

## **ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE**

### **Head 704 – DRAINAGE**

#### **Civil Engineering – Drainage and erosion protection**

#### **119CD - Drainage improvement in Northern New Territories – package C**

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **119CD**, entitled “Drainage improvement works in Tai Po Tin and Ping Che of Ta Kwu Ling, and Man Uk Pin and Lin Ma Hang of Sha Tau Kok”, to Category A at an estimated cost of \$161.8 million in money-of-the-day prices; and
- (b) the retention of the remainder of **119CD**, re-titled “Drainage improvement in Northern New Territories – package C (remaining works)” in Category B.

### **PROBLEM**

Some areas in the Northern New Territories are susceptible to flooding during heavy rainstorms due to inadequate capacity of the existing drainage systems and natural streamcourses.

**/PROPOSAL .....**

## PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for Development, proposes to upgrade part of **119CD** to Category A at an estimated cost of \$161.8 million in money-of-the-day (MOD) prices for drainage improvement works in Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang in the New Territories.

## PROJECT SCOPE AND NATURE

3. The part of **119CD** which we now propose to upgrade to Category A comprises construction of –

- (a) about 0.8 kilometres (km) of drainage channel with width ranging from 5 metres (m) to 8 m and provision of ancillary works in Tai Po Tin;
- (b) about 0.7 km of drainage channel with width ranging from 5 m to 8 m, about 150 m of twin-cell box culvert with internal cell dimensions of 4 m in width by 3 m in height and provision of ancillary works in Ping Che;
- (c) about 1.7 km of drainage channels with width ranging from 1 m to 45 m, about 80 m single-cell box culvert with internal cell dimensions ranging from 3 m in width by 1 m in height to 4 m in width by 2 m in height and provision of ancillary works in Man Uk Pin; and
- (d) improvement works for about 0.2 km of bank along the existing streamcourses and provision of ancillary works in Lin Ma Hang.

———— A site plan and typical sections of the proposed works are at Enclosure 1.

4. We plan to commence construction in December 2007 for completion in June 2011.

## JUSTIFICATION

5. Owing to developments and extensive changes in land use in the Northern New Territories over the years, large tracts of natural ground have been

/paved .....

paved over and become impermeable. Rainwater can no longer dissipate naturally through ground infiltration. This has led to a significant increase in surface run-off and an overloading of the existing drainage systems and streamcourses. As such, many areas of the Northern New Territories are susceptible to flooding during heavy rainstorms.

6. To alleviate the problem, we propose to carry out drainage improvement works in paragraph 3 above. Upon completion of the proposed works, the risk of flooding during heavy rainstorms in the areas concerned will be reduced. The drainage systems in Tai Po Tin, Ping Che, Man Uk Pin and Lin Ma Hang will be generally improved to withstand rainstorms with a return period<sup>1</sup> of one in ten years.

### FINANCIAL IMPLICATIONS

7. We estimate the cost of the proposed works to be \$161.8 million in MOD prices (see paragraph 8 below), made up as follows –

	<b>\$ million</b>
(a) Construction of drainage improvement and ancillary works in	126.3
(i) Tai Po Tin	24.6
(ii) Ping Che	35.5
(iii) Man Uk Pin	60.5
(iv) Lin Ma Hang	5.7
(b) Environmental mitigation measures	5.3
(c) Consultants' fees for	12.5
(i) contract administration	0.7
(ii) site supervision	11.8
	/(d) .....

<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>
(d)	Contingencies	14.4
	Sub-total	158.5
		(in September 2007 prices)
(e)	Provision for price adjustment	3.3
	Total	161.8
		(in MOD prices)

\_\_\_\_\_ A breakdown of the estimates for consultants' fees by man-months is at Enclosure 2.

8. Subject to approval, we will phase the expenditure as follows –

<b>Year</b>	<b>\$ million (Sept 2007)</b>	<b>Price Adjustment Factor</b>	<b>\$ million (MOD)</b>
2007 – 2008	2.6	1.00000	2.6
2008 – 2009	48.5	1.00750	48.9
2009 – 2010	42.4	1.01758	43.1
2010 – 2011	33.8	1.02775	34.7
2011 – 2012	23.7	1.03803	24.6
2012 – 2013	7.5	1.05619	7.9
	158.5		161.8

/9. ....

