

For discussion
on 9 April 2003

Draft

PWSC(2003-04)xx

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

22CD – Main drainage channels for Yuen Long and Kam Tin – Tin Tsuen Channel

Members are invited to recommend to Finance Committee the upgrading of **22CD**, retitled “Main drainage channel for Yuen Long and Kam Tin – Shan Ha Tsuen to Lam Hau Tsuen section”, to Category A at an estimated cost of \$133.2 million in money-of-the-day prices.

PROBLEM

We need to construct a main drainage channel from the south of Shan Ha Tsuen to Lam Hau Tsuen to alleviate the flooding hazard to the low-lying areas at the south of Yuen Long Town.

PROPOSAL

2. The Director of Territory Development (DTD), with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade **22CD** to Category A at an estimated cost of \$133.2 million in money-of-the-day (MOD) prices for the construction of a main drainage channel from the south of Shan Ha Tsuen through Yuen Long Highway near Lam Hau Tsuen to Yuen Long Main Nullah near Lung Tin Tsuen.

PROJECT SCOPE AND NATURE

3. The scope of **22CD** comprises –
- (a) construction of a rectangular drainage channel of about two kilometres long from the south of Shan Ha Tsuen through Yuen Long Highway near Lam Hau Tsuen to Yuen Long Main Nullah near Lung Tin Tsuen;
 - (b) construction of two vehicular bridges and five footbridges across the proposed channel;
 - (c) construction of roads and ramps with associated drainage and water works along the proposed channel;
 - (d) implementation of environmental mitigation measures including landscaping works; and
 - (e) implementation of an environmental monitoring and audit (EM&A) programme for the works mentioned in items (a) to (d) above.

The proposed works are shown on the plan at Enclosure 1. We plan to commence construction in September 2003 for completion in January 2006.

JUSTIFICATION

4. For many years, the areas at the south of Yuen Long Town have been susceptible to flooding due to their low-lying topography. The rapid urbanisation in Yuen Long Town and the surrounding area in the last two decades has reduced the overall flood storage capacity and further aggravated the flooding problem in the area. The “Territorial Land Drainage and Flood Control Strategy Study – Phase II”, completed by the Drainage Service Department in 1993, recommends a series of river training works to alleviate the flooding hazard in the North West New Territories, including the south of Yuen Long Town.

5. The existing section of streamcourse between Shan Ha Tsuen and Lam Hau Tsuen is narrow and meandering, and can only accommodate moderate rainstorms. The proposed works will turn this section into a wider and deeper drainage channel and will substantially increase its hydraulic capacity, thus reducing the risk of flooding in the area. We will design the proposed drainage channel with a capacity to withstand rainstorms with a 50-year return period¹.

6. To facilitate access around and across the embankments, we will construct two vehicular bridges and five footbridges. We will also construct roads and ramps along the embankments of the proposed drainage channel to facilitate future maintenance.

7. We will implement an EM&A programme during the construction and operation stages of the project.

FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the project to be \$133.2 million in MOD prices (see paragraph 9 below), made up as follows –

	\$ million
(a) Main drainage channel	63.0
(b) Two vehicular bridges and five footbridges	6.0
(c) Roads and ramps with associated drainage and water works	36.0
(d) Environmental mitigation measures (including landscaping works)	3.5
(e) EM&A programme	2.0

¹ “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.

		\$ million	
(f)	Consultants' fees for construction stage	11.6	
	(i) contract administration	0.5	
	(ii) preparation of as-built drawings	0.1	
	(iii) resident site staff costs	11.0	
(g)	Contingencies	12.0	
	Sub-total	134.1	(in September 2002 prices)
(h)	Provision for price adjustment	(0.9)	
	Total	133.2	(in MOD prices)

Due to a lack of in-house staff resources, DTD proposes to employ consultants to carry out the construction supervision for the proposed works. A breakdown of the estimate for consultants' fees by man-months is at Enclosure 2.

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

Year	\$ million (Sept 2002)	Price adjustment factor	\$ million (MOD)
2003 – 2004	20.0	0.99250	19.9
2004 – 2005	60.0	0.99250	59.6
2005 – 2006	40.0	0.99250	39.7
2006 – 2007	9.1	0.99250	9.0
2007 – 2008	5.0	0.99250	5.0
	134.1		133.2

10. 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 2003 to 2008. We will tender the proposed works under a lump-sum contract because we can clearly define the scope of the majority of the works in advance. The contract will provide for price adjustments as the construction period will exceed 21 months.

