

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 to increase the approved project estimate of **53CD** from \$587.6 million by \$168.7 million to \$756.3 million in money-of-the-day prices.

PROBLEM

The approved project estimate (APE) of **53CD** is not sufficient to complete the works under the project.

PROPOSAL

2. The Director of Territory Development (DTD), with the support of the Secretary for Works, proposes to increase the APE of **53CD** from \$587.6 million by \$168.7 million to \$756.3 million in money-of-the-day (MOD) prices.

PROJECT SCOPE AND NATURE

3. The scope of **53CD** comprises –

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- (a) widening, deepening and realigning of 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.

———— A site plan showing the scope of works is at Enclosure 1.

JUSTIFICATION

4. The river channels of Upper River Indus are meandering and lack sufficient width and depth to allow effective discharge of flood waters into Shenzhen River. As a result, villages and farmland in the River Indus flood plain are prone to flooding during typhoons and heavy rainstorms. Flooding in the area has resulted in significant economic losses and disruption to traffic and social activities. Completion of the river training works under **53CD** is critical to improving the situation.

5. Construction works of the river training project started in August 1999 and were originally scheduled for completion in mid-2002. Unfortunately, the performance of the contractor deteriorated from early 2000. The contractor

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failed to place adequate resources on site to maintain work progress as scheduled. From early 2000 to late 2001, we took all possible regulatory measures¹ under the contractual arrangement to try to improve the contractor's performance and make up for the delay. In response to our action, the contractor has shown some improvements but they were not entirely to our satisfaction.

6. During the period from 5 to 9 June 2001, heavy rainstorms occurred in various areas of the territory. Rainfall was particularly intense in North New Territories, recording a total rainfall of 265 millimetres in 24 hours on 9 June 2001. The rainfall intensity on that day was higher than rainstorm with a return period of one in ten years². Coupled with the inadequate drainage capacity of the existing Upper River Indus, the prolonged heavy rainstorms with the unusual heavy rainstorm on 9 June 2001 resulted in severe flooding on that day.

7. After the flooding incidents in June 2001, there was strong public outcry for early relief of the flooding in the New Territories, including Shek Wu San Tsuen, Tin Ping Shan and Fu Tei Au areas along Upper River Indus. In June 2001, the Government set up a Task Force on Improvement of Drainage Systems to review comprehensively the overall programme of major flood protection projects, including **53CD**. After meeting twice, the Task Force assured the public that upon completion of the current major flood prevention projects in the midstream and downstream sections of the main river channels in North and North West New Territories in 2003, there would be significant improvement to the flooding problem in these areas.

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¹ During the period from early 2000 to June 2000, the Territory Development Department issued two adverse performance reports. The contractor then made some improvement. TDD repeatedly urged the contractor to increase the level of resources to mitigate the delay. For the period from September 2000 to November 2000, TDD issued one more adverse report. Monitoring of the contractor's performance was stepped up in November 2000 with bi-weekly progress meetings with the contractor. TDD also interviewed the contractor's top management. The contractor then made some improvement but it was not entirely satisfactory. On 1 June 2001 Works Bureau suspended the contractor from tendering.

² "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.

8. To mitigate the delay of the river training works in Upper River Indus, and expedite implementation of the remaining works under **53CD**, we had considered the possibility of re-entering the contract in June 2001. It was not feasible because according to the Engineer of the contract, there was no sufficient evidence that the contractor had failed to proceed with the works with due diligence at that time.

9. With a view to providing early relief to the flooding problem in North New Territories, including Tin Ping Shan area, DTD excised part of the existing river training contract under **53CD** in July 2001 and invited a new contractor to carry out the works under a new contract. This arrangement, allowing for overall increases in resources from the two contractors, aimed to complete the critical river training works before the 2002 wet season.

10. On 20 July 2001, DTD invited restricted tenders for the excised works from contractors with proven experience and good track record on similar river training works in Hong Kong. The new contract includes 1.5 kilometres (km) of river training works (out of the total 4.6 km in the original contract) at the Upper River Indus downstream of Man Kam To Road Bridge and other associated works. The excised works constituted about 30% of the original contract works. DTD received three tenders with competitive tender sums.

