

**For information**

**Legislative Council Panel on Planning, Lands and Works**

**109CD – Drainage improvement works in Tai Po**

**PURPOSE**

This paper briefs Members on the Administration's proposal to part-upgrade **109CD** entitled "Drainage improvement works in Tai Po" to Category A, at an estimated cost of about \$426 million in money-of-the-day (MOD) prices, for drainage improvement works in Upper Lam Tsuen River, She Shan River, Upper Tai Po River, Ping Long and Kwun Hang in Tai Po.

**PROPOSAL**

2. The scope of the part of **109CD** which we propose to upgrade to Category A comprises construction of –

- (a) about 2.6 kilometres (km) drainage channel of width ranging from 18 to 29 metres (m) in Upper Lam Tsuen River;
- (b) about 1.1 km drainage channel of width ranging from 8.5 to 21.5 m in She Shan River;
- (c) about 0.7 km drainage channel of width ranging from 13 to 20 m in Upper Tai Po River;
- (d) about 25 m long twin-cell box culvert with internal cell dimensions of 1 350 millimetres (mm) high by 2 500 mm wide at Ping Long, and about 18 m long single-cell box culvert with internal cell dimensions of 2 150 mm high by 3 000 mm wide at Kwun Hang; and
- (e) ancillary road works.

We plan to commence construction in September 2007 for completion in end 2011. A site plan and typical sections showing the proposed works are at **Enclosure 1**.

## JUSTIFICATION

3. Owing to inadequate drainage capacity, the areas in the vicinity of the existing Upper Lam Tsuen River, She Shan River, Upper Tai Po River, and at Ping Long and Kwun Hang, are susceptible to flooding during heavy rainstorms. Moreover, owing to changes in land use in the areas over the years, tracts of natural ground have been paved over and become impermeable. Rainwater can no longer dissipate naturally through ground infiltration as in the past. This has led to an increase in surface run-off and aggravated the extent of flooding in the areas.

4. To alleviate the problem, we propose to carry out drainage improvement works as mentioned in paragraph 2 above. Upon completion of the proposed works, the risk of flooding during heavy rainstorms in the areas concerned will be reduced. The main drainage systems comprising Upper Lam Tsuen River, She Shan River, Upper Tai Po River, and the box culverts at Ping Long and Kwun Hang will then withstand rainstorms with a return period<sup>1</sup> of one in 50 years.

## FINANCIAL IMPLICATIONS

5. We estimate the capital cost of the proposed works to be about \$426 million in MOD prices, made up as follows –

	<b>\$ million</b>
(a) Construction of drainage and ancillary works	332
(i) in Upper Lam Tsuen River	193
(ii) in She Shan River	58
(iii) in Upper Tai Po River	78
(iv) at Ping Long and Kwun Hang	3
(b) Consultants' fees for	35
(i) contract administration	2
(ii) site supervision	33

<sup>1</sup> "Return period" is the average number of years during which a certain severity of flooding will occur once, statistically. A longer return period means a rarer chance of occurrence of a more severe flooding.

	<b>\$ million</b>
(c) Environmental mitigation measures	21
(d) Contingencies	38
Total	<hr/> 426 (in MOD prices) <hr/>

## **PUBLIC CONSULTATION**

6. We consulted the Environment, Housing and Works Committee of Tai Po District Council on 23 July 2004 for the proposed works. Members expressed support for the proposed works.

7. We gazetted the proposed works in Upper Lam Tsuen River, She Shan River and Upper Tai Po River under the Roads (Works, Use and Compensation) Ordinance on 18 November 2005, and subsequently gazetted the amendment plans and scheme on 28 July 2006.

## **ENVIRONMENTAL IMPLICATIONS**

8. The proposed training of Upper Tai Po River is a designated project under the Environmental Impact Assessment (EIA) Ordinance due to the proximity of an archaeological site at Wun Yiu, Tai Po. We completed the Project Profile (PP) for the proposed works in Upper Tai Po River for direct application of an environmental permit under the EIA Ordinance and obtained the permit on 31 August 2005. We shall monitor the vibration and formulate a contingency plan with remedial action to deal with situations when vibration impact on the remains of Wun Yiu Pottery Kiln is detected during the construction stage. The proposed drainage works in Upper Lam Tsuen River, She Shan River, Ping Long and Kwun Hang are not designated projects. We have also completed an Environmental Study (ES) for the proposed works at these locations. Both the PP and ES conclude that the environmental impacts arising from the proposed works could be mitigated within established standards and guidelines upon implementation of the recommended mitigation measures. We will implement the mitigation measures as recommended.