9. We have derived the MOD estimate on the basis of Government's latest forecast of trend rate of change in the prices of public sector building and construction output for the period 2007 to 2013. We will tender the proposed works under a standard re-measurement contract because of uncertainties of the existence and alignment of underground utilities and ground condition. The contract will provide for price adjustments as the contract period will exceed 21 months.

10. We estimate the annual recurrent expenditure arising from the proposed works to be about \$0.7 million.

## **PUBLIC CONSULTATION**

11. We consulted the North District Council District Development & Environmental Improvement Committee, the Sha Tau Kok Rural Committee and the Ta Kwu Ling Rural Committee on 23 May 2005, 4 February 2005 and 28 February 2005 respectively for the proposed works. Members supported the implementation of the proposed works.

12. We gazetted the proposed ancillary road works under the Roads (Works, Use and Compensation) Ordinance on 13 April 2006 and received a total of nine objections. The objectors were concerned about land resumption and clearance and corresponding impacts on their living environment and business operations. Upon revision of the proposed ancillary road works to reduce resumption and clearance of lands and structures, all objections were withdrawn. We gazetted the amendment plans and scheme on 2 March 2007 and did not receive any further objection. The scheme was authorised by the Secretary for Transport and Housing on 26 July 2007.

13. We consulted the Legislative Council Panel on Planning, Lands and Works on the proposed works by circulation of an information paper on 17 July 2007. Members raised no objection to the proposed works.

## **ENVIRONMENTAL IMPLICATIONS**

14. The proposed drainage improvement works at Lin Ma Hang and part of the works at Man Uk Pin are designated projects under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499) as Lin Ma Hang has been designated as a Site of Special Scientific Interest (SSSI) and the works at Man Uk Pin are in the proximity of a Conservation Area in Loi Tung. An environmental permit is required for the construction and operation of the project.

/In .....

In July 2007, the environmental impact assessment (EIA) report for the project was approved under the EIAO and an environmental permit was issued. The EIA report concluded that the proposed works will not give rise to any insurmountable environmental impacts to the Conservation Area in Loi Tung and the SSSI in Lin Man Hang, provided that the relevant legislation, guidelines and recommended mitigation measures are followed; and the environmental impact of the project can be controlled to within the criteria under EIAO and the Technical Memorandum on EIA Process. The remaining works of the project are not designated projects and we have completed an Environmental Study (ES) in September 2006 which concluded that with full implementation of the recommended mitigation measures and the environmental monitoring and audit programme, the proposed works would not have significant residual environmental impacts. We will incorporate the recommendations of the EIA report and ES into the works contract for implementation.

15. For short-term impacts caused by the proposed works during construction, we will control noise, dust and site run-off within the standards and guidelines through implementation of mitigation measures in the works contract, such as the use of temporary noise barriers and silenced construction plants to reduce noise generation, water-spraying to reduce emission of fugitive dust and strict control on diversion of stream flows and works within streamcourses. We will also carry out regular site inspection to ensure that these recommended mitigation measures and good site practices will be properly implemented on site. We have included \$5.3 million (in September 2007 prices) in the project estimate for implementing the environmental mitigation measures. In addition, we have adopted environmentally friendly designs such as two-stage channel with existing natural river bed and channels with gabion walls and mattress lining in order to reduce the impact on the stream habitat.

16. We have considered ways in the planning and design stages to reduce the generation of construction waste where possible. For example, we have determined the alignments of the proposed drainage channels such that excavation and demolition of existing structures would be minimised. In addition, we will require the contractor to reuse inert construction waste (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 inert construction waste to public fill reception facilities<sup>2</sup>. We will encourage the contractor to maximise the use of recycled and recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

/17. ....

---

<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 inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

17. 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 contractors to separate inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control disposal of inert construction waste and non-inert construction waste to public filling reception facilities and landfills respectively through a trip-ticket system.