11. The contractor of the new contract commenced works on 14 September 2001. In order that the section of Upper River Indus downstream of Man Kam To Road Bridge (including Fu Tei Au area) can be upgraded to withstand rainstorms with a return period of one in ten years as a temporary relief before the rainy season of 2002, the new contract has prescribed the completion of the critical structural and channel works in this section by March 2002, while allowing overall completion before the rainy season of 2003. The contractor has a very tight programme and is not allowed to work within the channel during the rainy season of 2002 lest its activities might obstruct the flow. No extension of time was allowed due to the effects of inclement weather. Such stringent requirements have been reflected in the higher than normal price of the new contract.

12. We had hoped that following partial excision of the works, the original contractor could concentrate its resources and improve progress on the remaining works. Nonetheless, the contractor's performance further deteriorated in the period that followed and made it necessary for us to re-enter the contract. We expelled the contractor from the site and re-entered the contract on 20 December 2001. At the time of re-entering the contract, some 30% of the original contract works have been completed.

13. In order to expedite the provision of a flow capacity of about one in ten years as a temporary relief for Tin Ping Shan and Shek Wu San Tsuen areas, we negotiated and executed a Supplemental Agreement on 21 December 2001 with the contractor carrying out the excised works mentioned in paragraph 11 above to undertake some of the critical bridge and channel works in the re-entered contract (about 15% of the original contract works) at rates comparable to the contract of the excised works. Works under this Supplemental Agreement are scheduled for completion by August 2002. DTD will retender the rest of the uncompleted works (about 25% of the original contract works) to commence in August 2002 targeting to enhance the flow capacity to cope with a one in 50 years rainstorm before the 2003 rainy season, and for the completion of the whole contract works in March 2004.

14. Following a review on the financial position of the project, DTD considers that the APE of **53CD** is insufficient to fund the works carried out so far by the original contractor, works excised from the original contract, and the rest of the uncompleted works. Moreover, there will be additional consultants' fees for preparation of tender documents for the completion contract. We will also have to incur additional site staff costs due to the prolonged construction period. We will recover from the contractor of the original contract the cost difference arising from the re-entry of the original contract in due course. A summary of the reasons for the proposed increase of \$168.7 million after taking into account the reduction in contingencies is as follows –

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Factor	Amount of increase (\$ million in MOD prices)	% of the total amount increased
(a) Increase in cost of works	156.6	92.8
(b) Increase in consultant's fees	3.8	2.2
(c) Increase in site staff costs	15.3	9.1
(d) Reduction in contingencies	(7.0)	(4.1)
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Total	168.7	100
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The proposed amount represents an increase of about 29% over the original estimate of \$587.6 million for the project when the project was upgraded to Category A in June 1999. A comparison of the cost breakdown of the APE and the revised project estimate in MOD prices, together with the reasons for the proposed increase are at Enclosure 2.

FINANCIAL IMPLICATIONS

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

Year	\$ million (MOD)
Up to 31 March 2002	296.0
2002 – 03	280.0
2003 – 04	130.0
2004 – 05	50.3
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	756.3
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16. We will tender the completion contract for the remaining works under a standard re-measurement contract because the works involve extensive earthworks, the quantities of which may vary according to the actual ground conditions. Since the contract will not exceed 21 months, we will not provide for price adjustment.

17. The proposed increase in the APE will not give rise to any additional recurrent expenditure.

PUBLIC CONSULTATION

18. As there is no change in the approved project scope, we consider it unnecessary to carry out any further public consultation.

19. We briefed Members of the LegCo Panel on Planning, Lands and Works on 12 April 2002 on our proposal to seek Finance Committee's approval for increasing the APE of **53CD** and the reasons for the proposed increase. In response to Members' demand for better control and management of contractor for the completion contract under **53CD**, we submitted supplementary information on 23 April 2002 vide LC Paper No. CB(1) 1581/01-02 on the measures currently implemented to improve the control and management of contractors. A copy of the information paper is at Enclosure 3. Members had no objection to the proposed increase in APE for **53CD**.

ENVIRONMENTAL IMPLICATIONS

20. The proposed increase in APE does not have any environmental implications.

21. We completed the Environmental Impact Assessment (EIA) for the project in October 1997. The EIA concluded that with the implementation of the recommended mitigation measures including proper design to minimize concreting of the river channel bed, re-vegetation in open space within the site and creation of wetlands at abandoned river meanders upon completion of the river training works, the environmental impacts arising from the project could be mitigated to within the established standards and guidelines. The Advisory Council on the Environment (ACE) endorsed the EIA report on 24 November 1997. We will implement all the recommended mitigation measures in the EIA through careful detailed design and construction as well as an EM&A programme.