9. We have considered ways in the planning and design stages to reduce the generation of construction and demolition (C&D) materials where possible. For example, we have determined the alignments of the proposed drainage channels such that excavation and demolition of existing structures would be minimized. We will

encourage the contractor to use non-timber formwork and recyclable material for temporary works. We will also require the contractor to carry out on-site sorting to recover reusable/recyclable material from C&D materials to minimise disposal of C&D materials and waste. In addition, we will require the contractor to reuse inert C&D materials (e.g. the excavated material as filling material) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of C&D materials to public fill reception facilities<sup>2</sup>. We will encourage the contractor to maximise the use of recycled and recyclable C&D materials to further minimise the generation of construction waste.

10. We will also require the contractor to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures (e.g. allocation of an area for waste segregation) to avoid, reduce and recycle C&D materials. We will ensure that the day-to-day operations on site comply with the approved plan. We will control disposal of public fill and C&D waste to public filling reception facilities and landfills respectively through a trip-ticket system. We will require the contractors to separate public fill from C&D waste for disposal at appropriate facilities. We will record the disposal, reuse and recycling of C&D materials for monitoring purposes.

11. We estimate that the project will generate about 472 000 tonnes of C&D materials. Of these, we will reuse about 160 500 tonnes (34%) on site and deliver about 273 800 tonnes (58%) to public fill reception facilities for subsequent reuse. In addition, we will dispose of about 37 700 tonnes (8%) at landfills. The total cost for accommodating C&D materials at public fill reception facilities and landfill sites is estimated to be about \$12.1 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne at landfills<sup>3</sup>).

## **TRAFFIC IMPACT**

12. We have carried out a traffic impact assessment (TIA) for the proposed works. The TIA concluded that the proposed works would not cause unacceptable traffic impact.

---

<sup>2</sup> Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of public fill in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

<sup>3</sup> The 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/m<sup>3</sup>), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled

## BACKGROUND INFORMATION

13. In October 1999, we completed a comprehensive review of the drainage systems in Sha Tin and Tai Po under **79CD** “Stormwater drainage master plan study in Sha Tin and Tai Po” (the Study). The Study has identified that some of the existing drainage systems in Sha Tin and Tai Po are inadequate to meet the required flood protection standard and recommended a programme of drainage improvement works to tackle the flooding problems in the areas.

14. In September 2000, we included **109CD** “Drainage improvement in Sha Tin and Tai Po” in Category B for implementing the drainage improvement works recommended under the Study. The scope included the urban drainage improvement works in Sha Tin and Tai Po, and the river improvement works for Upper Lam Tsuen River, She Shan River and Upper Tai Po River in Tai Po.

15. In June 2001, we part-upgraded **109CD** to Category A as **115CD** entitled “Drainage improvement in Sha Tin and Tai Po – consultants’ fees and investigations” at estimated cost of \$24 million for engaging consultants to undertake the site investigations, environmental impact assessment, traffic impact assessment and detailed design for **109CD**. The consultancy commenced in February 2002 for completion in June 2012.

16. In February 2005, we part-upgraded **109CD** to Category A as **136CD** “Drainage improvement works in Sha Tin” at estimated cost of \$72.4 million for carrying out the urban drainage improvement works in Sha Tin. The construction works commenced in March 2005 for completion in December 2007.

17. In November 2005, we part-upgraded **109CD** to Category A as **141CD** “Drainage improvement works in Tai Po town area” at estimated cost of \$82.5 million for carrying out the urban drainage improvement works in the town areas of Tai Po. The construction works commenced in December 2005 for completion in August 2008.

18. We have substantially completed the detailed design for the drainage improvement works for Upper Lam Tsuen River, She Shan River, Upper Tai Po River, Ping Long and Kwun Hang and plan to start the construction of the above proposed works in September 2007 for completion in end 2011. The planning and design of the remaining drainage improvement works for Wai Ha River in Shuen Wan is underway.

