

## 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 Lung Yeuk Tau, Kwan Tei South and Leng Tsai, Fanling”, to Category A at an estimated cost of \$120.3 million in money-of-the-day prices; and
- (b) the retention of the remainder of **119CD** in Category B.

### PROBLEM

Many areas in the Northern New Territories are susceptible to flooding during heavy rainstorms due to the 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 the Environment, Transport and Works, proposes to upgrade part of **119CD** to Category A at an estimated cost of \$120.3 million in money-of-the-day (MOD) prices for carrying out the improvement works for the existing drainage systems in Lung Yeuk Tau, Kwan Tei South and Leng Tsai in Fanling.

## PROJECT SCOPE AND NATURE

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

- (a) construction of about 3 kilometres (km) of drainage channels with width ranging from 1.5 metres (m) to 35 m and about 0.2 km of box culverts with width ranging from 5 m to 16 m, and provision of ancillary works in Lung Yeuk Tau and Kwan Tei South; and
- (b) construction of about 0.3 km of drainage channels of 2 m in width and provision of ancillary works in Leng Tsai.

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

4. We plan to commence construction in June 2007 for completion in June 2010.

## 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 over and become impermeable. Rainwater which would previously dissipate naturally through ground infiltration can no longer do so. This has led to significant increase in surface run-off and 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. Upon completion of the proposed works, the risk of flooding during heavy rainstorms in the areas concerned will be reduced. The drainage systems in Lung Yeuk Tau, Kwan Tei South and Leng Tsai 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 about \$120.3 million in MOD prices (see paragraph 8 below), made up as follows –

		<b>\$ million</b>	
(a)	Construction of drainage channels, box culverts and ancillary works in	93.6	
	(i) Lung Yeuk Tau and Kwan Tei South	78.3	
	(ii) Leng Tsai	15.3	
(b)	Environmental mitigation measures	4.5	
(c)	Consultants' fees for	9.5	
	(i) contract administration	0.7	
	(ii) site supervision	8.8	
(d)	Contingencies	10.6	
	Sub-total	118.2	(in September 2006 prices)
(e)	Provision for price adjustment	2.1	
	Total	120.3	(in MOD prices)

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

/8. ....

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

---

<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.

Year	\$ million (Sept 2006)	Price Adjustment Factor	\$ million (MOD)
2007 – 2008	12.8	0.99900	12.8
2008 – 2009	28.2	1.00649	28.4
2009 – 2010	31.0	1.01656	31.5
2010 – 2011	26.6	1.02672	27.3
2011 – 2012	19.6	1.03699	20.3
	118.2		120.3

9. We have derived the MOD estimate on the basis of the Government's latest forecast of trend rate of change in the prices of public sector building and construction output for the period 2007 to 2012. We will tender the proposed works under a standard re-measurement contract because of uncertainties of the existence and alignment of the underground utilities and the ground condition. The contract will provide for price adjustments because the contract period will exceed 21 months.

10. We estimate the annual recurrent expenditure arising from this proposed works to be about \$0.8 million.

## **PUBLIC CONSULTATION**

11. We consulted the North District Council and the Fanling Rural Committee on 23 May 2005 and 13 April 2005 respectively for the proposed works. Members supported the implementation of the proposed works.

12. We gazetted the proposed works under the Roads (Works, Use and Compensation) Ordinance on 2 December 2005 and received a total of four objections. Three objectors were concerned about land resumption, and one was concerned about the adverse environmental impacts during construction. Three

/objectors .....

objectors withdrew their objections upon our clarification of the project details and revision of the scheme to reduce resumption and clearance of lands and

structures. We did not receive any response from the remaining objector after we had provided him with detailed explanation on the need for the resumption and the objection was considered unresolved. After considering the objections, the Chief Executive in Council authorised the proposed works with modifications on 5 December 2006.

13. We consulted the Legislative Council Panel on Planning, Lands and Works on the proposed works by circulation of an information paper on 14 February 2007. Members raised no objection to the proposed works.

### **ENVIRONMENTAL IMPLICATIONS**

14. The proposed works is not a designated project under the Environmental Impact Assessment Ordinance. We have completed an Environmental Study (ES) in 2006 which concluded that with full implementation of the recommended mitigation measures and environmental monitoring and audit programme, the proposed works would not have significant residual environmental impacts. We would incorporate the ES recommendations into the works contract for implementation.