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22. We have considered in the planning and design stages ways of minimising the generation of construction and demolition (C&D) materials. We estimate that the works under the completion contract will generate about 374 000 cubic metres (m³) of the C&D materials. Of these, about 220 000 m³ (59%) will be reused on site, 150 000 m³ (40%) will be reused as fill in public filling areas³, and 4 000 m³ (1%) will be disposed of at landfills. The notional cost of accommodating C&D waste at landfill site is estimated to be \$500,000 for the proposed works (based on a notional unit cost⁴ of \$125/m³).

23. We estimate that the works under the completion contract will generate about 14 000 m³ contaminated materials, which will be disposed of at East Sha Chau.

24. We will require the contractor to submit a waste management plan (WMP) to the Consulting Engineer for approval. The WMP will include appropriate mitigation measures to avoid, reduce, reuse and recycle C&D materials. We will require the contractor to ensure that the day-to-day operations on site comply with the approved WPM. We will require the contractor to reuse the excavated materials as filling material on site or on other construction sites as filling material as far as possible to minimise the disposal of public fill. To further minimise the generation of C&D materials, we will encourage the contractor to use non-timber formwork and recyclable materials for temporary works. We will control the disposal of public fill and C&D waste to designated public filling facilities and landfills respectively through a trip-ticket system. We will require the contractor 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.

LAND ACQUISITION

25. The proposed increase in the APE does not require any land acquisition.

/BACKGROUND

³ A public filling area is a designated part of a development project that accepts public fill for reclamation purposes. Disposal of public fill in a public filling area requires a licence issued by the Director of Civil Engineering.

⁴ 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/m³), nor the cost to provide new landfills (which are likely to be more expensive) when the existing ones are filled. The notional cost estimate is for reference only and does not form part of this project estimate.

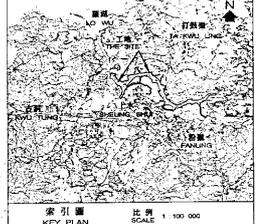
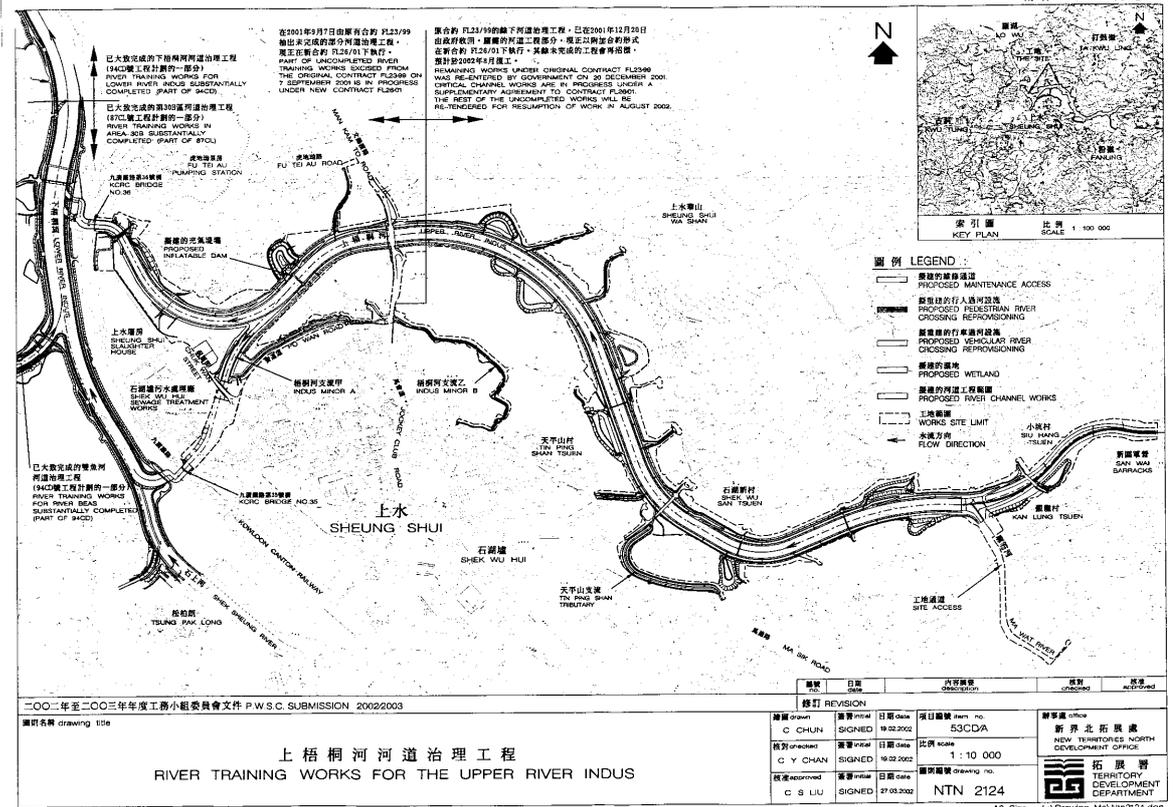
BACKGROUND INFORMATION

