For discussion **PWSC(2002-03)34**
on 5 June 2002

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 707 – NEW TOWNS AND URBAN AREA DEVELOPMENT
New Territories North Development
Civil Engineering – Land development
227CL – Tin Shui Wai development - village flood protection works for Sheung Cheung Wai

Members are invited to recommend to Finance Committee –

(a) the upgrading of part of **227CL**, entitled "Tin Shui Wai development – village flood protection works for Sheung Cheung Wai, phase 1 – upgrading of existing stormwater pumping station", to Category A at an estimated cost of $36.7 million in money-of-the-day prices; and

(b) the retention of the remainder of **227CL**, retitled "Tin Shui Wai development – village flood protection works for Sheung Cheung Wai, phase 2 – construction of interceptor drains", in Category B.

/PROBLEM .....

PROBLEM

We need to increase the discharge capacity of the existing stormwater pumping station at Sheung Cheung Wai to alleviate the flooding problems in Ping Shan North.

PROPOSAL

2. The Director of Territory Development (DTD), with the support of the Secretary for Works, proposes to upgrade part of **227CL** to Category A at an estimated cost of $36.7 million in money-of-the-day (MOD) prices for upgrading the existing stormwater pumping station at Sheung Cheung Wai to provide additional discharge capacity.

PROJECT SCOPE AND NATURE

3. The scope of **227CL** comprises the construction of flood protection works for Sheung Cheung Wai and its adjacent villages at Ping Shan North including Hang Mei Tsuen. A site plan showing details of the works under **227CL** is at Enclosure 1.

4. The part of **227CL** we now propose to upgrade to Category A comprises upgrading of the existing stormwater pumping station at Sheung Cheung Wai and associated drainage works. Details of the proposed works are as follows –

(a) site formation for the stormwater pumping station extension works;

(b) construction of the stormwater pumping station extension and modification to the existing stormwater pumping station facilities;

(c) implementation of electrical and mechanical (E&M) works associated with the existing pumping station and the proposed extension (item (b) above);

/(d) .....

(d) implementation of drainage works including drain pipes and box culvert associated with the proposed stormwater pumping station extension (item (b) above);

(e) implementation of landscaping works associated with the existing pumping station and the proposed extension (item (b) above); and

(f) environmental monitoring and audit (EM&A) programme for the works mentioned in items (a) to (e) above.

The proposed works are shown on the plan at Enclosure 2. We plan to start construction in October 2002 for completion in December 2004.

5. The remainder of **227CL** comprises the construction of interceptor channels, drain pipes and box culverts in the villages at Ping Shan North including Sheung Cheung Wai and Hang Mei Tsuen. We plan to start the remaining works in 2003 for completion in 2005.

JUSTIFICATION

6. Flooding incidents in the low-lying area south of Tin Shui Wai had adversely affected the villagers at Ping Shan North, inluding Sheung Cheung Wai. The floodings caused economic losses and disruption to transport and social activities in the villages. The proposed flood protection works form part of the Government's overall flood control programme for the North West New Territories and will alleviate flooding problems in the concerned villages.

7. The original flood protection scheme for Sheung Cheung Wai was a poldered village scheme comprising construction of a pumping station, a flood storage pond and flood protection embankments. We completed the pumping station and flood storage pond in February 1992 under **338CL** "Tin Shui Wai development, village flood protection, phase III" (see paragraph 21 below). We have not implemented the remaining flood protection embankments as the

/proposed .....

proposed levels of embankments were not acceptable to the local villagers. The partially completed scheme is, however, only able to withstand rainstorms with a 10-year return period[1].

8. As a result of recent developments, fishponds in the area have been filled up. This has reduced the overall flood storage capacity and further aggravated the flooding problem in Sheung Cheung Wai and its adjacent villages. Considering the inadequacy of the partially-completed poldered village scheme, we have, in consultation with the Ping Shan Rural Committee and the Yuen Long District Council, revised the scheme under **227CL** (see paragraph 14 below). The revised scheme will alleviate the flooding problem for Sheung Cheung Wai and surrounding areas in the following ways –

(a) we will increase the maximum discharge capacity of the existing stormwater pumping station from 1.65 cubic metres (m^3) per second to 8.25 m^3 per second. To provide this extra discharge capacity, we need to upgrade the existing stormwater pumping system by constructing an extension and carrying out modification works to the existing pumping station (the proposed works);

(b) we will construct interceptor channels, drain pipes and box culverts in the villages at Ping Shan North including Sheung Cheung Wai and Hang Mei Tsuen to discharge stormwater run-off from the upper part of the catchment area to the main drainage culverts, namely Tai culvert and Eastern culvert (remainder of **227CL**); and

(c) the existing flood storage pond will store the surplus stormwater collected in the low-lying area. Before the pond starts to overflow, the upgraded pumping system will be activated to pump the water into the existing Tai culvert.

/9. .....

---

[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.

9. Upon completion of the revised scheme in 2005, the proposed works under **227CL** will have a design capacity to withstand rainstorms with a 50-year return period. To bring early relief to the flooding risk at Sheung Cheung Wai and its surrounding area, we propose to carry out the proposed pumping station extension and modification works in October 2002 for completion in December 2004.

