

**For discussion
on 28 February 2011**

**Legislative Council
Panel on Environmental Affairs**

160DS — Tuen Mun sewerage, stage 1

235DS — Yuen Long and Kam Tin sewerage and sewage disposal

344DS — Upgrading of Central and East Kowloon sewerage

PURPOSE

This paper seeks Members' support for our proposals to –

- (a) upgrade part of **160DS** to Category A at an estimated cost of about \$22 million;
- (b) upgrade part of **235DS** to Category A at an estimated cost of about \$195 million; and
- (c) upgrade part of **344DS** to Category A at an estimated cost of about \$500 million

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

PROJECT SCOPE AND JUSTIFICATIONS

160DS – Tuen Mun sewerage, stage 1

2. The part of **160DS** that we propose to upgrade to Category A comprises –

- (a) construction of about 1.5 kilometres (km) of sewers at Tsing Chuen Wai and Tuen Tsz Wai; and
- (b) ancillary works.

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

3. At present, the sewage from Tsing Chuen Wai and Tuen Tsz Wai is treated and disposed of by means of private treatment facilities (such as septic tank and soakaway (STS) systems). These facilities are

often ineffective in removing pollutants due to their proximity to watercourses¹ and inadequate maintenance². This is detrimental to the water quality of Tuen Mun River Channel as well as environmental hygiene in the vicinity.

4. In 2003, Environmental Protection Department completed a review of the Tuen Mun and Tsing Yi Sewerage Master Plans (SMPs) in which extension of public sewerage to Tsing Chuen Wai and Tuen Tsz Wai was recommended to address the above. The proposed works aim to collect the sewage generated from part of the areas of Tsing Chuen Wai and Tuen Tsz Wai and convey it to Pillar Point sewage treatment works (STW) for treatment and disposal. This will prevent the sewage from entering Tuen Mun River Channel.

5. Subject to approval of the Finance Committee (FC), Drainage Services Department (DSD) plans to commence construction of the proposed works in mid 2011 for completion by mid 2014. We will implement **160DS** in phases and retain the remainder in Category B, which covers construction of a sewage pumping station with associated sewers at Siu Lam and laying of sewers at ten villages in Tuen Mun (including the remaining areas of Tsing Chuen Wai and Tuen Tsz Wai). The proposed works will facilitate early implementation of remaining phases of the project. Funding approval for the remaining works will be sought at a later stage when they are ready for upgrading to Category A.

235DS – Yuen Long and Kam Tin sewerage and sewage disposal

6. The part of **235DS** that we propose to upgrade to Category A comprises –

- (a) construction of about 1.5 km of gravity trunk sewers and 0.5 km of twin rising mains in Lau Fau Shan;
- (b) construction of a new sewage pumping station near Deep Bay Road; and
- (c) ancillary works.

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

¹ STS systems operate by allowing the effluent to percolate through gravels whereby pollutants would be removed in a natural manner. However, if the STS system is located in an area where the underground water table is high, such as an area in proximity to watercourses, it will not be able to function properly.

² Inadequate maintenance of STS systems would affect their pollutant removal efficiency and might even lead to an overflow of effluent.

7. **235DS** implements the recommendations of the review of Yuen Long and Kam Tin sewerage and sewage disposal requirements with a view to attaining better water quality and meeting future development needs in these areas. It comprises upgrading of existing treatment facilities and extension of trunk sewers to villages in rural areas of Yuen Long and Kam Tin for conveying the sewage collected to San Wai STW and Yuen Long STW for further treatment and disposal. This will prevent the sewage from entering Deep Bay.

8. The works under **235DS** are being implemented in phases. In May 2009, we obtained FC's funding approval for upgrading part of **235DS** to Category A (as **368DS** – Yuen Long South sewerage and expansion of Ha Tsuen sewage pumping station). The upgraded part has commenced construction in end 2009 for completion in 2013.

9. Further to the above, we are now ready to proceed with upgrading another part of **235DS** on construction of about 2.0 km of trunk sewers in Lau Fau Shan, which comprise about 1.5 km of gravity sewers and about 0.5 km of twin rising mains. We also propose to build a sewage pumping station near Deep Bay Road to provide sufficient hydraulic gradient for overcoming the topographical constraints along the sewer alignment.