19. We estimate that the proposed works will create about 154 jobs (125 for labourers and 29 for professional/technical staff) providing a total employment of 6 380 man-months.

20. Of the 1 104 trees within the project boundary, 495 trees will be preserved. The proposed works will involve the removal of 606 common trees including 586 trees to be felled and 20 trees to be replanted within the project site. Besides, three important trees<sup>4</sup> will be affected during the implementation of the project. A summary of important trees affected is provided at **Enclosure 2**. We will incorporate planting proposals as part of the project, including estimated quantities of 1 099 trees and 25 000 shrubs and 10 000 m<sup>2</sup> of grassed area.

## **WAY FOWARD**

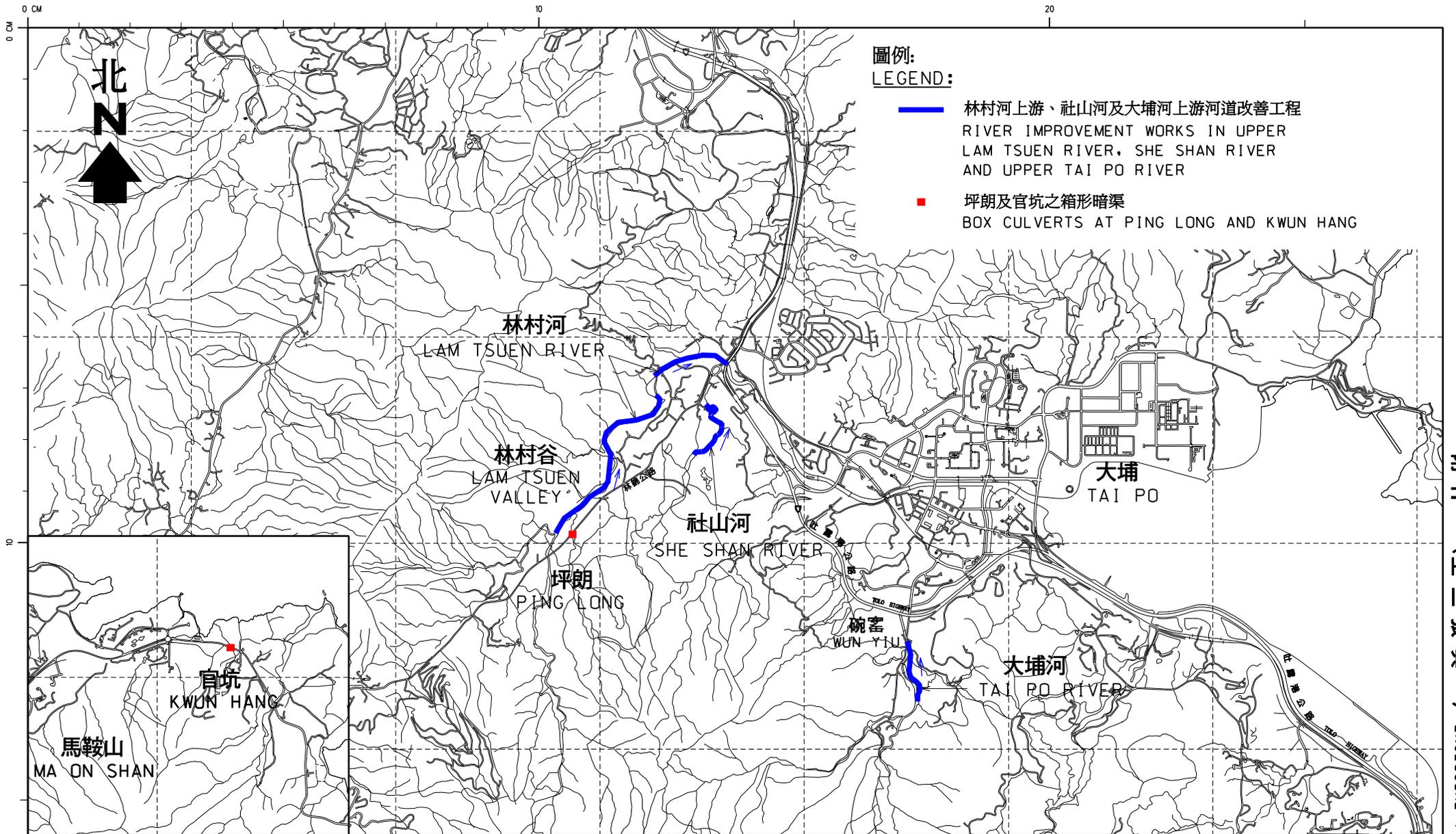
21. Members are invited to support our proposal for part-upgrading of **109CD** for consideration by the Public Works Subcommittee and for funding approval by the Finance Committee in mid 2007.

