For discussion
on 29 April 2019

Legislative Council
Panel on Environmental Affairs

San Shek Wan Sewage Treatment Works in South Lantau, Provision of Sewerage Network in South Lantau and Tolo Harbour, and Rehabilitation of Underground Sewers in Kowloon

PURPOSE

This paper seeks Members' views on our proposals to upgrade the following sewerage items to Category A. These sewerage items include the construction of the San Shek Wan Sewage Treatment Works in South Lantau, provision of sewerage network to parts of the unsewered areas in South Lantau and Tolo Harbour catchment, and rehabilitation of ageing underground sewers in Kowloon -

(a) part of **4331DS – Outlying Islands sewerage, stage 2 − South Lantau sewerage works** at an estimated cost of $1,688.8 million in money-of-the day (MOD) prices;

(b) part of **4125DS – Tolo Harbour sewerage of unsewered areas, stage 2** at an estimated cost of $308.1 million in MOD prices; and

(c) part of **4414DS – Rehabilitation of underground sewers** at an estimated cost of $306.1 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. In addition, there is a need to rehabilitate some of the ageing underground sewers in Kowloon to prevent pollution and protect public

health.

3. On 25 March 2019, Members supported six sewerage projects for Cheung Chau, Sai Kung, Kowloon and Tsuen Wan. This composite paper consists of another three projects covering districts of South Lantau, Sha Tin and Tai Po and in Kowloon, of which their consultation and design works were just completed. Details of the proposals are at **Enclosures 1** to **3** respectively.

4. We will continue to pursue various projects in various areas of the territory to expand or rehabilitate our sewerage network and to enhance the quality of coastal waters of Victoria Harbour and other water bodies.

WAY FORWARD

5. We plan to seek funding approval from the Finance Committee for the proposed works under part of **4331DS**, part of **4125DS**, and part of **4414DS** after consulting the Public Works Subcommittee. Members are invited to comment on these three funding applications.

Environment Bureau
Drainage Services Department
April 2019

Enclosure 1

4331DS – Outlying Islands sewerage, stage 2
– South Lantau sewerage work

PROJECT SCOPE

The part of **4331DS** that we propose to upgrade to Category A comprises –

(a) the construction of a secondary sewage treatment works (STW) with design capacity of 5 800 cubic metres per day (m^3/day) at San Shek Wan in South Lantau;

(b) the construction of a sewage pumping station (SPS) with a design capacity of about 1 960 m^3/day at Pui O;

(c) the construction of about 1.4 kilometres (km) of submarine outfall for the disposal of treated effluent from the proposed STW at San Shek Wan;

(d) the construction of about 4.1 km of gravity sewers along South Lantau Road and Chi Ma Wan Road and at Pui O Lo Uk;

(e) the construction of about 1.2 km of twin rising mains along South Lantau Road and Chi Ma Wan Road; and

(f) ancillary works[1].

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

[1] Ancillary works include architectural works, landscaping works and building services works for the proposed STW and SPS, utility diversion, temporary closure and reinstatement of carriageways/footpaths/open space necessary for completion of the proposed works.

JUSTIFICATIONS

2. Currently, there is no public sewerage system along the central coastal area of South Lantau between Shui Hau and Ham Tin, and sewage from this area is often treated and disposed of by means of private on-site treatment facilities such as septic tanks and soakaway (STS) systems[2]. Provision of the public sewerage system to this area can help improve environmental hygiene by reducing the amount of pollutants being discharged into the receiving coastal waters and protect the water quality of nearby bathing beaches.

3. According to the natural population growth projection and the planned housing development, sewage flow in South Lantau is projected to reach 5 800 m^3/day from an ultimate population of around 12 600 after 20 years. To meet the sewage disposal need, we propose to construct a trunk sewerage system for Pui O area, a secondary STW at San Shek Wan and a village sewerage system for Lo Uk.

4. Upon completion of the proposed works, sewage from the area will be conveyed to the proposed STW for proper treatment and the treated effluent will be discharged into the sea about 1.1 km off the South Lantau coast.

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 third quarter of 2025. The remainder of **4331DS** for provision of public sewerage system for another eight unsewered areas within the catchment of the proposed STW will be retained in Category B, with funding to be sought at a later stage after completion of the design and preparatory works.

[2] 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.

FINANCIAL IMPLICATIONS

6. We estimate that the total capital cost of the proposed works as detailed in paragraph 1 above to be $1,688.8 million in money-of-the-day prices.

