

**For discussion  
on 25 March 2019**

**Legislative Council  
Panel on Environmental Affairs**

**Upgrading of Cheung Chau Sewage Treatment and Disposal Facilities,  
Provision of Village Sewerage in Sai Kung, and  
Upgrading of West Kowloon and Tsuen Wan Sewerage**

**PURPOSE**

This paper seeks Members' views on our proposals to upgrade the following sewerage items to Category A for taking forward the upgrading of sewage treatment and disposal facilities in Cheung Chau, the provision of village sewerage to unsewered areas in Tseung Kwan O and Port Shelter within Sai Kung, and the upgrading of the existing sewerage in West Kowloon and Tsuen Wan -

- (a) part of **4354DS – Outlying Islands sewerage, stage 2 - upgrading of Cheung Chau and Tai O sewage collection, treatment and disposal facilities** at an estimated cost of \$2,606.9 million in money-of-the day (MOD) prices ;
- (b) **4214DS – Tseung Kwan O sewerage for villages** at an estimated cost of \$289.5 million in MOD prices;
- (c) part of **4272DS – Port Shelter sewerage, stage 2** at an estimated cost of \$515.9 million in MOD prices;
- (d) part of **4273DS – Port Shelter sewerage, stage 3** at an estimated cost of \$668.2 million in MOD prices;
- (e) **4389DS – Upgrading of West Kowloon and Tsuen Wan sewerage – phase 2** at an estimated cost of \$2,285.5 million in MOD prices; and
- (f) part of **4391DS – West Kowloon and Tsuen Wan village sewerage** at an estimated cost of \$104.1 million in MOD prices.

## **PROJECT SCOPE AND NATURE**

2. To cater for population growth and development needs of Hong Kong and to safeguard public health and the environment, we need to maintain and enhance the capacity and coverage of the sewerage infrastructure. At present, the public sewerage system of Hong Kong has reached over 93% of the population, there is a continual need to upgrade the system to improve its performance and extend the existing infrastructure further to serve expansions in existing developed areas, new development areas and more rural villages throughout the territory.

3. This composite paper consists of six projects covering the districts of Cheung Chau, Tseung Kwan O, Port Shelter, West Kowloon and Tsuen Wan. We will submit more sewerage projects covering areas in North District, Tolo Harbour, Yuen Long, Tuen Mun and Lantau Island for Members' consideration in the coming months. In the following years, we will continue to propose more projects to expand our sewerage network to the needed areas in the New Territories and Outlying Islands as well as to enhance the quality of coastal waters of Victoria Harbour and other water bodies.

4. Details of the above proposals are at **Enclosures 1 to 6** respectively.

## **WAY FORWARD**

5. We plan to seek funding approval from the Finance Committee for the proposed works under part of **4354DS**, **4214DS**, part of **4272DS**, part of **4273DS**, **4389DS** and part of **4391DS** after consulting the Public Works Subcommittee. Members are invited to comment on the proposed sewerage projects.

**Environment Bureau**  
**Drainage Services Department**  
**March 2019**

**4354DS - Outlying Islands sewerage, stage 2 – upgrading of Cheung Chau and Tai O sewage collection, treatment and disposal facilities**

**PROJECT SCOPE**

The part of **4354DS** that we propose to upgrade to Category A comprises –

- (a) the upgrading of the existing Cheung Chau Sewage Treatment Works (STW) to increase its treatment capacity to 9 800 cubic metres per day (m<sup>3</sup>/day) and to upgrade its treatment standard to secondary level; and
- (b) the upgrading of the existing Pak She Sewage Pumping Station (SPS); and
- (c) ancillary works<sup>1</sup>.

— A plan showing the locations of the proposed works is at **Annex to Enclosure 1**.

**JUSTIFICATIONS**

2. Both the existing Cheung Chau STW and Pak She SPS have been operating for over 30 years, with most of their facilities reaching the end of their design life. Cheung Chau STW is a primary sewage treatment works with a design capacity of 4 000 m<sup>3</sup>/day, serving about 65% of Cheung Chau's existing population of 22 000 with access to public sewerage network.

3. To cope with the gradual expansion of village sewerage network to other unsewered areas of Cheung Chau in the future, we propose to construct additional treatment facilities at Cheung Chau STW to increase its treatment capacity to 9 800 m<sup>3</sup>/day and upgrade its treatment standard to secondary level to serve Cheung Chau's projected ultimate population of approximately 38 200. The treated effluent will be discharged into the sea through the existing

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<sup>1</sup> Ancillary works include the utilities diversion, road and drainage works, provision of manholes, temporary closure and reinstatement of carriageways/footpaths/open space, necessary architectural, building services and landscaping works that are required to complete the proposed works.

submarine outfall of the Cheung Chau STW, which has sufficient flow capacity. We also propose to upgrade and retrofit all the electrical and mechanical equipment of the existing Pak She SPS.

4. Subject to the funding approval of the Finance Committee, we aim to commence the proposed works in the fourth quarter of 2019 for completion in the first quarter of 2025. The remainder of **4354DS** for upgrading of Tai O STW and the provision of public sewerage system for ten areas in Cheung Chau and seven areas in Tai O will be retained in Category B, with funding to be sought at a later stage after completion of the design and preparatory work.

## **FINANCIAL IMPLICATIONS**

5. We estimate that the total capital cost of the proposed works as detailed in paragraph 1 above to be \$2,606.9 million in money-of-the-day prices.

## **PUBLIC CONSULTATION**

6. We have been consulting relevant members of the Cheung Chau Rural Committee and the Islands District Council (IsDC) about the proposed works since June 2011. We provided updates at the IsDC meetings held in September 2014, September 2016 and March 2018, in which the proposed works were supported. We further consulted the Tourism, Agriculture, Fisheries and Environmental Hygiene Committee of the IsDC on 26 November 2018. The Committee also supported the proposed works.

## **ENVIRONMENTAL IMPLICATIONS**

7. The project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) and an environmental permit (EP) is required for the construction and operation of the project. In December 2013, the Environmental Impact Assessment (EIA) report for the project was approved under EIAO. The EIA report concluded that the environmental impact of the project could be controlled to within the criteria under EIAO and the Technical Memorandum on EIA Process. An EP for the project was issued in May 2014. We will implement the measures recommended in the approved EIA Report and stipulated in the EP as well as the environmental monitoring and audit programme to ascertain the effectiveness of the mitigation measures. We have included in the project

estimate of the proposed works the cost for implementation of the necessary environmental mitigation measures.

8. For the construction phase, we will control noise, dust and site run-off nuisances to within the established standards and guidelines through implementation of the recommended mitigation measures in the relevant contract. These measures include the use of silenced construction equipment and temporary noise barriers to reduce noise impact. In addition, water-spraying to the construction site will be applied regularly to minimise emission of fugitive dust, and on-site treatment of site run-off will be carried out to minimise potential water quality impact. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good practices will be properly implemented on site.

9. For the operation phase, we will also implement the measures recommended in the approved EIA report and stipulated in the EP. The key measures include enclosing all process equipment inside building structure, equipping the upgraded STW with deodourisation unit, fitting exhaust fans with acoustic louvre/silencer and removing sewage sludge off-site regularly in fully enclosed containers. We will also prepare an emergency response plan to cater for any emergency discharge.

10. At the planning and design stages, we have considered ways to reduce the generation of construction waste where possible. 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 to the public fill reception facilities (PFRF<sup>2</sup>). We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

11. We will also 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 inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert and non-inert construction waste at PFRF and landfills respectively through a trip-ticket system.

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<sup>2</sup> PFRF are specified in Schedule 4 of Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in PFRF requires a licence issued by the Director of Civil Engineering and Development.

12. We estimate that the proposed works will generate in total about 82 300 tonnes of construction waste. Of these, we will reuse about 12 600 tonnes (15%) of inert construction waste on site, and deliver 68 900 tonnes (84%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 800 tonnes (1%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be \$5.1 million for the proposed works (based on an unit charge rate of \$71 per tonne for disposal at PFRF and \$200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

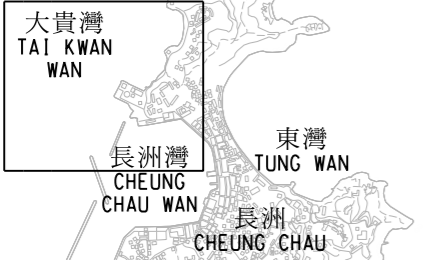
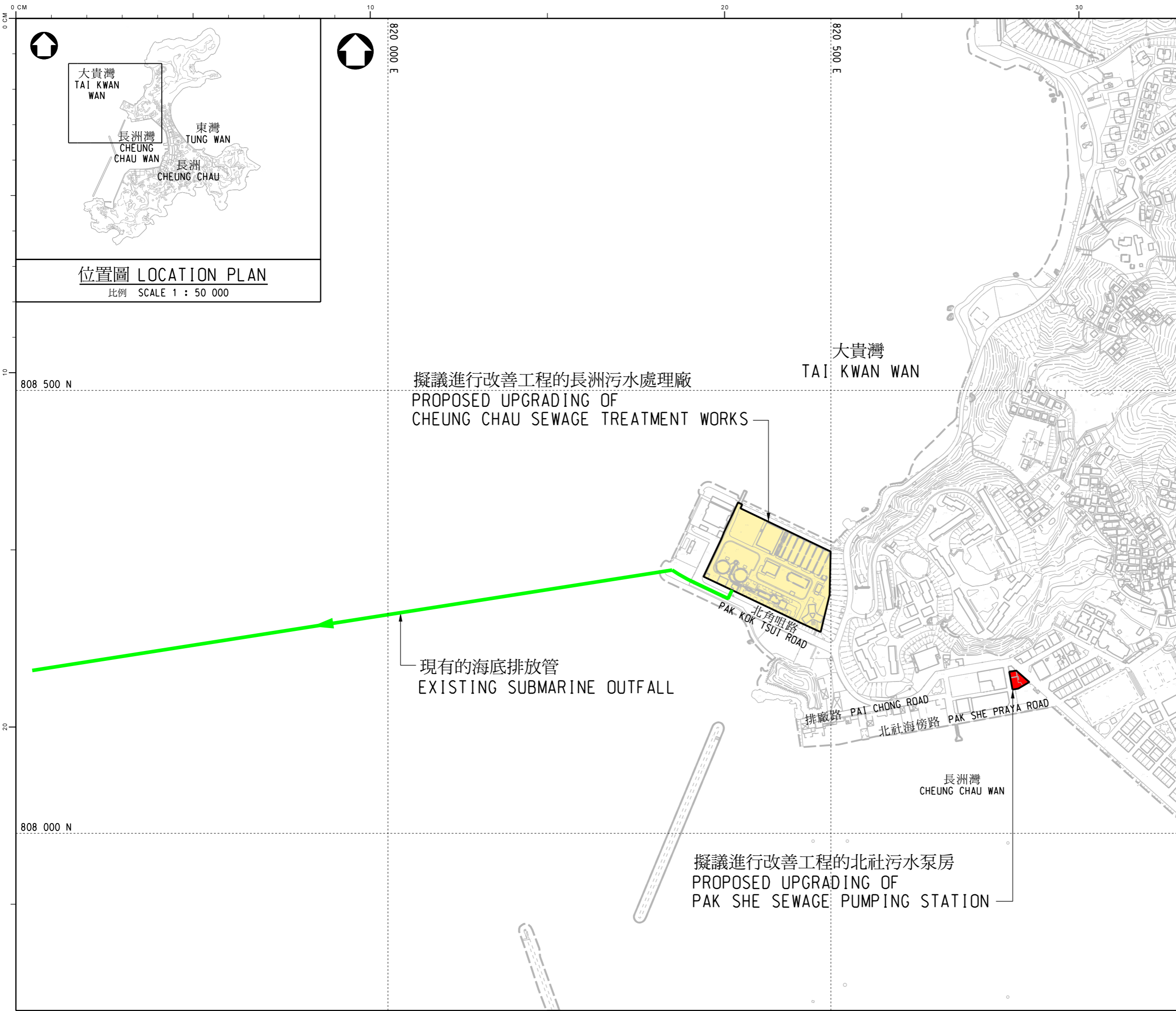
## **HERITAGE IMPLICATIONS**

13. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites and buildings, sites of archaeological interest and government historic sites identified by the Antiquities and Monuments Office.

## **LAND ACQUISITION**

14. The proposed works will only involve government land. No land resumption is required.

**Environment Bureau  
Drainage Services Department  
March 2019**



位置圖 LOCATION PLAN  
比例 SCALE 1 : 50 000

版 no.	日期 date	修改項目 description	簡簽 initial
修訂 REVISION			
	姓名 name	日期 date	
繪畫 drawn	SIGNED W. H. CHAN	4 FEB 2019	
核對 checked	SIGNED Ir K. S. CHAN	4 FEB 2019	
批核 approved	SIGNED Ir L. CHEN	4 FEB 2019	

圖則名稱 drawing title

工務工程計劃編號 4354DS  
- 離島污水收集系統第2階段  
長洲及大澳污水收集處理及排放改善工程

PWP ITEM NO. 4354DS  
- OUTLYING ISLANDS SEWERAGE, STAGE 2 -  
UPGRADING OF CHEUNG CHAU AND TAI O  
SEWAGE COLLECTION, TREATMENT AND  
DISPOSAL FACILITIES

圖則編號 drawing no.	比例 scale
DCM/2019/002	1 : 4 000

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部門 office  
**顧問工程管理部**  
**CONSULTANTS MANAGEMENT DIVISION**

 香港特別行政區政府渠務署  
DRAINAGE SERVICES DEPARTMENT  
GOVERNMENT OF THE  
HONG KONG  
SPECIAL ADMINISTRATIVE REGION

## 4214DS - Tseung Kwan O sewerage for villages

### PROJECT SCOPE

The proposed scope of works under **4214DS** comprises -

- (a) the construction of about 6.4 kilometres of gravity sewers for ten unsewered areas in Tseung Kwan O;
- (b) the construction of a sewage pumping station (SPS) with a design capacity of about 130 cubic metres per day at Au Tau;
- (c) the construction of about 700 metres of twin rising mains at Au Tau and Sun Tei Village; and
- (d) ancillary works<sup>1</sup>.

— A Plan showing the locations of the proposed works are at **Annex to Enclosure 2**.

### JUSTIFICATIONS

2. Currently the majority part of Tseung Kwan O is covered by public sewerage system, but some old village areas in the district are still unsewered, with their sewage disposed of by individual and simple facilities on-site such as septic tanks and soakaway (STS) systems<sup>2</sup>. Extension of the public sewerage system to these areas can help improve environmental hygiene and further reduce the amount of pollutants being discharged into the receiving waters of Tseung Kwan O.

3. We now propose to provide public sewerage system for ten unsewered areas in Tseung Kwan O, namely Shui Bin Village, Ming Oi New Village, Mau Wu Tsai Village, Tseung Kwan O Upper Old Village, Tseung

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<sup>1</sup> Ancillary works include the utilities diversion, road and drainage works, provision of manholes, temporary closure and reinstatement of carriageways/footpaths/open space, necessary architectural, building services and landscaping works that are required to complete the proposed works.

<sup>2</sup> STS systems operate by allowing the effluent to percolate through soil layers so that pollutants may be 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 the seaside or watercourses, it will not function properly due to ineffective percolation. There are also maintenance problems with some STS systems.



Kwan O Village, Boon Kin Village, Hang Hau Lower Old Village, Wo Tong Kong, Au Tau and Sun Tei Village through the proposed works. The proposed sewerage system will serve an estimated ultimate population of 3 200.

4. Upon completion of the proposed works, sewage from Au Tau and Sun Tei Village will be pumped by the proposed SPS to the existing Kwun Tong Preliminary Treatment Works (PTW) while sewage from the remaining eight areas will be conveyed to the Tseung Kwan O PTW for proper treatment and disposal.

5. Subject to the funding approval of the Finance Committee, we aim to commence construction of the proposed works in the first quarter of 2020 for completion in the second quarter of 2024.

## **FINANCIAL IMPLICATIONS**

6. We estimate that the total capital cost of the proposed works as detailed in paragraph 1 above to be \$289.5 million in money-of-the-day prices.

## **PUBLIC CONSULTATION**

7. Following the previous consultations with the Hang Hau Rural Committee (HHRC) and the Housing and Environmental Hygiene Committee of the Sai Kung District Council (SKDC) in 2009, we consulted the HHRC again on 16 October 2018 and reported progress of the proposed works to the SKDC on 15 November 2018. Both Committees maintained their support of the proposed works and urged the Government to expedite progress.

8. We gazetted the proposed sewerage works for five villages in two packages under the Water Pollution Control (Sewerage) Regulation (Cap. 358AL). The first package for Tseung Kwan O Village, Boon Kin Village and Wo Tong Kong was gazetted in January 2013 and amended by further gazette in June 2014. It was authorised in November 2015 after the three objections received against the proposal were satisfactorily resolved. The second package for Sun Tei Village and Au Tau was gazetted in March 2013 and amended by further gazette in September 2013. It was authorised in January 2014 after the one objection received against the proposal was satisfactorily resolved. The proposed sewerage works for the remaining five villages, namely Shui Bin Village, Ming Oi New Village, Mau Wu Tsai Village, Tseung Kwan O Upper Old Village and Hang Hau Lower Old Village, which will not affect any private land, was authorised in March 2019 to be executed as

minor works under the Road (Works, Use and Compensation) Ordinance (Cap. 370).

## **ENVIRONMENTAL IMPLICATIONS**

9. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). The Drainage Services Department completed a Preliminary Environmental Review (PER) for the proposed works in 2009 and updated the PER in January 2019. The updated PER concluded and the Director of Environmental Protection agreed that the proposed works would not cause long-term adverse environmental impacts. We have included in the project estimate of the proposed works the cost for implementing the necessary environmental mitigation measures.

10. For the construction phase, we will control noise, dust and site run-off nuisances to within the established standards and guidelines through the implementation of the recommended mitigation measures in the relevant contract. These measures include the use of silenced construction equipment and temporary noise barriers to reduce noise impact. In addition, water-spraying to the construction site will be applied regularly to minimise the emission of fugitive dust, and on-site treatment of site run-off will be carried out to minimise potential water quality impact. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good practices will be properly implemented on site.

11. At the planning and design stages, we have considered ways to reduce the generation of construction waste where possible. 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 to the public fill reception facilities (PFRF<sup>3</sup>). We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

12. We will also require the contractors to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation measures to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved

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<sup>3</sup> PFRF are specified in Schedule 4 of Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in PFRF requires a licence issued by the Director of Civil Engineering and Development.

plan. We will require the contractors to separate inert and non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert and non-inert construction waste at PFRF and landfills respectively through a trip-ticket system.

13. We estimate that the proposed works will generate in total about 30 640 tonnes of construction waste. Of these, we will reuse about 18 380 tonnes (60%) of inert construction waste on site, and deliver about 11 950 tonnes (39%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 310 tonnes (1%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be \$910,000 for the proposed works (based on a unit charge rate of \$71 per tonne for disposal at PFRF and \$200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

