

## ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

### HEAD 704 – DRAINAGE

#### Civil Engineering – Drainage and erosion protection

#### 135CD – Drainage improvement works at Yung Shue Long New Village in Lamma Island, Tseng Lan Shue in Sai Kung and Shui Lau Hang in Ta Kwu Ling

Members are invited to recommend to Finance Committee the upgrading of **135CD** to Category A at an estimated cost of \$46.1 million in money-of-the-day prices for drainage improvement works at Yung Shue Long New Village, Tseng Lan Shue and Shui Lau Hang.

### PROBLEM

The areas around Yung Shue Long New Village in Lamma Island, Tseng Lan Shue in Sai Kung and Shui Lau Hang in Ta Kwu Ling are susceptible to flooding during heavy rainstorms due to inadequate capacity of the existing drainage systems and natural watercourses.

### PROPOSAL

2. The Director of Drainage Services (D of DS), with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade **135CD** to Category A at an estimated cost of \$46.1 million in money-of-the-day (MOD) prices for implementation of the proposed drainage improvement works at Yung Shue Long New Village, Tseng Lan Shue and Shui Lau Hang.

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**PROJECT SCOPE AND NATURE**

3. The scope of the project comprises –
- (a) construction of about 130 metres (m) of a rectangular drainage channel, deepening of about 44 m of the existing drainage channel and provision of ancillary works such as reconstruction of an affected footpath at Yung Shue Long New Village;
  - (b) construction of about 140 m of a box culvert and provision of ancillary works such as access road, footpath, rubble bedding and a flood wall at Tseng Lan Shue; and
  - (c) construction of about 440 m of a rectangular drainage channel and provision of ancillary works such as a maintenance ramp at Shui Lau Hang.

4. We plan to start the proposed works in January 2006 for completion in January 2008. Layout plans of the proposed works at Yung Shue Long New Village, Tseng Lan Shue and Shui Lau Hang are at Enclosures 1 to 3 respectively.

**JUSTIFICATION****Yung Shue Long New Village in Lamma Island**

5. Due to inadequate capacity of the existing drainage channel, Yung Shue Long New Village is susceptible to flooding during heavy rainstorms. As the only access road from Yung Shue Long New Village to the public pier is situated in the low-lying area, flooding in the past has adversely affected the local residents and caused disruption to access and social activities in the area. To abate the problem, we propose to deepen a section of the existing downstream drainage channel and extend the drainage channel upstream to increase the hydraulic capacity of the drainage system. In order to minimise land resumption and retain the upstream section of the existing natural streamcourse as requested by villagers, the proposed design would only protect the Yung Shue Long New

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Village area from rainstorms with a return period<sup>1</sup> of one in 10 years. The flood protection level was highlighted in our consultation paper discussed in the meeting of the Lamma Area Committee on 23 May 2001 (paragraph 12 below refers). Members of the Lamma Area Committee had no objection to the design.

### **Tseng Lan Shue in Sai Kung**

6. Owing to inadequate capacity of the existing natural streamcourse, Tseng Lan Shue is susceptible to flooding during heavy rainstorms. To alleviate the flooding problem, we have taken steps to intercept the surface runoff in phases. We completed phases I and II works in June 1998 and April 2001 respectively under the Rural Planning and Improvement Strategy (RPIS) programme for the upstream part north of Clear Water Bay Road, where the flooding problem was more critical because the streamcourse was narrow and heavily vegetated, and more village houses were affected by flooding. Since then, the risk of flooding at the upstream area has been substantially reduced. We now propose to implement the phase III works which include mitigation measures to provide flood relief to the downstream part south of Clear Water Bay Road and the adjacent areas. To preserve the existing streamcourse, we propose to construct a box culvert alongside the existing streamcourse to intercept a substantial amount of runoff during heavy rainstorms and to construct a 3.5 m wide access road on top of the box culvert to facilitate the routine maintenance of the box culverts. The proposed access road will be open for public use. Upon completion of the proposed drainage works, the flood protection level around the Tseng Lan Shue area will generally be raised to withstand rainstorms with a return period of one in 50 years, and the risk of flooding during heavy rainstorms will be substantially reduced.

### **Shui Lau Hang in Ta Kwu Ling**

7. Shui Lau Hang is mainly agricultural land with scattered residential premises. The surface runoff is collected and conveyed to Ping Yuen River in small ditches which are inadequate to cope with heavy rainstorms. With the change of land use and more agricultural land paved, rainwater which could previously dissipate naturally through ground filtration can no longer do so. This has led to increase in surface runoff and flooding at low-lying areas during heavy rainstorms.