PUBLIC CONSULTATION

7. We have been consulting relevant members of the South Lantau Rural Committee and the Islands District Council (IsDC) about the proposed works since August 2010, and they supported the proposed works. We further consulted the Tourism, Agriculture, Fisheries and Environmental Hygiene Committee of the IsDC in July 2011 and November 2018. The Committee maintained their support for the proposed works.

8. We gazetted the proposed submarine outfall under the Foreshore and Sea-bed (Reclamations) Ordinance (Cap. 127) on 25 October 2013. No objection was received and the proposed works were authorised on 17 November 2017.

9. We gazetted the proposed STW under the Water Pollution Control (Sewerage) Regulation (Cap. 358AL) on 16 December 2016. No objection was received and the proposed works were authorised on 5 October 2018.

10. We gazetted the proposed sewerage system for Pui O and Lo Uk sewerage works under the Water Pollution Control (Sewerage) Regulation (Cap. 358AL) on 1 March 2019. If no objection is received upon the expiry of the gazettal on 30 April 2019, the proposed works will be authorised. If objections are received within the objection period and cannot be resolved, the proposed works will be submitted to the Chief Executive in Council for consideration.

ENVIRONMENTAL IMPLICATIONS

11. 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 April 2017, the Environmental Impact Assessment (EIA) Report for the project was approved with conditions 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 July 2017. We will implement the measures recommended in the EIA Report and the EP as well as the environmental monitoring and audit programme to ascertain the effectiveness of the mitigation measures. The key mitigation measures for San Shek Wan STW and Pui O SPS include placing most of their equipment in underground enclosed structures, provision of deodorization units as well as landscaping works and green roof to the structures to minimise the potential noise, odour and visual impact to nearby sensitive receivers. We have included in the project estimate of the proposed works the cost for implementation of the necessary environmental mitigation measures.

12. For the construction phase, we will adopt non-dredge trenchless method for the outfall construction to avoid disturbing the seabed and will conduct removal of sediment at the proposed outfall diffuser by closed grab dredgers surrounded by silt curtains to minimise adverse impact on water quality. 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.

13. 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 public fill reception facilities (PFRF)[3]. We will encourage the contractors to maximise the use of

[3] Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of

recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

14. 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 the 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.

15. We estimate that the proposed works will generate in total about 113 600 tonnes of construction waste. Of these, we will reuse about 44 840 tones (39.5%) of inert construction waste on site and deliver about 68 420 tonnes (60.2%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 340 tonnes (0.3%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be $4.9 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

16. The proposed works will not affect declared monuments, proposed monuments, graded historic sites or buildings, and government historic sites identified by the Antiquities and Monuments Office. As part of the proposed works will be executed within the Pui O Site of Archaeological Interest, we will implement the mitigation measures as recommended by the approved EIA Report accordingly. A marine archaeological investigation has been conducted under the EIA. It concluded that adverse impact on marine archaeology was not anticipated.

Construction Waste) Regulation (Cap 354N). Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

LAND ACQUISTION

17. Four private agricultural lots (about 203.5 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
April 2019

圖例
LEGEND:

- 擬建污水處理廠集水範圍 CATCHMENT AREA OF PROPOSED SEWAGE TREATMENT WORKS
- 擬建的污水管道 PROPOSED SEWERS
- 擬建的污水泵喉 PROPOSED RISING MAINS
- 擬建的海底管道 PROPOSED SUBMARINE OUTFALL
- 擬建的污水處理廠 PROPOSED SEWAGE TREATMENT WORKS
- 擬建的污水泵房 PROPOSED SEWAGE PUMPING STATION
- 擬建的鄉村污水收集系統範圍 PROPOSED AREA FOR VILLAGE SEWERAGE WORKS