11. We estimate the annually recurrent expenditure arising from this project to be \$1.53 million.

PUBLIC CONSULTATION

12. We presented to the Yuen Long District Board on 13 June 1996 the findings and environmental mitigation measures recommended in the Environmental Impact Assessment (EIA) report on the main drainage channels for Yuen Long, Kam Tin and Ngau Tam Mei. Members had no objection to the proposed measures. We consulted the EIA Sub-committee of the Advisory Council on the Environment (ACE) on the report on 1 July 1996. The ACE endorsed the report with conditions as prescribed in paragraph 16 below.

13. We consulted the Ping Shan Rural Committee on the proposed project on 7 November 2000 and 2 March 2001, the Shap Pat Heung Rural Committee on 8 June 2001, and the Town Planning and Development Committee of the Yuen Long District Council on 11 July 2001. Members of the Rural Committees and District Council supported implementation of the project.

14. On 13 June 2001, we briefed the Legislative Council Panel on Planning, Lands and Works on the flooding which occurred in the New Territories in June 2001. In August and September 2001, we provided information papers to the Panel and committed to speeding up implementation of the remaining flood protection projects (including **22CD**) in North West New Territories to bring early relief to the flooding problem.

15. We gazetted the proposed road scheme ancillary to the main drainage channel under the Roads (Works, Use and Compensation) Ordinance on 24 August 2001 and received 25 objections, of which 11 remain unresolved. On 31 May 2002, the Chief Executive in Council overruled the objections in public interest and authorised the scheme with modifications. The modifications involve adjustment of land resumption boundary to minimise the resumption of land from a private lot.

ENVIRONMENTAL IMPLICATIONS

16. We completed an EIA report on the main drainage channels for Yuen Long, Kam Tin and Ngau Tam Mei in May 1996. The ACE endorsed the report in July 1996 on the conditions that the project proponents should –

- (a) consider restoring the old river channels into wildlife habitats;
- (b) dispose of contaminated mud to the satisfaction of the Marine Fill Committee (MFC) (then Fill Management Committee) and such disposal should have no adverse effects on the environment; and
- (c) review the conceptual off-site wetland compensation measures in the light of the Government's latest policy on off-site wetland compensation and report back to the EIA Sub-committee their specific proposals for this project.

For (a) and (c), the Administration is carrying out a study and will report back to the EIA Sub-committee. As regards (b), the MFC approved the arrangements for the disposal of contaminated mud in November 2002.

17. The EIA report concluded that the environmental impact arising from the project could be controlled to within established standards and guidelines through the implementation of the recommended mitigation measures. We will implement the measures recommended in the EIA report. The key measures include the control of noise, dust, and water quality to within established standards and guidelines through the implementation of pollution control measures in works contract during the construction stage. We will implement the EM&A programme during the construction and operation stage of the project. We estimate the total cost of implementing the environmental mitigation measures and EM&A programme to be \$5.5 million (at September 2002 prices). We have included this cost in the project estimate.

18. We have considered at the planning and design stages, ways of minimising the generation of construction and demolition (C&D) materials by giving due consideration to designing the level and layout of the proposed works. We estimate that the project will generate about 79 300 cubic metres (m³) of C&D materials. Of these, we will reuse about 17 000 m³ (21%) on site, 56 100 m³ (71%) as fill in public filling areas² and dispose of 6 200 m³ (8%) at landfills. The notional cost of accommodating C&D waste at landfill site is estimated to be \$775,000 for this project (based on a notional unit cost³ of \$125/m³).

19. The project will generate about 5 100m³ of uncontaminated mud and about 700 m³ of contaminated mud. We will deliver the uncontaminated mud by barges to marine disposal areas at South Cheung Chau and the contaminated mud to the disposal facility at East Sha Chau.

20. We will require the contractor to submit a waste management plan (WMP) to the Engineer for approval. The WMP will include appropriate mitigation measures to avoid, reduce, reuse and recycle C&D materials. 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 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 material 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.

² 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.

³ 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.

