

**For discussion
on 24 May 2010**

**Legislative Council
Panel on Environmental Affairs**

363DS – Provision of interception facilities at Jordan Valley Box Culvert

372DS – Rehabilitation and construction of trunk sewers underneath Shing Mun River Channel

PURPOSE

This paper seeks Members' support for our proposal to –

- (a) upgrade **363DS** to Category A at an estimated cost of \$570 million in money-of-the-day (MOD) prices; and
- (b) upgrade **372DS** to Category A at an estimated cost of \$140 million in MOD prices.

PROJECT SCOPE AND NATURE

363DS – Provision of interception facilities at Jordan Valley Box Culvert

- 2. The scope of **363DS** comprises –
 - (a) construction of an interception compound with automatic penstocks and associated desilting facilities at Jordan Valley Box Culvert (JVBC) near Kai Fuk Road;
 - (b) construction of a pumping station;
 - (c) construction of a stormwater bypass box culvert;
 - (d) modification of about 80 metres (m) of an existing trunk sewer along Kai Fuk Road;
 - (e) rehabilitation works within the affected section of JVBC; and
 - (f) ancillary works.

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

3. Subject to funding approval by the Finance Committee (FC), we aim to commence construction of the proposed works in late 2010 for completion of items (a), (b), (c) and (d) in mid 2013 and items (e) and (f) in mid 2014.

372DS – Rehabilitation and construction of trunk sewers underneath Shing Mun River Channel

4. The scope of **372DS** comprises –

- (a) construction of about 250 metres (m) of a twin pipe trunk sewer underneath Shing Mun River Channel (SMRC), with diameter of 1 500 millimetres (mm) for each pipe;
- (b) subsequent rehabilitation of about 250 m of an existing gravity trunk sewer underneath SMRC with diameter of 2 050 mm; and
- (c) ancillary works.

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

5. Subject to FC's funding approval, we aim to commence construction of the twin pipe trunk sewer in December 2010 for completion in December 2013. Rehabilitation of the existing trunk sewer will commence soon after full commissioning of its duplicate for completion by end 2015.

JUSTIFICATIONS

363DS – Provision of interception facilities at Jordan Valley Box Culvert

6. At present, the stormwater from Kowloon Bay, Ngau Tau Kok and Jordan Valley is discharged into Kai Tak Approach Channel (KTAC) through JVBC, an underground seven-cell reinforced concrete stormwater drainage culvert. The flow in JVBC has contributed to poor water quality and odour nuisance around KTAC because it consists of polluted urban runoff within the catchment area. To address these problems, the Environmental Protection Department completed a study on the control of stormwater pollution at JVBC in 2008. The study has recommended

interception of the polluted flow at the downstream of JVBC in addition to removal of expedient connections for controlling the pollution at source.

7. The Drainage Services Department (DSD) subsequently completed the design of the proposed interception facilities and plans to invite tenders for the project in end May 2010¹. Upon commissioning of the interception facilities, the polluted flow in JVBC will be intercepted at an interception compound located at the downstream and pumped into an existing trunk sewer along Kai Fuk Road. The intercepted flow will eventually be conveyed to the Stonecutters Island sewage treatment works for proper treatment prior to disposal, thereby preventing the polluted urban runoff from entering KTAC through JVBC and alleviating the odour nuisance.

8. The proposed interception compound will be equipped with automatic penstocks and desilting facilities. We will also need to construct a pumping station next to the interception compound, modify about 80 m of the existing trunk sewer along Kai Fuk Road, and carry out structural rehabilitation works within affected section of the aging JVBC for proper functioning of the facilities. The project also covers construction of a stormwater bypass box culvert to meet the operational needs during exceptionally heavy rainstorms and emergency situations.

372DS – Rehabilitation and construction of trunk sewers underneath Shing Mun River Channel

9. At present, the sewage collected from the eastern bank of SMRC² is conveyed across the river channel to the Shatin sewage treatment works via a trunk sewer near Sha Tin Road. The trunk sewer, with diameter of 2 050 mm, has been in continuous service for decades since it was laid underneath the river channel during the development of Sha Tin New Town in the late 1970s. It is being fully utilised as a result of significant population growth in the region.