大嶼山
LANTAU ISLAND

貝澳羅屋村
PUI O LO UK TSUEN

嶼南路
SOUTH LANTAU ROAD

貝澳
PUI O

芝麻灣路
CHI MA WAN ROAD

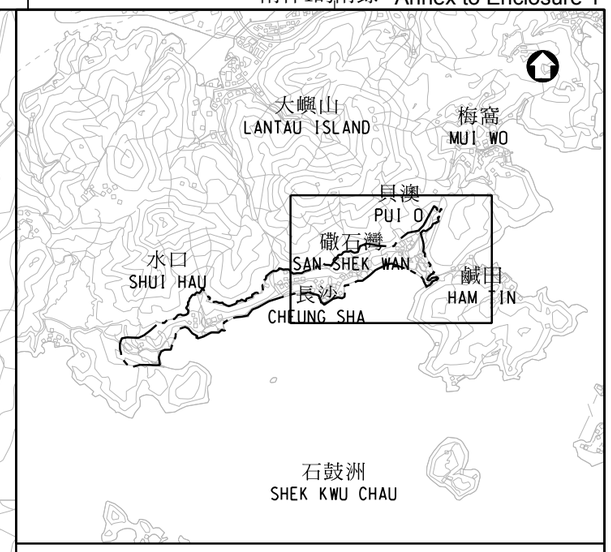
磡石灣
SAN SHEK WAN

長沙
CHEUNG SHA

貝澳沙灘
PUI O BEACH

1.1 公里
1.1 km

1.4 公里
1.4 km



位置圖 LOCATION PLAN
比例 SCALE 1 : 150 000

圖則名稱 drawing title

工務工程計劃編號4331DS - 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.4331DS - OUTLYING ISLANDS SEWERAGE STAGE 2
- SOUTH LANTAU SEWERAGE WORKS

版 no.	日期 date	修改項目 description	簡簽 initial

繪畫 drawn	SIGNED K. S. LEUNG	日期 date 09 APR 2019
核對 checked	SIGNED Ir W. K. LIN	日期 date 09 APR 2019
批核 approved	SIGNED Ir L. CHEN	日期 date 09 APR 2019
部門 office	顧問工程管理部 CONSULTANTS MANAGEMENT DIVISION	

圖則編號 drawing no. DCM/2019/001
比例 scale 1:12 500

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

4125DS — Tolo Harbour sewerage of unsewered areas, stage 2

PROJECT SCOPE

The part of **4125DS** that we propose to upgrade to Category A comprises –

(a) the construction of a sewage pumping station (SPS) with a design capacity of about 120 cubic metres per day at Cheung Kang;

(b) the modification of a sewage pumping station at Tai Po Kau;

(c) the construction of about 300 metres of rising mains;

(d) the construction of about 5.6 kilometres of gravity sewers in Cheung Kang, Ma Niu, Ha Wong Yi Au and Care Village; and

(e) ancillary works[1].

A plan showing the locations of the proposed works is at **Annex to Enclosure 2**.

JUSTIFICATIONS

2. Currently, the majority part of Sha Tin and Tai Po is covered by public sewerage system, but some village areas in these districts are still unsewered, with their sewage disposed of by individual and simple on-site facilities such as septic tanks and soakaway (STS) systems[2]. 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 Tolo Harbour.

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[1] Ancillary works include the utilities diversions, provision of manholes, temporary closure and reinstatement of carriageways/footpaths/open space, necessary building services and landscaping works that are required to complete the proposed works.

[2] 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.

3. We now propose to construct public sewerage system for the four unsewered village areas within the Tolo Harbour catchment, namely Cheung Kang, Ma Niu, Ha Wong Yi Au and Care Village. The proposed sewerage system will serve an estimated ultimate population of about 3 300.

4. Upon completion of the proposed works, sewage from Cheung Kang will be pumped by the proposed SPS and be conveyed to Sha Tin Sewage Treatment Works together with sewage from Ma Niu, while sewage from Ha Wong Yi Au and Care Village will be pumped by the modified Tai Po Kau SPS to Tai Po Sewage Treatment Works 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 fourth quarter of 2019 for completion in first quarter of 2024. The remainder of **4125DS** for provision of public sewerage system for another 26 unsewered areas in the Tolo Harbour 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 $308.1 million in money-of-the-day prices.

PUBLIC CONSULTATION

7. We have been consulting relevant members of Sha Tin Rural Committee (STRC), Tai Po Rural Committee (TPRC), the Development and Housing Committee of the Sha Tin District Council (STDC DHC) and the Environment, Housing and Works Committee of the Tai Po District Council (TPDC EHWC) since March 2009, in which the proposed works were supported. We further consulted the Health and Environment Committee of the Sha Tin District Council (STDC HEC) and TPDC EHWC in March 2019 and in January 2019 respectively. The Committees maintained their support for the proposed works.

