

For discussion
on 28 April 1999

PWSC(1999-2000)12

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 707 - NEW TOWNS AND URBAN AREA DEVELOPMENT
New Territories North Development
Civil Engineering - Drainage and erosion protection
53CD - River training works for the upper River Indus

Members are invited to recommend to Finance Committee the upgrading of **53CD** to Category A at an estimated cost of \$587.6 million in money-of-the-day prices.

PROBLEM

We need to carry out river training works at the upper River Indus in order to ameliorate the flooding problems in the low-lying flood plain areas of Fanling, Sheung Shui and hinterland.

PROPOSAL

2. The Director of Territory Development (DTD), with the support of the Secretary for Works, proposes to upgrade **53CD** to Category A at an estimated cost of \$587.6 million in money-of-the-day (MOD) prices for the river training works at the upper River Indus.

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PROJECT SCOPE AND NATURE

3. The scope of **53CD** comprises -
- (a) widening, deepening and realigning the upper River Indus and its tributaries;
 - (b) construction of maintenance accesses with associated drainage works;
 - (c) reprovisioning of four existing vehicular and five existing pedestrian river crossings, irrigation weirs and other facilities affected by the river training works described in paragraph (a) above;
 - (d) environmental mitigation measures including landscape works, and creation of compensatory wetlands at river meanders; and
 - (e) an environmental monitoring and audit (EM&A) programme for works mentioned in paragraphs (a) to (d) above.

JUSTIFICATIONS

4. The river channels of the upper River Indus are meandering and lack sufficient width and depth to allow the effective discharge of flood waters through the lower River Indus into the Shenzhen River. As a result, the villages and farmland in the Indus Basin are prone to flooding during typhoons or heavy rainstorms. Flooding in the area has on a number of occasions, houses and other properties inside and in the vicinity of the basin were flooded, resulting in significant economic losses and disruption to transport and social activities.

5. We completed a River Indus Study in May 1989, which . The Study recommended that we should carry out full-scale river training works in the Indus Basin to alleviate the flooding problem. A land drainage and flood control study completed in June 1993, also confirmed the recommendations of the River Indus

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Study. In addition, it recommended that we complete the river training works in the Indus Basin in step with the Shenzhen River Regulation project, as the River Indus enters into the Shenzhen River before discharging into the sea at Deep Bay¹.

6. In collaboration with the Shenzhen Municipal Government, we are implementing the first two stages of river training works along the downstream sections of Shenzhen River up to the junction of the lower Indus River. We are also implementing river training works at the lower River Indus. To complete the remaining river training works at the upper Indus River, we need to carry out the proposed works later this year.

76. In collaboration with the Shenzhen Municipal Government, we started the Shenzhen River regulation project in May 1995 for completion of the section of Shenzhen River downstream of its junction with the River Indus by end 2000. As part of the full-scale river training works in the Indus Basin, we commenced the river training works in Fanling area 30B under **87CL** and for the lower River Indus under **94CD** in September 1998 and March 1999 respectively and we will complete them in March 2001. To complete the remaining river training works in the Indus Basin in step with the Shenzhen River regulation project and the downstream sections of the training of River Indus, we need to start the proposed river training works in August 1999 for completion in March 2001. We will construct four vehicular bridges and five pedestrian footbridges to replace the existing river crossing facilities, which will need to be demolished during the widening of the river channels. We will also construct access roads and ramps to facilitate future maintenance of the drainage channels.

8. As the new drainage channels will be wider and will follow new alignments at several locations, some areas of farmland that depends on water from the river for irrigation will be affected. In order to maintain an irrigation supply from the river to these areas, we will construct an inflatable dam to the south of Fu Tei Au Road to replace two existing irrigation weirs. We will build an air blower house near the inflatable dam to regulate the water level to sufficient level to meet the irrigation demand.

FINANCIAL IMPLICATIONS

¹ We normally complete river training works for downstream sections first and then gradually work upstream as it would not serve flood prevention purposes to widen upstream channels while downstream sections are still constricted. Therefore, river training works in the Indus Basin can only be carried out when the downstream works along the Shenzhen River are in place.

