

For discussion
on 23 September 1998

PWSC(98-99)11

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 704 - DRAINAGE

Civil Engineering - Drainage and erosion protection

64CD - Rural drainage rehabilitation scheme

Members are invited to recommend to Finance Committee -

- (a) the upgrading of part of **64CD**, entitled "Rural Drainage Rehabilitation Scheme, stage 1, phase 1B - rehabilitation works at Sheung Yue River" to Category A at an estimated cost of \$245.9 million in money-of-the-day prices; and
- (b) the retention of the remainder of **64CD** in Category B.

PROBLEM

The rural areas in the North-east and North-west New Territories have become more susceptible to local flooding during typhoons and heavy rainstorms in recent years due to silting and inadequate capacity of the watercourses in the area.

/PROPOSAL

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for Works, proposes to upgrade part of **64CD** to Category A at an estimated cost of \$245.9 million in money-of-the-day (MOD) prices for the rehabilitation of the upper reach of Sheung Yue River (also known as River Beas) and its tributaries and the provision of proper access for future maintenance.

PROJECT SCOPE AND NATURE

3. Project **64CD** comprises two stages of works for the rehabilitation of a number of watercourses in the North-east and North-west New Territories and the provision of proper maintenance access. We now propose to upgrade to Category A part of the stage 1 works (Stage 1 Phase 1B), which covers the upper reach of the Sheung Yue River and its tributaries as shown on the site plan at Enclosure 1. The scope of works comprises the following -

- (a) construction of a 3.9-kilometre long drainage channel along the section of the Sheung Yue River from Tsiu Keng Lo Wai to Fanling Highway;
- (b) construction of a 500-metre long drainage channel along the section of Ying Pun Ho from Chan Uk Po to the confluence with Sheung Yue River;
- (c) construction of a 500-metre long drainage channel along Kwu Tung Stream from Fanling Highway to the confluence with Sheung Yue River;
- (d) construction of a total of 4.9-kilometre long maintenance roads along the proposed drainage channels;
- (e) demolition and reprovision of six footbridges and two agricultural weirs; and
- (f) environmental mitigation works.

4. The remainder of **64CD** for retention in Category B comprises the construction of the remaining stage 1 works and the design, site investigation, and construction of the stage 2 works.

JUSTIFICATION

5. In recent years, the rural areas in the North-east and North-west New Territories have become more susceptible to local flooding during typhoons and heavy rainstorms. Our investigation has revealed that the main cause is the silting of major watercourses, resulting in substantial reduction in the hydraulic capacity of the watercourses. Owing to the lack of proper access, it is difficult to carry out improvement works to the watercourses to rectify the situation. Furthermore, the conversion of farmland into open storage yards has increased the quantity of flow in the watercourses because rainwater which, in the past, dissipated mostly as groundwater in the farmland, now flows as stormwater on the surface of the paved areas. This has further overloaded the watercourses and aggravated the flooding problem during heavy rainstorms.

6. One of the major watercourses in the North-east New Territories having flooding problems is Sheung Yue River and its tributaries. In order to alleviate the flooding hazard, we need to form proper drainage channels in Sheung Yue River, Ying Pun Ho and Kwu Tung Stream to increase their capacity. We also need to provide proper access along the proposed channels to facilitate routine maintenance.

7. There are six footbridges and two agricultural weirs across the Sheung Yue River, Ying Pun Ho and Kwu Tung Stream. The footbridges provide channel-crossing facilities for local residents and the weirs are flow-control facilities for irrigation. As these footbridges and agricultural weirs will obstruct the construction of the drainage channel, we need to demolish them during the construction of the drainage works. We will provide temporary facilities during the construction period and will re-provision the footbridges and agriculture weirs under the project. In order to control the water level inside the drainage channel more effectively, we will use the inflatable agricultural weirs to replace the existing concrete weirs.

8. We will also implement the environmental mitigating measures recommended in the environmental impact assessment (EIA) study for the project to ensure compliance with established environmental standards and guidelines.

9. If we do not implement the proposed works, local flooding will remain a serious problem in the area.

FINANCIAL IMPLICATIONS

10. We estimate the capital cost of the project to be \$245.9 million in MOD prices (see paragraph 11 below), made up as follows -

		\$ million	
(a) Drainage channels		120.6	
(b) Road works		14.1	
(c) Footbridges		12.5	
(d) Environmental mitigation works		3.5	
(e) Weirs		2.8	
(f) Consultants' fees		24.4	
	(i) construction stage	1.1	
	(ii) resident site staff cost	23.3	
(g) Contingencies		17.7	

	Sub-total	195.6	(at December 1997 prices)
(h) Inflation allowance		50.3	

	Total	245.9	(in MOD prices)

/A

A breakdown by man month of the estimates for consultants' fees for construction stage and resident site staff costs is at Enclosure 2.