18. We estimate that the project will generate in total about 123 150 tonnes of construction waste. Of these, we will reuse about 37 970 tonnes (31%) of inert construction waste on site and deliver about 79 980 tonnes (65%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of about 5 200 tonnes (4%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be about \$2.8 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne<sup>3</sup> at landfills).

## **TRAFFIC IMPACTS**

19. We have carried out a traffic impact assessment for the proposed works, which concluded that the proposed works would not cause any unacceptable traffic impact.

## **LAND ACQUISITION**

20. We will clear about 53 900 square metres (m<sup>2</sup>) of Government land and resume about 48 553 m<sup>2</sup> of private agricultural land. The land acquisition and clearance will affect two households involving five persons and eighteen temporary domestic structures. Seven of these structures are on private land and the remaining eleven are on Government land. One household involving four persons is residing on private land and another household involving one person is residing on Government land. The Director of Housing will rehouse the families according to their eligibility under the prevailing Government policy. We will charge the land resumption and clearance costs, estimated to be about \$109.37 million comprising about \$101.65 million for land resumption and about \$7.72 million for clearance, to **Head 701 – Land Acquisition.**

**/BACKGROUND .....**

---

<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**

21. In October 1999, we completed a comprehensive review of the drainage systems in the Northern New Territories under **55CD** “Drainage Master Plan Study in the Northern New Territories” with an approved project estimate of \$37.3 million. The Study has identified that some existing upstream and local drainage systems are inadequate to meet the required flood protection standard and future development needs. The Study recommends a three-package programme of drainage improvement works to tackle the flooding problems in the areas. Package A covers works in San Tin North, Fanling, Sheung Shui and Tai Po North. Package B covers works in San Tin South, Kwu Tung, Ma Tso Lung and Fu Tei Au, whereas Package C covers works in Ta Kwu Ling, Lung Yuek Tau, Man Uk Pin and Ling Ma Hang.

22. In November 2001, we included **119CD** “Drainage improvement in Northern New Territories – package C” in Category B.

23. In July 2002, we upgraded part of **119CD** to Category A as **130CD** “Drainage improvement in Northern New Territories – package C – consultants’ fees and investigations”, with an approved project estimate of \$15.4 million, for engaging consultants to undertake site investigations and surveys, impact assessments and design for the drainage improvement works for the whole project. The consultancy commenced in July 2003 for completion in November 2007.

24. In May 2007, we upgraded part of **119CD** to Category A as **151CD** “Drainage improvement works in Lung Yeuk Tau, Kwan Tei South and Leng Tsai, Fanling”, with an approved project estimate of \$120.3 million, for carrying out the drainage improvement works at Lung Yeuk Tau, Kwan Tei South and Leng Tsai in Fanling. The construction works commenced in June 2007 for completion in June 2010.

25. We have substantially completed the design of the proposed works mentioned in paragraph 3 above. We will continue to plan and conduct detailed design of the remaining works involving the improvement of a section of river in Ta Kwu Ling.

/26. ....



26. Of the 761 trees within the project boundary, 530 trees will be preserved. The proposed works will involve the removal of 231 common trees including 125 trees to be felled and 106 trees to be replanted within the project site. All trees to be removed are not important trees<sup>4</sup>. We will incorporate planting proposal as part of the project, including estimated quantities of 750 trees, 11 000 shrubs and 9 000 m<sup>2</sup> of grassed area.