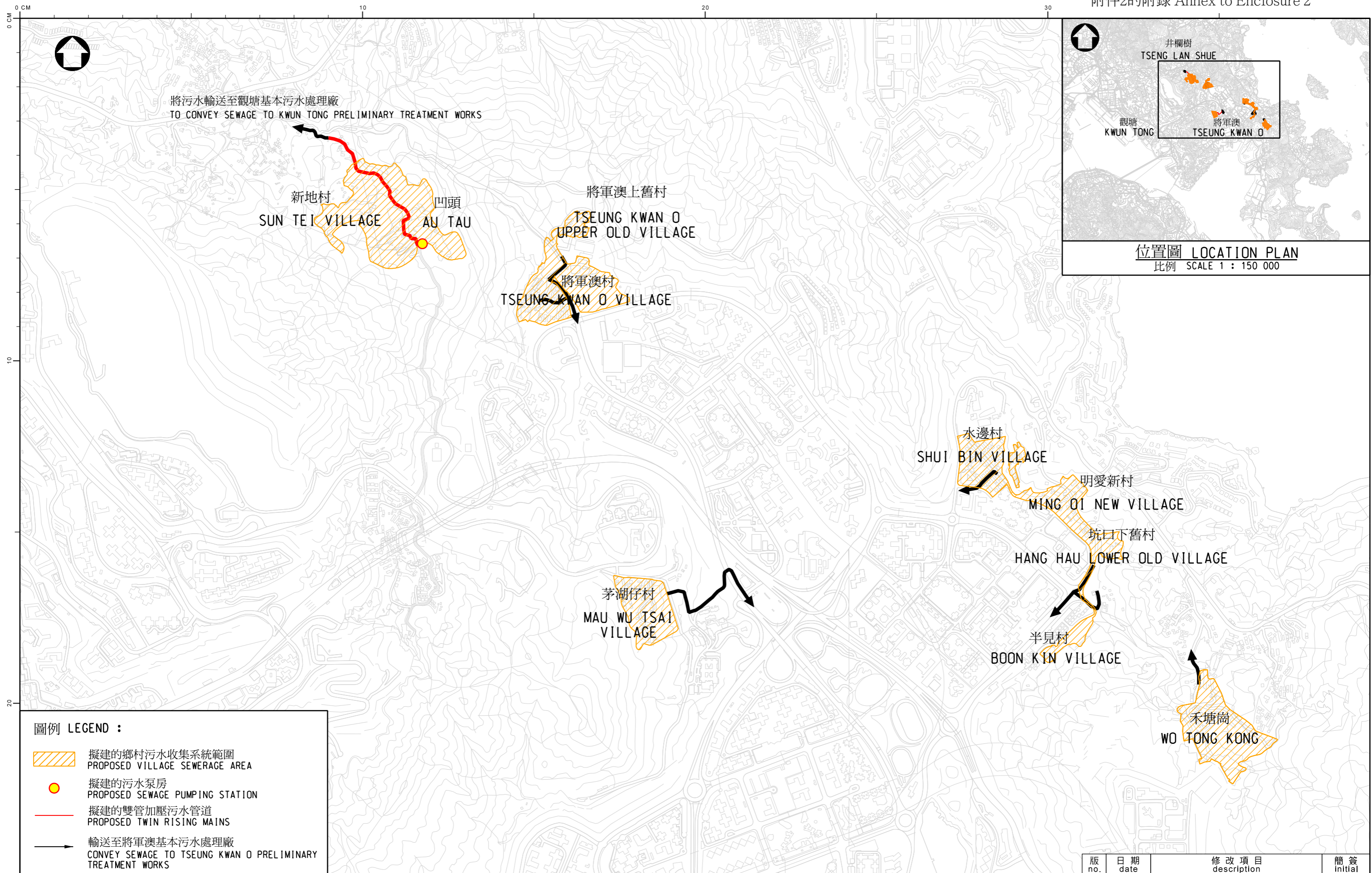
## **HERITAGE IMPLICATIONS**

14. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites and buildings, sites of archaeological interest and government historic sites identified by the Antiquities and Monuments Office.

## **LAND ACQUISITION**

15. Thirteen private agricultural lots (about 410 square metres) will need to be resumed for implementing the proposed works. Site clearance at Tseung Kwan O Village, Boon Kin Village, Wo Tong Kong, Shui Bin Village, Ming Oi New Village, Mau Wu Tsai Village, Tseung Kwan O Upper Old Village and Hang Hau Lower Old Village will not affect any household or structure. Site clearance at Sun Tei Village and Au Tau will not affect any household, but will affect four structures.

**Environment Bureau  
Drainage Services Department  
March 2019**



位置圖 LOCATION PLAN  
比例 SCALE 1 : 150 000

**圖例 LEGEND :**

- 擬建的鄉村污水收集系統範圍  
PROPOSED VILLAGE SEWERAGE AREA
- 擬建的污水泵房  
PROPOSED SEWAGE PUMPING STATION
- 擬建的雙管加壓污水管道  
PROPOSED TWIN RISING MAINS
- 輸送至將軍澳基本污水處理廠  
CONVEY SEWAGE TO TSEUNG KWAN O PRELIMINARY TREATMENT WORKS

圖則名稱 drawing title  
工務工程計劃編號4214DS號  
將軍澳鄉村污水收集系統  
PWP ITEM NO. 4214DS  
TSEUNG KWAN O SEWERAGE FOR VILLAGES

繪畫 drawn SIGNED H. Y. LEE	日期 date 28 FEB 2019	修改項目 description	簡簽 initial
核對 checked SIGNED C. F. YEUNG	日期 date 28 FEB 2019	圖則編號 drawing no. DPM/4214DS/0007	比例 scale N.T.S.
批核 approved SIGNED C. H. CHAN	日期 date 28 FEB 2019	保留版權 COPYRIGHT RESERVED	
部門 office 工程管理部 PROJECT MANAGEMENT DIVISION	香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION		

## 4272DS – Port Shelter sewerage, stage 2

### PROJECT SCOPE

The part of **4272DS** that we propose to upgrade to Category A comprises –

- (a) the construction of a secondary sewage treatment works (STW) with a design capacity of about 2 050 cubic metres per day (m<sup>3</sup>/day) at Wo Mei;
- (b) the construction of a sewage pumping station (SPS) with a design capacity of about 1 350 m<sup>3</sup>/day at Wong Chuk Wan;
- (c) the construction of about 1.2 kilometre (km) of sewage rising mains along Tai Mong Tsai Road at Wong Chuk Wan;
- (d) the construction of about 4.2 km of gravity sewers in Wong Chuk Wan, Wo Mei and Heung Chung; and
- (e) ancillary works<sup>1</sup>.

———— A plan showing the locations of the proposed works is at **Annex to Enclosure 3**.

### JUSTIFICATIONS

2. Currently many parts of Sai Kung are covered by public sewerage system, but some of the village areas in the district within the Port Shelter catchment are unsewered, with their sewage disposed of by individual and simple on-site facilities such as septic tanks and soakaway (STS) systems<sup>2</sup>.

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<sup>1</sup> Ancillary works include the utilities diversion, road and drainage works, provision of manholes, temporary closure and reinstatement of carriageways/footpaths/open space, necessary architectural, building services and landscaping works that are required to complete the proposed works.

<sup>2</sup> STS systems operate by allowing the effluent to percolate through soil layers so that pollutants may be removed in a natural manner. However, if a STS system is located in an area where the ground water table

Extension of the public sewerage system to these areas can help improve environmental hygiene and further reduce the amount of pollutants being discharged into the nearby water bodies.

3. We now propose to provide public sewerage system for three unsewered areas within the Port Shelter catchment, namely Wong Chuk Wan, Wo Mei and Heung Chung through the proposed works. The proposed sewerage system will serve an estimated ultimate population of about 4 000.

4. Upon completion of the proposed works, sewage from Wong Chuk Wan will be pumped by the proposed SPS and be conveyed to the Sai Kung Sewage Treatment Works for proper treatment and disposal. Sewage from Wo Mei and Heung Chung will be treated by the proposed STW to be constructed at Wo Mei, and the treated effluent will be discharged into the nearshore waters of Hebe Haven.

5. Subject to funding approval of the Finance Committee, we aim to commence construction of the proposed works in the fourth quarter of 2019 for completion in the fourth quarter of 2024. The remainder of **4272DS** for provision of public sewerage system for another 17 unsewered areas in the Port Shelter catchment will be retained in Category B, with funding to be sought at a later stage after completion of the design and preparatory works.

## **FINANCIAL IMPLICATIONS**

6. We estimate that the total capital cost of the proposed works as detailed in paragraph 1 above to be \$515.9 million in money-of-the-day prices.

## **PUBLIC CONSULTATION**

7. We have been consulting relevant members of Sai Kung Rural Committee (SKRC) and Sai Kung District Council (SKDC) about the proposed works since September 2001, and have provided updates at the Housing and Environmental Hygiene Committee (HEHC) of the SKDC and the SKRC in March 2013 and March 2016 respectively, in which the proposed works were supported. We further consulted the HEHC on 15 November 2018. The Committee maintained their support for the proposed works.

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is high, such as an area in proximity to the seaside or watercourses, it will not function properly due to ineffective percolation. There are also maintenance problems with some STS systems.

8. We gazetted the proposed sewerage works in two packages under the Water Pollution Control (Sewerage) Regulation (Cap. 358AL) on 3 May 2013 and 14 December 2018 respectively. No objection was received. The proposed works were authorised on 18 July 2013 and 15 March 2019 respectively.

## **ENVIRONMENTAL IMPLICATIONS**

9. The proposed works are not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). Drainage Services Department (DSD) completed Preliminary Environmental Reviews (PER) for the proposed works in December 2010 and proposed STW at Wo Mei in September 2016. DSD then updated the PER of December 2010 for the proposed SPS in Wong Chuk Wan in January 2019. The PERs concluded and the Director of Environmental Protection agreed that the proposed works would not cause long-term adverse environmental impacts. We have included in the project estimate of the cost for implementing the necessary environmental mitigation measures.

10. During construction, we will control noise, dust and site run-off nuisance to within the established standards and guidelines through the implementation of the recommended mitigation measures in the relevant contract. These measures include the use of silenced construction equipment and temporary noise barriers to reduce noise impact, regular water-spraying the construction site to minimise the emission of fugitive dust, and on-site treatment of site run-off to minimise potential water quality impact. We will also carry out regular site inspections to ensure proper implementation of these recommended mitigation measures and good site practices.

11. For the operation phase of the proposed SPS in Wong Chuk Wan and the proposed STW in Wo Mei, we will implement the measures recommended in the respective PERs. The key measures will include placing most of the equipment in underground enclosed structures, provision of deodourisation units as well as landscaping works and vertical greening to the structures to minimise the potential noise, odour and visual impact to nearby sensitive receivers.

12. At the planning and design stages, we have considered ways to reduce the generation of construction waste where possible. In addition, we will require the contractor 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 to the public fill reception facilities

(PFRF<sup>3</sup>). We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

13. We will also require the contractor to submit for approval a plan setting out the waste management measures, including appropriate mitigation measures 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 contractor to separate inert and non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert and non-inert construction waste at PFRF and landfills respectively through a trip-ticket system.

14. We estimate that the proposed works will generate in total about 68 000 tonnes of construction waste. Of these, we will reuse about 38 000 tonnes (56%) of inert construction waste on site and deliver about 29 000 tonnes (43%) to PFRF for subsequent reuse. We will dispose of the remaining 1 000 tonnes (1%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be \$2.3 million for the proposed works (based on a unit charge rate of \$71 per tonne for disposal at PFRF and \$200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

## **HERITAGE IMPLICATIONS**

15. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites and buildings, sites of archaeological interest and government historic sites identified by the Antiquities and Monuments Office.