10. Inspection and rehabilitation of the trunk sewer is currently impractical as it is the only sewer conveying sewage collected from the

¹ Due to complexity of the project, we plan to initiate tendering exercise for **363DS** in end May 2010, so that the project cost estimate can be finalised based on returned tender price before submission to Public Works Subcommittee in November 2010. The acceptance of any tenders will still be subject to funding approval and conditions attached to such.

² The areas covered include A Kung Kok, Shek Mun, Siu Lek Yuen, Yuen Chau Kok, Sha Tin Wai and Tai Wai with a population of around 300 000.

southeast part of Sha Tin across the SMRC to Shatin sewage treatment works and is in full flow condition round the clock. Recent inspections of the sewerage in Sha Tin District nevertheless indicate early signs of structural deterioration in many sewers laid by around the same period³. Based on DSD's experience, it is likely that the trunk sewer underneath SMRC is also in a deteriorating condition with a growing risk of structural failure unless intensive rehabilitation works are carried out. In typical cases, temporary diversion of the sewage flow from a trunk sewer to adjacent sewers will be necessary for any comprehensive structural integrity check and rehabilitation works to proceed. However, due to the vast population served by this trunk sewer, it is technically infeasible to divert the large sewage flow as in other cases.

11. DSD therefore proposes to provide a duplicate trunk sewer to permanently overcome the technical constraints identified above. The proposed duplicate trunk sewer will be aligned in parallel to the existing trunk sewer and laid underneath SMRC using trenchless construction method⁴. It will adopt twin pipe configuration for more flexible operation to accommodate routine inspection and maintenance works of either pipe during low flow period. DSD will commence rehabilitation of the existing trunk sewer soon after full commissioning of its duplicate, which will receive all the diverted sewage flows throughout the rehabilitation.

12. Upon project completion by end 2015, it will become technically feasible to operate both trunk sewers independently for performing routine inspection, maintenance and emergency repairs whenever necessary. This will also prolong the service lives of both trunk sewers and safeguard the overall reliability of the sewerage.

FINANCIAL IMPLICATIONS

13. We estimate the capital costs of **363DS** and **372DS** to be \$570 million and \$140 million in MOD prices respectively⁵.

³ In some situations, DSD has to replace the sewers or provide duplicate sewers for rehabilitation works in order to extend their service lives.

⁴ The main benefit of using trenchless method is that there will be no excavation and backfilling of the river bed. Interferences with the water quality and public enjoyment of SMRC (including water sports) during the construction stage will be minimised.

⁵ These figures represent the latest estimates of the capital costs and new job opportunities. We will finalise these figures and include the cost breakdowns prior to submitting the proposals to the Public Works Subcommittee for consideration.

14. We estimate that proposed works under **363DS** and **372DS** will create about 186 jobs (150 for labourers and another 36 for professional / technical staff) and 75 jobs (65 for labourers and another 10 for professional / technical staff) respectively, providing a total employment of 6 900 and 2 100 man-months respectively⁵.

PUBLIC CONSULTATION

15. We consulted the Environment and Hygiene Committee under the Kwun Tong District Council (DC) and the Housing and Infrastructure Committee under the Kowloon City DC on **363DS** on 16 April 2009 and 23 April 2009 respectively. They all supported the proposed works.

16. We also consulted the Development and Housing Committee under the Sha Tin DC on **372DS** on 29 October 2009. The Committee supported the proposed works.

ENVIRONMENTAL IMPLICATIONS

17. For **363DS**, the proposed pumping station located within the interception compound is a designated project under the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). We obtained the Environmental Permit (EP) for construction and operation of the pumping station on 11 August 2009 under the EIA Ordinance. While other proposed works mentioned in paragraph 2 above are not designated projects, we have completed a Preliminary Environmental Review (PER) in August 2009 to address the environmental impact of the works. The PER concluded that the project would not cause adverse long term environmental impact with mitigation measures in place. We shall implement the project in full compliance with the requirements of the EP as well as the PER recommendations.