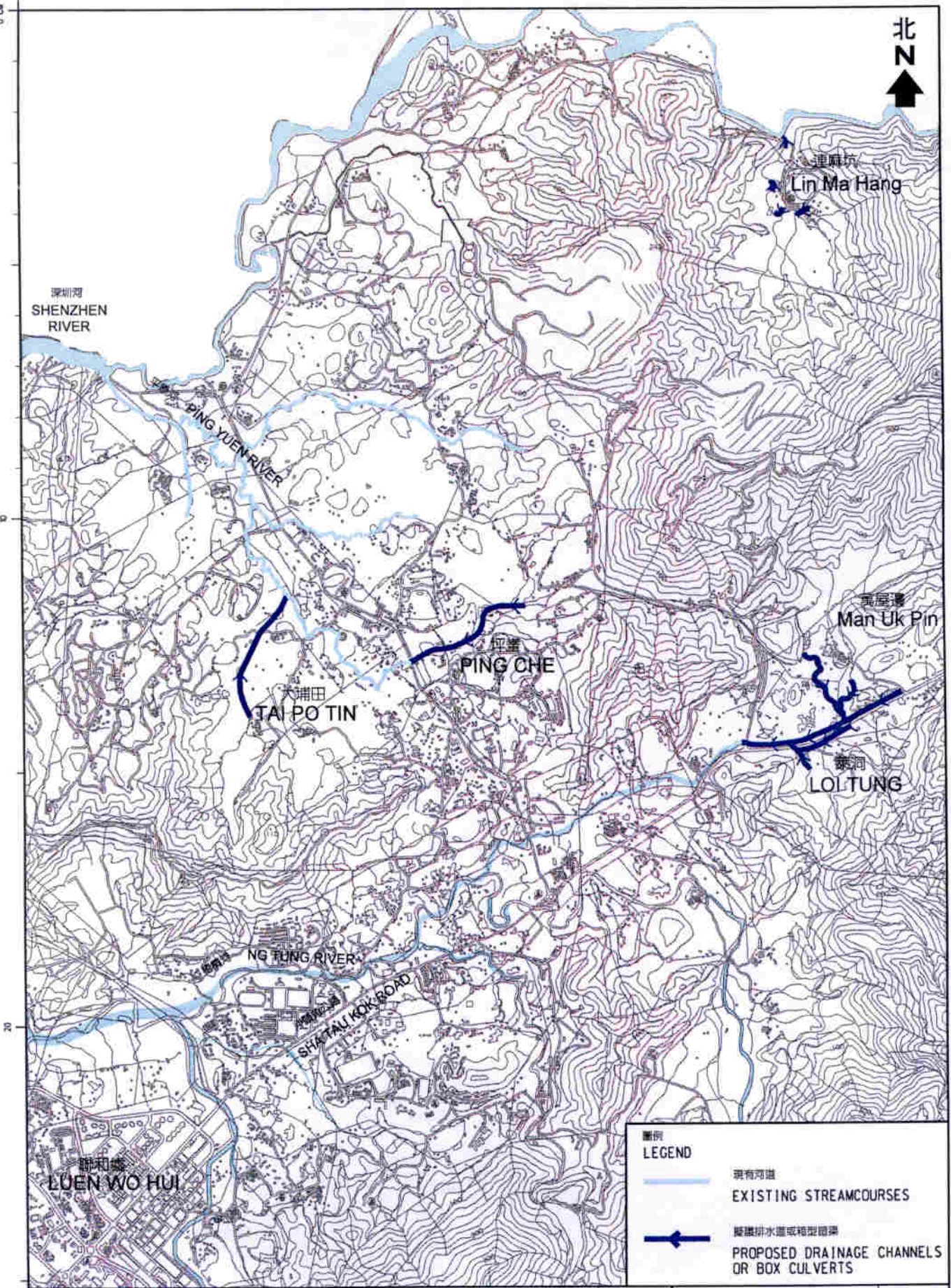
27. We estimate that the proposed works will create about 80 jobs (64 for labourers and 16 for professional/technical staff) providing a total employment of 2 550 man-months.