8. We gazetted the proposed sewerage works for three villages in two packages under the Water Pollution Control (Sewerage) Regulation (Cap. 358AL). The first package for Ma Niu was gazetted in March 2015 and authorised in January 2016, after the two objections received against the proposal were resolved. The second package for Ha Wong Yi Au and Care Village was gazetted in May 2017 and amended by further gazette in November 2018. It

was authorised in January 2019 after the two objections received against the proposal were resolved. The proposed sewerage works for Cheung Kang, which will not affect any private land, was authorised in April 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 (DSD) completed a Preliminary Environmental Review in December 2009. DSD also completed a Supplementary Preliminary Environmental Review for the proposed modification of Tai Po Kau Sewage Pumping Station in March 2017. The two Reviews concluded and the Director of Environmental Protection agreed that, with the implementation of appropriate mitigation measures, the proposed works would not cause long-term adverse environmental impacts. These measures include equipping the new and modified sewage pumping stations with deodorisation units and acoustic louvres/silencers. We have included in the project estimate of the proposed works the cost for implementing the environmental mitigation measures.

10. 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. They include the use of silenced construction equipment and temporary noise barriers to reduce noise impact, water-spraying to the construction site regularly to minimise 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 that these recommended mitigation measures and good site practices will be properly implemented on site.

11. At the planning and design stages, we have considered measures to reduce 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 disposal of inert construction waste at public fill reception facilities (PFRF[3]). 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.

[3] 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.

12. 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.

13. We estimate that the proposed works will generate in total about 11 500 tonnes of construction waste. Of these, we will reuse about 7 600 tonnes (66%) of the inert construction waste on site and deliver another 2 900 tonnes (25%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 1 000 tonnes (9%) of non-inert construction waste to landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be about $410,000 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)).