LAND ACQUISITION

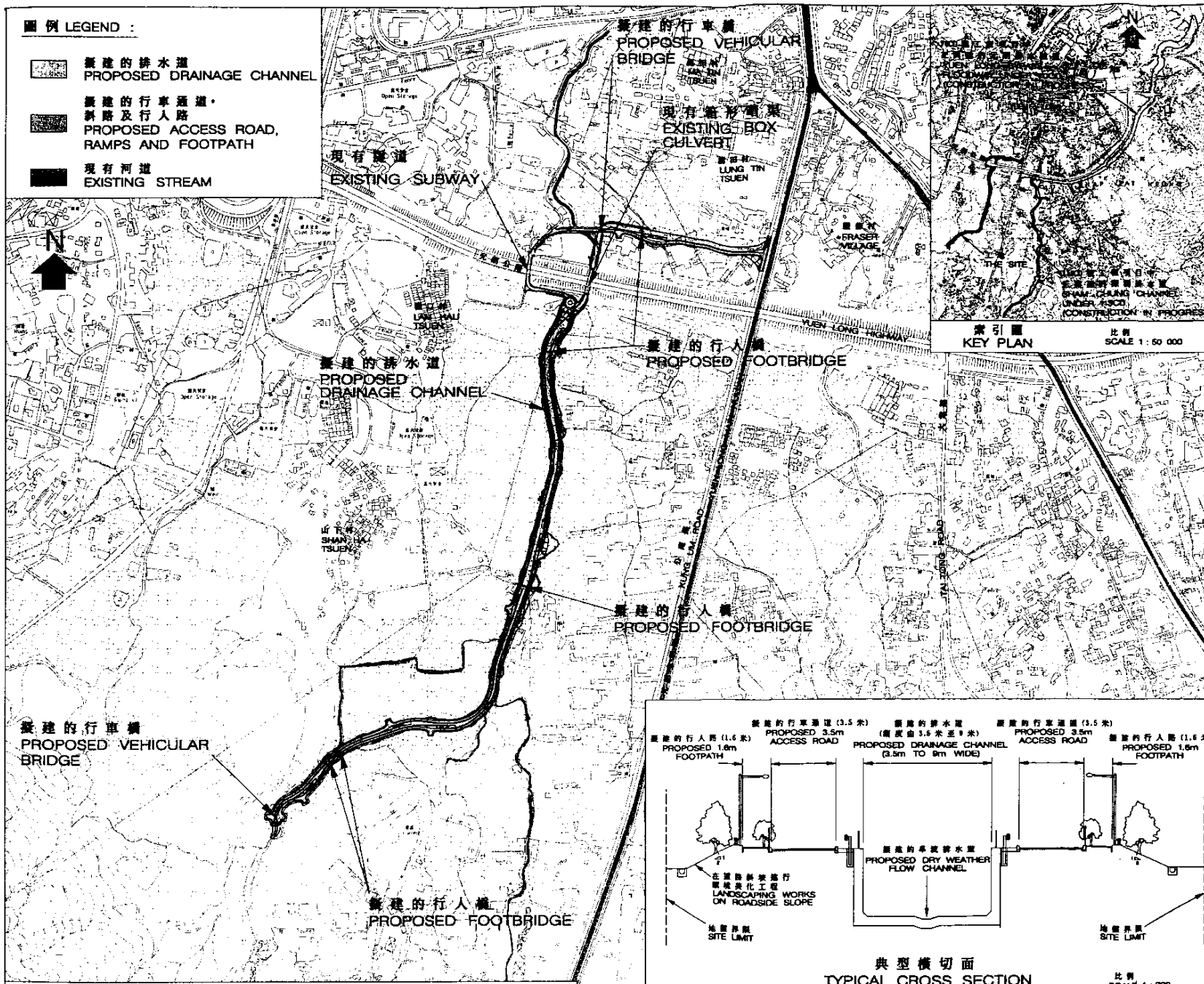
21. We will resume about 4.9 hectares of agricultural land for the proposed works. The land acquisition and clearance will affect 18 households involving 47 persons and 265 temporary structures. Under the existing policy, the Director of Housing will offer eligible families accommodation in public housing. We will charge the land acquisition and clearance costs estimated at \$129 million, comprising \$121 million for land resumption and \$8 million for clearance, to **Head 701 - Land Acquisition**.