15. For short-term impacts caused by the works during construction, we will control noise, dust and site run-off within established standards and guidelines through implementation of mitigation measures such as the use of temporary noise barriers and silenced construction equipment to reduce noise generation, water-spraying to reduce emission of dust and working in dry environment with barriers to control water pollution during excavation. 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 \$4.5 million (in September 2006 prices) in the project estimate for implementing the environmental mitigation measures.

16. We have considered ways in the planning and design stage 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 to minimise excavation and demolition of existing structures, and adopted standardised sections of reinforced concrete structures to minimise the use of formwork. We will encourage the contractor to use non-timber

/formworks .....

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 and 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.

17. 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 WMP. We will control disposal of public fill and C&D waste to public fill 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.

18. We estimate that the project will generate about 289 400 tonnes of C&D materials. Of these, we will reuse about 87 700 tonnes (30%) on site and deliver 191 600 tonnes (66%) to public fill reception facilities for subsequent reuse. In addition, we will dispose of 10 100 tonnes (4%) at landfills. The total cost for accommodating C&D materials at public fill reception facilities and landfill sites is estimated to be about \$6.4 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>).

## LAND ACQUISITION

19. We will clear about 108 270 square metres (m<sup>2</sup>) of Government land and resume about 38 214 m<sup>2</sup> of private agricultural land. The land resumption and

/clearance .....

clearance will affect 11 households involving 27 persons and 29 temporary domestic structures. Of these, five households involving 14 persons and 20 temporary domestic structures are residing on Government land, and six households involving 13 persons and nine temporary domestic structures are residing on private

---

<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.

agricultural land. The Director of Housing will offer eligible families with public housing under the prevailing Government policy. We will charge the land resumption and clearance costs, estimated to be about \$96.9 million, comprising about \$83.0 million for land resumption and about \$13.9 million for clearance, to **Head 701 – Land Acquisition**.

## **TRAFFIC IMPACTS**

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

## **BACKGROUND INFORMATION**

21. In October 1999, we completed a comprehensive review of the drainage systems in 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 Ping and Lin Ma Hang.

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

23. In June 2002, we part-upgraded **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. ....

24. Taking into account the phasing of land resumption and clearance for lands required in different locations, we will implement the drainage improvement works under **119CD** in two phases.

25. We have substantially completed the design for Phase 1 which covers the proposed works in paragraph 3 above. Phase 2 comprises the construction of drainage channels in Ta Kwu Ling, Man Uk Pin and Lin Ma Hang. Planning and design works for phase 2 are in progress.

26. Of the 726 trees within the project boundary, 552 trees will be preserved. The proposed works will involve the removal of 174 common trees including 154 trees to be felled and 20 trees to be replanted within the project site. All trees to be removed are not important trees<sup>4</sup>. We will incorporate planting proposals as part of the project, including estimated quantities of 1 000 trees, 17 000 shrubs and 15 000 m<sup>2</sup> of grassed area.

27. We estimate that the proposed works will create about 75 jobs (60 for labourers and 15 for professional/technical staff) providing a total employment of 2 000 man-months.