## **LAND ACQUISITION**

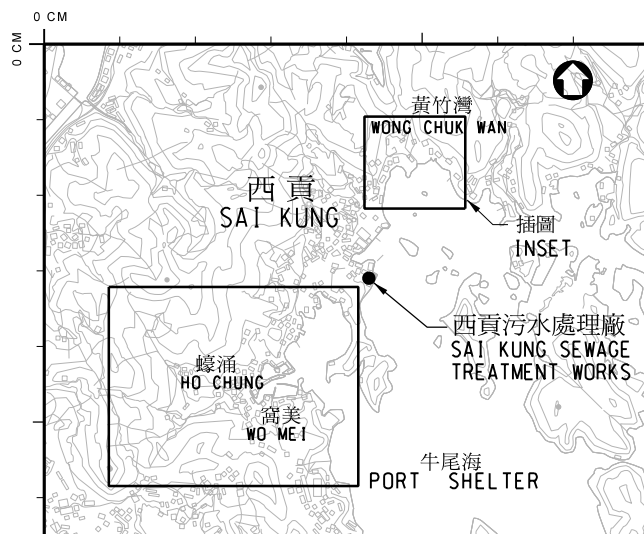
16. The proposed works will only involve government land. No land resumption is required.

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<sup>3</sup> PFRF are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in PFRF requires a licence issued by the Director of Civil Engineering and Development.



**Environment Bureau  
Drainage Services Department  
March 2019**



位置圖 LOCATION PLAN  
比例 SCALE 1 : 150 000

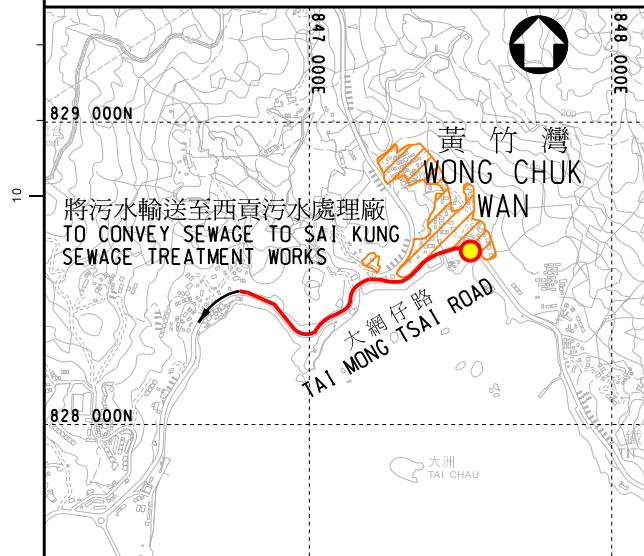




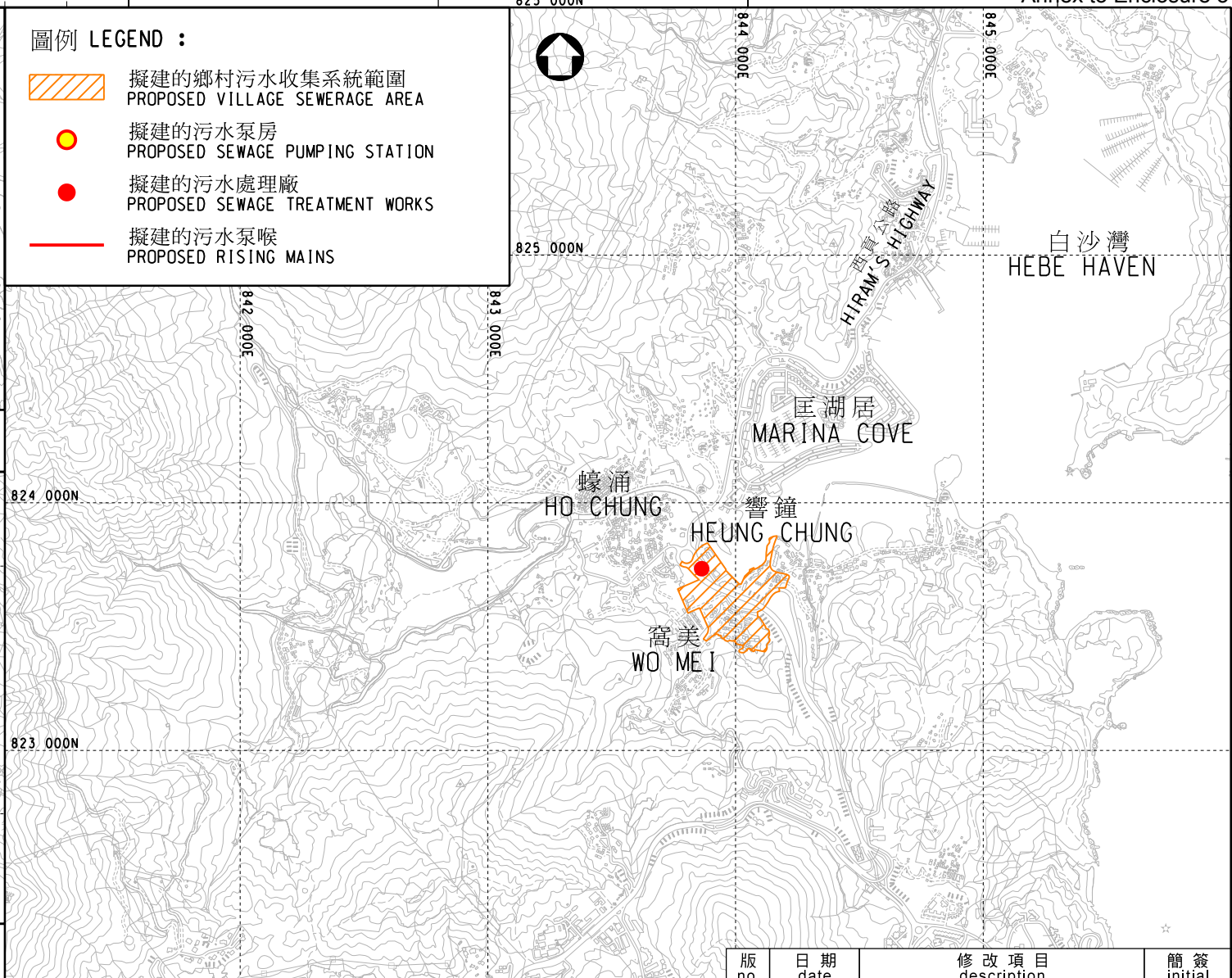


插圖 INSET  
比例 SCALE 1 : 25 000

圖例 LEGEND :

-  擬建的鄉村污水收集系統範圍  
PROPOSED VILLAGE SEWERAGE AREA
-  擬建的污水泵房  
PROPOSED SEWAGE PUMPING STATION
-  擬建的污水處理廠  
PROPOSED SEWAGE TREATMENT WORKS
-  擬建的污水泵喉  
PROPOSED RISING MAINS



圖則名稱 drawing title

工務工程計劃編號4272DS - 牛尾海污水收集系統第2階段  
PWP ITEM NO.4272DS - PORT SHELTER SEWERAGE, STAGE 2

繪畫 drawn	SIGNED K. S. LEUNG	日期 date	1 MAR 2019
核對 checked	SIGNED Ir C. F. WAN	日期 date	1 MAR 2019
批核 approved	SIGNED Ir S. C. CHIU	日期 date	1 MAR 2019
部門 office	顧問工程管理部 CONSULTANTS MANAGEMENT DIVISION		

修改項目 description	簡簽 initial
圖則編號 drawing no.	比例 scale
DCM/2019/018	1 : 25 000 OR AS SHOWN
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### 4273DS – Port Shelter sewerage, stage 3

#### PROJECT SCOPE

The part of **4273DS** that we propose to upgrade to Category A comprises –

- (a) the construction of a secondary sewage treatment works (STW) with a design capacity of about 140 cubic metres per day (m<sup>3</sup>/day) at Po Toi O;
- (b) the construction of a sewage pumping station (SPS) with a design capacity of about 3 400 m<sup>3</sup>/day at Tseng Lan Shue;
- (c) the construction of about 390 metres (m) of submarine outfall for the disposal of treated effluent from the proposed STW at Po Toi O;
- (d) the construction of about 800 m of rising mains in Tseng Lan Shue and Po Toi O;
- (e) the construction of about 13.3 kilometres (km) of gravity sewers in Tseng Lan Shue, Sam Long, Tai Po Tsai and Po Toi O; and
- (f) ancillary works<sup>1</sup>.

— A plan showing the locations of the proposed works is at **Annex to Enclosure 4**.

#### JUSTIFICATIONS

2. Currently many parts of Sai Kung are covered by public sewerage system, but some of the village areas in the district within the Port Shelter

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<sup>1</sup> Ancillary works include the utilities diversion, road and drainage works, provision of manholes, temporary closure and reinstatement of carriageways/footpaths/open space, necessary architectural, building services and landscaping works that are required to complete the proposed works.

catchment are unsewered, with their sewage disposed of by individual and simple on-site facilities such as septic tanks and soakaway (STS) systems<sup>2</sup>. Extension of the public sewerage system to these areas can help to improve environmental hygiene and further reduce the amount of pollutants being discharged into the nearby water bodies.

3. We now propose to provide public sewerage system for four unsewered areas, namely Tseng Lan Shue, Sam Long, Tai Po Tsai and Po Toi O through the proposed works. The proposed sewerage system will serve an estimated ultimate population of about 9 500.

4. Upon completion of the proposed works, sewage from Tseng Lan Shue and Sam Long will be pumped by the proposed SPS and be conveyed to the Kwun Tong Preliminary Treatment Works while the sewage from Tai Po Tsai will be conveyed to the Tseung Kwan O Preliminary Treatment Works for proper treatment and disposal. Sewage from Po Toi O will be treated by the proposed STW and the treated effluent will be discharged through the proposed submarine outfall into the Clear Water Bay away from the existing mariculture area.

5. Subject to funding approval of the Finance Committee, we aim to commence construction of the proposed works in the fourth quarter of 2019 for completion in the fourth quarter of 2024. The remainder of **4273DS** for provision of public sewerage system for another five unsewered areas in the Port Shelter catchment will be retained in Category B, with funding to be sought at a later stage after completion of the design and preparatory works.