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<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.

We therefore propose to construct a proper drainage channel to convey the surface runoff. Stone mattress bedding will be provided intermittently to the invert of the drainage channel to create ecological habitats and conserve the existing environment in the vicinity of the watercourse. Upon completion of the proposed drainage works, the flood protection level around the Shui Lau Hang area will generally be raised to withstand rainstorms with a return period of one in 50 years, and the risk of flooding during heavy rainstorms will be substantially reduced.

### FINANCIAL IMPLICATIONS

8. We estimate the cost of the proposed works to be \$46.1 million at MOD prices (see paragraph 9 below), made up as follows –

	<b>\$ million</b>	
(a) Drainage improvement works and ancillary works at -	35.2	
(i) Yung Shue Long New Village, Lamma Island	8.3	
(ii) Tseng Lan Shue, Sai Kung	14.6	
(iii) Shui Lau Hang, Ta Kwu Ling	12.3	
(b) Consultants' fees for -	4.7	
(i) contract administration	1.0	
(ii) site supervision	3.7	
(c) Environmental mitigation measures	2.1	
(d) Contingencies	4.1	
	Sub-total	46.1 (in September 2005 prices)
(e) Provision for price adjustment	0.0	
	Total	46.1 (in MOD prices)

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A breakdown of the estimate for the consultants' fees by man-months is at Enclosure 4.

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

<b>Year</b>	<b>\$ million (Sept 2005)</b>	<b>Price adjustment factor</b>	<b>\$ million (MOD)</b>
2005 – 2006	2.0	1.00000	2.0
2006 – 2007	22.0	1.00125	22.0
2007 – 2008	15.3	1.00125	15.3
2008 – 2009	4.8	1.00125	4.8
2009 – 2010	2.0	1.00125	2.0
	46.1		46.1

10. We have derived the MOD estimate on the basis of the Government's latest forecast of the trend rate of change in prices of the public sector building and construction output for the period from 2005 to 2010. We will tender the proposed works under a re-measurement contract because of uncertainties of underground utilities such as electricity cables, telephone cables and water pipes. The contract will provide for price adjustments as the contract period will exceed 21 months.

11. We estimate that the annual recurrent expenditure arising from the project will be about \$85,000.

## **PUBLIC CONSULTATION**

### **Yung Shue Long New Village in Lamma Island**

12. We consulted the Lamma Area Committee on 23 May 2001. Members of the Lamma Area Committee supported implementation of the proposed works at Yung Shue Long New Village.

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13. We gazetted the proposed works under the Foreshore and Seabed (Reclamations) Ordinance on 17 and 24 January 2003 and received one objection from the World Wide Fund for Nature Hong Kong. After we provided the environmental review report showing the detailed environmental impact assessment and the proposed mitigation measures, the objection was withdrawn unconditionally.

### **Tseng Lan Shue in Sai Kung**

14. We consulted the Food and Environmental Hygiene Committee under the Sai Kung District Council on 29 June 2000. Members of the Committee supported implementation of the proposed works at Tseng Lan Shue.

15. We gazetted the road scheme under the Roads (Works, Use and Compensation) Ordinance on 28 March and 4 April 2002. One objection was received and remained unresolved after clarification with the objectors. The objectors claimed themselves as trustee of the subject lot. They were concerned that the proposed works would undermine the potential development of their land and adversely affect the “Pak Kung”<sup>2</sup> and “Fung Shui” of the village. The objectors suggested shifting the proposed drainage channel by 500 m. This was considered not feasible because the position of the proposed channel has to match with the channels at the upstream. After considering the objection, the Chief Executive in Council authorised the proposed works without modification on 17 April 2003.

### **Shui Lau Hang in Ta Kwu Ling**

16. We consulted the North District Council on 19 March 2002. Members of the District Council supported implementation of the proposed works at Shui Lau Hang.

17. We consulted the Legislative Council Panel on Planning, Lands and Works on the proposed works in Yung Shue Long New Village, Tseng Lan Shue and Shui Lau Hang by circulation of an information paper on 21 June 2005. Members did not raise any objection to the proposal.

**/ENVIRONMENTAL.....**

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<sup>2</sup> Earth God for protection of villagers in Chinese tradition.