-----  
Development Bureau  
October 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 –

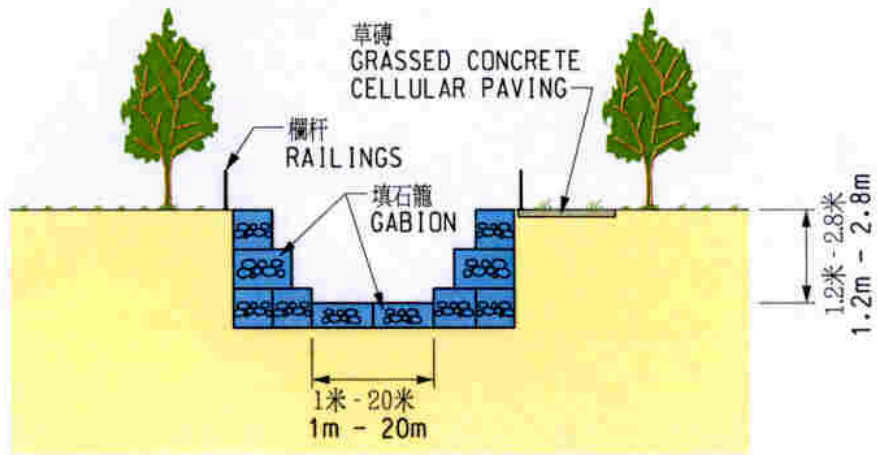
- (a) trees over 100 years old or above;
- (b) trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument, and trees in memory of important persons or event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (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.