**Environment, Transport and Works Bureau**  
**May 2007**

---

<sup>4</sup> “Important trees” refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –

- (a) trees over 100 years old or above;
- (b) trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument, and trees in memory of important persons or event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- (e) trees with trunk diameter equal or exceeding 1.0 m (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.

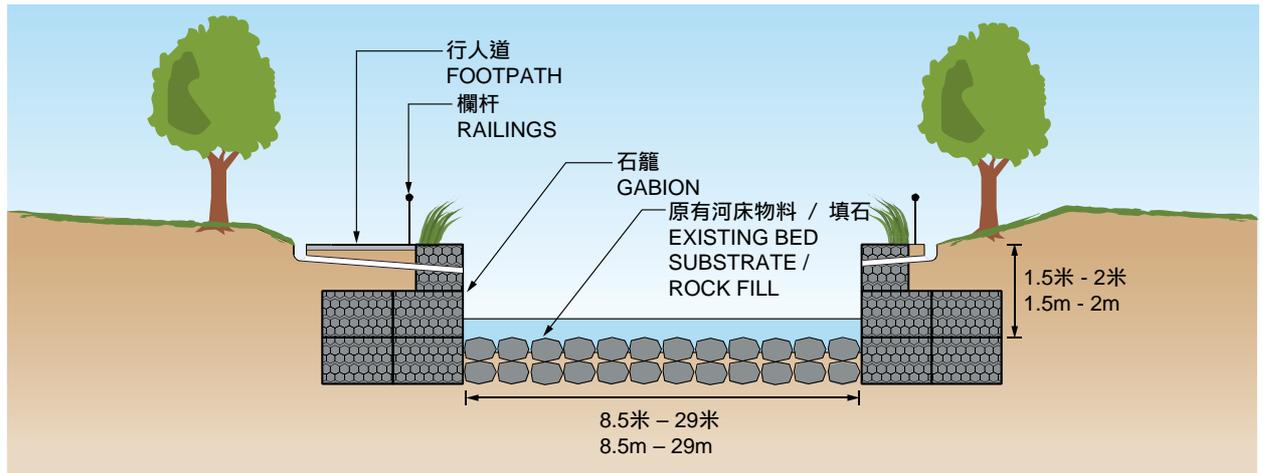


圖例:  
LEGEND:

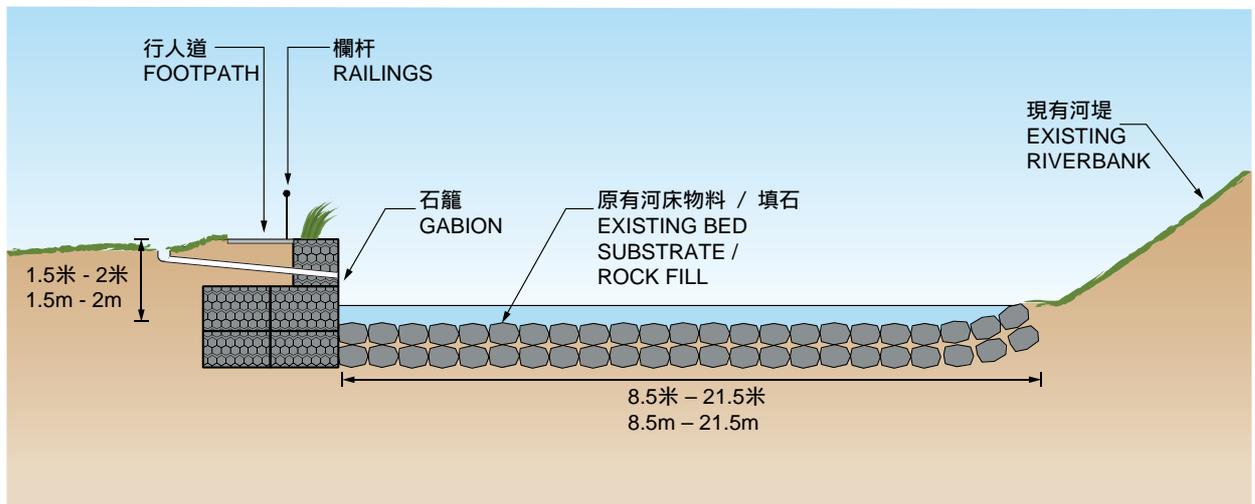
- 林村河上游、社山河及大埔河上游河道改善工程  
RIVER IMPROVEMENT WORKS IN UPPER LAM TSUEN RIVER, SHE SHAN RIVER AND UPPER TAI PO RIVER
- 坪朗及官坑之箱形暗渠  
BOX CULVERTS AT PING LONG AND KWUN HANG

