

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 704 – DRAINAGE

Civil Engineering – Drainage and erosion protection

118CD – Drainage improvement in Northern New Territories – package B

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **118CD**, entitled “Drainage improvement works in Kwu Tung South and Fu Tei Au, Sheung Shui”, to Category A at an estimated cost of \$58.3 million in money-of-the-day prices; and
- (b) the retention of the remainder of **118CD** in Category B.

PROBLEM

Many areas in the Northern New Territories are susceptible to flooding during heavy rainstorms due to the inadequate capacity of the existing drainage systems and natural streamcourses.

/PROPOSAL

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade part of **118CD** to Category A at an estimated cost of \$58.3 million in money-of-the-day (MOD) prices for carrying out the improvement works to the existing drainage systems in Kwu Tung South and Fu Tei Au in Sheung Shui.

PROJECT SCOPE AND NATURE

3. The part of **118CD** which we now propose to upgrade to Category A comprises -

- (a) construction of about 1.6 kilometres (km) of drainage channels and provision of ancillary works in Kwu Tung South; and
- (b) construction of about 0.2 km of drainage channels and provision of ancillary works in Fu Tei Au.

— A location plan showing the proposed works is at Enclosure 1.

4. We plan to start the proposed works in July 2006 for completion in January 2009.

JUSTIFICATION

5. Owing to developments and extensive changes in land use in the Northern New Territories over the years, large tracts of natural ground have been paved over and become impermeable. Rainwater which would previously dissipate naturally through ground infiltration can no longer do so. This has led to significant increase in surface run-off and overloading of the existing drainage systems and streamcourses. As such, many areas of the Northern New Territories are susceptible to flooding during heavy rainstorms.

6. To alleviate the flooding risks in the Northern New Territories and to meet the community's increasing expectation for better flood protection, we have planned a comprehensive drainage improvement programme which was

/being

being implemented in phases starting from the downstream end. Since 1995, we have started training of major downstream rivers including Shenzhen River, River Indus and River Beas. With those works being gradually completed, we have reviewed the upstream and local drainage systems in the Northern New Territories under **55CD** “Drainage Master Plan Study in the Northern New Territories” (the Study).

7. The Study has identified that many areas in Kwu Tung South including Kam Tsin, Hang Tau Tai Po, Tong Kung Leng, Tsiu Keng, Lin Tong Mei Tsoi Yuen and some low-lying areas in Fu Tei Au are susceptible to flooding during heavy rainstorms mainly due to the inadequate drainage capacity of the existing local streamcourses. We have substantially completed the detailed design for the proposed drainage channels in Kwu Tung South and Fu Tei Au and plan to start works so as to bring early improvement to these areas.

8. Upon completion of the proposed works, the drainage systems in Kwu Tung South and Fu Tei Au would be generally improved to withstand rainstorms with a return period¹ of one in 50 years.

FINANCIAL IMPLICATIONS

9. We estimate the cost of the proposed works to be about \$58.3 million (in MOD prices), made up as follows

	\$ million
(a) Construction of drainage channels and ancillary works in	43.8
(i) Kwu Tung South	38.0
(ii) Fu Tei Au	5.8
(b) Environmental mitigation measures	2.5
(c) Consultants’ fees	5.2

/(i)

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	
(i)	contract administration	0.6	
(ii)	site supervision	4.6	
(d)	Contingencies	4.7	
	Sub-total	56.2	(in September 2005 prices)
(e)	Provision for price adjustment	2.1	
	Total	58.3	(in MOD prices)

A breakdown of the estimates for the consultants' fees by man-months is at Enclosure 2.

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

Year	\$ million (Sept 2005)	Price Adjustment Factor	\$ million (MOD)
2006 – 2007	7.1	1.01500	7.2
2007 – 2008	21.4	1.03023	22.0
2008 – 2009	21.0	1.04568	22.0
2009 – 2010	4.8	1.06136	5.1
2010 – 2011	1.9	1.07728	2.0
	56.2		58.3

11. We have derived the MOD estimate on the basis of the Government's latest forecast of trend rate of change in the prices of public sector building and construction output for the period 2006 to 2011. We will tender the works under a

/standard

standard re-measurement contract because of the uncertainties of the sub-soil conditions and locations of existing underground utilities such as electricity cables, telephones cables and water pipes. The contract will provide for price adjustments as the contract period will exceed 21 months.