## **FINANCIAL IMPLICATIONS**

6. We estimate that the total capital cost of the proposed works as detailed in paragraph 1 above to be \$668.2 million in money-of-the-day prices.

## **PUBLIC CONSULTATION**

7. We have been consulting relevant members of Hang Hau Rural

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<sup>2</sup> STS systems operate by allowing the effluent to percolate through soil layers so that pollutants may be 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 the seaside or watercourses, it will not function properly due to ineffective percolation. There are also maintenance problems with some STS systems.

Committee (HHRC) and Sai Kung District Council (SKDC) about the proposed works since October 2001, and have provided updates at the Housing and Environmental Hygiene Committee (HEHC) of the SKDC in March 2013, in which the proposed works were supported. We further consulted the HEHC on 15 November 2018. The Committee maintained their support for the proposed works.

8. We gazetted the proposed sewerage works in three packages under the Water Pollution Control (Sewerage) Regulation (Cap. 358AL). The first package for Tai Po Tsai was gazetted on 7 December 2012, it was authorised by The Chief Executive in Council on 17 January 2014 after considering the unresolved objections submitted by the members of the public. The second and third packages for the other three areas were gazetted on 14 March 2014 and 11 August 2017. They received no objections and were authorised on 6 June 2014 and 17 November 2017 respectively.

## **ENVIRONMENTAL IMPLICATIONS**

9. The proposed STW and submarine outfall at Po Toi O are designated projects under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) requiring an environmental permit (EP) for construction and operation. The Director of Environmental Protection (DEP) approved the EIA report and issued an EP for the construction and operation of the proposed works in January 2017. The approved EIA report has concluded that with implementation of the recommended mitigation measures, the proposed works would not cause adverse environmental impact. Drainage Services Department (DSD) will implement the mitigation measures recommended in the approved EIA report and comply with the conditions of the EP.

10. The proposed SPS at Tseng Lan Shue is a designated project under Schedule 2 of the EIA Ordinance (Cap. 499) requiring an EP for its construction and operation. Having regard to the project profile (PP), DEP is satisfied that with implementation of the recommended measures, the proposed works would not cause adverse environmental impact. With the consent of the Secretary for the Environment, the permission to apply directly for an EP was granted in December 2018. An EP for the construction and operation of the proposed works was issued in February 2019. DSD will implement the measures set out in the PP and comply with the conditions of the EP.

11. The remaining part of **4273DS** we propose to upgrade to Category A are not a designated project under the EIA Ordinance (Cap. 499). DSD completed a Preliminary Environmental Review (PER) for the remaining

proposed works in December 2010 and updated the PER in January 2019. The PER concluded and the DEP agreed that, with the implementation of appropriate mitigation measures, the proposed works would not cause any adverse environmental impacts.

12. During construction of the proposed works under 4273DS, DSD will adapt non-dredge trenchless construction method and water-tight cofferdam during submarine outfall construction, and implement measures to control noise, dust and site run-off nuisance to within the established standards and guidelines, as well as the environmental monitoring and audit (EM&A) programme in the relevant contract. These measures include the use of silenced construction equipment and temporary noise barriers to reduce noise impact, regular water-spraying the construction site to minimise the emission of fugitive dust, and on-site treatment of site run-off to minimise potential water quality impact. We have included in the project estimate of the cost for implementing the environmental mitigation measures and the EM&A programme.

13. For the operation phase, we will implement the measures recommended in the relevant PER, PP, EIA Report and stipulated in the relevant EPs. For the operation of the proposed STW in Po Toi O and the proposed SPS in Tseng Lan Shue, the key measures will include placing most of the equipment in underground enclosed structure, provision of deodourisation units as well as landscaping works and vertical greening to the structures to minimise potential noise, odour and visual impact to nearby sensitive receivers.

14. At the planning and design stages, we have considered ways to reduce the generation of construction waste where possible. In addition, we will require the contractor 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 to the public fill reception facilities (PFRF<sup>3</sup>). We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

15. We will also require the contractor to submit for approval a plan setting out the waste management measures, including appropriate mitigation measures 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 contractor to separate inert and non-inert construction waste

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<sup>3</sup> PFRF are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in PFRF requires a licence issued by the Director of Civil Engineering and Development.

on site for disposal at appropriate facilities. We will control the disposal of inert and non-inert construction waste at PFRF and landfills respectively through a trip-ticket system.

16. We estimate that the proposed works will generate 150 000 tonnes of construction waste. Of these, we will reuse about 97 300 tonnes (65%) of inert construction waste on site and deliver about 51 600 tonnes (34%) to PFRF for subsequent reuse. We will dispose of the remaining 1 100 tonnes (1%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be \$3.9 million for the proposed works (based on a unit charge rate of \$71 per tonne for disposal at PFRF and \$200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap 354N)).

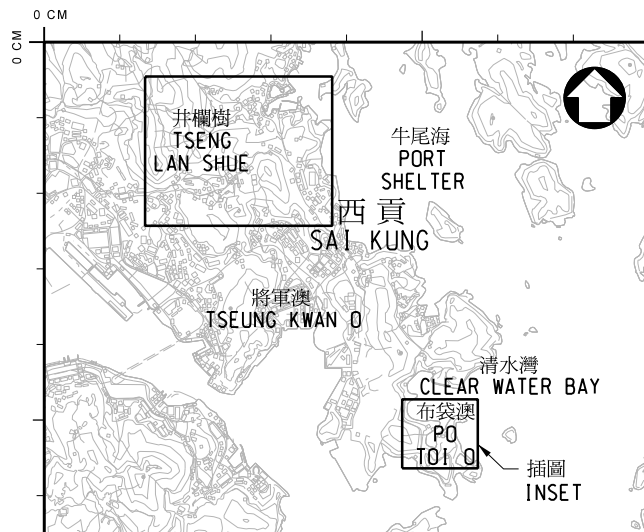
## **HERITAGE IMPLICATIONS**

17. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites or buildings, sites of archaeological interest and government historic sites identified by the Antiquities and Monuments Office.

## **LAND ACQUISITION**

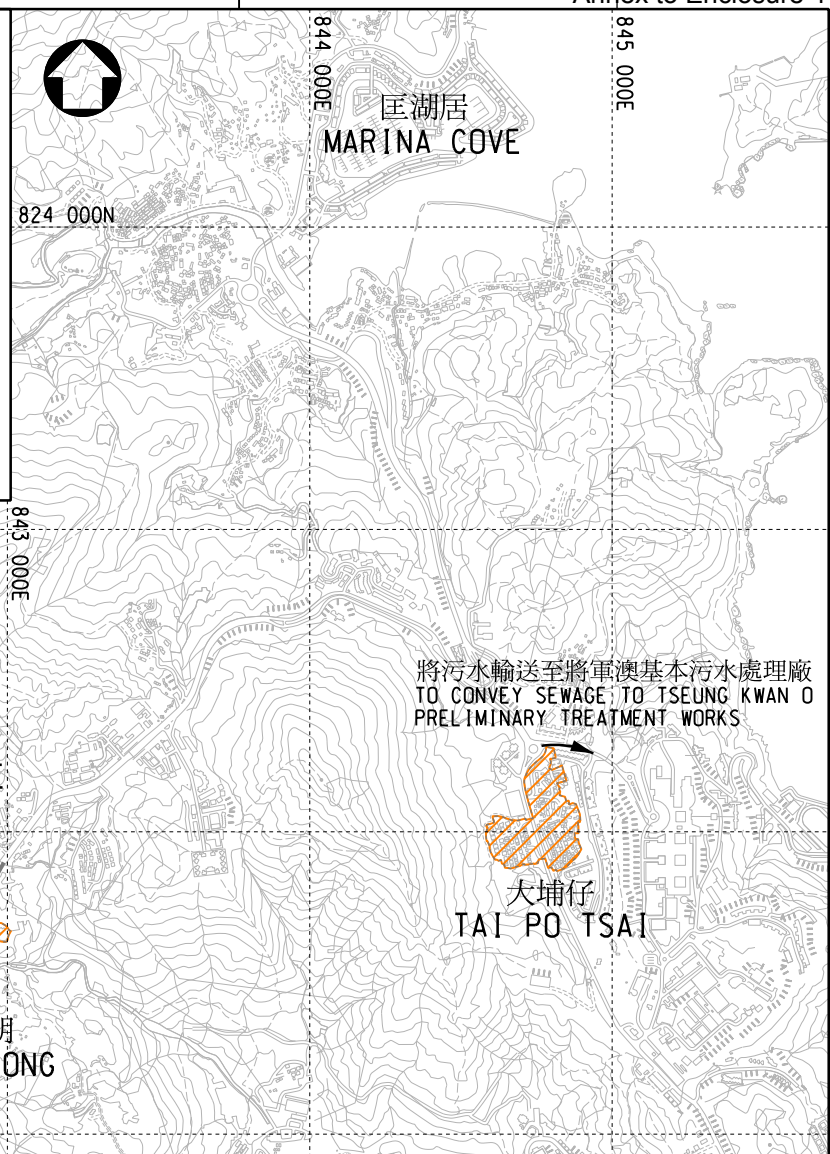
18. 53 private lots (about 1 496 square metres) will need to be resumed for implementing the proposed works. Site clearance will not affect any household or structure.