BACKGROUND INFORMATION

22. We upgraded **22CD** to Category B in May 1995. In November 2000, we upgraded part of **22CD** to Category A as **113CD** “Main drainage channels for Yuen Long and Kam Tin – Sham Chung Channel”. We started the works in March 2001 for completion in March 2003.

23. In February 1997, we engaged consultants to undertake the investigation and detailed design for the proposed works and charged the cost of \$0.9 million to the block allocation **Subhead 7100CX** “New towns and urban area works, studies, and investigations for items in Category D of the Public Works Programme”. The consultants have completed the detailed design and drawings.

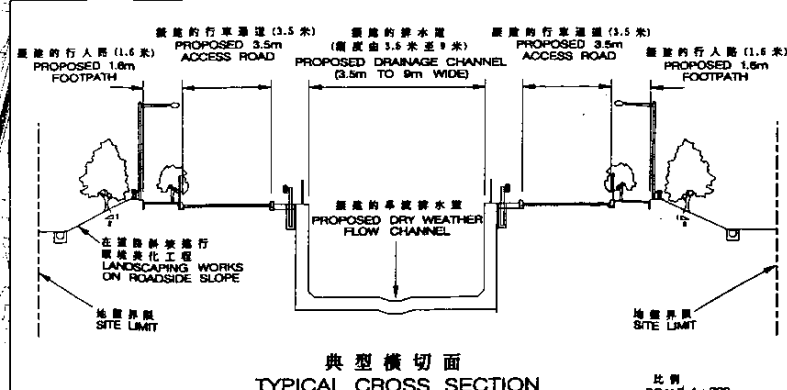
24. We estimate that the project will create about 86 jobs comprising 17 professional/technical staff and 69 labourers, totalling 2 244 man-months.



圖例 LEGEND :

	新建的排水道 PROPOSED DRAINAGE CHANNEL
	新建的行人通道、 斜坡及行人路 PROPOSED ACCESS ROAD, RAMPS AND FOOTPATH
	現有河道 EXISTING STREAM

編號/日期 no./date	內容/說明 description	核准 checked	日期 date
修訂 REVISION			
	姓名 name	簽署 initial	日期 date
繪圖 drawn	K S LO	SIGNED	12.08.02
核實 checked	S K LAM	SIGNED	15.10.02
核准 approved			
	D J HAYES	SIGNED	26.02.03
總工程師 Chief Engineer		日期 date	
工程編號 project no.	22CD		
圖則編號 file no.			
合約編號 contract no.	YL56/03		
合約 contract			



圖則名稱 drawing title	
元朗及錦田的主要排水道 - 山下村至樓口村段 MAIN DRAINAGE CHANNELS FOR YUEN LONG AND KAM TIN - SHAN HA TSUEN TO LAM HAU TSUEN SECTION	
圖則編號 drawing no.	比例 scale
NTN 2129	1 : 7 500
辦事處 office	
新界北拓展處 NEW TERRITORIES NORTH DEVELOPMENT OFFICE	
拓展署 TERRITORY DEVELOPMENT DEPARTMENT	

**22CD – Main drainage channels for Yuen Long and Kam Tin –
Tin Tsuen Channel**

Breakdown of the estimate for consultants' fees

Consultants' staff costs		Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a) Consultants' fees for construction stage					
(i) contract administration (Note 2)	Professional	3.7	38	2.0	0.43
	Technical	1.8	14	2.0	0.07
(ii) preparation of as-built drawings(Note 2)	Professional	0.3	38	2.0	0.03
	Technical	1.8	14	2.0	0.07
(b) Resident site staff costs (Note 3)	Professional	52.0	38	1.6	4.80
	Technical	202.0	14	1.6	6.20
Total consultants' staff costs					11.60

* 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 1.10.2002, MPS pt. 38 = \$57,730 per month and MPS pt. 14 = \$19,195 per month.)
2. The consultants' staff cost for contract administration and preparation of as-built drawings is calculated in accordance with the existing consultancy agreement for investigation, design and supervision of construction works for North West New Territories development – main drainage channels for Yuen Long and Kam Tin – remainder of phase 4.
3. The consultants' staff cost for site supervision is based on estimates prepared by the Director of Territory Development. We will only know the actual man-months and actual costs after completion of the construction works.