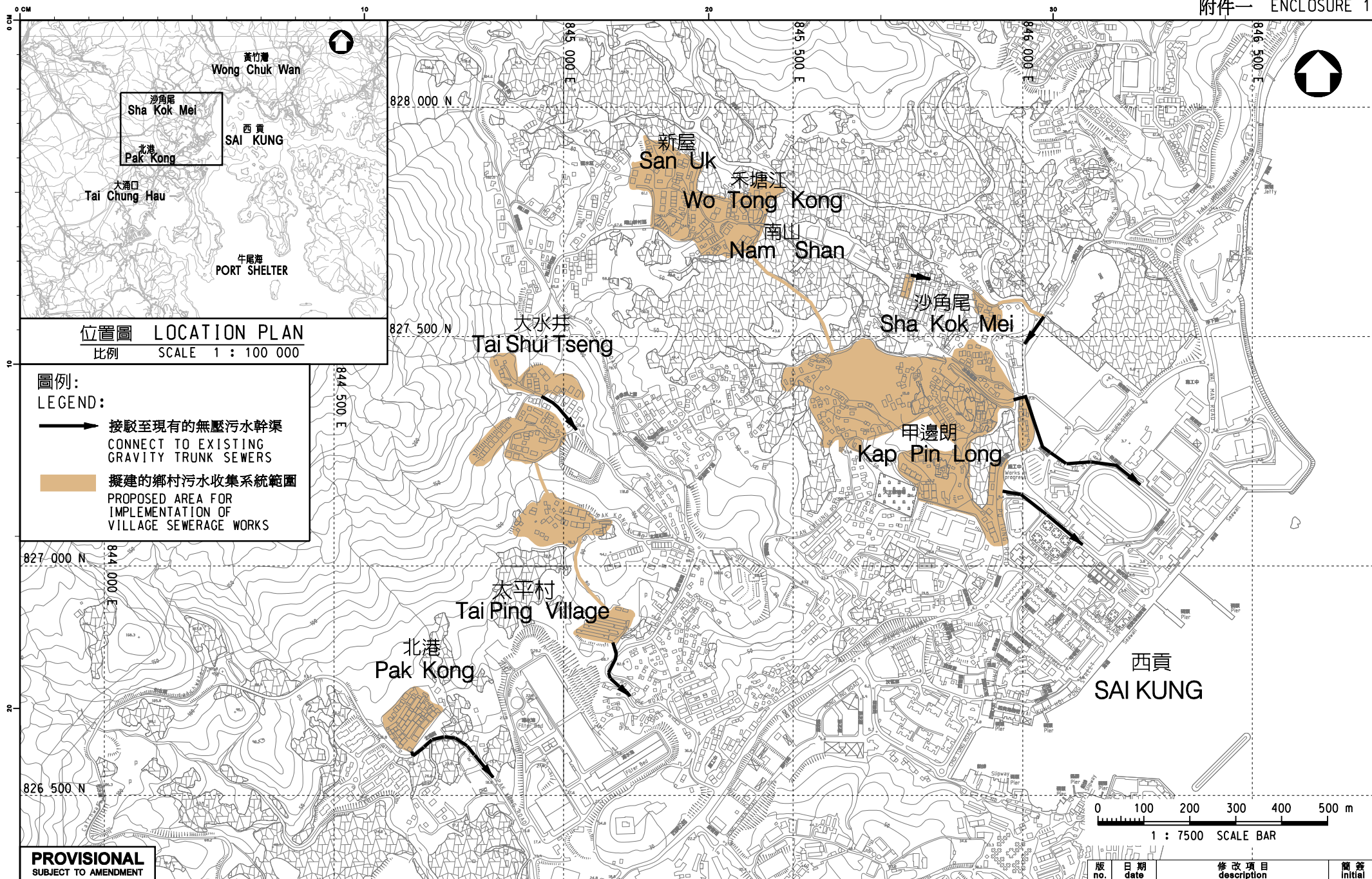
### **ADVICE SOUGHT**

31. Members are invited to support our proposals for upgrading the proposed works under **272DS** and **273DS** and the proposed consultancy and site investigation under **331DS** to Category A. Subject to Members' advice, we plan to submit our proposals for endorsement by the Public Works Subcommittee in May 2012 with a view to seeking FC's funding approval in June 2012.

**Environmental Protection Department**  
**Drainage Services Department**  
**April 2012**

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<sup>4</sup> This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90 per cubic metre), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.