18. As for **372DS**, the project is not a designated project under the EIA Ordinance. We completed a PER for the construction of the proposed trunk sewers and ancillary works in February 2009. The PER concluded that there is no insurmountable environmental impacts and the project has very little potential for giving rise to adverse environmental impacts.

19. For short-term impacts during construction, we will control noise, dust and site run-off to levels within established standards and

guidelines through implementation of mitigation measures, such as temporary noise barriers and quieter construction plant to reduce noise generation, water-spraying to reduce dust emission, and strict control over diversion of site run-off. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good site practices are properly implemented. For **363DS** and **372DS**, we have included a sum of \$4 million and \$6 million (in September 2009 prices) in the respective project estimate for implementation of the environmental mitigation measures.

20. We have considered in the planning and design stages ways to reduce the generation of construction waste where possible, including adoption of trenchless construction method to minimise the extent of excavation and to avoid as far as practicable demolition of existing structures. 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 public fill reception facilities⁶. We will encourage the contractor 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.

21. 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 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 to public fill reception facilities and landfills respectively through a trip-ticket system.

22. We estimate that the two projects will generate in total about 61 300 tonnes of construction waste (50 000 tonnes and 11 300 tonnes for **363DS** and **372DS** respectively). Of these, we will reuse about 23 900 tonnes (39%) on site and deliver 32 300 tonnes (53%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 5 100 tonnes (8%) of non-inert construction waste at landfills. The total cost for accommodating

⁶ Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

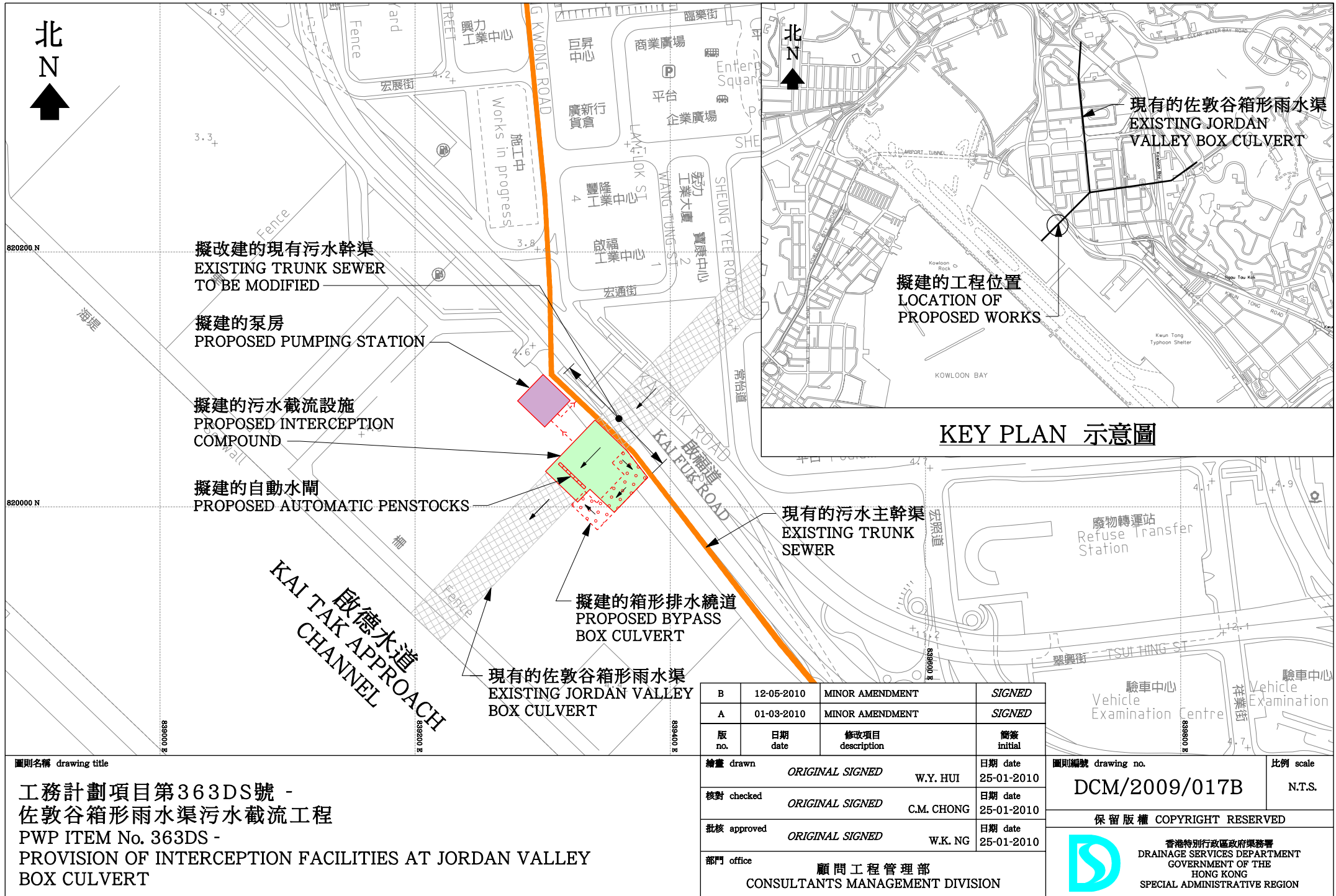
construction waste at public fill reception facilities and landfill sites is estimated to be about \$1.4 million and \$130,000 for **363DS** and **372DS** respectively (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne⁷ at landfills.)