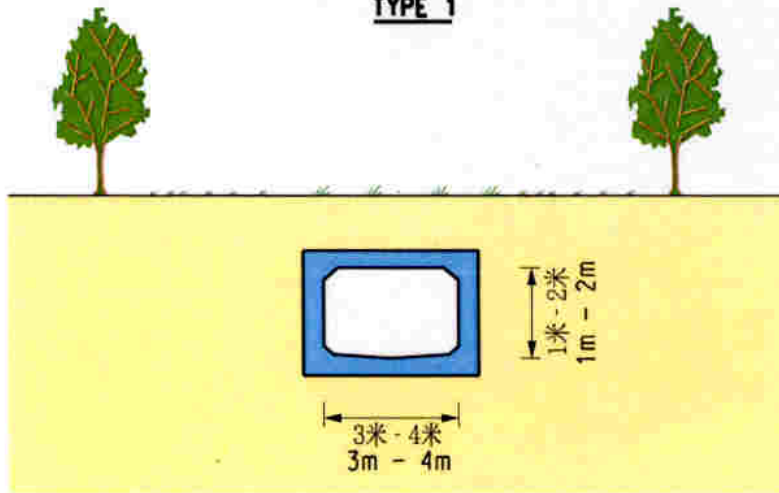
**圖例 LEGEND**

- 現有河道 EXISTING STREAMCOURSES
- > 擬議排水渠或箱型暗渠 PROPOSED DRAINAGE CHANNELS OR BOX CULVERTS

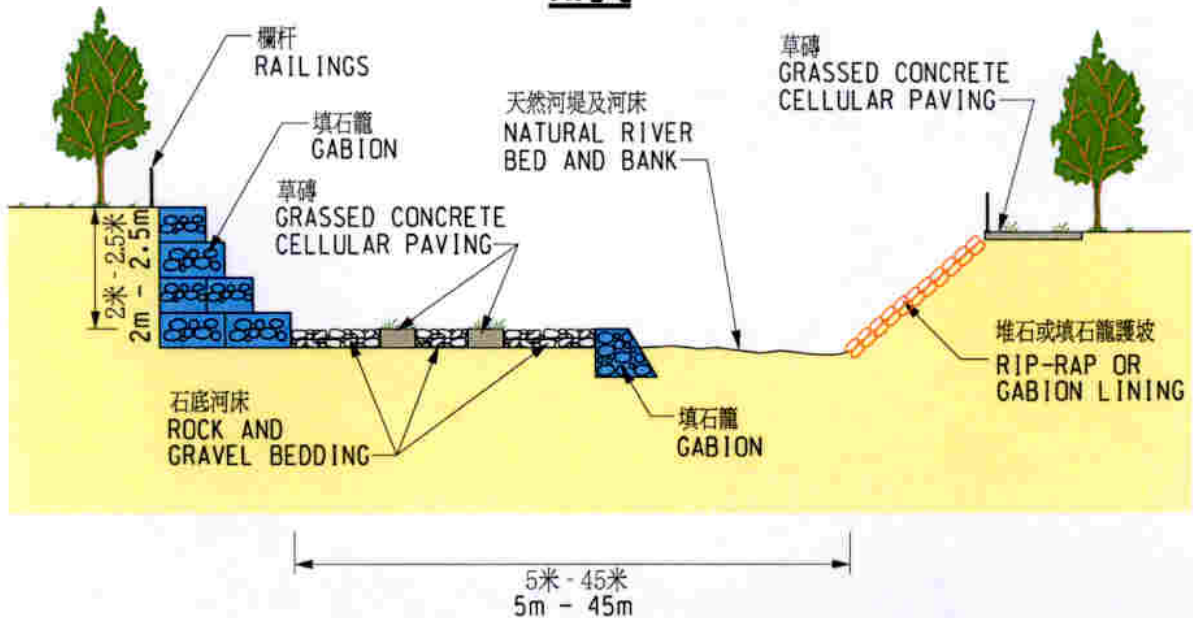
<p>圖則名稱 drawing title</p> <p>工務工程計劃編號119CD                  新界北部雨水排放系統改善計劃 - C部分                  PWP ITEM NO. 119CD                  DRAINAGE IMPROVEMENT                  IN NORTHERN NEW TERRITORIES                  - PACKAGE C</p>	繪畫 drawn	S. Y. WONG	日期 date	15 MAY. 07	圖則編號 drawing no.	DDN/119CD1/8018	比例 scale	1:30000
	核對 checked	S. K. CHUI	日期 date	15 MAY. 07	保留版權 COPYRIGHT RESERVED			
	批核 approved	B. K. KWOK	日期 date	15 MAY. 07	香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION			
部門 office 排水工程處 DRAINAGE PROJECTS DIVISION								



類型一  
**TYPE 1**



類型二  
**TYPE 2**



類型三  
**TYPE 3**

圖則名稱 drawing title  
工務工程計劃編號119CD  
新界北部雨水排放系統改善計劃—C部分  
PWP ITEM No. 119CD  
DRAINAGE IMPROVEMENT IN NORTHERN NEW  
TERRITORIES - PACKAGE C  
排水道典型切面圖  
TYPICAL CROSS-SECTION  
OF DRAINAGE CHANNELS

繪畫 drawn S. C. TAM 日期 date 15 MAY.07  
核對 checked S. K. CHUI 日期 date 15 MAY.07  
批核 approved B. K. KWOK 日期 date 15 MAY.07  
部門 office 排水工程部  
DRAINAGE PROJECTS DIVISION

圖則編號 drawing no. DDN/119CD1/8019 比例 scale N.T.S.  
保留版權 COPYRIGHT RESERVED  
香港特別行政區政府渠務署  
DRAINAGE SERVICES DEPARTMENT  
GOVERNMENT OF THE  
HONG KONG  
SPECIAL ADMINISTRATIVE REGION

**119CD – Drainage improvement works in Northern New Territories – package C**

**Breakdown of the estimates for consultant’s fees**

			Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
<b>Consultants’ staff costs</b>						
(a)	Contract administration (Note 2)	Professional	—	—	—	0.5
		Technical	—	—	—	0.2
(b)	Site supervision by resident site staff of the consultants (Note 3)	Professional	66	38	1.6	6.0
		Technical	192	14	1.6	5.8
<b>Total consultants’ staff costs</b>						12.5

\* MPS = Master Pay Scale

**Notes**

1. A multiplier of 1.6 is applied to the average MPS point to estimate the cost of resident site staff supplied by the consultants. (As at 1 April 2007, MPS Pt. 38 = \$56,945 per month and MPS Pt. 14 = \$18,840 per month.)
2. The consultants’ staff cost for contract administration are based on the lump sum fees calculated in accordance with the existing consultancy agreement which the Director of Drainage Services has agreed with the consultants undertaking the design and construction of the project. The construction phase of the assignment for the proposed works will only be executed subject to Finance Committee’s approval to upgrade the proposed works to Category A.
3. We will only know the actual man-months and actual costs for site supervision after completion of the construction works.