10. Subject to FC's approval, DSD plans to commence the proposed works in mid 2011 for completion in end 2015. We will retain the remainder of **235DS** in Category B, which covers construction of trunk sewers with associated pumping facilities in Ngau Tam Mei, San Tin, Pat Heung and Kam Tin, expansion of San Wai STW and modification of Yuen Long STW. Funding approval for the remaining works will be sought at a later stage when they are ready for upgrading to Category A.

344DS – Upgrading of Central and East Kowloon sewerage

11. The part of **344DS** that we propose to upgrade to Category A comprises –

- (a) upgrading of about 5.7 km of existing sewers and construction of about 1.3 km of new sewers in Kwun Tong, Yau Tong, Ngau Tau Kok, Kowloon Bay and Ngau Chi Wan;

- (b) upgrading of seven existing dry weather flow interceptors (DWFIs)³ in Kwun Tong, To Kwa Wan and Kowloon Bay; and
- (c) ancillary works.

A site plan showing the proposed works is at **Enclosure 3**.

12. Completed in August 2003, the review of Central Kowloon SMP and East Kowloon SMP has recommended a host of sewerage improvement works to provide adequate flow capacity for catering the development needs in the region. These include provision of new sewers and upgrading of existing sewage facilities across Kwun Tong, Wong Tai Sin, Kowloon City and Yau Tsim Mong districts.

13. The improvement works in Central and East Kowloon as recommended in the said review are grouped into several works packages under **344DS** for implementation in phases. In January 2009, we obtained FC's funding approval to upgrade part of **344DS** to Category A (as **367DS** – Upgrading of Central and East Kowloon sewerage – phase 1) for implementing the first phase of improvement works in Central and East Kowloon areas. The upgraded part has commenced construction in early 2009 for completion in 2012.

14. Further to the above, we are now ready to proceed with upgrading another part of **344DS** (known as phase 2), under which we propose to upgrade 5.7 km of existing sewers with sewage pipes of larger diameters (between 300 mm and 1 350 mm) and lay 1.3 km of new sewers in Kwun Tong, Yau Tong, Ngau Tau Kok, Kowloon Bay and Ngau Chi Wan. The proposed works will minimise the risk of local surcharging and overflow in these areas, in particular at those sections downstream of future developments. We also propose to upgrade seven DWFIs in Kwun Tong, To Kwa Wan and Kowloon Bay with adjustable weirs to enhance their performance in flow control.

15. Subject to FC's approval, DSD plans to commence phase 2 works in mid 2011 for completion by end 2015. We will retain the remainder of **344DS** in Category B, which covers the upgrading of about 7.0 km of sewers in San Po Kong, Kowloon City, To Kwa Wan, Hung Hom and Tsim Sha Tsui. Funding approval for the remaining works will be sought at a later stage when they are ready for upgrading to Category A.

³ During dry seasons, DWFIs prevent water pollution by intercepting and diverting the polluted dry weather flow in a stormwater system to the sewerage for treatment and disposal; whereas in wet seasons, the flow would largely bypass the DWFIs for discharge via the stormwater system.

FINANCIAL IMPLICATIONS

16. We estimate the capital costs of the proposed works under **160DS**, **235DS** and **344DS** to be about \$22 million, \$195 million and \$500 million in MOD prices respectively⁴. We will invite tenders for the proposed works before funding is secured with a view to expediting their implementation schedules. Acceptance of tenders will still be subject to FC's funding approval.

17. We estimate that implementation of the proposed works under **160DS**, **235DS** and **344DS** will create a total of 215 jobs (175 for labourers and another 40 for professional / technical staff), providing a total employment of 9 200 man-months⁴. Detailed breakdowns are as follows –

PWP item no.	(A) Number of jobs to be created for labourers	(B) professional / technical staff	(A) + (B) Total number of jobs created	(C) Employment in man-months
160DS (part)	8	2	10	300
235DS (part)	45	10	55	2 400
344DS (part)	122	28	150	6 500
Total	175	40	215	9 200

PUBLIC CONSULTATION

160DS – Tuen Mun sewerage, stage 1

18. We consulted the Environment, Hygiene and District Development Committee under Tuen Mun District Council (DC) on 26 November 2010 and obtained its support for the proposed works. Village Representatives of Tsing Chuen Wai and Tuen Tsz Wai had also been consulted and both expressed support for implementation of the

⁴ These figures represent the latest estimates of the capital costs and new job opportunities. We will finalise the figures and include the cost breakdowns prior to submitting the proposals to the Public Works Subcommittee (PWSC) for consideration.

proposed works.