12. We estimate the annual recurrent expenditure arising from this project to be about \$0.3 million.

PUBLIC CONSULTATION

13. We consulted the North District Council and the Sheung Shui Rural Committee on 20 September 2004 and 16 November 2004 respectively. Members supported the implementation of the proposed works.

14. We gazetted the proposed works under the Roads (Works, Use and Compensation) Ordinance on 20 May 2005. Of the four objections received, three objectors were concerned that their business and the development potential of the land would be affected due to land resumption, and one requested for a proper vehicular access leading to the remaining portion of land upon resumption. Three objectors withdrew their objections upon our revision of the scheme to reduce or exclude their lands from resumption. For the remaining objector, we do not consider his request reasonable as there is no existing vehicular access for his lots and the scope of project does not involve construction of new roads. The objector maintained the objection. After considering the objection, the Chief Executive in Council authorised the proposed works on 7 February 2006.

15. We consulted the Legislative Council Panel on Planning, Lands and Works on the proposed works by circulation of an information paper on 20 March 2006. Members raised no objection to the proposed works.

ENVIRONMENTAL IMPLICATIONS

16. The project is not a designated project under the Environmental Impact Assessment Ordinance. We have completed an Environmental Study (ES) which concluded that with full implementation of the recommended mitigation measures and environmental monitoring and audit programme, there would not be any long term adverse environmental impacts arising from the proposed works. We would incorporate the ES recommendations into the works contract for

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implementation. For short-term impacts caused by the works during construction, we will control noise, dust and site run-off within established standards and guidelines through implementation of mitigation measures such as the use of temporary noise barriers and silenced construction equipment to reduce noise generation, water-spraying to reduce emission of dust and working in dry environment with barriers to control water pollution during excavation. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good site practices will be properly implemented on site. We have included \$2.5 million (in September 2005 prices) in the project estimates for implementing the environmental mitigation measures.

17. We have considered ways in the planning and design stages to reduce the generation of construction and demolition (C&D) materials where possible. For example, we have determined the alignments of the proposed drainage channels such that excavation and demolition of existing structures would be minimised, and adopted standardised sections of reinforced concrete structures to minimise the use of formwork. We will encourage the contractor to use non-timber formwork and recyclable material for temporary works. We will also require the contractor to carry out on-site sorting to recover reusable/recyclable material from C&D materials and to reuse inert C&D materials (e.g. the excavated material as filling material) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of C&D materials to public fill reception facilities². We will encourage the contractor to maximise the use of recycled and recyclable C&D materials to further minimise the generation of construction waste.

18. We will also require the contractor to submit a waste management plan (WMP) for approval. The WMP will include appropriate mitigation measures (e.g. allocation of an area for waste segregation) to avoid, reduce and recycle C&D materials. We will ensure that the day-to-day operations on site comply with the approved WMP. We will control disposal of public fill and C&D waste to public fill reception facilities and landfills respectively through a trip-ticket system. We will require the contractors 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.

/19.

² Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of public fill in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

19. We estimate that the project will generate about 46 800 tonnes of C&D materials. Of these, we will reuse about 6 600 tonnes (14%) on site and deliver 30 000 tonnes (64%) to public fill reception facilities for subsequent reuse. In addition, we will dispose of 10 200 tonnes (22%) at landfills. The total cost for accommodating C&D materials at public fill reception facilities and landfill sites is estimated to be about \$2 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne³ at landfills).

LAND ACQUISITION

20. We will resume about 25 760 square metres (m²) of private agricultural land and clear 32 386 m² of government land for the proposed works. We will charge the land resumption and clearance cost for the project, estimated to be about \$59 million, to **Head 701 – Land Acquisition**.

TRAFFIC IMPLICATIONS

21. We have carried out a traffic impact assessment for the proposed works which concluded that the proposed works would not cause unacceptable traffic impact.