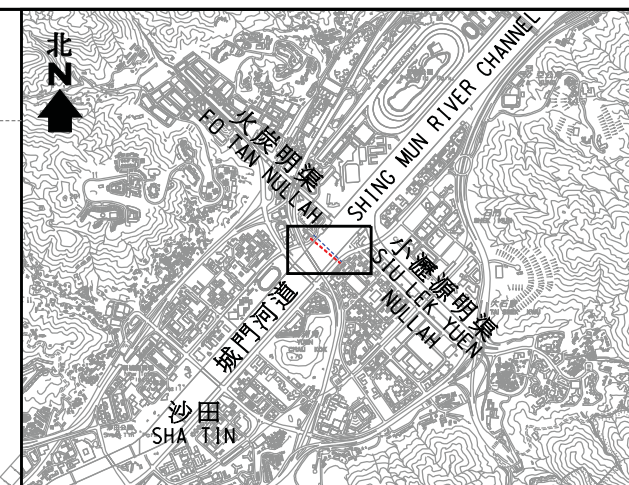
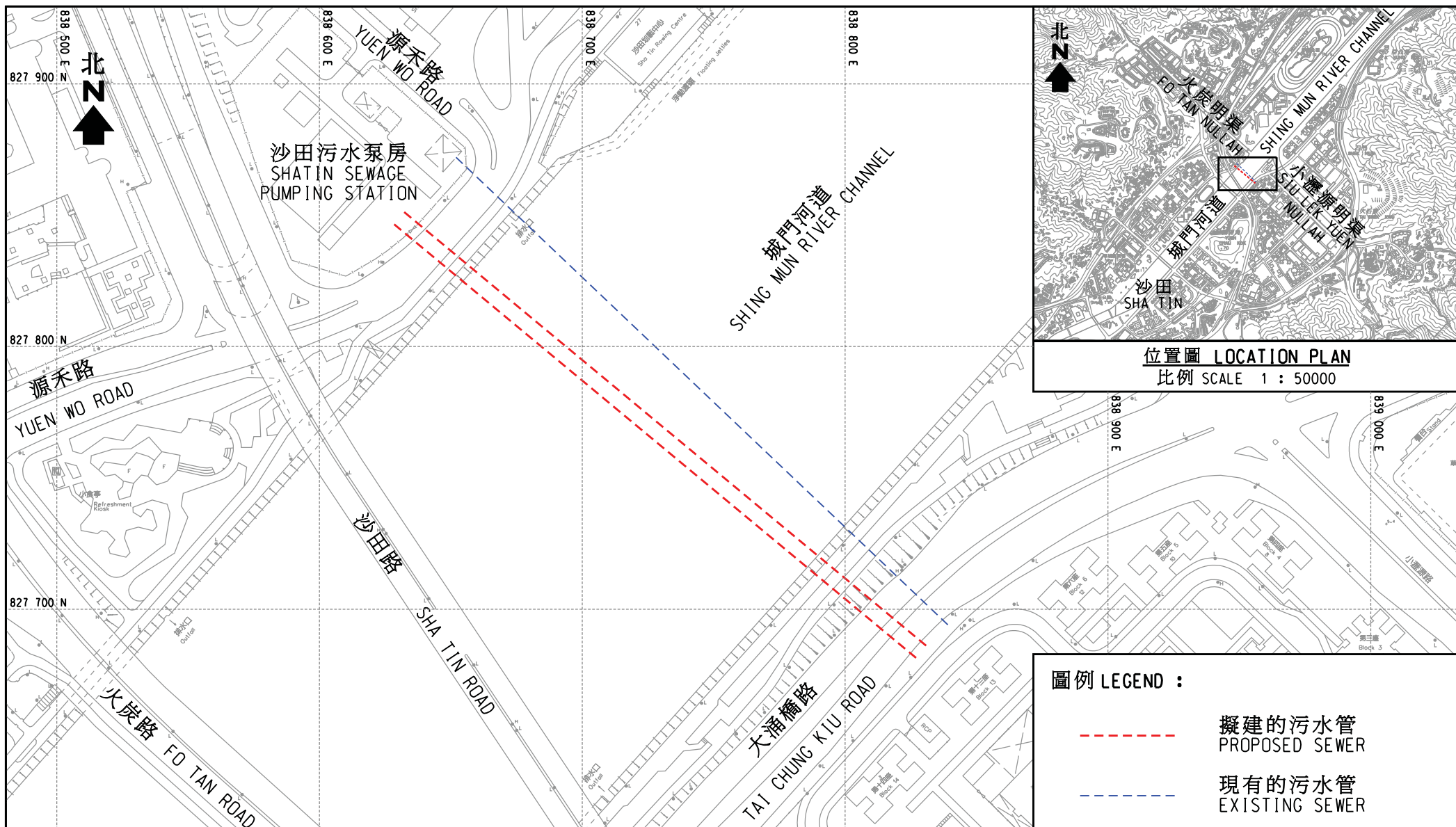
ADVICE SOUGHT