235DS – Yuen Long and Kam Tin sewerage and sewage disposal

19. We consulted Ping Shan Rural Committee and Ha Tsuen Rural Committee on 17 October 2007 and 5 March 2008 respectively. Both Rural Committees supported the proposed works. We also briefed the Environmental Improvement Committee of Yuen Long DC on 19 May 2008 and the Committee supported the proposal.

344DS – Upgrading of Central and East Kowloon sewerage

20. We consulted the Housing and Infrastructure Committee under Kowloon City DC, the Traffic and Transport Committee under Kwun Tong DC and the Traffic and Transport Committee under Wong Tai Sin DC on 18 November 2010, 25 November 2010 and 30 November 2010 respectively. The Committees supported the proposed works.

HERITAGE IMPLICATIONS

21. The proposed works under **160DS**, **235DS** and **344DS** will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

22. The proposed works under **160DS**, **235DS** and **344DS** do not require any land acquisition.

ENVIRONMENTAL IMPLICATIONS

23. The proposed works under **160DS**, **235DS** and **344DS** are not designated projects under the Environmental Impact Assessment Ordinance (Cap. 499). We have completed the Preliminary Environmental Review for the proposed works and concluded that they would not have any long-term adverse environmental impacts.

24. For short term environmental impacts during construction, we

will control noise, dust and site run-off to within the established standards and guidelines through implementation of environmental mitigation measures, such as the use of silenced construction equipment and noise barriers to reduce noise generation, water-spraying to reduce emission of fugitive dust, and proper treatment of site run-off before discharge. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good site practices will be properly implemented on site. We have included a sum of \$0.3 million, \$4.3 million and \$9.1 million (in September 2010 prices) in the project estimates of the proposed works under **160DS**, **235DS** and **344DS** respectively for implementing the environmental mitigation measures.

25. At the planning and design stages, we have considered ways to reduce the generation of construction waste where possible. For example, in addition to the need for meeting the hydraulic and traffic requirements, we have also designed the alignment of the proposed sewerage works in such a manner that excavation and demolition of existing structures will be minimised. In addition, we will require the contractors to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste at public fill reception facilities (PFRF)⁵. We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

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

27. We estimate that the proposed works will generate about 78 560 tonnes of construction waste in total (6 860 tonnes, 11 500 tonnes and 60 200 tonnes for the proposed works under **160DS**, **235DS** and **344DS** respectively). Of these, we will reuse 31 450 tonnes (40%) of

⁵ PFRF are specified in Schedule 4 of Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in PFRF requires a licence issued by the Director of Civil Engineering and Development.