9. We estimate the capital cost of the project to be \$587.6 million in MOD prices (see paragraph 10 below), made up as follows -

/(a)

	\$ million	
(a) River training works	267.0	
(b) Roads and drainage works	64.0	
(c) Reprovisioning works, including pedestrian and vehicular river crossings	80.0	
(d) Inflatable dam and air blower house	11.0	
(e) Environmental mitigation measures	14.0	
(f) Environmental monitoring and audit programme	4.0	
(g) Consultants' fees for -	50.0	
(i) construction stage	6.6	
(ii) site staff costs	43.4	
(h) Contingencies	49.0	
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Sub-total	539.0	(at December 1998 prices)
(i) Provision for price adjustment	48.6	
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Total	587.6	(in MOD prices)
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Owing to insufficient in-house resources, DTD proposes to employ consultants to carry out the construction supervision. A breakdown by man months of the estimate for

consultants' fees is at Enclosure 1.

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

Year	\$ million (Dec 1998)	Price adjustment factor	\$ million (MOD)
1999 - 2000	55	1.02625	56.4
2000 - 01	185	1.06217	196.5
2001 - 02	190	1.09934	208.9
2002 - 03	65	1.13782	74.0
2003 - 04	44	1.17765	51.8
	539		587.6

11. We have derived the MOD estimate on the basis of the Government's latest forecast of trend labour and construction prices for the period from 1999 to 2004. We will tender the proposed works under a standard remeasurement contract because the works involve extensive earthworks, the quantities of which may vary according to the actual ground conditions. The contract will provide for price adjustments because the contract period will exceed 21 months.

12. We estimate the annually recurrent expenditure to be \$6.63 million.

PUBLIC CONSULTATION

13. We consulted the rural committees concerned in the North District and the North Provisional District Board on the proposed works on 17 July 1997 and 18 July 1997 respectively. Members supported the project for the relief it would bring to the flooding problem in the North District.

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14. We gazetted the proposed works under Foreshore and Sea-bed (Reclamations) Ordinance on 28 November 1997. We received one objection from the World Wide Fund for Nature Hong Kong on environmental grounds.

To address the concerns, we plan to adopt a one-year post-construction environmental monitoring programme, and a long-term management and maintenance programme for the wetlands to be created at river bends. The objector agreed to the proposed mitigation measures and withdrew the objection. The Chief Executive in Council authorised the proposed works on 27 March 1998.

15. We gazetted the road scheme of the proposed works under Roads (Works, Use and Compensation) Ordinance on 22 January 1999 and received no objection.

ENVIRONMENTAL IMPLICATIONS

16. We completed an Environmental Impact Assessment (EIA) for the project in October 1997. The EIA concluded that with the implementation of the recommended mitigation measures, the environmental impacts arising from the project could be mitigated to within the established standards and guidelines. The mitigation measures include proper design to minimise concreting of the river channel bed, re-vegetation in open space within the site and creation of wetlands at abandoned river bends upon completion of the river training works. The Advisory Council on the Environment (ACE) endorsed the EIA report on 24 November 1997.

17. We have incorporated all the recommended mitigation measures in the detailed design and will implement them during construction. We will also carry out an EM&A programme and submit the regular ecological monitoring and audit reports to the ACE. The estimated cost of the mitigation measures (\$14 million) and EM&A programme (\$4 million) is \$18 million. These costs have been included in the overall project estimate.

LAND ACQUISITION

18. We will resume about 39 hectares of agricultural land for the project. The land acquisition and clearance will affect 111 households involving

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495 people and 639 structures. The Director of Housing will rehouse eligible clearers in public housing in accordance with the existing policy. We will charge the cost of land acquisition and clearance, estimated at \$1,138 million, to

Head 701 - Land Acquisition.

BACKGROUND INFORMATION

19. We upgraded **53CD** to Category B in November 1992.

20. Following the recommendation made in the land drainage and flood control study completed in June 1993, we started the Shenzhen River Regulation project in collaboration with the Shenzhen Municipal Government in 1995. We started the stage I works under **24CD** "Regulation of Shenzhen River, stage I - improvement to river bends at Lok Ma Chau and Liu Pok" in May 1995 and completed the works in May 1997. We commissioned the works under **44CD** "Regulation of Shenzhen River, Stage II, Phase I - Reprovisioning of border road between Lok Ma Chau and Tam Kon Chau" in November 1996 and completed them in November 1998. We also started **31CD** "Regulation of Shenzhen River stage II phase II - improvement to river sections between Liu Pok and Lok Ma Chau and from Lok Ma Chau to estuary" in May 1997 for completion by end 2000. We are now planning to implement stage III of the Shenzhen River Regulation project. A map showing the Shenzhen River and the Indus Basin is at Enclosure 2.