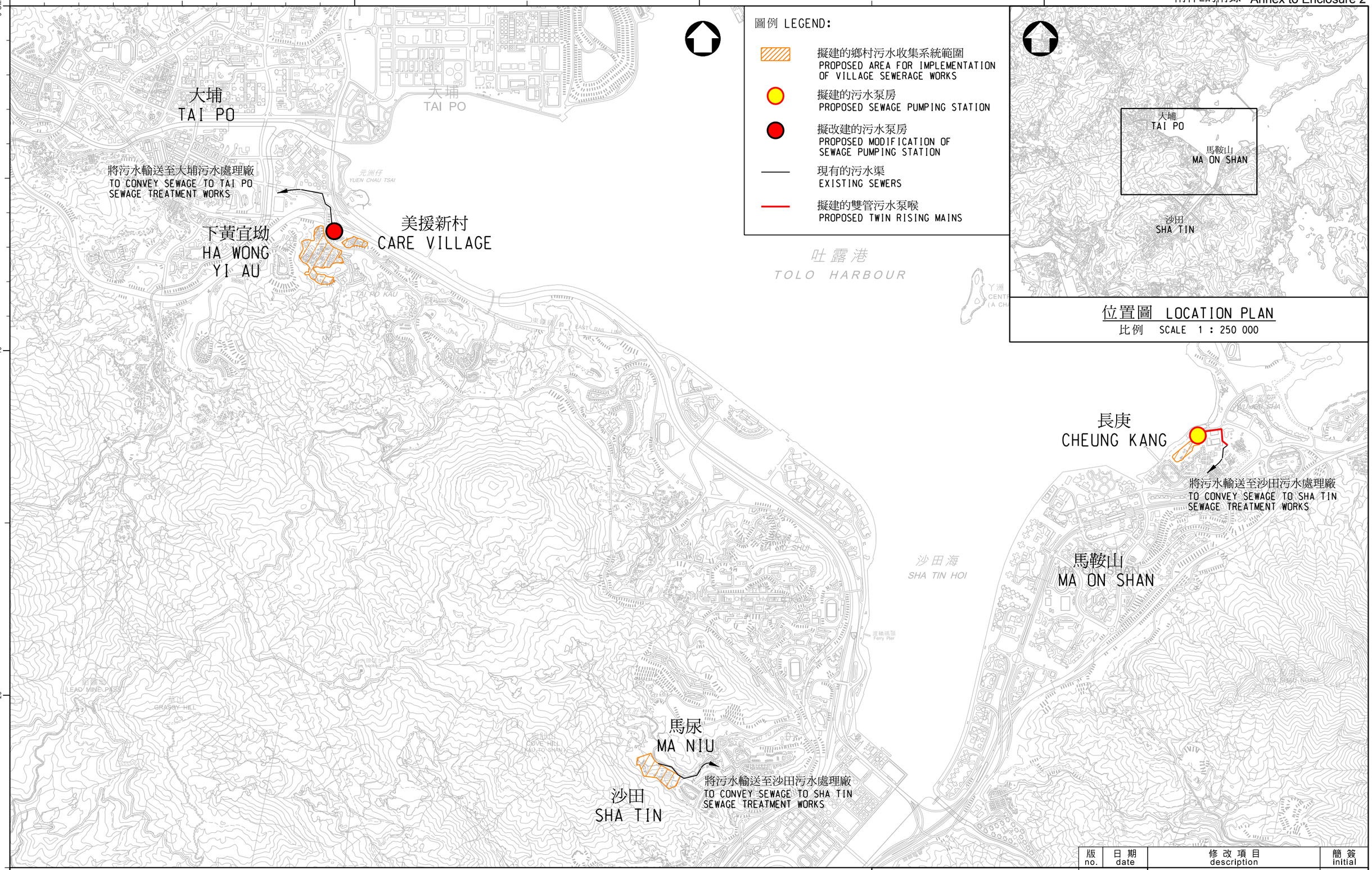
HERITAGE IMPLICATIONS

14. The proposed works will not affect any heritage sites, 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. Forty-three private lots (about 1 559 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
April 2019



圖例 LEGEND:

- 擬建的鄉村污水收集系統範圍 PROPOSED AREA FOR IMPLEMENTATION OF VILLAGE SEWERAGE WORKS
- 擬建的污水泵房 PROPOSED SEWAGE PUMPING STATION
- 擬改建的污水泵房 PROPOSED MODIFICATION OF SEWAGE PUMPING STATION
- 現有的污水渠 EXISTING SEWERS
- 擬建的雙管污水泵喉 PROPOSED TWIN RISING MAINS

位置圖 LOCATION PLAN
比例 SCALE 1 : 250 000

圖則名稱 drawing title

工務工程計劃編號4125DS - 吐露港未敷設污水設施地區的污水收集系統，第2階段
PWP ITEM NO.4125DS - TOLO HARBOUR SEWERAGE OF UNSEWERED AREAS, STAGE 2

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繪畫 drawn	SIGNED W. H. CHAN	日期 date 08 APR 2019
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部門 office	顧問工程管理部 CONSULTANTS MANAGEMENT DIVISION	

圖則編號 drawing no. DCM/2019/029
比例 scale 1 : 25 000 OR AS SHOWN

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

v8I_PDF_cswp_Col-DPSP2016.pltcfg IWIn7v8I_CSWP.tbl c:\temp\dsd_pw\dms21508\DCM_2019_029.dgn A3 420x297

Enclosure 3

4414DS - Rehabilitation of underground sewers

PROJECT SCOPE

The part of **4414DS** that we propose to upgrade to Category A comprises –

(a) the rehabilitation of about 6 kilometres (km) of underground sewers and associated manholes in six districts in Kowloon; and

(b) ancillary works[1].

A plan showing the locations of the proposed works is at **Annex 1 to Enclosure 3**.

JUSTIFICATIONS

2. There are about 1 800 km underground sewers in Hong Kong. Routine inspection and maintenance are conducted on these sewers, and repairs will be made when defects are detected. As many of these sewers have been in service for many years and are suffering from ageing and deterioration at an increasing rate, it is necessary to carry out detailed surveys using more sophisticated techniques to ensure that defects can be timely detected and thoroughly rectified. In the past few years, there have been incidents of ageing pipe collapse, resulting in road subsidence and overflow of raw sewage, and hence disruptions to traffic and nuisance to the public. Such incidents are expected to become more frequent as the sewers age further.

3. In 2015, the "Enhanced Management of Underground Sewer and Drain Networks - Feasibility Study" (the Study) has evaluated the risks of failure of the existing underground sewers. The Study categorised the gravity sewers and sewage rising mains according to their condition and risk of structural failure, and a territory-wide replacement

[1] Ancillary works include temporary closure and reinstatement of carriageways/footpaths/open space that are required to complete the proposed works.

and rehabilitation (R&R) programme was formulated. The status of the implementation of R&R programme is summarised at **Annex 2 to Enclosure 3**

4. We now propose to rehabilitate about 6 km of gravity sewers that have been confirmed by past inspection records as having high risks of structural failure. These sewers are located in Tsuen Wan, Kwai Tsing, Sham Shui Po, Yau Tsim Mong, Kowloon City and Wong Tai Sin. The rehabilitation works involve the installation of internal lining through the sewers. Trenchless technologies will be employed as far as possible to reduce road excavation works and minimise traffic impact.