26. On 11 June 1999, the Finance Committee approved the upgrading of **53CD** to Category A at an estimated cost of \$587.6 million in MOD prices for the training of Upper River Indus. The works are to ameliorate the flooding problems on the low-lying flood plains of Fanling, Sheung Shui and their hinterland.

27. We started the construction works in August 1999. After re-entry of the first contract, we plan to carry out the outstanding works under a completion contract in August 2002 for completion in March 2004.

28. The proposed increase in the APE will not create any new jobs.

Works Bureau
May 2002



- 圖例 LEGEND :**
- 擬議的維修通道
PROPOSED MAINTENANCE ACCESS
 - 擬議的人行過河設施
PROPOSED PEDESTRIAN RIVER CROSSING REPROVISIONING
 - 擬議的汽車過河設施
PROPOSED VEHICULAR RIVER CROSSING REPROVISIONING
 - 擬議的濕地
PROPOSED WETLAND
 - 擬議的河道工程範圍
PROPOSED RIVER CHANNEL WORKS
 - 工地圍欄
WORKS SITE LIMIT
 - ← 水流方向
FLOW DIRECTION
 - 工地通道
SITE ACCESS

在2001年9月7日由原合約 FL237/99 抽出未完成的部份河道工程。
原主在新合約 FL26/01 下執行。
原合約 FL237/99 的餘下河道工程，已在2001年12月31日 前完成。原合約的河道工程部分，現正以新合約的形式 在新合約 FL26/01 下執行。其餘未完成的工程會再招標。
原合約 FL237/99 的餘下河道工程，現正以新合約的形式 在新合約 FL26/01 下執行。其餘未完成的工程會再招標。

已大致完成的下層河河道治理工程 (44C) 工程計劃的一部分。
LOWER RIVER INDUS SUBSTANTIALLY COMPLETED PART OF 44C/01.

已大致完成的上層河河道治理工程 (47C) 工程計劃的一部分。
UPPER RIVER INDUS SUBSTANTIALLY COMPLETED PART OF 47C/01.

九龍橋抽水機房 NO.36
FU TEI AU PUMPING STATION NO.36

石湖墟抽水機房 NO.35
SHEK WU HUI PUMPING STATION NO.35

上水壩山 SHEUNG SHUI WA SHAN

石湖墟 SHEK WU HUI

上水 SHEUNG SHUI

INDUS REACH A

INDUS REACH B

天平山村 TING SHAN TSUN

石湖墟 SHEK WU HUI

天平山山頂 TING SHAN TREATMENT

石湖墟 SHEK WU HUI

二〇〇二年至二〇〇三年年度工程小組委員會文件 P.W.S.C. SUBMISSION 2002/2003

圖則名稱 drawing title

上梧桐河道治理工程
RIVER TRAINING WORKS FOR THE UPPER RIVER INDUS

編號	日期	內容	校對	核准
1	19.02.2002	53CDA		
2	19.02.2002	NTN 2124		

修訂	日期	內容	校對	核准
1	19.02.2002	53CDA		
2	19.02.2002	NTN 2124		

項目編號 item no. 53CDA

比例 scale 1:10 000

圖則編號 drawing no. NTN 2124

辦事處 office 新界北區發展處 NEW TERRITORIES NORTH DEVELOPMENT OFFICE

拓展署 TERRITORY DEVELOPMENT DEPARTMENT

53CD - River training works for the Upper River Indus

A comparison of the approved and revised project estimates in MOD prices is as follows –