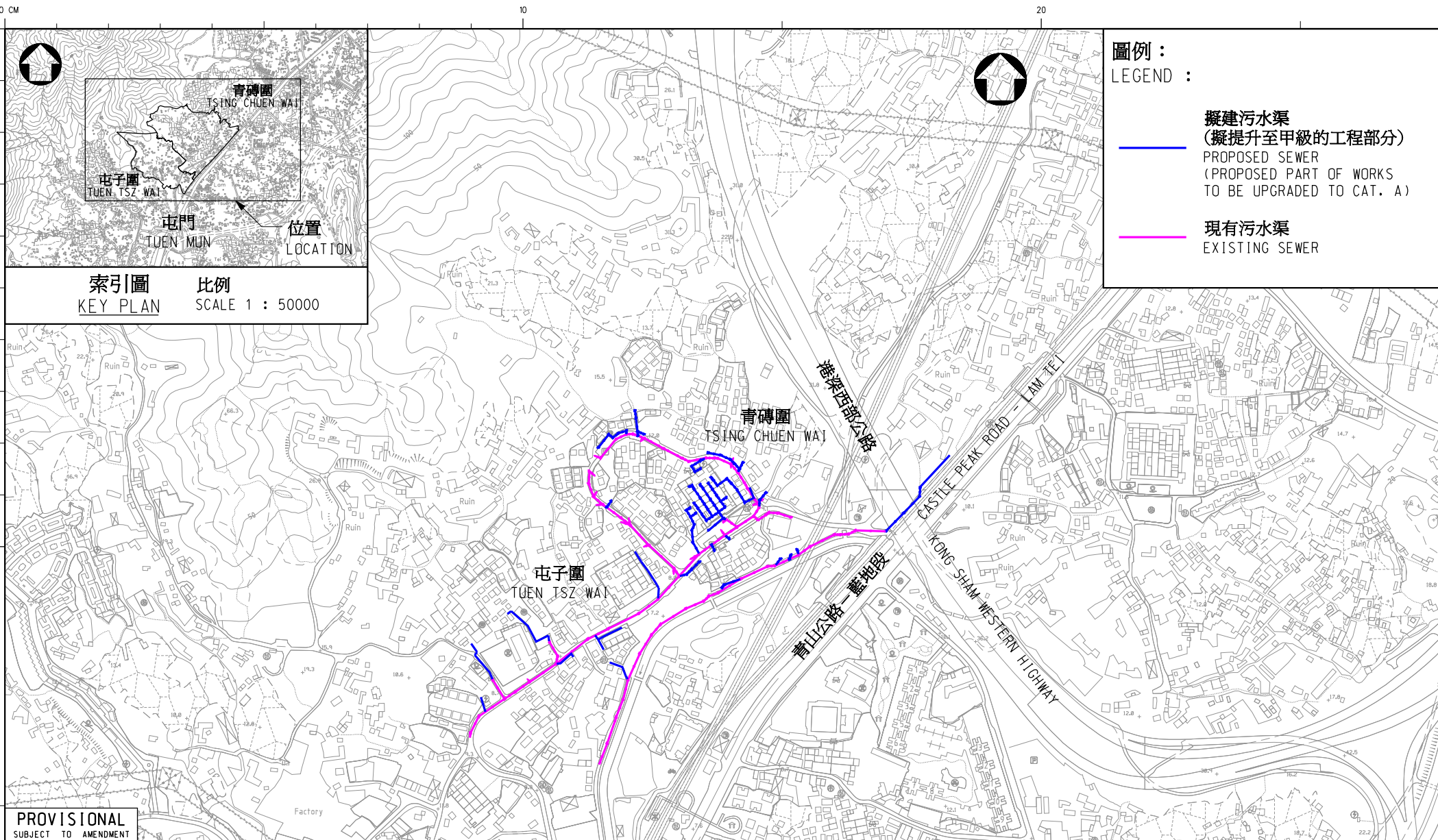
inert construction waste on site and deliver 42 700 tonnes (54%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 4 410 tonnes (6%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at PFRF and landfill sites is estimated to be about \$0.1 million, \$0.2 million and \$1.4 million for the proposed works under **160DS**, **235DS** and **344DS** respectively (based on a unit cost of \$27 per tonne for disposal at PFRF and \$125 per tonne⁶ at landfills).

ADVICE SOUGHT

28. Members are invited to support our proposals for upgrading the proposed works under **160DS**, **235DS** and **344DS** to Category A. Subject to Members' advice, we plan to submit our proposals for consideration by PWSC in May or June 2011 with a view to seeking FC's funding approval in June or July 2011.

Environmental Protection Department
Drainage Services Department
February 2011

⁶ This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90 per m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.



圖例：
LEGEND：

擬建污水渠
(擬提升至甲級的工程部分)
PROPOSED SEWER
(PROPOSED PART OF WORKS
TO BE UPGRADED TO CAT. A)