FINANCIAL IMPLICATIONS

10. We estimate the capital cost of the project to be $36.7 million in MOD prices (see paragraph 11 below), made up as follows –

			$ million
(a)	Site formation for the stormwater pumping station extension works		1.8
(b)	Construction of the stormwater pumping station extension and modification to the existing stormwater pumping station facilities		23.7
	(i) civil works	10.0	
	(ii) E&M works	13.7	
(c)	Drainage works		3.3
(d)	Landscaping works		0.3
(e)	EM&A programme		1.0
(f)	Consultants' fees for		3.9
	(i) construction stage	0.5	
	(ii) site staff costs	3.4	

/(g) .....

(g)	Contingencies		3.4	
		Sub-total	37.4	(in September 2001 prices)
(h)	Provision for price adjustment		(0.7)	
		Total	36.7	(in MOD prices)

Due 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 3.

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

Year	**$ million (Sept 2001)**	**Price adjustment factor**	**$ million (MOD)**
2002 – 2003	4.3	0.98625	4.2
2003 – 2004	17.0	0.98378	16.7
2004 – 2005	12.8	0.98378	12.6
2005 – 2006	3.3	0.98378	3.2
	37.4		36.7

12. We have derived the MOD estimate on the basis of the Government's latest forecast of trend labour and construction prices for the period 2002 to 2006. We will tender the proposed works under a lump-sum contract because we can clearly define the scope of the majority of these works in advance. Since the contract period will exceed 21 months, we will provide for price adjustments in the contract.

13. We estimate the annual recurrent expenditure arising from this project to be $707,000.

/**PUBLIC** .....

PUBLIC CONSULTATION

14. We consulted the Ping Shan Rural Committee on 5 July 2001, and the Town Planning and Development Committee of the Yuen Long District Council on 11 July 2001. Members supported the proposed revised scheme and urged the Government for early commencement of the works to alleviate the flooding risk as soon as possible, particularly the pumping station extension works which do not require land resumption.

15. On 13 June 2001, we briefed the Legislative Council Panel on Planning, Lands and Works on the flooding 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 the present submission) in North West New Territories to bring early relief to the flooding problem.

ENVIRONMENTAL IMPLICATIONS

16. The project is designated under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance and an environmental permit is required for the construction and operation of the project. We completed an EIA study in March 1997 to assess the environmental impacts of further developments in Tin Shui Wai and its vicinity. The findings and recommendations of the EIA Report were endorsed by Advisory Council on the Environment on 21 April 1997.

17. We have completed an environmental review for the village flood protection works for Sheung Cheung Wai. The review confirmed that the environmental impacts of the project had been adequately assessed in the EIA report for Tin Shui Wai further development. It also concluded that the environmental impact of the project could be controlled to within the established standards and guidelines with the application 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 the works contracts during the construction stage. We will implement an EM&A programme during the course of the project. We estimate the cost of implementing the EM&A programme to be $1 million. We have included this cost in the overall project estimate.

/18. .....

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 1 600 cubic metres (m^3) of C&D materials. Of these, about 800 m^3 (50%) will be reused on site, 300 m^3 (19%) will be reused as fill in public filling area[2] and 500 m^3 (31%) will be disposed of at landfills. The notional cost of accommodating C&D waste at landfill site is estimated to be $62,500 for this project (based on a notional unit cost[3] of $125/$m^3$).

19. 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 day-to-day operations on site will comply with the approved WMP. We will require the contractor to reuse the excavated materials 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.

LAND ACQUISITION

20. The proposed works do not require any land acquisition and clearance.

/BACKGROUND .....

---

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 $90/$m^3$), 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

21. We included **227CL** in Category B in June 1984 for flood protection works in Tin Shui Wai. Since then, we have part upgraded **227CL** to Category A as **270CL** "Tin Shui Wai development, package 3, part IIA – village flood protection", **338CL** "Tin Shui Wai development, village flood protection, phase III" and **473CL** "Tin Shui Wai development – village flood protection works for Ha Mei San Tsuen" in September 1986, December 1989 and July 1996 respectively.

22. We started the village flood protection works under **270CL**, **338CL** and **473CL** in April 1987, November 1990 and April 1997 and completed the works in March 1990, February 1992 and September 1998 respectively.

23. We have engaged consultants to undertake the site investigation, scheme review and detailed design for the flood protection works at Sheung Cheung Wai under **227CL** at an estimated cost of $2.92 million charged 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 site investigation, detailed design and preparation of tender documents for the proposed works.

24. We estimate that the project will create some 32 new jobs, comprising 11 professional/technical staff and 21 labourers, totalling 690 man-months.

Works Bureau
May 2002

227CL – Tin Shui Wai development - village flood protection works for Sheung Cheung Wai

Breakdown of the estimate for consultants' fees

Consultants' staff costs			Estimated man-months	Average MPS* salary point	Multiplier[Note 1]	Estimated fees ($ million)
(a)	Consultants' fees for construction stage[Note 2]					
(i)	contract administration	Professional	2.3	–	–	0.33
		Technical	1.5	–	–	0.07
(ii)	preparation of as-built drawings	Professional	0.2	–	–	0.03
		Technical	1.5	–	–	0.07
(b)	Resident site staff costs[Note 3]	Professional	16.0	38	1.7	1.64
		Technical	53.0	14	1.7	1.76
					Total consultants' staff costs	3.90

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.7 is applied to the average MPS point to estimate the cost of resident site staff supplied by the consultants. (As at 1.4.2001, MPS pt. 38 = $60,395 per month and MPS pt. 14 = $19,510 per month)

2. The consultants' staff cost for construction stage (including 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 Tin Shui Wai Development.

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.