5. Subject to the funding approval by the Finance Committee, we aim to commence the proposed works in the first quarter of 2020 for completion in the third quarter of 2024. The remainder of **4414DS** comprising the rehabilitation of about 6 km of underground gravity sewers in other districts 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 $306.1 million in money-of-the-day prices.

PUBLIC CONSULTATION

7. We consulted the relevant Committees of six District Councils during the period from December 2018 to February 2019 as listed at **Annex 3 to Enclosure 3**. These 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 (DSD) conducted a Preliminary Environmental Review (PER) for the proposed works in January 2019. The PER concluded and the

Director of Environmental Protection agreed that, with the implementation of appropriate mitigation measures, 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 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 temporary noise barriers and silenced construction equipment 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 generation of construction waste wherever possible including the use of trenchless construction method to minimize the extent of excavation and avoidance of demolition of existing structures as far as practicable. 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)[2]. 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 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 and non-inert construction waste at PFRF and landfills respectively through a trip-ticket system.

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[2] 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 6 000 tonnes of construction waste. Of these, we will reuse about 3 900 tonnes (65%) of inert construction waste on site, and deliver about 1 450 tonnes (24%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 650 tonnes (11%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be $232,950 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)).

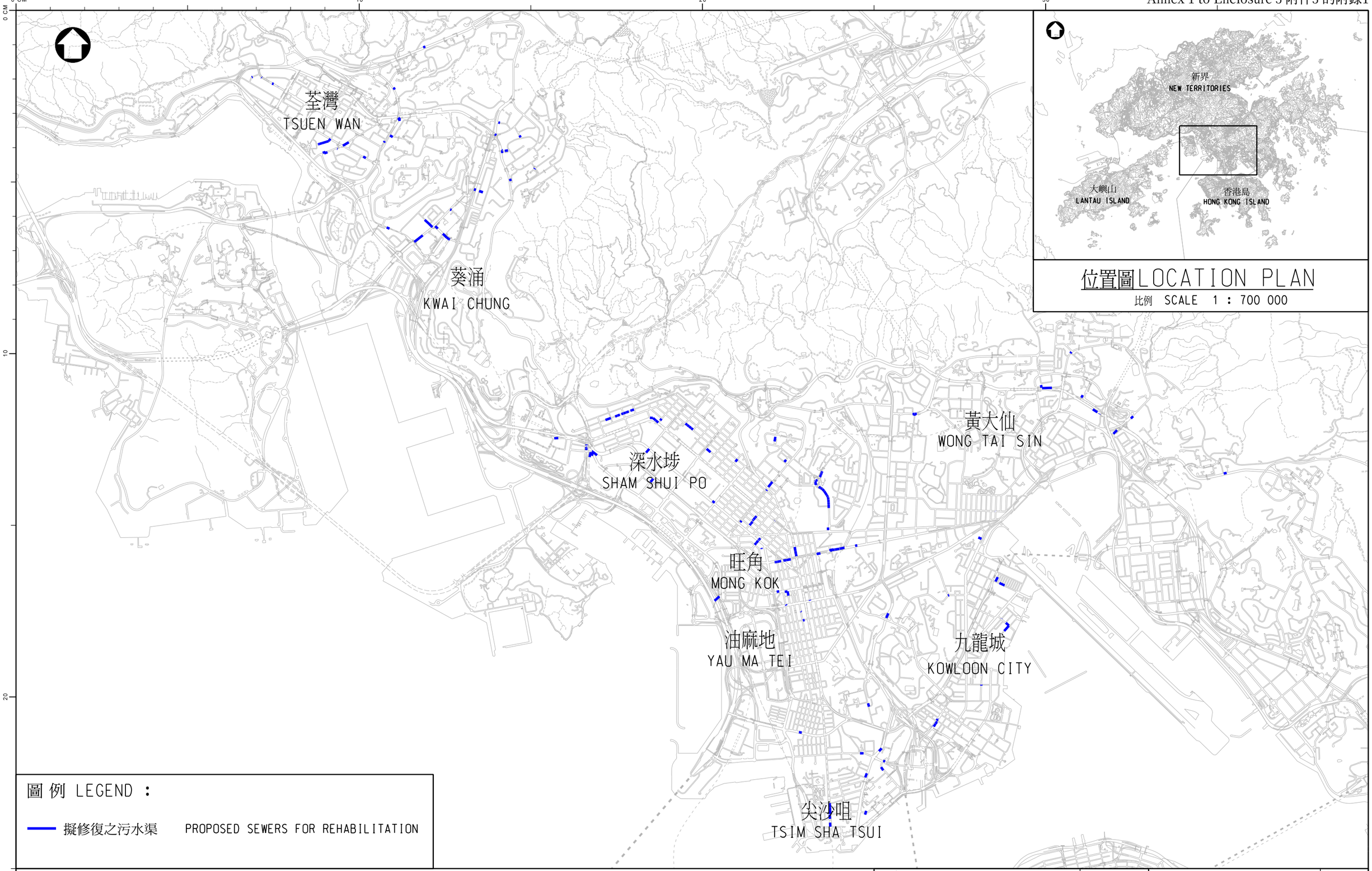
HERITAGE IMPLICATIONS

13. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites or 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
April 2019



位置圖 LOCATION PLAN

比例 SCALE 1 : 700 000

圖例 LEGEND :

擬修復之污水渠 PROPOSED SEWERS FOR REHABILITATION

圖則名稱 drawing title

工務工程計劃編號4414DS – 地下污水渠修復工程
PWP ITEM NO.4414DS - REHABILITATION OF UNDERGROUND SEWERS

繪畫 drawn	SIGNED H.Y. LEE	日期 date 15 FEB 2019
核對 checked	SIGNED K.Y. CHEN	日期 date 15 FEB 2019
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部門 office	工程管理部 PROJECT MANAGEMENT DIVISION	