圖則名稱 drawing title  工務計劃項目第 4109CD 號 大埔雨水排放系統改善計劃  PWP ITEM NO. 4109CD DRAINAGE IMPROVEMENT WORKS IN TAI PO	繪畫 drawn	T.M. LEE	日期 date	圖則編號 drawing no.	比例 scale
	核對 checked	S.Y. WONG	日期 date	DDN/109CD1/8005	1:50 000
	審核 vetted	S.K. CHUI	日期 date	保留版權 COPYRIGHT RESERVED	
	部門 office	<b>排水工程處</b> DRAINAGE PROJECTS DIVISION		 <b>香港特別行政區政府渠務署</b> DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	

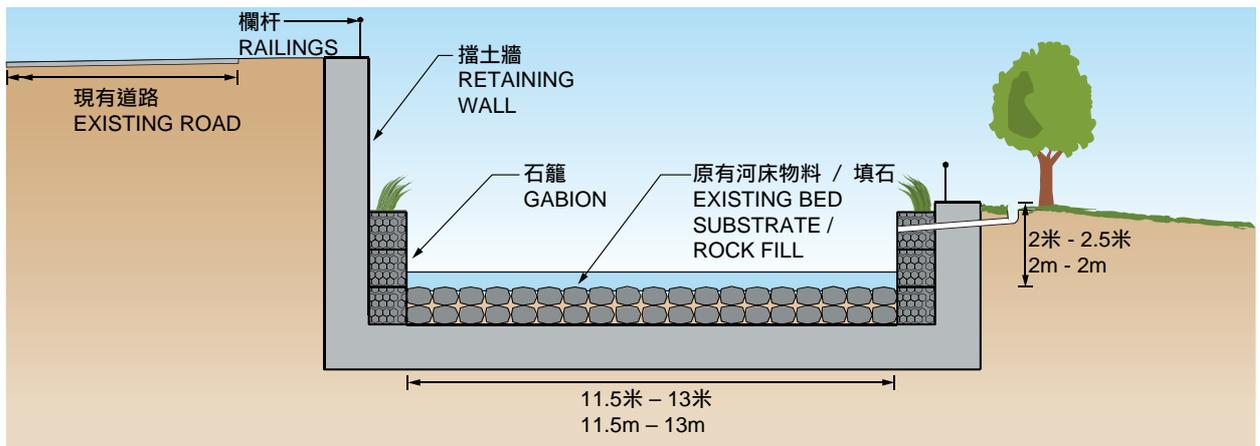
附件一 (全三張其一) ENCLOSURE 1 (SHEET 1 OF 3)



類型一 ( 超過2.7公里沿林村河上游、社山河及大埔河上游之主要典型切面 )  
 TYPE 1 ( Main typical section for over 2.7km along Upper Lam Tsuen River, She Shan River and Upper Tai Po River )