	Approved estimate	Revised estimate	Difference
	\$ million (in MOD prices)		
(a) River training works (paragraph 3(a))	293.5	424.8	131.3
(b) Inflatable dam and air blower house (paragraph 3(a))	12.1	16.0	3.9
(c) Roads and drainage works (paragraph 3(b))	70.3	79.7	9.4
(d) Reprovisioning works, including pedestrian and vehicular river crossings (paragraph 3(c))	87.9	90.2	2.3
(e) Environmental mitigation measures (paragraph 3(d))	15.4	22.5	7.1
(f) EM&A programme (paragraph 3(e))	4.4	7.0	2.6
(g) Consultants' fees (for items (a) - (f) above)	7.3	11.1	3.8
(h) Site staff costs (for items (a) - (f) above)	47.7	63.0	15.3

(i)	Contingencies	49.0	42.0	(7.0)
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	Total	587.6	756.3	168.7
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2. As regards (a) (river training works), (b) (inflatable dam and air blower house), (c) (roads and drainage works), (d) (reprovisioning works, including pedestrian and vehicular river crossings), (e) (environmental mitigation measures), and (f) (EM&A programme), the total increase of \$156.6 million is attributable to the following factors –

- (i) the programme of works under the new contracts is much more compressed than the original contract. In order to meet the tight programme, the contractors have to work simultaneously at more locations and overtime. This would reduce the opportunity for the reuse of temporary works, such as sheet piles and formwork. More substantial falsework for cross-river structures is also required so as to enable works to continue during the wet season of 2002 whilst minimising obstruction to flow;
- (ii) taking up of the uncompleted works by another contractor inevitably results in some additional works (e.g., mobilisation of piling rigs). Additional protective works are also required for the partially completed river channels; and
- (iii) there are additional preliminaries under the new contracts, including contractor's temporary accommodation, insurance, and other general obligations such as maintenance of traffic and river flow. The cost of preliminaries further increases as a result of the prolonged construction period.

3. **As regards (g) (consultants' fees)**, the increase of \$3.8 million is due to the preparation of Supplemental Agreements, tender documents for the two contracts (including tender assessment) and other additional services relating to re-entry of the original contract.

4. **As regards (h) (site staff costs)**, the increase of \$15.3 million is to cover the additional cost of increased site supervisory efforts due to lengthened construction period.

5. **As regards (i) (contingencies)**, we have retained a sum of \$42 million as contingencies for the outstanding works.

**Information Paper for Legislative Council
Panel on Planning, Lands and Works**

**Supplementary Note on
River Training Works for the Upper River Indus**

Introduction

In discussing the paper on the River Training Works for the Upper River Indus for flood protection item 53CD at the LegCo Panel on Planning, Lands and Works meeting on 12 April 2002, Members raised concern on the control and management of contractors, and would like to know the improvements made in the tendering system for public works. Members also requested for a brief account of the contractor under 53CD, which was re-entered by the Government.

Tightened Control on Public Works Contractors

2. We had carried out a comprehensive review aiming at tightening up the administrative control to enhance better performance of public works contractors on the approved lists. The review recommended a series of improvements, which have been incorporated in the contractor management handbook¹ already promulgated in March 2001. A brief account of the improvement measures are summarized below.

3. In order to ensure that only good contractors are allowed to tender for public works, the timeframe for taking regulating actions against a poorly performed contractor has been shortened. The contractor would be suspended from tendering when he received two consecutive adverse reports on performance under the same contract instead of the previous three consecutive adverse reports.

4. The financial criteria for admission, retention and tendering on the approved lists have been tightened in order to further strengthen the Government's position in ensuring that the contractors are financially capable in undertaking public works contracts. Apart from raising the minimum amount of capital

¹ The contractor management handbook consolidates and updates the existing guidelines and procedures pertaining to administration and monitoring of the performance of contractors and suppliers on the List of Approved Contractors for Public Works and the List of Approved Suppliers of Materials and Specialist Contractors for Public Works into a single handbook, and was promulgated in March 2001 under WBTC No. 5/2001. It is available for viewing and download at Works Bureau's web site <http://www.wb.gov.hk/publications/management.htm>.

requirements, contractors will also be required to provide additional financial information as necessary for auditing. Regulating actions will be taken if the contractor fails to meet the financial criteria.