圖則編號 drawing no. DPM/4414DS/2014

比例 scale 1:40 000

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

4414DS – Rehabilitation of underground sewers

Territory-wide Replacement and Rehabilitation (R&R) Programme for Sewers

Works Package	**Scope of Replacement and Rehabilitation Works**
Public Works Project (PWP) Item No.: **4381DS** (under construction)	● Construction of about 6.5 km of an additional sewage rising main with 1 200 millimetres (mm) diameter from Tung Chung to Siu Ho Wan ● Rehabilitation of about 6.3 km of the existing sewage rising main with 1200 mm diameter from Tung Chung to Siu Ho Wan
PWP Item No.: **4393DS** (under construction)	● Rehabilitation of about 1.7 kilometres (km) of gravity sewers in Ngau Chi Wan, To Kwa Wan, Sha Tin and Sai Kung
PWP Item No.: **4390DS** (under construction)	● Rehabilitation of about 4.2 km of sewage box culvert in Tuen Mun ● Rehabilitation of about 360 metres (m) of gravity sewers with diameters ranging from 400 mm to 1 100 mm across Tuen Mun River Channel ● Construction of about 600 m of gravity sewers with 1 200 mm diameter in Tuen Mun
PWP Item No.: **4426DS** (under construction)	● Condition surveys of about 75 km of gravity sewers in different regions of the territory ● Rehabilitation of about 7 km of gravity sewers in different regions of the territory
PWP Item No.: **4414DS** (partly included in the proposed works)	● Rehabilitation of about 12 km of gravity sewers in different regions of the territory that have been confirmed by past inspection records as having high risks of structural failure
Other PWP items (under planning)	● Rehabilitation of about 20 km of rising mains in different regions of the territory ● Rehabilitation of gravity sewers confirmed by further condition surveys to have high risk of structural failure
R&R works to be carried out by the maintenance teams of DSD (on-going)	● Rehabilitation of about 40 km of gravity sewers in different regions of the territory ● Condition surveys of about 60 km of gravity sewers in different regions of the territory

4414DS – Rehabilitation of underground sewers

Consultation with District Councils

Date	District Council	Committee
18 December 2018	Kwai Tsing	Planning and District Facilities Management Committee
18 December 2018	Wong Tai Sin	Food and Environmental Hygiene Committee
3 January 2019	Tsuen Wan	Environmental and Health Affairs Committee
10 January 2019	Kowloon City	Housing and Infrastructure Committee
17 January 2019	Yau Tsim Mong	Food, Environmental Hygiene and Public Works Committee
14 February 2019	Sham Shui Po	Environment and Hygiene Committee