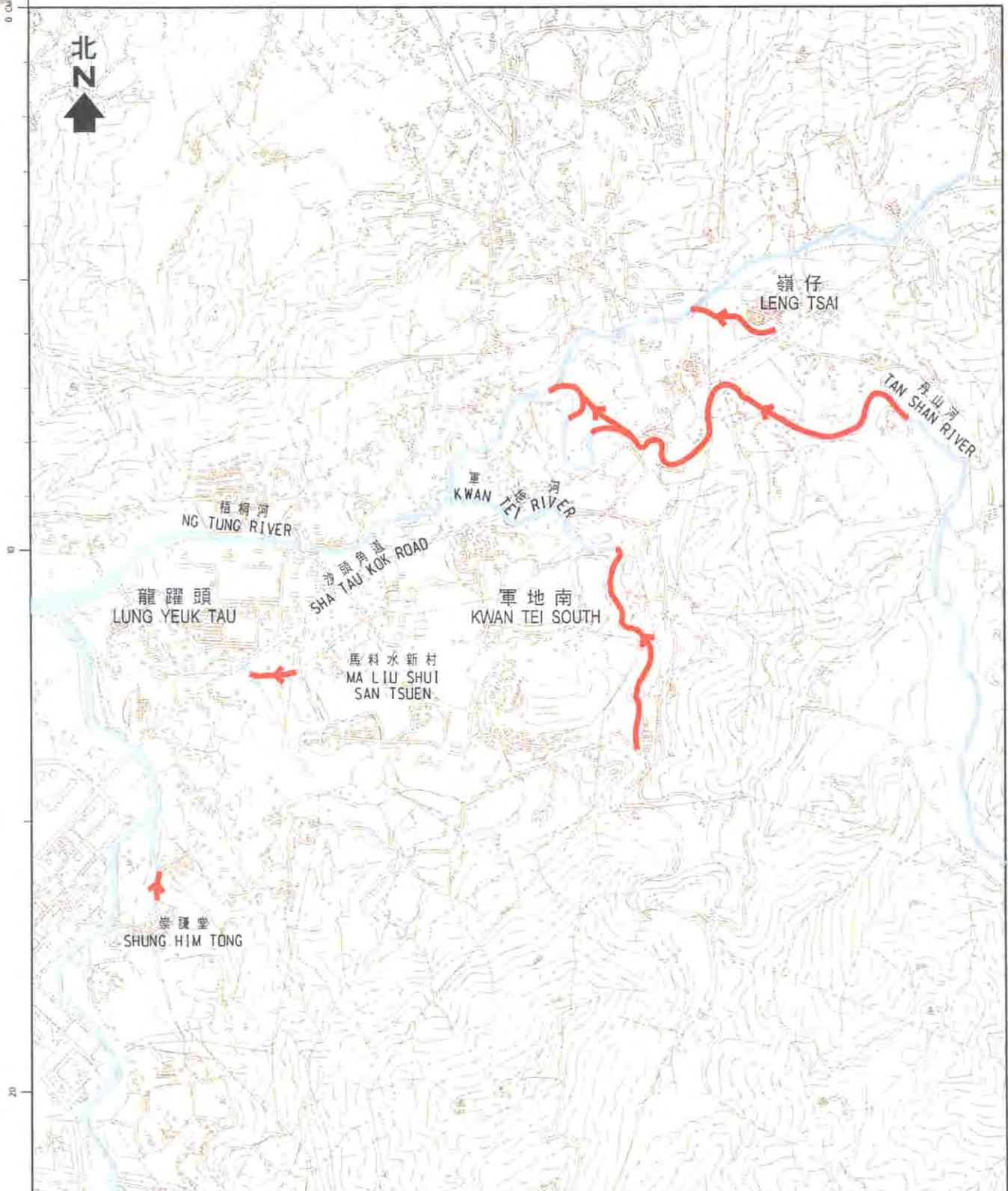
-----

Environment, Transport and Works Bureau  
April 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.