5. Furthermore, a profitability trend analysis has been introduced to scrutinize the financial performance of a contractor. If a contractor does not meet the laid down financial performance requirement, his tender will not be recommended for acceptance for contracts and may also be subject to regulating actions unless additional capital is injected.

Improvements in the Tendering System for Public Works

6. We had also completed a review of the tendering system for public works. Following the review, we have decided to implement improvement changes to the tendering system to promote quality construction.

7. A marking scheme in tender evaluation will be introduced later this year for public works contracts, which will systematically take into account both the tender price and the quality of tender in the evaluation. It will be established that a tenderer's past performance is an important attribute in assessing the quality of tender and hence a good performer will have a better chance of winning a contract. This will provide an incentive for contractors to execute the contracts more effectively and in the long run, improve the overall quality of service and achieve better value for money in the procurement of public works.

Guangdong Water Conservancy and Hydro-power Engineering Development Company Limited (GWCH-PRC)

8. GWCH-PRC was admitted onto the List of Approved Contractors for Public Works on 26 October 1981 under the categories of "Port Works", "Roads and Drainage", "Site Formation" and "Waterworks" and since then it had completed 22 public works contracts amounting to 1.4 billion dollars and the performance had been satisfactory.

9. GWCH-PRC has authorized Guangdong Water Conservancy and Hydro-power Engineering Development Company Limited (GWCH-HK) as its agent to enter into contract with the Hong Kong Government for Contract No. FL23/99 – Main Drainage Channels for Fanling, Sheung Shui and Hinterland River Training Works for Upper River Indus. Similar authorization is also applicable to other public works contracts and is legally acceptable. GWCH-PRC

has encountered its own financial difficulties in completing Contract No. FL23/99. As a consequence, we decided to re-enter this contract on 20 December 2001 in accordance with the provisions of the contract. We will take legal action to recover from GWCH-PRC the additional costs arising from such re-entry.

The Completion Contract

10. In view of this incident, we have implemented a number of measures in tightening the control on public works contractors, and we have made improvements in the tendering system for public works. For the completion contract to commence in August 2002, we have built in several measures to ensure both the performance of the contractor and the quality of construction. A marking scheme will be used in selecting the contractor. As due weight is given to the tenderers' experience, past performance, resources and other technical capabilities, the tender with the lowest price may not necessarily be the winning bid. To further demonstrate his commitment and financial soundness, the successful tenderer will be required to secure the Government with a performance bond.

11. A financial breakdown of the construction works and the contingencies is at enclosure 1. The increase in APE is mainly attributable to the increase in the cost of construction works due to the compressed programme of works, additional works such as mobilization of plant and the protection of partially completed works, and the preliminaries from a prolonged construction period. The contingencies have made provisions, if necessary, for the installation of deep wells for the villagers, services diversion, additional laboratory testings, and the possible changes in excavation quantities.

12. With the built-in provisions of marking scheme and performance bond, we will select the most suitable contractor for the completion contract and to ensure that the Government will achieve good value for money in the procurement of public works.

Works Bureau
April 2002

53CD – River training works for the Upper River Indus

Cost Breakdown

		Revised Estimate (\$million)	Expenditure Up to 31 March 2002 (\$million)	Remaining Expenditure (\$million)
(A)	Construction works			
(i)	Contract FL23/99	148.7	148.7	0
(ii)	Contract FL26/01 (including Supplemental Agreement to Contract FL26/01)	314.5	118.5	196.0
(iii)	Completion Contract (FL27/02)	<u>177.0</u>	<u>0</u>	<u>177.0</u>
	Sub-total	640.2	267.2	373.0
(B)	Contingencies	42.0	4.0	38.0

Note

1. Contract FL23/99 is the original contract with GWCH-PRC, which was re-entered on 20 December 2001.
2. Contract FL26/01 is the contract for the works excised from the original contract in order to upgrade certain sections of the River to withstand a rainstorm with a return period of one in ten years during the rainy season of 2002. The contract was entered into in September 2001.
3. Contract FL27/02 is the completion contract scheduled to commence in August 2002 for the remaining works.