**PROVISIONAL**  
SUBJECT TO AMENDMENT

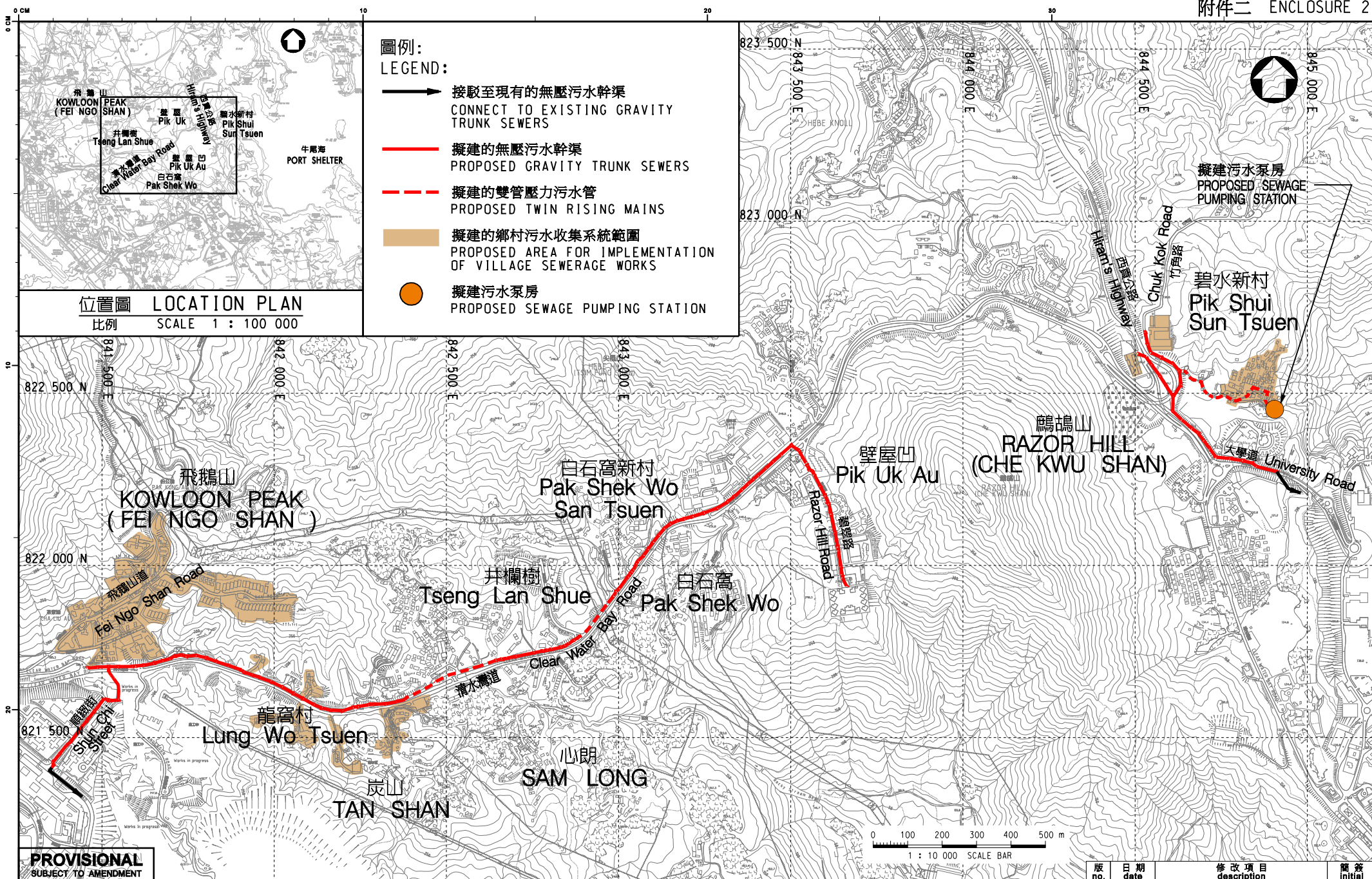
圖則名稱 drawing title

工務計劃項目第 272DS 號 - 牛尾海污水收集系統第2階段工程  
PWP ITEM NO.272DS - PORT SHELTER SEWERAGE, STAGE 2

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PROVISIONAL  
SUBJECT TO AMENDMENT