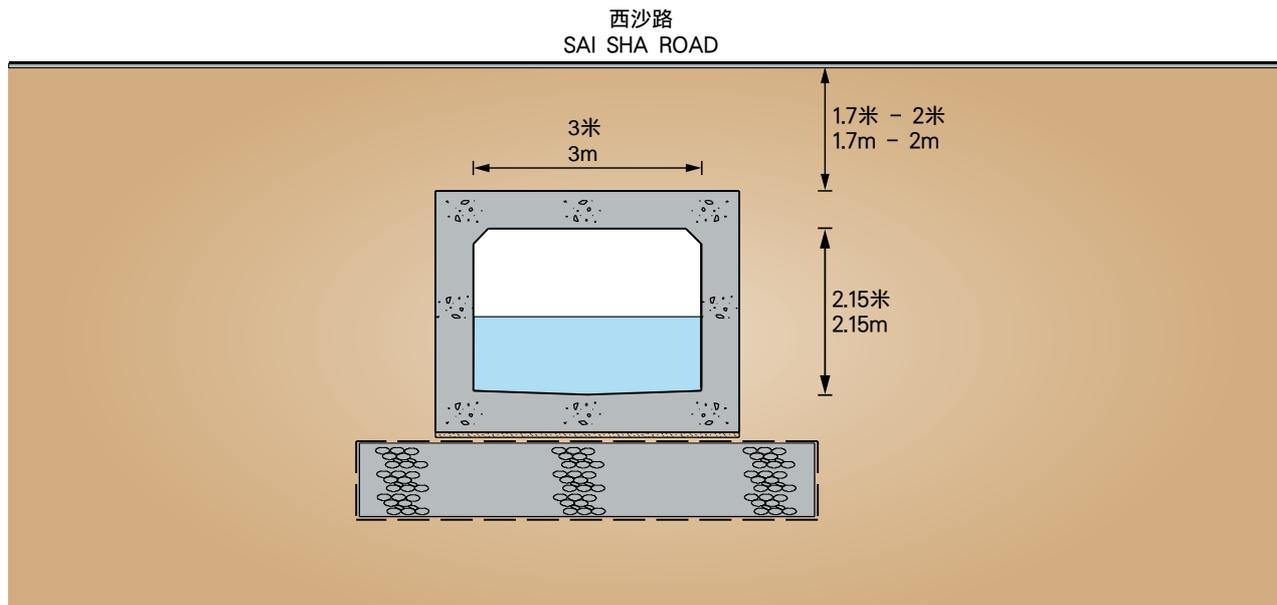
類型二 ( 約0.45公里沿林村河上游、社山河及大埔河上游之典型切面 )  
 TYPE 2 ( Typical section for approximately 0.45km along Upper Lam Tsuen River, She Shan River and Upper Tai Po River )



類型三 ( 約0.4公里沿社山河及大埔河上游之典型切面 )  
 TYPE 3 ( Typical section for approximately 0.4km along She Shan River and Upper Tai Po River )

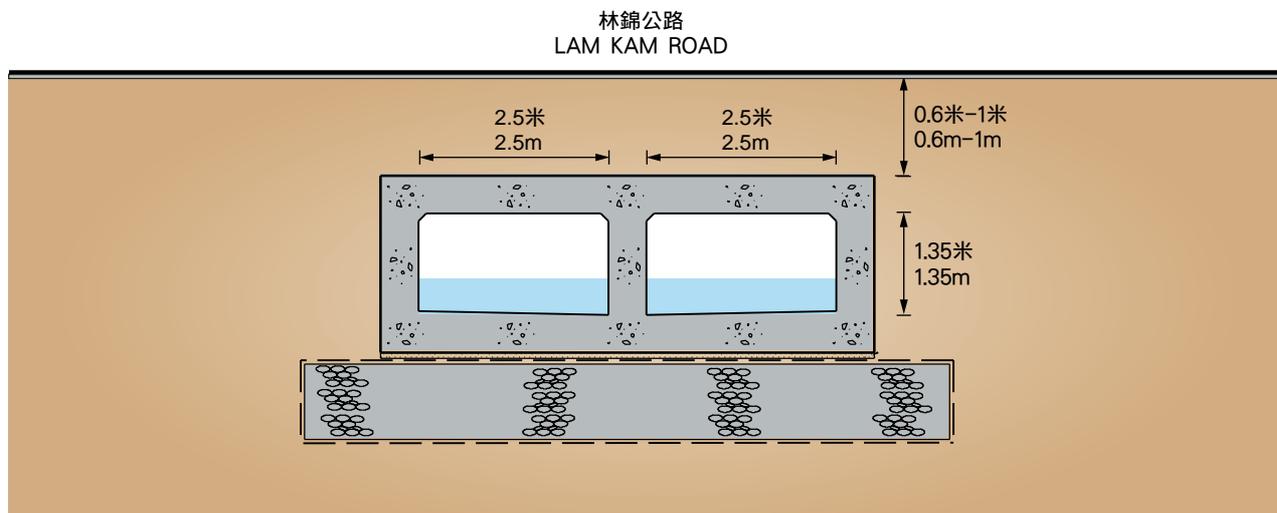
圖則名稱 drawing title 工務計劃項目第4109CD號 大埔雨水排放系統改善計劃 PWP ITEM NO. 4109CD DRAINAGE IMPROVEMENT WORKS IN TAI PO 排水道典型切面圖 TYPICAL CROSS-SECTION OF DRAINAGE CHANNELS	繪畫 drawn	C. H. HO	日期 date	23 MAR. 07	圖則編號 drawing no. DDN/109CD1/8006	比例 scale N.T.S.
	核對 checked	C. C. TAM	日期 date	23 MAR. 07		
	批核 approved	S. K. CHUI	日期 date	23 MAR. 07	保留版權 COPYRIGHT RESERVED	
	部門 office	排水工程處 DRAINAGE PROJECTS DIVISION			 香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	