**Environment Bureau  
Drainage Services Department  
March 2019**



圖例 LEGEND :

- 擬建的鄉村污水收集系統範圍  
PROPOSED VILLAGE SEWERAGE AREA
- 擬建的污水泵房  
PROPOSED SEWAGE PUMPING STATION
- 擬建的污水處理廠  
PROPOSED SEWAGE TREATMENT WORKS
- 擬建的泵喉  
PROPOSED RISING MAINS
- 擬建的海底排放管  
PROPOSED SUBMARINE OUTFALL
- 現有的污水渠  
EXISTING SEWERS



位置圖 LOCATION PLAN

比例 SCALE 1 : 200 000

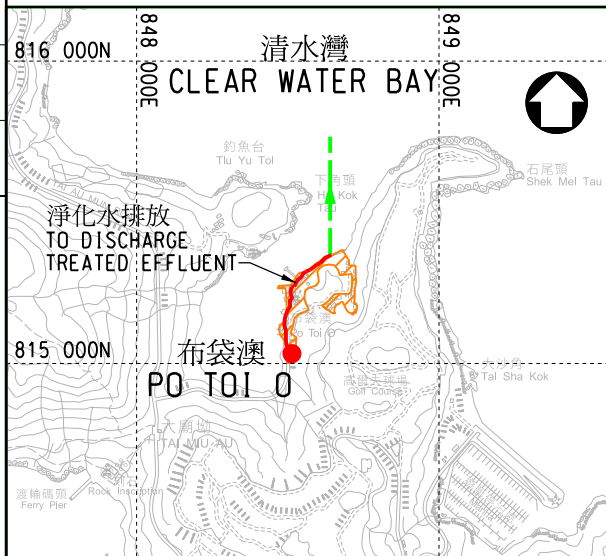
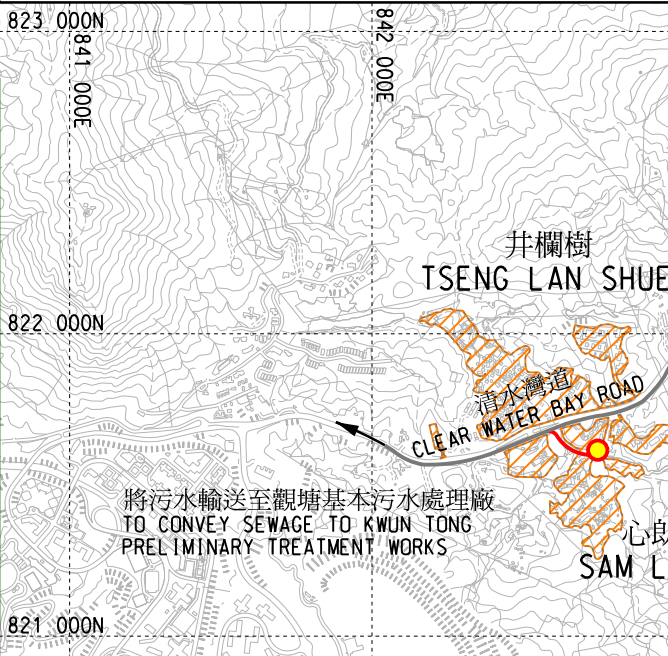


插圖 INSET

比例 SCALE 1 : 25 000



圖則名稱 drawing title

工務工程計劃編號4273DS - 牛尾海污水收集系統第3階段  
PWP ITEM NO.4273DS - PORT SHELTER SEWERAGE, STAGE 3

繪畫 drawn  
SIGNED K. S. LEUNG

核對 checked  
SIGNED Ir C. F. WAN

批核 approved  
SIGNED Ir S. C. CHIU

部門 office  
顧問工程管理部

CONSULTANTS MANAGEMENT DIVISION

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**4389DS – Upgrading of West Kowloon and Tsuen Wan sewerage – phase 2**

**PROJECT SCOPE**

The proposed scope of works under **4389DS** comprises –

- (a) the construction of about 33.5 kilometres (km) of gravity sewers in West Kowloon and Tsuen Wan;
- (b) the demolition of about 19 km of existing gravity sewers;
- (c) the provision of internal lining at 28 existing sewer crossings within stormwater box culverts; and
- (d) ancillary works<sup>1</sup>.

Plans showing the locations of the proposed works are at **Annex 1 to Enclosure 5**.

**JUSTIFICATIONS**

2. Owing to natural population growth and planned housing development, sewage flow in the West Kowloon and Tsuen Wan region<sup>2</sup> (the region) is projected to increase by 33% from 2006 to 2036. Upgrading works of the existing sewerage system in the region can make available sufficient capacity to accommodate the projected flow increase and to reduce the risk of pollution caused by leakage from aging sewers.

3. We now propose to implement the sewerage upgrading works, which involve the demolishment and replacement of about 19 km of existing gravity sewers by larger gravity sewers and the construction of another 14.5 km of new gravity sewers in the region. The diameters of these replacement and new sewers range from 225 mm to 1 500 mm. Trenchless technologies will be

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<sup>1</sup> Ancillary works include the utilities diversion, road and drainage works, provision of manholes, temporary closure and reinstatement of carriageways/footpaths/open space required to facilitate the sewerage works.

<sup>2</sup> The region covers districts of Sham Shui Po, Kowloon City, Mong Kok, Yau Ma Tei, Tsuen Wan and Kwai Chung with a total planned population of 2.8 million.

employed, where appropriate, to reduce inconvenience to the public.

4. To minimise the risk of sewage leakage causing pollution to the stormwater drainage system and coastal waters, we also propose to install internal lining to existing sewer in the region at 28 locations where the sewer pipes cross through stormwater box culverts, which will further improve the coastal water quality and the associated odour problem in these areas.

5. Subject to the funding approval of the Finance Committee, we aim to commence construction of the proposed works in the fourth quarter of 2019 for completion in the second quarter of 2026.

## **FINANCIAL IMPLICATIONS**

6. We estimate that the total capital cost of the proposed works as detailed in paragraph 1 above to be \$2,285.5 million in money-of-the-day prices.

## **PUBLIC CONSULTATION**

7. We consulted the relevant Committees of five District Councils during the period from October 2018 to January 2019 as listed in **Annex 2 to Enclosure 5**. These Committees supported the proposed works.

## **ENVIRONMENTAL IMPLICATIONS**

8. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). The Drainage Services Department completed a Preliminary Environmental Review (PER) for the proposed works in March 2016. The PER concluded and the Director of Environmental Protection agreed that, with the implementation of appropriate mitigation measures as mentioned in the following paragraphs, the proposed works would not have any long-term adverse environmental impacts. We have included in the project estimate of the proposed works the cost for implementation of the environmental mitigation measures.

9. For the construction phase, we will control noise, dust and site run-off nuisance to within the established standards and guidelines through the implementation of the recommended mitigation measures in the relevant contract. These measures include the use of silenced construction equipment

and temporary noise barriers to reduce noise impact. In addition, water-spraying to the construction site will be applied regularly to minimise emission of fugitive dust, and on-site treatment of site run-off will be carried out to minimise potential water quality impact. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good practices will be properly implemented on site.

10. At the planning and design stages, we have considered ways to reduce the generation of construction waste (e.g. use of common trenches to minimise excavation works) where possible. In addition, we will require the contractor 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 to the public fill reception facilities (PFRF<sup>3</sup>). We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

11. We will also require the contractor 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 contractor to separate inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert and non-inert construction waste at PFRF and landfills respectively through a trip-ticket system.

12. We estimate that the proposed works will generate in total about 279 500 tonnes of construction waste. Of these, we will reuse about 104 000 tonnes (37%) of inert construction waste on site, and deliver the 156 500 tonnes (56%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 19 000 tonnes (7%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be \$14.9 million for the proposed works (based on a unit charge rate of \$71 per tonne for disposal at PFRF and \$200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

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<sup>3</sup> PFRF are specified in Schedule 4 of Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in PFRF requires a licence issued by the Director of Civil Engineering and Development.

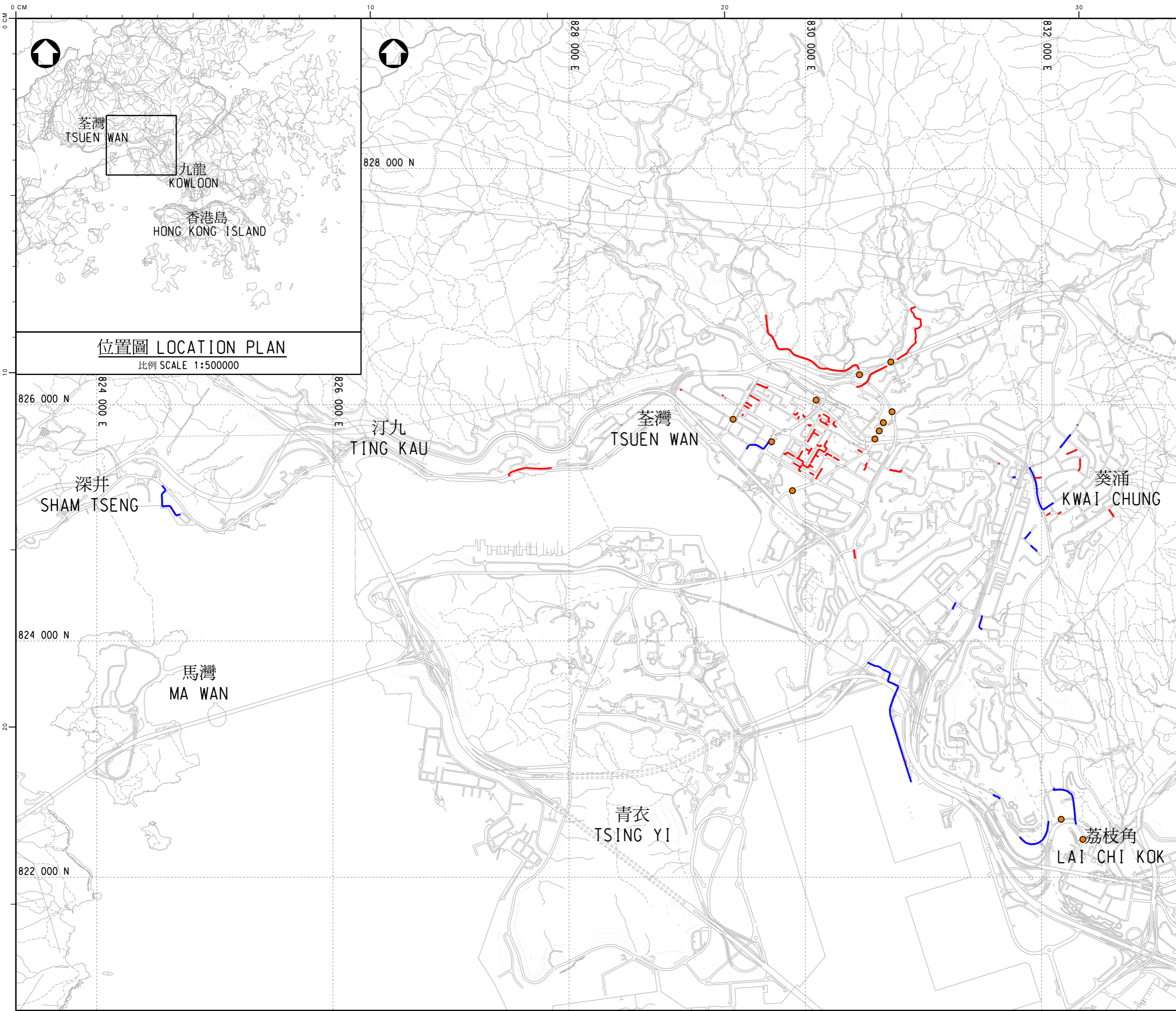
## **HERITAGE IMPLICATIONS**

13. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites and buildings, sites of archaeological interest and government historic sites identified by the Antiquities and Monuments Office.