21. As for the lower River Indus, we commenced the river training works in the downstream section within Fanling area 30B under part of **87CL** "Shek Wu Hui development, package 4, engineering works" in September 1998 for completion in March 2001. We started the works under **94CD** "River training works for the lower River Indus and River Beas" in March 1999 for completion in March 2001.

22. In June 1996, we upgraded part of **53CD** to Category A as **85CD** "Main drainage channels for Fanling, Sheung Shui and hinterland: site investigations and consultants' fees" for engaging consultants to carry out the site investigations and detailed design of the proposed works. The site investigations and detailed design have been completed in March 1999. We plan to start the proposed works in August 1999 for completion in March 2002. A map showing the proposed works is at Enclosure 3.

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23. Upon completion of all the projects mentioned in paragraphs 20 to 22 above, we will be able to ameliorate the flooding problems in the low-lying flood plain areas of Fanling, Sheung Shui and hinterland.

Works Bureau
AprilMarch 1999

(cd53-07.doc)

(PWSC0108/WIN4)

Enclosure 1 to PWSC(1999-2000)12

53CD - River training works for the upper River Indus

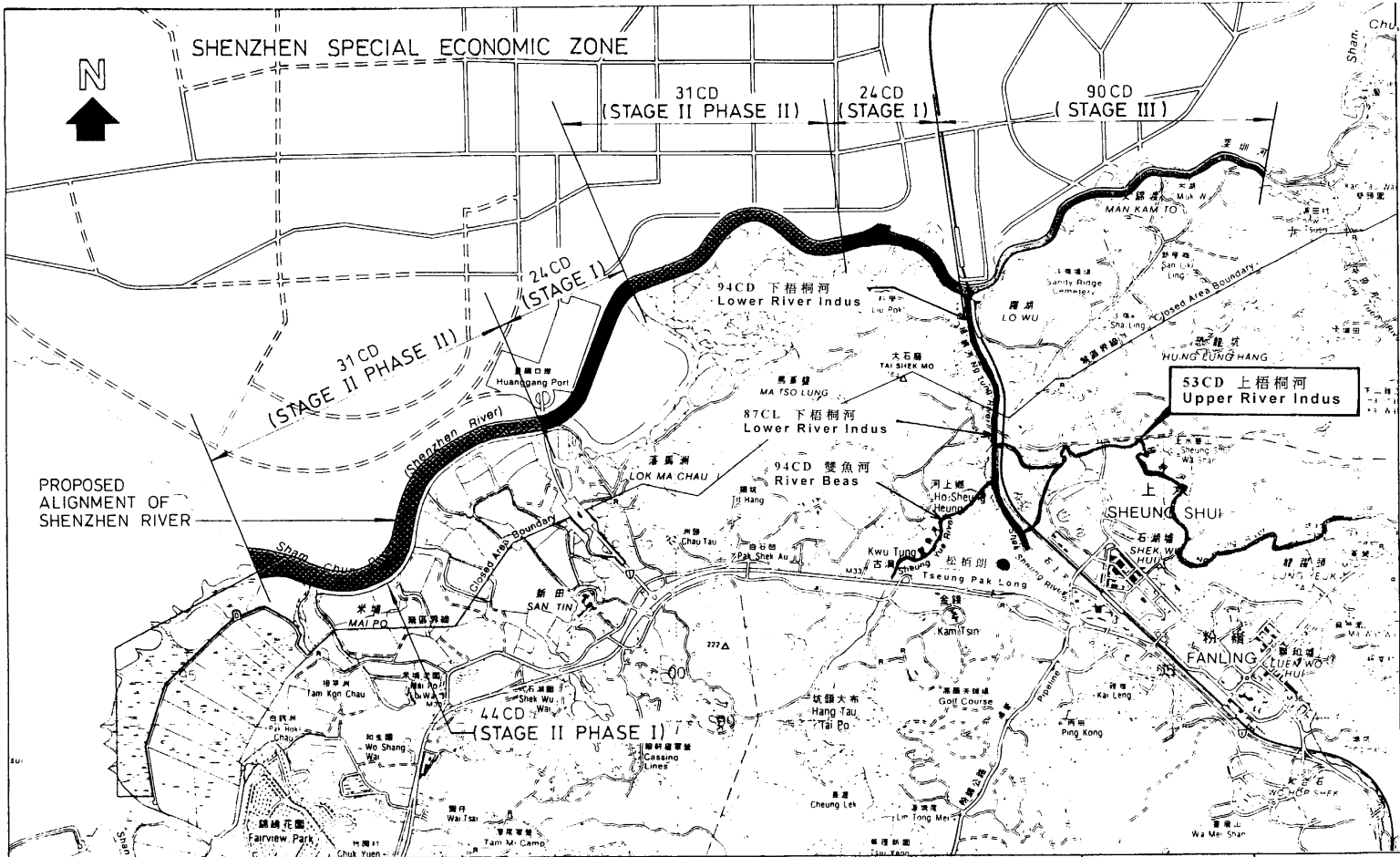
Breakdown of estimates for consultants' fees