BACKGROUND INFORMATION

22. In October 1999, we completed a comprehensive review of the drainage systems in Northern New Territories under **55CD** “Drainage Master Plan Study in the Northern New Territories”. The Study has identified that some existing upstream and local drainage systems are inadequate to meet the required flood protection standard and future development needs.

23. The Study recommends a three-package programme of drainage improvement works to tackle the flooding problems in the areas. Package A covers works in San Tin North, Fanling, Sheung Shui and Tai Po North. Package B covers works in San Tin South, Kwu Tung, Ma Tso Lung and Fu Tei Au

/whereas

³ The 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 is likely to be more expensive) when the existing ones are filled.

whereas Package C covers works in Ta Kwu Ling, Lung Yuek Tau, Man Uk Ping and Lin Ma Hang. In September 2000, we included **112CD** "Drainage improvement in Northern New Territories – package A" in Category B. In March 2001, we included **118CD** "Drainage improvement in Northern New Territories – package B" and **119CD** "Drainage improvement in Northern New Territories – package C" in Category B.

24. In June 2002, we upgraded part of **118CD** to Category A as **129CD** "Drainage improvement in Northern New Territories - package B - consultants' fees and investigations" for engaging consultants to undertake site investigations, impact assessments and design for the drainage improvement works for the whole project. The consultancy commenced in November 2002 and is scheduled for completion in March 2007.

25. Taking into account the phasing of land resumption and clearance for lands required in different locations, we have been implementing the drainage improvement works under **118CD** in three phases.

26. Under phase 1, we included an item "Site investigation for rural drainage rehabilitation scheme in the North West New Territories" under the block allocation **Subhead 4100DX** "Drainage works, studies and investigations for items in Category D of Public Works Programme" in June 2005 at an approved project estimate of \$3.97 million in MOD prices for carrying out the drainage improvement works of a watercourse. The watercourse is located at the north of the junction between Fu Tei Au Road and Man Kam To Road in Sheung Shui. The construction works commenced in October 2005 for completion in January 2007.

27. Phase 2 covers the proposed works in paragraph 3, i.e. construction of drainage channels in Kwu Tung South and Fu Tei Au in Sheung Shui.

28. Phase 3 comprises the construction of drainage channels in San Tin, Ma Tso Lung, Kwu Tung North and Sha Ling of Fu Tei Au. Planning and design works for phase 3 are underway.