## **LAND ACQUISITION**

14. The proposed works will only involve government land. No land resumption is required.

**Environment Bureau  
Drainage Services Department  
March 2019**



- 圖例  
LEGEND :
- 擬議改善污水渠  
PROPOSED SEWERS TO BE UPGRADED
  - 擬議新污水渠  
PROPOSED NEW SEWERS
  - 擬議污水渠與箱形雨水渠的相交處鋪設內捕層  
PROPOSED INTERNAL LINING AT SEWER CROSSINGS WITHIN STORMWATER BOX CULVERTS

位置圖 LOCATION PLAN  
比例 SCALE 1:500000

版 no.	日期 date	修改項目 description	簡簽 initial
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修訂 REVISION

	姓名 name	日期 date
繪畫 drawn	SIGNED K. S. LEUNG	1 FEB 2019
核對 checked	SIGNED Ir K. M. FU	1 FEB 2019
批核 approved	SIGNED Ir H. H. CHEUNG	1 FEB 2019

圖則名稱 drawing title

工務工程計劃編號 4389DS  
- 九龍西部及荃灣污水系統改善工程 - 第二期  
PWP ITEM NO. 4389DS  
- UPGRADING OF WEST KOWLOON AND TSUEN WAN SEWERAGE - PHASE 2

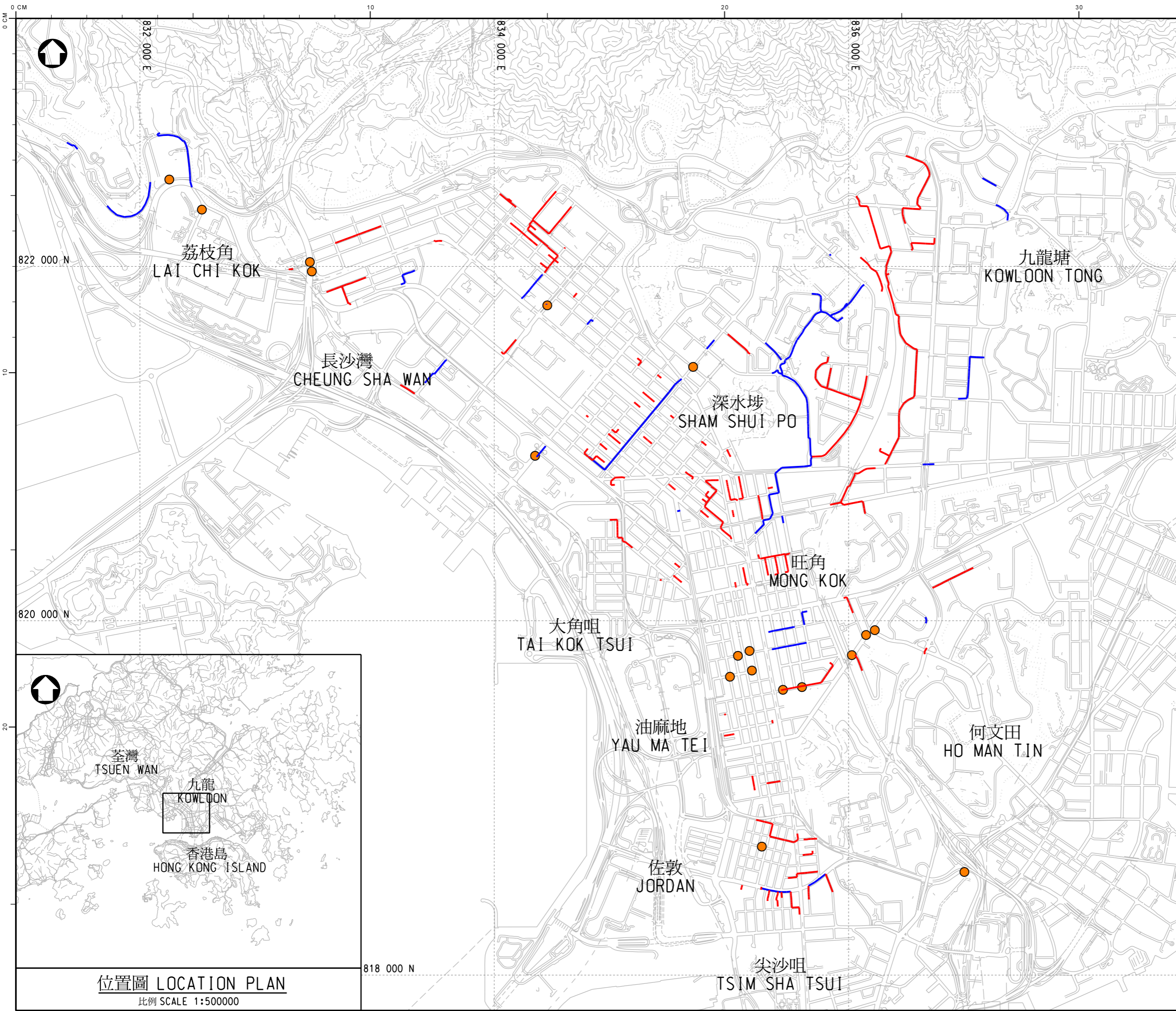
全二張其一 (SHEET 1 OF 2)

圖則編號 drawing no.	比例 scale
DCM/2018/033	1 : 30 000 OR AS SHOWN

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DRAINAGE SERVICES DEPARTMENT  
GOVERNMENT OF THE  
HONG KONG  
SPECIAL ADMINISTRATIVE REGION



- 圖例  
LEGEND :
- 擬議改善污水渠  
PROPOSED SEWERS TO BE UPGRADED
  - 擬議新污水渠  
PROPOSED NEW SEWERS
  - 擬議污水渠與箱形雨水渠的相交處鋪設內捕層  
PROPOSED INTERNAL LINING AT SEWER CROSSINGS WITHIN STORMWATER BOX CULVERTS

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		姓名 name	日期 date
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批核 approved		SIGNED Ir H. H. CHEUNG	1 FEB 2019

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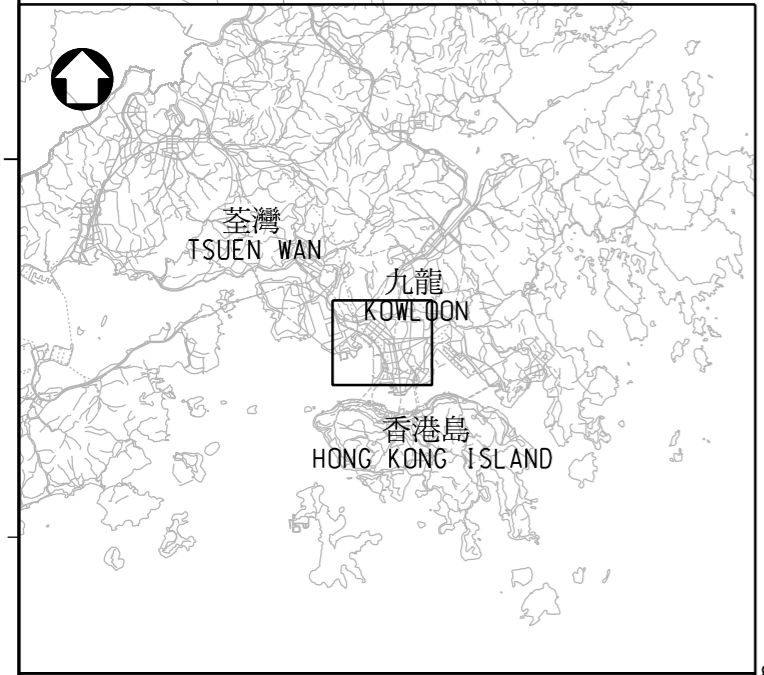
工務工程計劃編號 4389DS  
- 九龍西部及荃灣污水系統改善工程 - 第二期  
PWP ITEM NO. 4389DS  
- UPGRADING OF WEST KOWLOON AND TSUEN WAN SEWERAGE - PHASE 2

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位置圖 LOCATION PLAN  
比例 SCALE 1:500000

**4389DS - Upgrading of West Kowloon and  
Tsuen Wan sewerage – phase 2**

**Consultation with District Councils**

<b>Date</b>	<b>District Council</b>	<b>Committee</b>
16 Oct 2018	Kwai Tsing	Planning and District Facilities Management Committee
1 Nov 2018	Tsuen Wan	Environmental and Health Affairs Committee
5 Nov 2018	Tsuen Wan	Traffic and Transport Committee
8 Nov 2018	Kowloon City	Housing and Infrastructure Committee
15 Nov 2018	Yau Tsim Mong	Traffic, Transport and Housing Committee
6 Dec 2018	Sham Shui Po	Transport Affairs Committee
3 Jan 2019	Yau Tsim Mong	Traffic, Transport and Housing Committee

## 4391DS - West Kowloon and Tsuen Wan village sewerage

### PROJECT SCOPE

The part of **4391DS** that we propose to upgrade to Category A comprises –

- (a) the construction of eight dry weather flow interceptors (DWFIs)<sup>1</sup> in Kwai Chung and Tsuen Wan; and
- (b) ancillary works<sup>2</sup>.

———— A plan showing the locations of the proposed works is at **Annex to Enclosure 6**.

### JUSTIFICATIONS

2. Sewage discharge from the unsewered villages in West Kowloon and Tsuen Wan is one of the sources of pollution at the coastal area of Tsuen Wan Bay and Rambler Channel, and the provision of sewerage system for these areas can reduce pollution to the receiving water.