Consultants' staff costs			Estimated man months	Average MPS* salary point	Multiplier factor	Estimated fee (\$ million)
(a)	Consultants' administration	Professional	33	40	2.4	5.0
		Technical	20	16	2.4	1.0
(b)	Preparation of as- built drawings	Professional	2	40	2.4	0.3
		Technical	6	16	2.4	0.3
(c)	Resident site staff costs	Professional	238	40	1.7	25.4
		Technical	504	16	1.7	18.0
Total consultants' staff costs						50.0

* MPS = Master Pay Scale

Notes

1. A multiplier factor of 2.4 is applied to the average MPS point to arrive at the full staff costs including the consultants' overheads and profit, as the staff will be employed in the consultants' offices. A multiplier factor of 1.7 is applied to the average MPS point in the case of resident site staff supplied by the consultants. (At 1.4.98, MPS pt 40 = \$62,780 p.m. and MPS pt 16 = \$21,010 p.m.)
2. The figures given above are based on estimates prepared by the Director of Territory Development. The consultancy works for this project have been included as part of the overall consultancy agreement for the main drainage channel works for Fanling, Sheung Shui and hinterland.

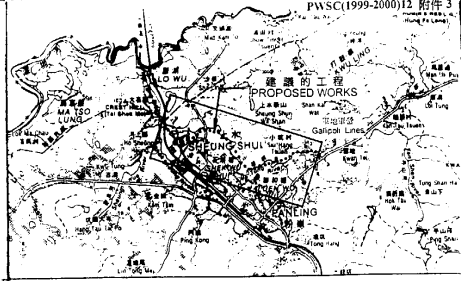


PROPOSED ALIGNMENT OF SHENZHEN RIVER

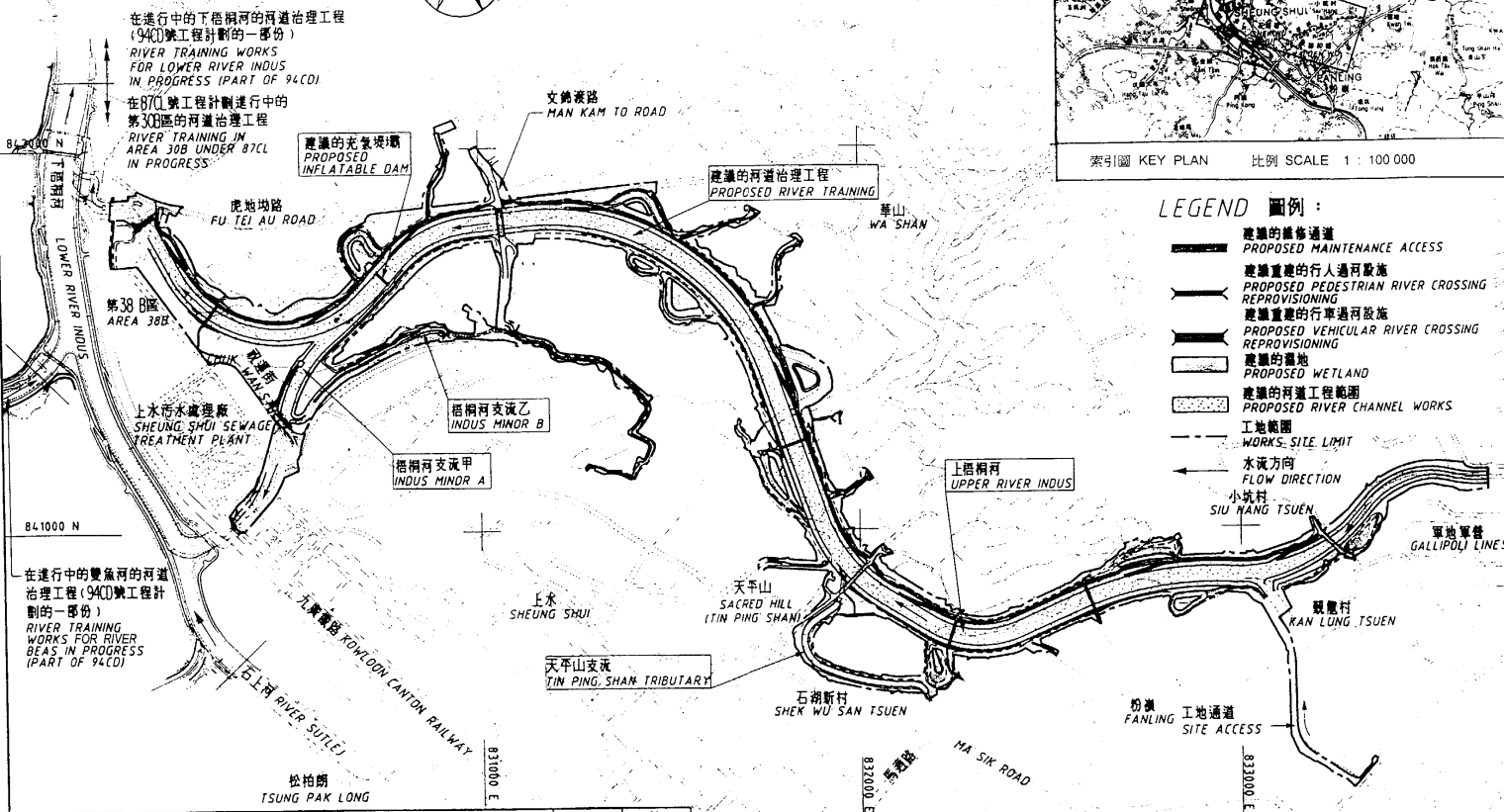