## ENVIRONMENTAL IMPLICATIONS

18. The proposed works are not designated projects under the Environmental Impact Assessment Ordinance. We have completed Environmental Reviews which concluded that there would not be any long term adverse environmental impacts arising from the proposed works. For short term impacts caused by the works during construction, we will control noise, dust and site runoff within established standards and guidelines through implementation of mitigation measures, such as the use of temporary noise barriers, silenced construction equipment and frequent water-spraying on site. 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 in the project estimate about \$2.1 million in September 2005 prices for implementation of environmental mitigation measures.

19. We have considered in the planning and design stages ways of minimising construction and demolition (C&D) materials. The alignment of the proposed drainage channels was determined to achieve least excavation and demolition of existing structures. Furthermore, standardised sections of reinforced concrete structures have been adopted to minimise the use of formwork. We will require the contractor to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures to avoid, reduce, reuse and recycle of C&D materials, including the allocation of an area for waste segregation. We will ensure that the day-to-day operations on site comply with the approved WMP. We will require the contractor to reuse the excavated material as filling material on site or on other construction sites as far as possible to minimise their disposal to public filling facilities. To further minimise C&D materials, 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 to minimise disposal of C&D materials and waste. We will control disposal of public fill and C&D waste to public filling 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 and reuse of C&D materials for monitoring purposes.

20. We estimate that the project will generate about 14 860 cubic metres (m<sup>3</sup>) of C&D materials. Of these, we will reuse about 700 m<sup>3</sup> (5%) on site and about 12 000 m<sup>3</sup> (81%) as fill in at public filling areas<sup>3</sup>, and dispose of about 2 160 m<sup>3</sup> (14%) at landfills. The notional cost of accommodating C&D waste at landfill sites is estimated to be \$270,000 for this project (based on a notional unit cost<sup>4</sup> of \$125/m<sup>3</sup>).

21. In June 2004, we consulted various green groups namely, the Green Powers, the Green Lantau Association, the Conservancy Association, the Friends of Earth, the World Wide Fund for Nature Hong Kong and the Able Charity of Lamma Island regarding the proposed project. They provided comments/suggestions to the design of the project so as to achieve environmentally friendly objectives. Their comments/suggestions have been critically reviewed and adopted wherever practicable. For example, we have reduced the scope of the project at Yung Shue Long New Village to preserve its natural upstream and have adopted stone mattress bedding for the drainage channel in Shui Lau Hang so as to create ecological habitats.

## LAND ACQUISITION

22. We will resume about 8 110 square metres of private agricultural land. The land acquisition and clearance will not affect any household. We will charge the costs of land acquisition and clearance, estimated at about \$16.6 million to **Head 701 – Land Acquisition**.

## BACKGROUND INFORMATION

23. In 1989, Government launched the RPIS to improve the living environment of rural villages in the New Territories. The RPIS focuses on the

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<sup>3</sup> A public filling area is a designated part of a development project that accepts public fill for reclamation purpose. Disposal of public fill in a public filling facility requires a licence issued by the Director of Civil Engineering and Development.

<sup>4</sup> 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 m<sup>3</sup>), nor the cost to provide new landfills (which are likely to be more expensive) when existing ones are filled. The notional cost estimate is for reference only and does not form part of this project estimate.



implementation of a 10-year programme of infrastructure development, alleviation of local flooding problems and environmental improvement. Since October 1994, the Director of Home Affairs had been responsible for the administration and co-ordination of the RPIS Minor Works Programme.

24. To address local flooding problems, we engaged consultants in May 1998 to carry out the design and construction of drainage improvements for 11 RPIS items. The improvement works for eight items had been substantially completed. In 2002, D of DS took over the implementation of the remaining three RPIS items relating to local flooding problems, which are -

- (a) drainage improvement at Yung Shue Long New Village, Lamma Island;
- (b) drainage improvement at Tseng Lan Shue - Phase III, Sai Kung; and
- (c) construction of drainage channel at Shui Lau Hang in Ta Kwu Ling.

In October 2004, we included the above remaining three RPIS items as the proposed works in Category B as **135CD**.

25. The proposed drainage works will involve removal of 26 common trees including 19 trees to be felled and seven trees to be replanted within the project sites. All trees to be removed are not important trees<sup>5</sup>. We will incorporate planting of 27 trees as part of the projects.

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<sup>5</sup> Important trees include trees on the Register of Old and Valuable Trees, and any other trees which meet one or more of the following criteria –

- (a) trees over 100 years old;
- (b) trees of cultural, historical or memorable significance;
- (c) trees of precious or rare species;
- (d) trees of outstanding form; or
- (e) trees with trunk diameter exceeding one metre (measured at one metre above ground level).