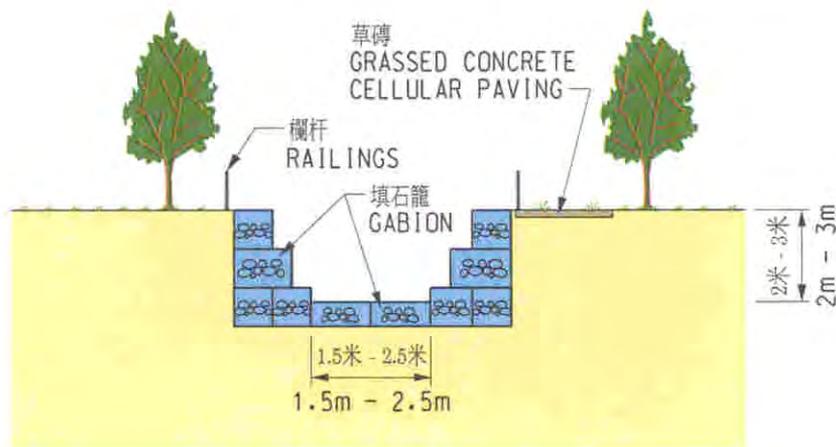
圖例  
LEGEND

-  現有河道  
EXISTING STREAMCOURSES
-  擬議排水道或箱型暗渠  
PROPOSED DRAINAGE CHANNELS  
OR BOX CULVERTS

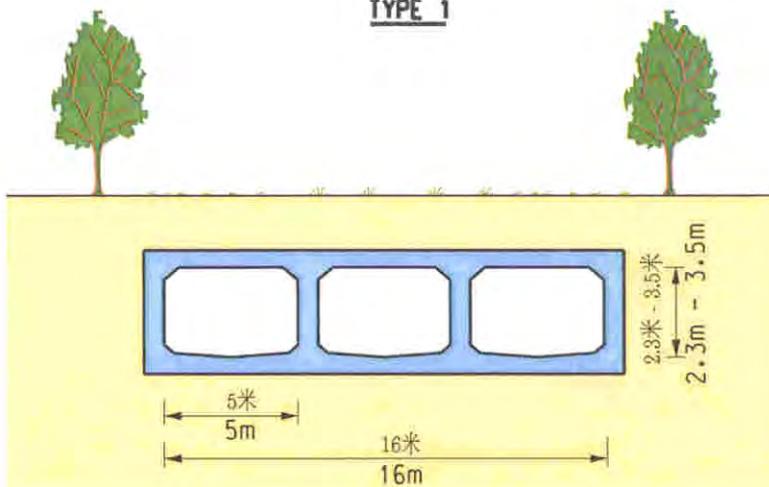
圖則名稱 drawing title  
工務工程計劃編號 119CD  
新界北部雨水排放系統改善計劃—C部分  
PWP ITEM No. 119CD  
DRAINAGE IMPROVEMENT IN  
NORTHERN NEW TERRITORIES  
- PACKAGE C

繪畫 drawn	C.K. WONG	日期 date	1 DEC. 06
核對 checked	S.S. POON	日期 date	1 DEC. 06
批核 approved	B.K. KWOK	日期 date	1 DEC. 06
部門 office	排水工程處 DRAINAGE PROJECTS DIVISION		

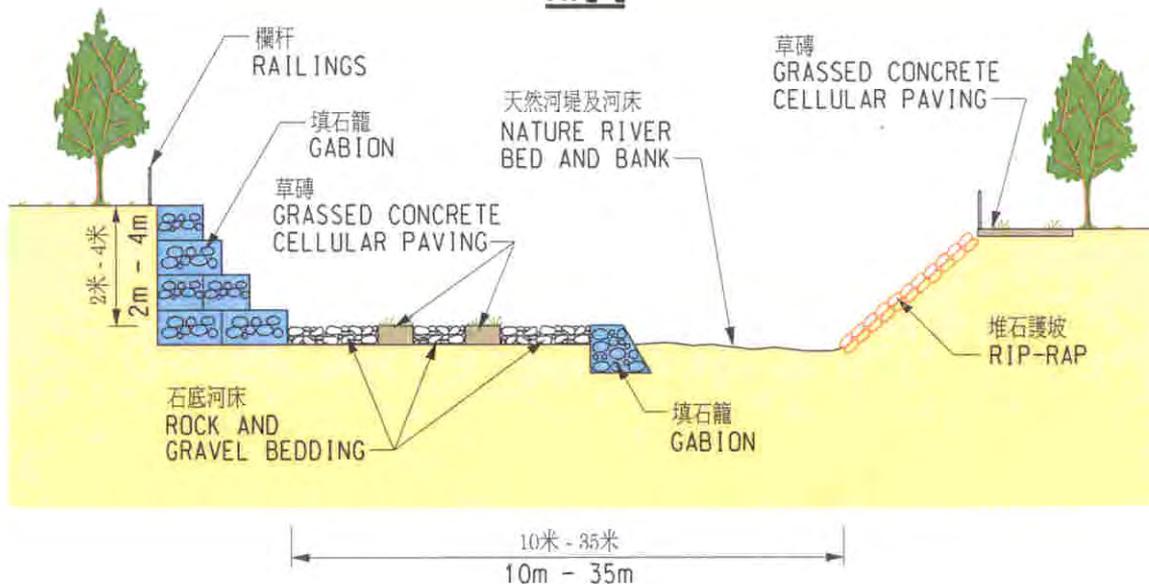
圖則編號 drawing no.	比例 scale
DDN/119CD1/8001	N.T.S.
保留版權 COPYRIGHT RESERVED	
 香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	



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	C. K. WONG	日期 date	1 DEC. 06
核對 checked	S. S. POON	日期 date	1 DEC. 06
批核 approved	B. K. KWOK	日期 date	1 DEC. 06
部門 office	排水工程處 DRAINAGE PROJECTS DIVISION		

圖則編號 drawing no.	比例 scale
DDN/119CD1/8002	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 in Northern New Territories – package C

**Breakdown of the estimate for consultants' fees**

Consultants' staff costs			Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$million)
(a)	Contract	Professional	-	-	-	0.6
	administration (Note 2)	Technical	-	-	-	0.1
(b)	Site supervision by resident site staff of the consultants (Note 3)	Professional	33	38	1.6	2.9
		Technical	205	14	1.6	5.9
<b>Total consultants' staff costs</b>						9.5

\* 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 January 2007, MPS Pt. 38 = \$54,255 per month and MPS Pt.14 = \$18,010 per month.)
2. The consultants' fees for contract administration are based on the lump sum fees calculated in accordance with the 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 after completion of the construction works.