現有污水渠
EXISTING SEWER

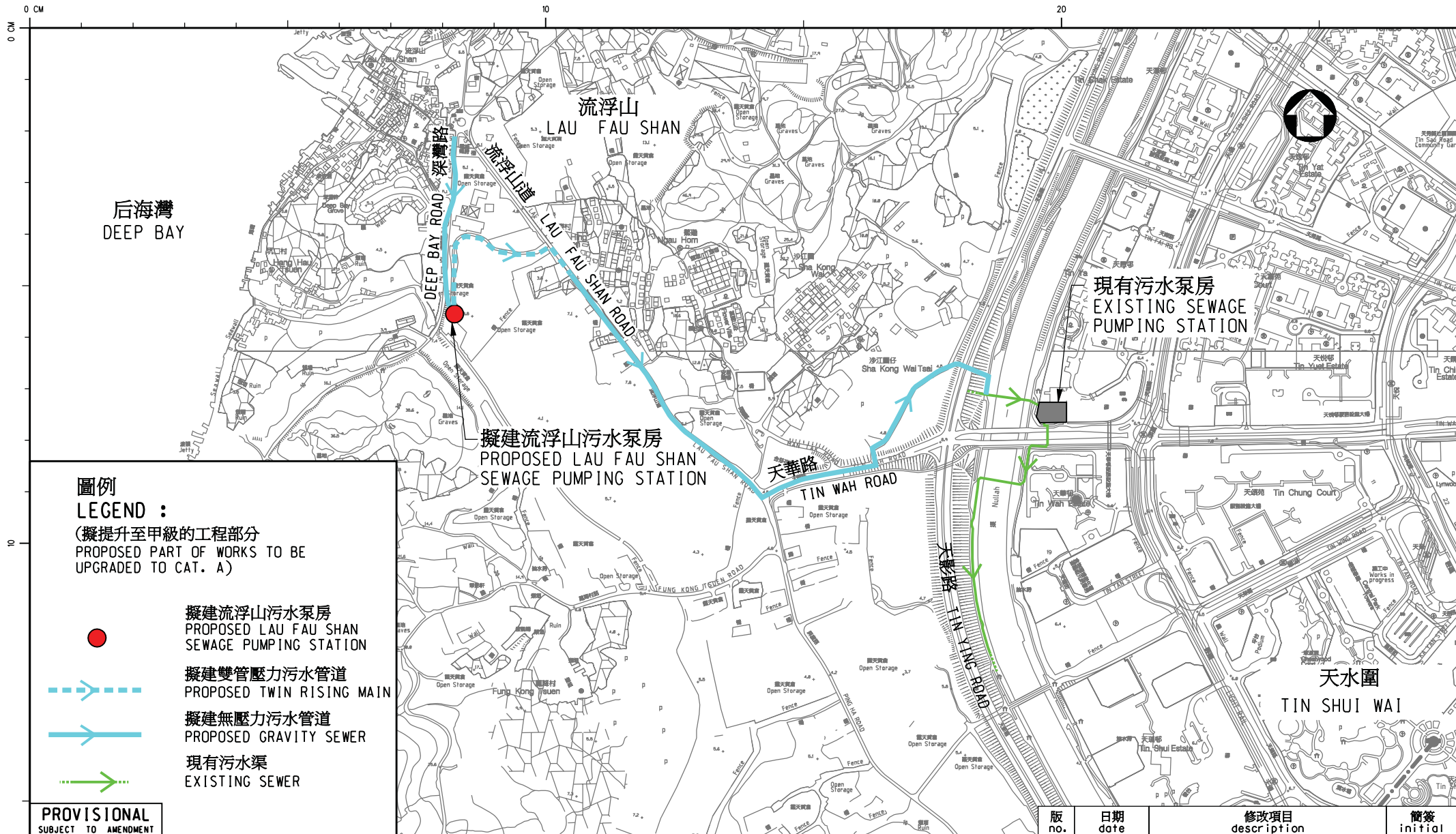
PROVISIONAL
SUBJECT TO AMENDMENT

圖則名稱 drawing title

工務計劃項目第160DS號 — 屯門污水收集系統第1階段
PWP ITEM NO. 160DS - TUEN MUN SEWERAGE, STAGE 1

繪畫 drawn	SIGNED T.M. SIU	日期 date	07 JAN 2011
核對 checked	SIGNED L.F. CHAN	日期 date	07 JAN 2011
批核 approved	SIGNED K.C. LO	日期 date	07 JAN 2011
部門 office	工程管理部 PROJECT MANAGEMENT DIVISION		

圖則編號 drawing no.	比例 scale
DPM/160DS/0010	1 : 7500 OR AS SHOWN
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香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	



PROVISIONAL
SUBJECT TO AMENDMENT

圖則名稱 drawing title

工務計劃項目第235DS號
元朗及錦田污水收集系統及污水排放計劃
PWP ITEM NO. 235DS
YUEN LONG AND KAM TIN SEWERAGE AND SEWAGE DISPOSAL

繪畫 drawn	SIGNED C. L. KWAN	日期 date	28 JAN 2011
核對 checked	SIGNED Ir K. C. LAM	日期 date	28 JAN 2011
批核 approved	SIGNED Ir W. M. LEE	日期 date	28 JAN 2011
部門 office	污水工程部 SEWERAGE PROJECTS DIVISION		

修改項目 description	圖則編號 drawing no.	簡簽 initial	比例 scale
	DDN/235DS1/8011		1:10000
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