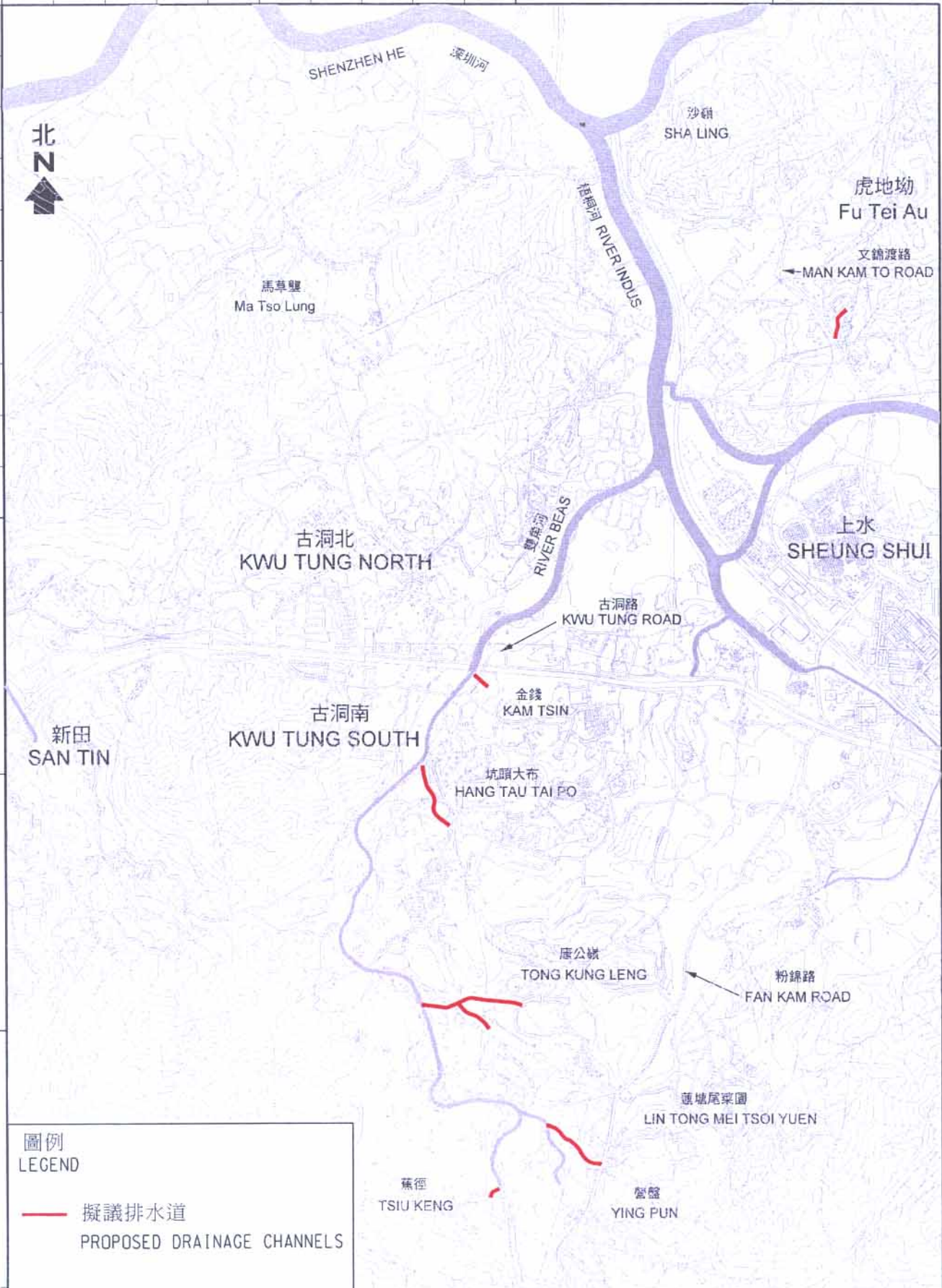
29. The proposed drainage improvement works will involve the removal of 76 trees including 49 trees to be felled and 27 trees to be replanted within the project site. All trees to be removed are not important trees⁴. We will incorporate planting proposals as part of the project, including the planting of about 400 trees and 11 060 m² of grassed area.

30. We estimate that the proposed works will create about 43 jobs (35 for labourers and another eight for professional/technical staff) providing a total employment of 900 man-months.

Environment, Transport and Works Bureau
June 2006

⁴ Important trees include trees on the Register of Old and Valuable Trees, and any other trees which meet one or more of the following criteria –

- (a) trees over 100 years old;
- (b) trees of cultural, historical or memorable significance;
- (c) trees of precious or rare species;
- (d) trees of outstanding form; or
- (e) trees with trunk diameter exceeding one metre (measured at one metre above ground level).



圖例
LEGEND

 擬議排水道
PROPOSED DRAINAGE CHANNELS

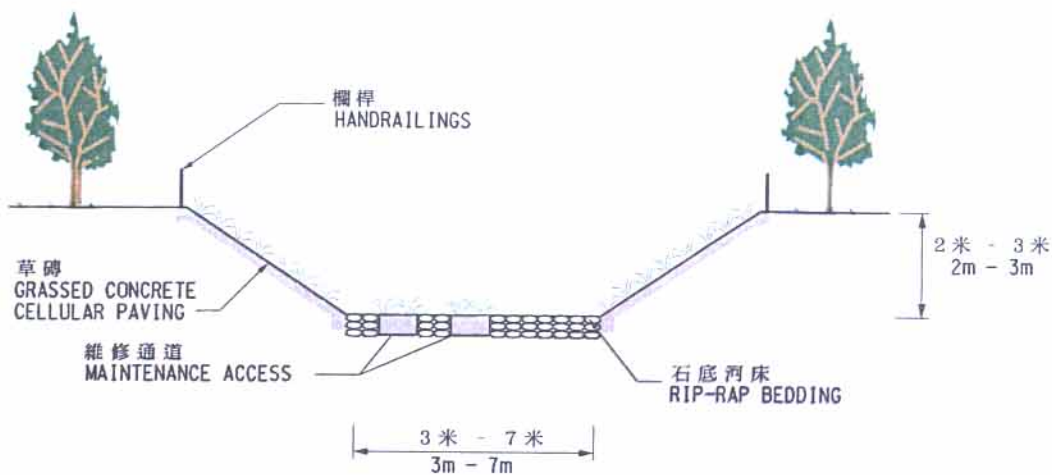
圖則名稱 drawing title
工務工程計劃編號118CD
新界北部雨水排放系統改善計劃-B部分
PWP ITEM No. 118CD
DRAINAGE IMPROVEMENT
IN NORTHERN NEW TERRITORIES
-PACKAGE B