3. Eight villages/areas in Kwai Chung and Tsuen Wan (namely Kwong Pan Tin Tsuen, San Tsuen Northeast, Fu Yung Shan, Wo Yi Hop Upper Village, Hon Man Squatter Area, Sam Tung Uk, Sheung Yat Chuen and Shek Lei Hang) with around 1 200 inhabitants living mostly in temporary structures have no access to public sewerage system. Only a few village houses thereat are equipped with individual and simple on-site facilities such as septic tank and soakaway (STS) systems<sup>3</sup> and it is not appropriate to provide permanent sewers for temporary structures.

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<sup>1</sup> DWFI is a device that intercepts and diverts polluted dry weather flow from a stormwater drain / channel into the sewerage system during non-rainy days for treatment.

<sup>2</sup> Ancillary works include the utilities diversion, road and drainage works required to complete the construction of the DWFIs.

<sup>3</sup> STS systems operate by allowing the effluent to percolate through soil layers so that pollutants may be 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 the seaside or watercourses, it will not function properly due to ineffective percolation. There are also maintenance problems with some STS systems.



4. To improve the situation, we propose to construct eight new DWFIs at critical locations to intercept the polluted stormwater and convey it to the Stonecutters Island Sewage Treatment Works for proper treatment and disposal. Upon completion, it is envisaged that the new DWFIs can remove about 70% of the total annual pollution loading arising from the corresponding stormwater drainage system, thereby improving the water quality of the receiving waters of Tsuen Wan Bay and Rambler Channel.

5. Subject to the funding approval of the Finance Committee, we aim to commence construction of the proposed works in the fourth quarter of 2019 for completion in the fourth quarter of 2023. The remainder of **4391DS** for the provision of sewers for other nine unsewered areas in West Kowloon and Tsuen Wan will be retained in Category B, with funding to be sought at a later stage after completion of the design and preparatory work.

## **FINANCIAL IMPLICATIONS**

6. We estimate that the total capital cost of the proposed works as detailed in paragraph 1 above to be \$104.1 million in money-of-the-day prices.

## **PUBLIC CONSULTATION**

7. We consulted the Environmental and Health Affairs Committee of Tsuen Wan District Council and the Community Affairs Committee of Kwai Tsing District Council on 7 July 2016 and 26 July 2016 respectively. Both Committees supported the proposed works.

## **ENVIRONMENTAL IMPLICATIONS**

8. The project is not a designated project under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499). The Drainage Services Department completed a Preliminary Environmental Review (PER) for the proposed works in September 2016. The PER has concluded and the Director of Environmental Protection agreed that, with the implementation of appropriate mitigation measures as mentioned in the following paragraphs, the proposed works would not impose long-term adverse environmental impacts. We have included in the project estimate the cost for implementation of the environmental mitigation measures.

9. For the construction phase, we will control noise, dust and site run-off nuisances to levels within the established standards and guidelines through implementation of the recommended mitigation measures including the use of silenced construction equipment and temporary noise barriers to reduce noise impact. In addition, water-spraying to the construction site will be applied regularly to minimise emission of fugitive dust, and on-site treatment of site run-off will be carried out to minimise potential water quality impact. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good practices will be properly implemented on site.

10. At the planning and design stages, we have considered ways to reduce the generation of construction waste where possible (e.g. the proposed DWFI's were properly designed to minimise excavation works). 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 to the public fill reception facilities (PFRF<sup>4</sup>). We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

11. We will also require the contractor 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 contractor to separate the inert portion from the non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert and non-inert construction waste at PFRF and landfills respectively through a trip-ticket system.

12. We estimate that the proposed works will generate in total about 2 420 tonnes of construction waste. Of these, we will reuse about 1 760 tonnes (73%) of inert construction waste on site, and deliver 630 tonnes (26%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 30 tonnes (1%) non-inert construction waste to landfill. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be \$50,730 for the proposed work (based on a unit charge rate of \$71 per tonne for disposal at PFRF and \$200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

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<sup>4</sup> PFRF are specified in Schedule 4 of Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in PFRF requires a licence issued by the Director of Civil Engineering and Development.

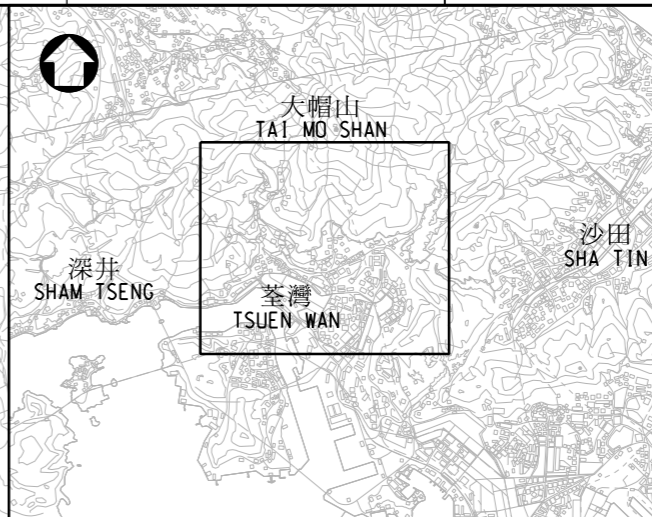
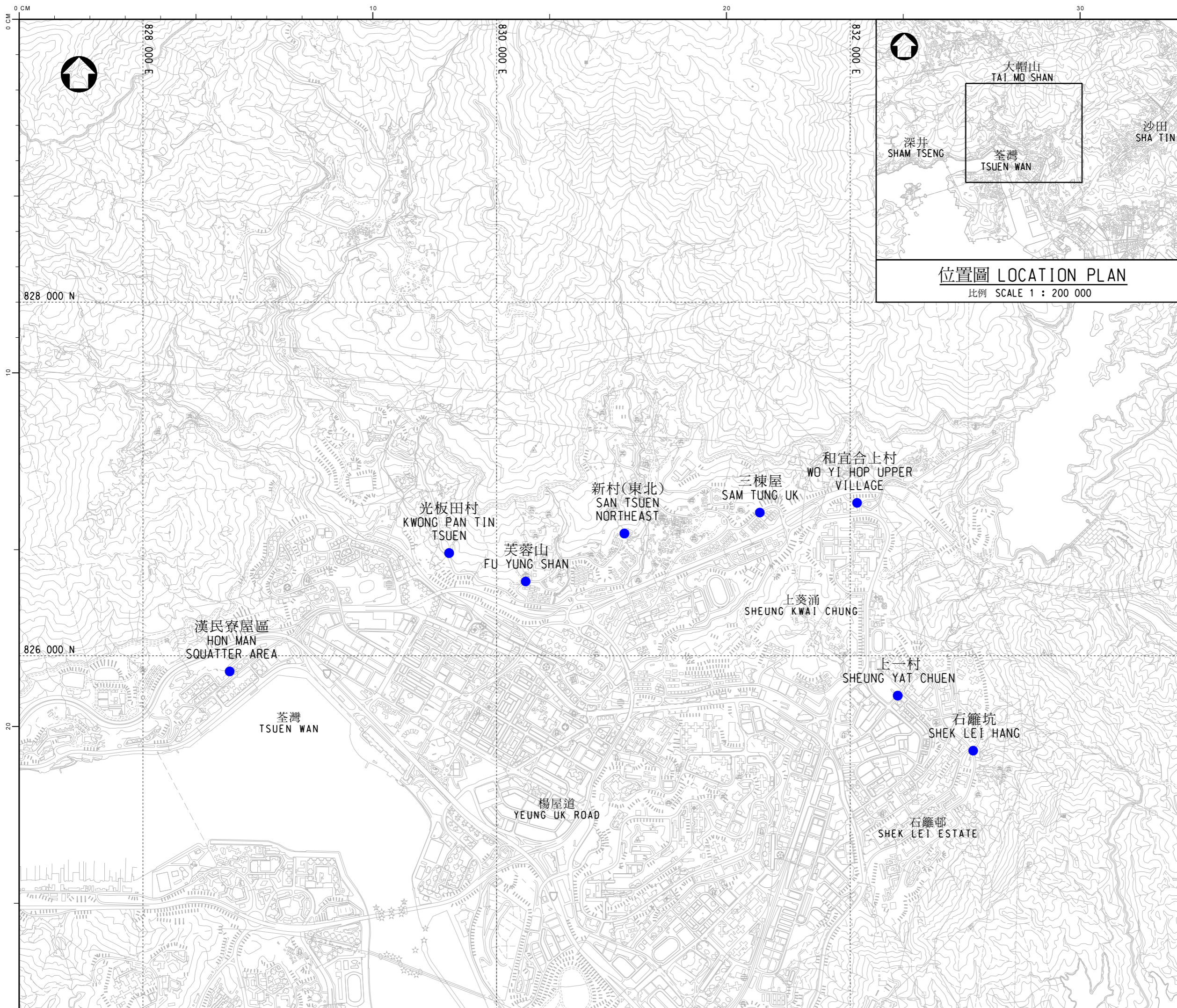
## **HERITAGE IMPLICATIONS**

13. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites and buildings, sites of archaeological interest and government historic sites identified by the Antiquities and Monuments Office.

## **LAND ACQUISITION**

14. The proposed works will only involve government land. No land resumption is required.

**Environment Bureau  
Drainage Services Department  
March 2019**



位置圖 LOCATION PLAN  
比例 SCALE 1 : 200 000

圖例 LEGEND :  
● 擬建的旱季截流器  
PROPOSED DRY WEATHER FLOW INTERCEPTOR

版 no.	日期 date	修改項目 description	簡簽 initial
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修訂 REVISION

	姓名 name	日期 date
繪畫 drawn	SIGNED K. S. LEUNG	4 FEB 2019
核對 checked	SIGNED Ir C. H. WONG	4 FEB 2019
批核 approved	SIGNED Ir H. H. CHEUNG	4 FEB 2019

圖則名稱 drawing title

工務工程計劃編號 4391DS  
- 九龍西部及荃灣鄉村污水收集系統工程  
PWP ITEM NO. 4391DS  
- WEST KOWLOON AND TSUEN WAN VILLAGE SEWERAGE

圖則編號 drawing no.	比例 scale
DCM/2018/031	1 : 20 000 OR AS SHOWN

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部門 office  
**顧問工程管理部**  
CONSULTANTS MANAGEMENT DIVISION

香港特別行政區政府渠務署  
DRAINAGE SERVICES DEPARTMENT  
GOVERNMENT OF THE HONG KONG  
SPECIAL ADMINISTRATIVE REGION