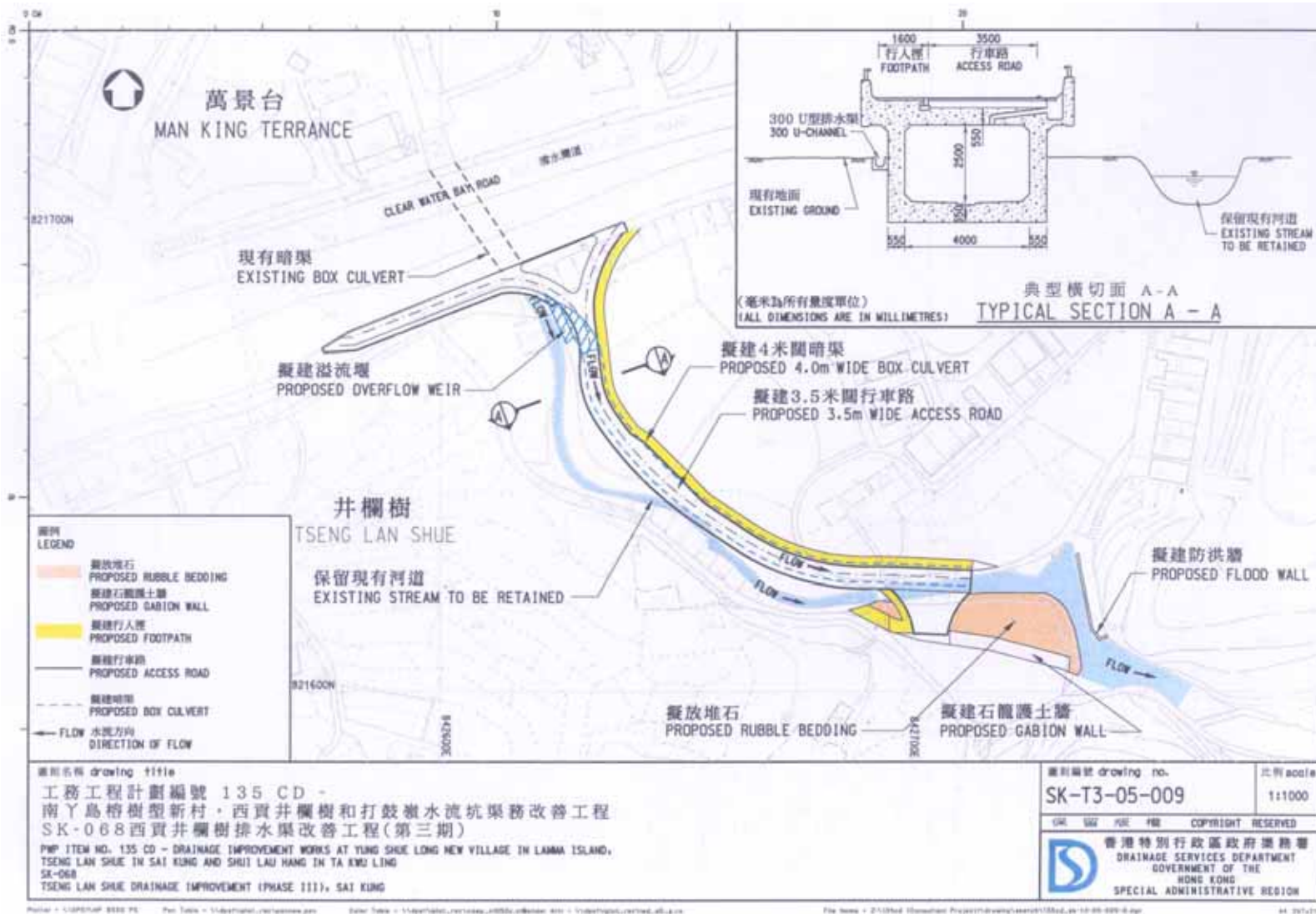
26. We estimate that the proposed works will create about 38 jobs (30 for labourers and another eight for professional/technical staff) providing a total employment of 730 man-months.