11. Subject to approval, we will phase expenditure as follows -

Year	\$ million (Dec 1997)	Price adjustment factor	\$ million (MOD)
1999 - 2000	64.0	1.14878	73.5
2000 - 01	75.0	1.24642	93.5
2001 - 02	36.0	1.35237	48.7
2002 - 03	20.6	1.46732	30.2
	—————		—————
	195.6		245.9
	—————		—————

12. We have derived the MOD estimate on the basis of the Government's forecasts of trend labour and construction prices for the period 1999 to 2003. We will tender the works under a standard re-measurement contract. We will adopt a re-measurement basis because we are uncertain about the quantities of earthworks involved. The contract will allow for adjustments to the tender price due to inflation as the contract period will exceed 21 months.

13. We estimate that the total annual recurrent expenditure to be \$3.1 million.

PUBLIC CONSULTATION

14. We consulted the North District Board, the Sheung Shui Rural Committee and the Fanling Rural Committee on 10 October 1996, 5 December 1996 and 16 March 1997 respectively on the proposed works. Members of the District Board and the Rural Committees supported the implementation of the proposed works.

15. We gazetted the road scheme of the proposed works on 20 癸 1997 under the Roads (Works, Use and Compensation) Ordinance and received two objections from local villagers. Having considered their grounds of objection, we slightly modified the proposed road scheme to avoid affecting the objectors' land. Both objectors agreed to the modification and withdrew their objections. The Secretary for Transport authorized the road scheme on 24 癸 1997.

ENVIRONMENTAL IMPLICATIONS

16. We completed an Environmental Impact Assessment (EIA) for the Rural Drainage Rehabilitation Scheme in July 1996. The EIA concluded that with the implementation of the recommended mitigation measures, the environmental impacts arising from the project could be mitigated to within established standards and guidelines. The Advisory Council on the Environment endorsed the EIA report on 20 January 1997.

17. We have included some of the mitigation measures recommended in the EIA in the detailed design and we will implement all the others through the works contracts and an environmental monitoring and audit programme.

LAND ACQUISITION

18. We shall resume about six hectares of private agricultural land for the implementation of the proposed works. The required land acquisition and clearance will affect 97 persons. The Director of Housing will offer eligible clearances accommodation in public housing or temporary housing in line with the prevailing policy. We will charge the land acquisition and clearance costs estimated to be \$159 million to Head 701 - Land Acquisition.

BACKGROUND INFORMATION

19. In March 1994, we upgraded **64CD** to Category B for the implementation of the rehabilitation works to a number of watercourses in the North-east New Territories under the stage 1 works and the North-west Territories under the stage 2 works.

20. In November 1994, we upgraded part of **64CD** to Category A as **67CD** "Rural Drainage Rehabilitation Scheme - consultants' fees and investigations" to engage consultants to conduct an EIA study for the whole project and carry out site investigations and detailed design for the stage 1 works.

21. We planned to implement the stage 1 works in two phases. The phase 1 works are for the rehabilitation of the upper reaches of Ng Tung River and Sheung Yue River and their tributaries while the phase 2 works are for the rehabilitation of the remaining watercourses in the North-east New Territories. The phasing of works is to tie in with the improvement works to the lower reaches of the watercourses and the Shenzhen River Regulation Project. Generally on river training works it is preferable to complete the downstream works before the upstream works.

22. In December 1997, we further upgraded part of **64CD** to Category A for the stage 1 phase 1A works as **91CD** "Rural Drainage Rehabilitation Scheme, stage 1, phase 1A - rehabilitation works at Ng Tung River". The works will commence in November 1998 and are scheduled to be completed in November 2000.

23. We have substantially completed the detailed design for the stage 1 phase 1B works and we plan to start construction in April 1999 for completion in April 2001. As regards the remaining works under stage 1, i.e. the stage 1 phase 2 works, we plan to start construction in late 2002 for completion in late 2004 to match with the target completion of the Shenzhen River Regulation Project, stage 猪II.

24. We plan to commence construction in mid 2000 for the stage 2 works which comprise the rehabilitation works to a number of watercourses in the North-west New Territories.

25. The proposed works form part of the overall river training works in the North-east New Territories. Other major projects concerning improvement works to Sheung Yue River include river training works under **53CD** "New Territories North East development - main drainage channels for Fanling, Sheung Shui and hinterland" and **87CL** "Shek Wu Hui development, package 4, engineering works", which will start construction in early 1999 and mid 1998 respectively.

Works Bureau
September 1998

(PWSC0002/WIN1)