繪畫 drawn	S. C. TAM	日期 date	29.03.2006
核對 checked	S. S. POON	日期 date	29.03.2006
批核 approved	B. K. KWOK	日期 date	29.03.2006
部門 office	排水工程處 DRAINAGE PROJECTS DIVISION		

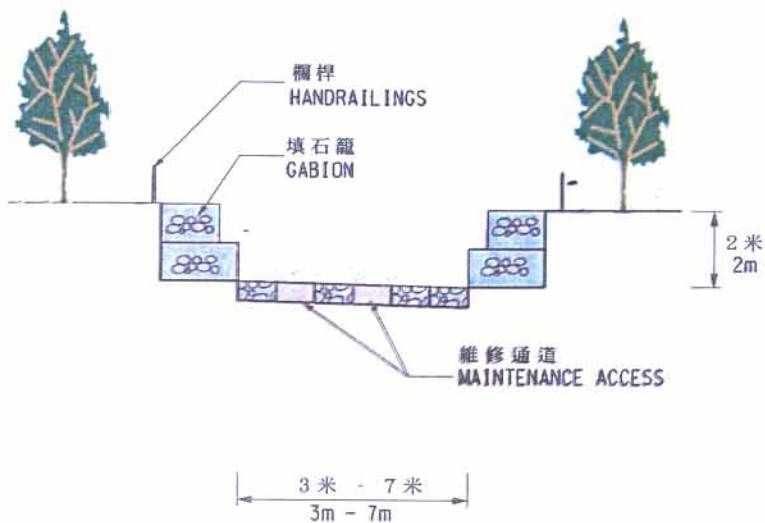
圖則編號 drawing no. SK-T3-06-19 比例 scale N.T.S.

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類型一
TYPE 1



類型二
TYPE 2

圖則名稱 drawing title

工務工程計劃編號118CD
新界北部雨水排放系統改善計劃-B部分
PWP ITEM No. 118CD - DRAINAGE IMPROVEMENT IN
NORTHERN NEW TERRITORIES - PACKAGE B

排水道典型切面圖
TYPICAL CROSS-SECTION OF
DRAINAGE CHANNELS

繪畫 drawn

S. C. TAM

日期 date
29.3.2006

核對 checked

S. S. PONG

日期 date
29.3.2006

批核 approved

B. K. KWOK

日期 date
29.3.2006

部門 offices

排水工程處
DRAINAGE PROJECTS DIVISION

圖則編號 drawing no.

SK-T3-06-018

比例 scale

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118CD – Drainage improvement in Northern New Territories – package B**Breakdown of the estimate for consultants' fees**

Consultants' staff costs			Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$million)
(a)	Contract	Professional	-	-	-	0.3
	administration (Note 2)	Technical	-	-	-	0.3
(b)	Site supervision by resident site staff of the consultants (Note 3)	Professional	20	38	1.6	1.7
		Technical	102	14	1.6	2.9
Total consultants' staff costs						5.2

* 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 January 2005, MPS Pt. 38 = \$54,255 per month and MPS Pt.14 = \$18,010 per month.)
2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the investigation, design and construction of **118CD**. The construction phase of the assignment for the proposed works will only be executed subject to Finance Committee's approval to upgrade the proposed works to Category A.
3. We will only know the actual man-months and actual costs for site supervision after completion of the works.