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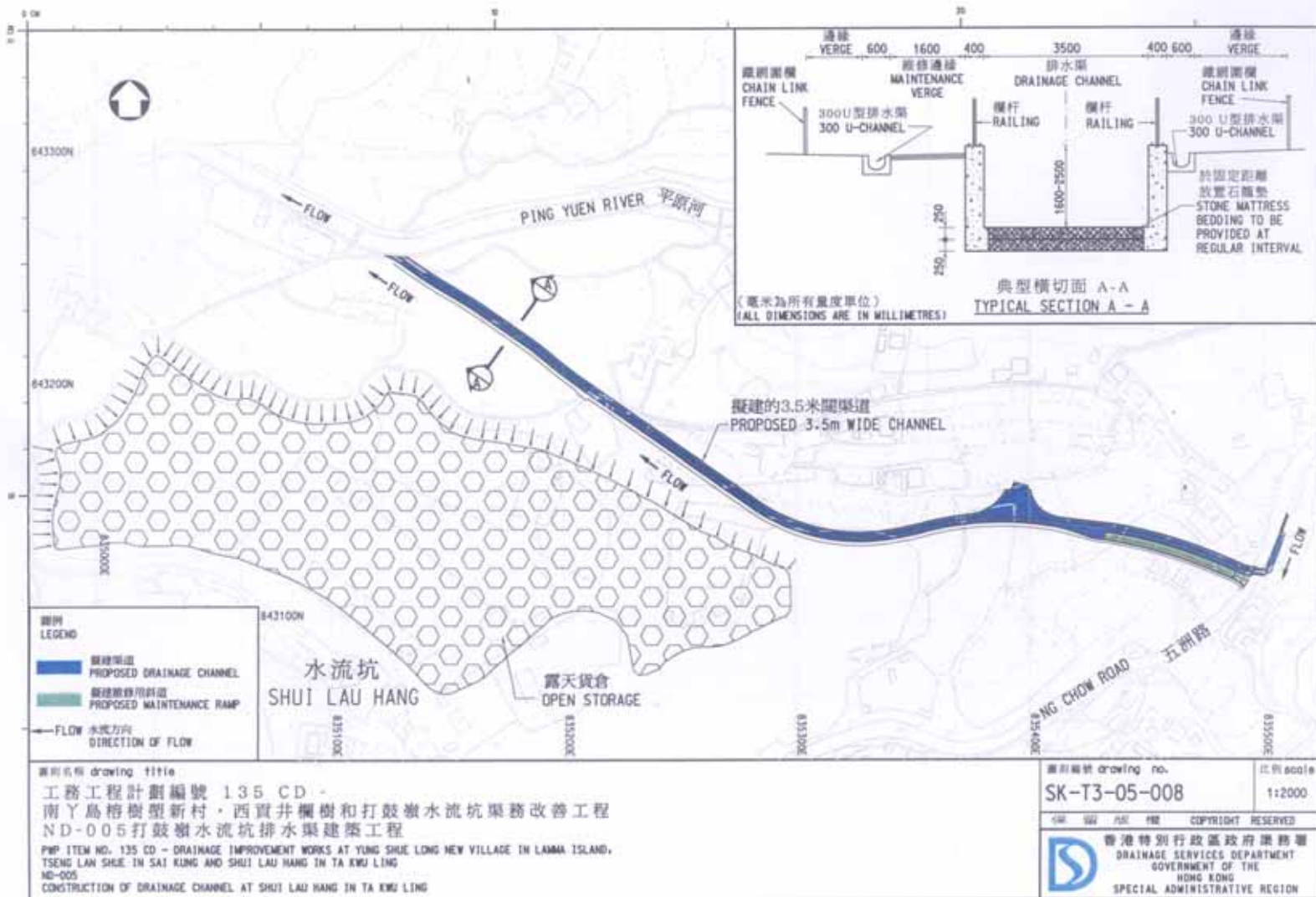
Environment, Transport and Works Bureau  
October 2005



附件 1  
ENCLOSURE 1



附件 2  
ENCLOSURE 2



附件 3 ENCLOSURE 3

**135CD – Drainage improvement works at Yung Shue Long New Village in Lamma Island, Tseng Lan Shue in Sai Kung and Shui Lau Hang in Ta Kwu Ling**

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

Consultants' staff costs			Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a)	Contract administration	Professional	—	—	—	0.8
	(Note 2)	Technical	—	—	—	0.2
(b)	Site supervision by resident site staff of the consultants	Professional	15	38	1.6	1.3
		Technical	84	14	1.6	2.4
<b>Total</b>						4.7

\* MPS = Master Pay Scale

**Notes**

1. A multiplier of 1.6 is applied in the case of site staff supplied by the consultants. (As at 1 January 2005, MPS Pt. 38 = \$54,255 per month and MPS Pt. 14 = \$18,010 per month.)
2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the investigation, design and construction of **135CD**. The construction phase of the assignment for this project will only be executed subject to Finance Committee's approval to upgrade **135CD** to Category A.
3. We will only know the actual man-months and actual costs for site supervision after completion of the works.