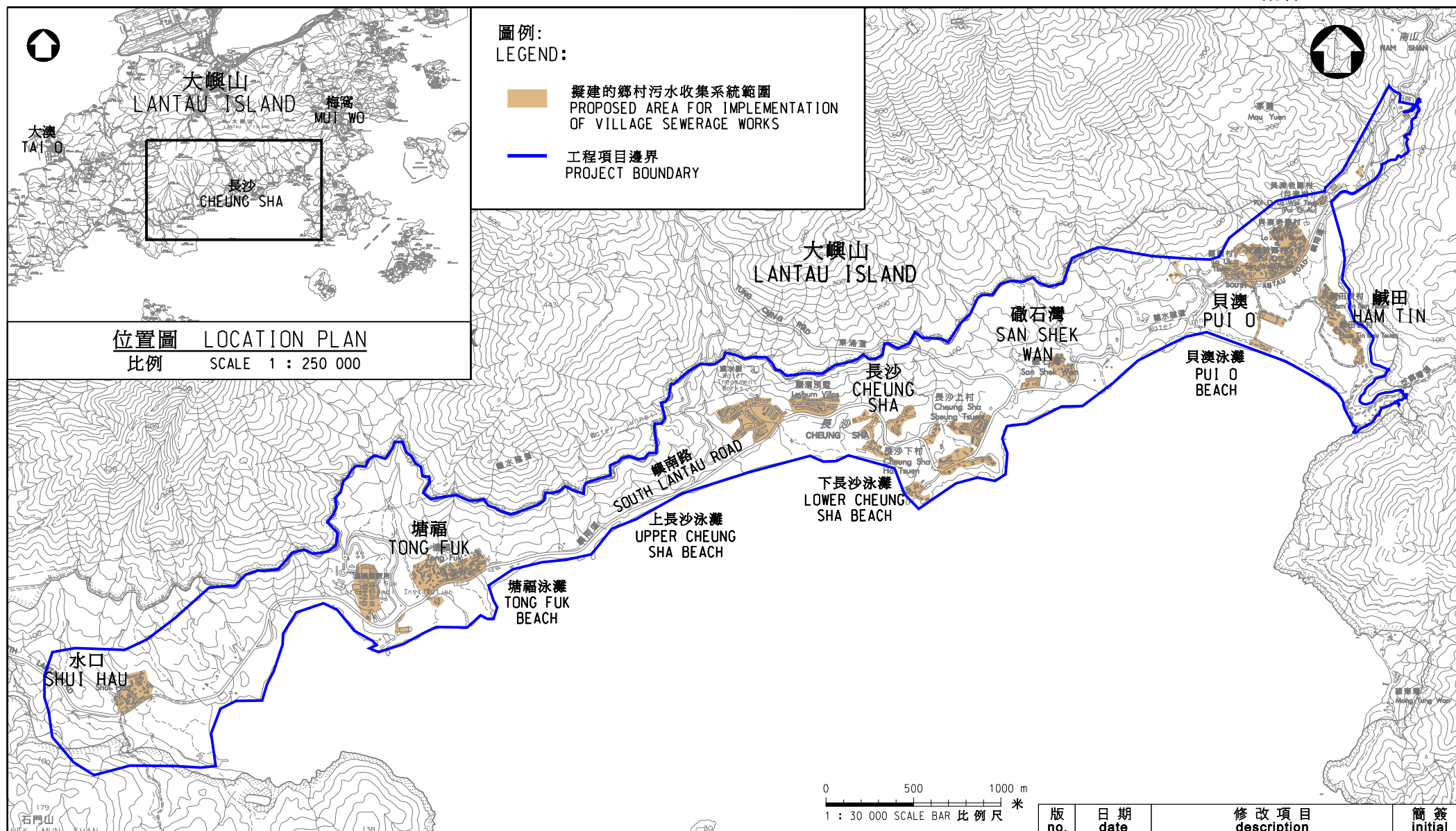
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工務計劃項目第 273DS 號 - 牛尾海污水收集系統第3階段工程  
PWP ITEM NO.273DS - PORT SHELTER SEWERAGE, STAGE 3

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圖則名稱 drawing title

工務計劃項目第 331DS 號 - 離島污水收集系統第2階段  
- 南大嶼山污水收集系統工程  
PWP ITEM NO. 331DS - OUTLYING ISLANDS SEWERAGE, STAGE 2  
- SOUTH LANTAU SEWERAGE WORKS

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W. Y. HUI

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核對 checked

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