drawing title	scale	date
	1 : 50 000	Mar 98
office		 DRAINAGE SERVICES DEPARTMENT HONG KONG
LAND DRAINAGE DIVISION		

SHENZHEN RIVER REGULATION PROJECT

TWS/CDD(1995-2000)11 附件 7



索引圖 KEY PLAN 比例 SCALE 1 : 100 000



- LEGEND 圖例：**
- 建議的維修通道
PROPOSED MAINTENANCE ACCESS
 - 建議重造的行人過河設施
PROPOSED PEDESTRIAN RIVER CROSSING REPROVISIONING
 - 建議重造的行車過河設施
PROPOSED VEHICULAR RIVER CROSSING REPROVISIONING
 - 建議的濕地
PROPOSED WETLAND
 - 建議的河道工程範圍
PROPOSED RIVER CHANNEL WORKS - SITE LIMIT
 - 工地範圍
WORKS - SITE LIMIT
 - 水流方向
FLOW DIRECTION

在進行中的下梧桐河河道治理工程 (94CD 號工程計劃的一部份)
RIVER TRAINING WORKS FOR LOWER RIVER INDUS IN PROGRESS (PART OF 94CD)

在 870 號工程計劃進行中的第 30B 區的河道治理工程
RIVER TRAINING IN AREA 30B UNDER 87CL IN PROGRESS

在進行中的雙魚河河道治理工程 (94CD 號工程計劃的一部份)
RIVER TRAINING WORKS FOR RIVER BEAS IN PROGRESS (PART OF 94CD)

一九九九年二〇〇〇年度工務小組委員會文件 PWSC Submission 1999/2000 項目編號 item no. 053CD 比例 scale 1:10 000 圖則編號 drawing no. NTN 2028		繪圖 drawn L S CHEUNG 核對 checked P S LI 核實 approved J C COORAY	日期 date 15.2.99 日期 date 15.2.99 日期 date 23.3.99	辦事處 office 新界北區發展處 NEW TERRITORIES NORTH DEVELOPMENT OFFICE 新界西區發展處 TERRITORY DEVELOPMENT DEPARTMENT
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上梧桐河的河道治理工程
RIVER TRAINING WORKS FOR THE UPPER RIVER INDUS