0.1M



類型四 ( 位於官坑的箱形暗渠之典型切面 )  
TYPE 4 ( Typical section for box culvert at Kwun Hang )

10



類型五 ( 位於坪朗的箱形暗渠之典型切面 )  
TYPE 5 ( Typical section for box culvert at Ping Long )

20

圖則名稱 drawing title 工務計劃項目第4109CD號 大埔雨水排放系統改善計劃 PWP ITEM NO. 4109CD DRAINAGE IMPROVEMENT WORKS IN TAI PO 箱形暗渠典型切面圖 TYPICAL CROSS-SECTION OF BOX CULVERTS	繪畫 drawn	C. H. HO	日期 date	23 MAR. 07	圖則編號 drawing no.	DDN/109CD1/8007	比例 scale	N.T.S.
	核對 checked	C. C. TAM	日期 date	23 MAR. 07				
	批核 approved	S. K. CHUI	日期 date	23 MAR. 07	保留版權 COPYRIGHT RESERVED			
	部門 office	排水工程處 DRAINAGE PROJECTS DIVISION			 香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION			

**Summary of “Important Trees” affected  
109CD - Drainage improvement works in Tai Po**

Tree ref. no.	Tree species (Botanical name)	Tree size			Form <sup>(1)</sup> (Good/Fair/Poor)	Health condition (Good/Fair/Poor)	Amenity value (High/Med/Low)	Survival rate after transplanting (High/Med/Low)	Recommendation (Retain/Transplant/Fell)	Remarks (including justification for proposed tree removal/ecological and historical significance (if any) of affected trees, etc)
		Overall height (metres)	Trunk diameter <sup>(2)</sup> (mm)	Average crown spread (metres)						
<b>She Shan River</b>										
A139	Cinnamomum camphora	10	1000	6	Poor	Fair	Low	Low	Fell	The slope on which tree A139 is located will be cut for the construction of channel wall and formation of footpath. Retention of tree A139 at its original location would require substantial shifting of the channel and footpath alignment away from the slope concerned and thus partial demolition of two village houses in the vicinity. Due to site constraint and the size of the tree, no practical means of transportation would be available to enable transplantation.
<b>Upper Lam Tsuen River</b>										
T77	Ficus microcarpa	10	1200	8	Fair	Fair	Low	Low	Transplant	Trees T77 and T87 will fall within the future drainage channel and affect the hydraulic performance if they are to be retained. Retention of these two trees at the original location would require substantial shifting of the channel alignment or local widening of channel width and thus the need of partial demolition of two village houses in the vicinity.
T87	Bischofia trifoliata	12	1000	8	Poor	Fair	Low	Low	Transplant	

Note:

- (1) Form of a tree will take account of the overall tree size, shape, and any special feature.  
(2) Trunk diameter of a tree refers to its diameter at breast height (i.e. measured at 1.3 m above ground level).