23. Members are invited to support our proposal for upgrading **363DS** and **372DS** to Category A. Subject to Members' advice, we plan to submit our proposals for the upgrading of **363DS** and **372DS** for consideration by the Public Works Subcommittee in November 2010 and June 2010 respectively with a view to seeking FC's funding approval.

Environmental Protection Department
Drainage Services Department
May 2010

⁷ The estimate has taken into account the cost of 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/m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.





位置圖 LOCATION PLAN
比例 SCALE 1 : 50000

圖例 LEGEND :

- 擬建的污水管
PROPOSED SEWER
- 現有的污水管
EXISTING SEWER

圖則名稱 drawing title

工務工程計劃編號372DS

在城門河道底下修復及建造污水幹渠

PWP ITEM NO. 372DS

REHABILITATION AND CONSTRUCTION OF TRUNK SEWERS
UNDERNEATH SHING MUN RIVER CHANNEL

繪畫 drawn

W. Y. HUI

日期 date
25 FEB 2010

核對 checked

F. C. LUI

日期 date
26 FEB 2010

批核 approved

S. S. LAM

日期 date
26 FEB 2010

部門 office

顧問工程管理部

CONSULTANTS MANAGEMENT DIVISION

圖則編號 drawing no.

DCM/2010/005

比例 scale
1 : 2000
OR
AS SHOWN

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DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE
HONG KONG
SPECIAL ADMINISTRATIVE REGION