64CD - Rural Drainage Rehabilitation Scheme

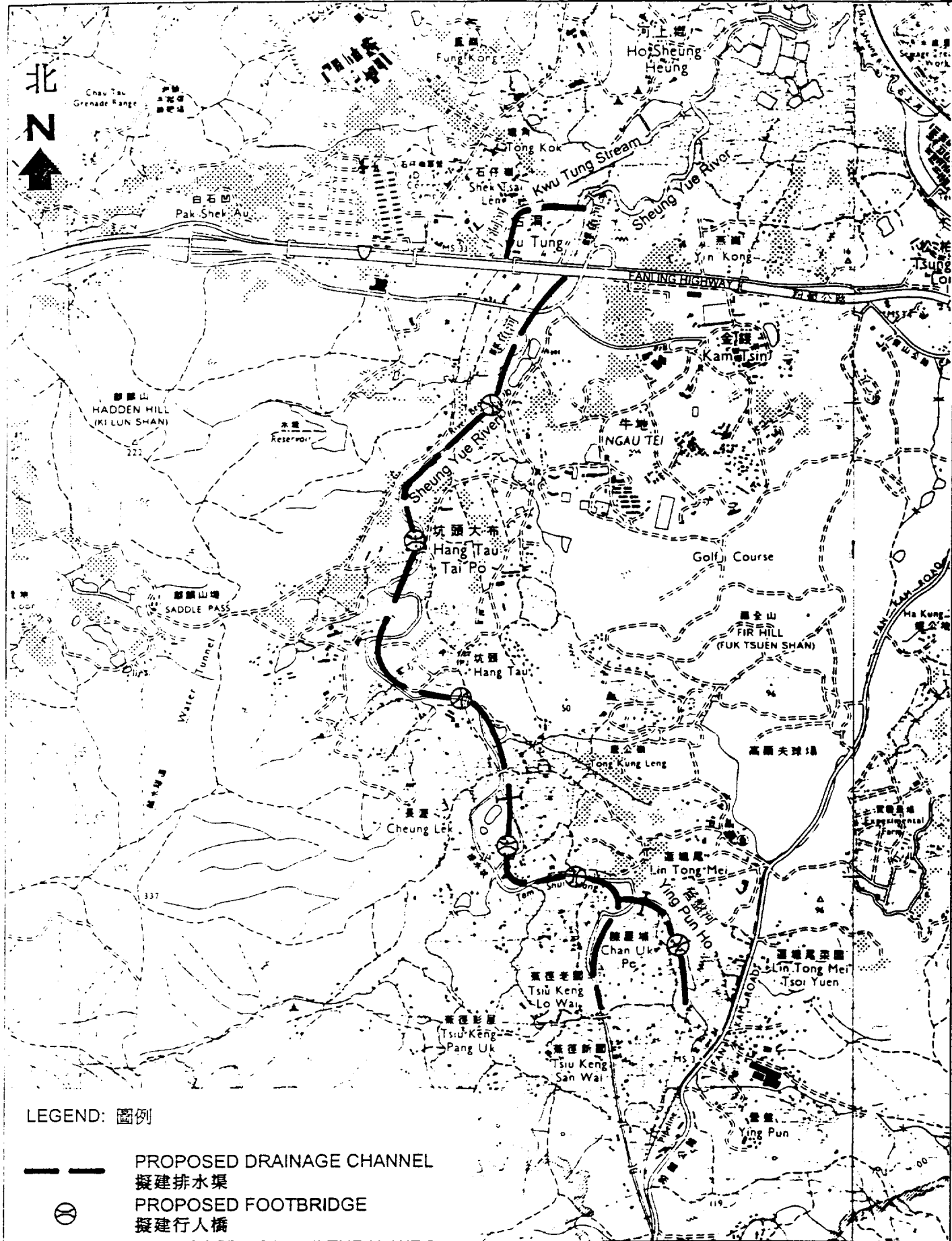
Details of Consultants' Fees

Breakdown of estimates for consultants' fees




Consultant's staff costs		Estimated Man-months	Average MPS salary point	Multiplier factor	Estimated fee (\$million)
(a)	Consultants' fees for construction stage	Professional	4	3.0	0.71
		Technical	7	3.0	0.42
(b)	Site supervision by resident site staff employed by the consultants	Professional	80	2.1	9.95
		Technical	320	2.1	13.35
Total consultants' staff costs					24.43

Notes

1. A multiplier of 3 is applied to the average MPS point to arrive at the full staff cost including the consultants' overheads and profit, as the staff will be employed in the consultants' offices. (At 1.4.1997, MPS pt. 40 = \$59,210 p.m. and MPS pt. 16 = \$19,860 p.m). A multiplier of 2.1 is applied in the case of site staff supplied by the consultants.
2. The consultants' fees for construction stage are based on the lump sum fees calculated in accordance with the consultancy agreement the Director of Drainage Services has with the consultants undertaking the design and investigation of the project. The costs of resident site staff are based on estimates prepared by the Director of Drainage Services. We will only know the actual man months and actual costs when the construction works have completed.






LEGEND: 圖例

-  PROPOSED DRAINAGE CHANNEL
擬建排水渠
-  PROPOSED FOOTBRIDGE
擬建行人橋
-  PROPOSED AGRICULTURAL WEIR
擬建灌溉水堰

PWP ITEM No. 4064CD
工務計劃項目第4064CD號

title 圖則名稱
RURAL DRAINAGE REHABILITATION
SCHEME STAGE 1, PHASE 1B -
REHABILITATION WORKS AT
SHEUNG YUE RIVER
鄉郊排水修復計劃第一階段第1B期 -
雙魚河修復工程

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1: 20 000
 DRAINAGE SERVICES
DEPARTMENT 渠務署
HONG KONG 香港