

## **ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE**

### **HEAD 704 – DRAINAGE**

#### **Civil Engineering – Drainage and erosion protection**

#### **104CD – Drainage improvement in Northern Hong Kong Island – lower catchment improvement**

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **104CD**, entitled “Drainage improvement in Northern Hong Kong Island – eastern lower catchment works”, to Category A at an estimated cost of \$37.5 million in money-of-the-day prices; and
- (b) the retention of the remainder of **104CD**, retitled “Drainage improvement in Northern Hong Kong Island – western lower catchment works” in Category B.

### **PROBLEM**

Northern Hong Kong Island is susceptible to flooding during heavy rainstorms due to inadequate capacity of the existing drainage systems in the area.

**/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 **104CD** to Category A at an estimated cost of \$37.5 million in money-of-the-day (MOD) prices for drainage improvement works in the Eastern district on Hong Kong Island.

## PROJECT SCOPE AND NATURE

3. The scope of the proposed drainage works to be part-upgraded to Category A under **104CD** comprises the construction of about 1.8 kilometres (km) of stormwater drains of diameter ranging from 225 millimetres (mm) to 1 350 mm and ancillary works in the Eastern district on Hong Kong Island. A site plan showing the locations of the proposed works is at Enclosure 1.

4. We plan to start the proposed works in November 2006 for completion in August 2008.

## JUSTIFICATION

5. The residential and commercial districts in Northern Hong Kong Island, including the Eastern, Wan Chai, Central and Western districts are served by drainage systems built decades ago to meet the flow requirements at that time. Rapid urbanisation and changes in land use over the past decades have turned natural ground and slopes into paved areas. Stormwater which could previously dissipate naturally through ground filtration can no longer do so. This has led to significant increase in surface run-off and overloading of the existing drainage systems. Although we have made local improvements to the systems to cater for developments from time to time, the drainage systems as a whole are still inadequate to meet the required flood protection standard. Flooding often occurs during heavy rainstorms.

6. We completed a drainage master plan study for Northern Hong Kong Island in 1999 to assess the adequacy of the existing drainage systems in the area. The study recommended the construction of a drainage tunnel in Mid-levels of Northern Hong Kong Island from Tai Hang to Pokfulam to intercept and convey the stormwater from the upper catchment directly to the sea as well as the upgrading of some of the drains in the lower catchment in the Eastern, Wan Chai, Central and Western districts.

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7. To bring about early improvement to the existing drainage systems, we propose to part-upgrade **104CD** for the construction of stormwater drains in the Eastern district. Upon completion of the proposed works, the standard of flood protection in the Eastern district would be raised generally to withstand rainstorms with a return period<sup>1</sup> of one in 50 years. The planning and design of the remaining scheme including the drainage tunnel and the associated drains in the western lower catchment are underway.

## FINANCIAL IMPLICATIONS

8. We estimate the project cost of the proposed works to be \$37.5 million (in MOD prices), made up as follows –

	<b>\$ million</b>	
(a) Construction of stormwater drains and ancillary works	28.8	
(b) Consultants' fees for	3.4	
(i) contract administration	0.8	
(ii) site supervision	2.6	
(c) Environmental mitigation measures	0.8	
(d) Contingencies	3.1	
Sub-total	36.1	(in September 2005 prices)
(e) Provision for price adjustment	1.4	
Total	37.5	(in MOD prices)

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

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<sup>1</sup> "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. Subject to approval, we will phase the expenditure as follows –

<b>Year</b>	<b>\$ million (Sept 2005)</b>	<b>Price adjustment factor</b>	<b>\$ million (MOD)</b>
2006 – 2007	2.5	1.01500	2.5
2007 – 2008	19.0	1.03023	19.6
2008 – 2009	9.1	1.04568	9.5
2009 – 2010	3.5	1.06136	3.7
2010 – 2011	2.0	1.07728	2.2
	36.1		37.5

10. We have derived the MOD estimates on the basis of the Government's latest forecast of trend labour and prices of public sector building and construction output for the period 2006 to 2011. We will tender the works under a standard re-measurement contract because of uncertainties of the underground utilities such as electricity cables, telephone cables and water pipes. The contract will not provide for price adjustments because the contract period will not exceed 21 months.

11. We estimate the annual recurrent expenditure arising from this project to be about \$47,000.

## **PUBLIC CONSULTATION**

12. We consulted the Works and Development Committee under the Eastern District Council on 30 March 2006. Members supported the implementation of the proposed drainage improvement works.

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

**/ENVIRONMENTAL .....**

## ENVIRONMENTAL IMPLICATIONS

14. The project is not a designated project under the Environmental Impact Assessment Ordinance. We completed a Preliminary Environmental Review in 1999 and subsequently carried out a review in 2002 which concluded that there would not be any long term adverse environmental impacts arising from the proposed works. 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 the 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 fugitive dust and strict control on diversion of sewage flows in the works contracts. We will incorporate a clause in the works contract to require the contractor to carry out the recommended environmental mitigation measures to control pollution and disposal of contaminated soil in accordance with the relevant regulations during construction. We have included \$0.8 million (in September 2005 prices) in the project estimates for implementing the environmental mitigation measures.

15. We have considered ways of minimising construction and demolition (C&D) materials in the planning and design stages. In addition, we will require the contractor to reuse inert C&D materials 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 facilities<sup>2</sup>. We will encourage the contractors to maximise the use of recycled or recyclable C&D materials, as well as the use of non-timber in formwork to further minimise the generation of construction waste.

16. We will also require the contractor to submit a waste management plan (WMP) 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 control the 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 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.

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<sup>2</sup> 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.

17. We estimate that the project will generate about 14 000 tonnes of C&D materials. Of these, we will reuse about 10 600 tonnes (76%) on site, deliver 1 400 tonnes (10%) to public fill reception facilities for subsequent reuse and dispose of 2 000 tonnes (14%) at landfills. The total cost for accommodating C&D materials at public fill reception facilities and landfill sites is estimated to be about \$0.3 million for this project (based on an unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne<sup>3</sup> at landfills).

## **TRAFFIC IMPLICATIONS**

18. To minimise possible disruption to traffic during construction, we have completed a traffic impact assessment for the proposed works. During construction, we will maintain smooth traffic flow through temporary traffic management measures as far as possible and display notice boards on site to explain the reason of temporary traffic arrangements and to show the expected completion date of the concerned section of works. We will set up telephone hotlines for public enquiries or complaints. We will carry out construction works in busy road sections during non-peak hours.

19. We will also establish a Traffic Management Liaison Group (TMLG) under the contract to discuss, scrutinise and agree on the proposed temporary traffic management measures. We will invite representatives from the Transport Department, Hong Kong Police Force, Highways Department, Eastern District Office and various public transport operators to attend the TMLG meetings and agree on the temporary traffic arrangement before implementation. The TMLG will also take into account all relevant factors such as site restrictions, existing and future traffic conditions, pedestrian safety, access to buildings/shop fronts and provision of emergency vehicles access while considering the temporary traffic arrangements.

## **LAND ACQUISITION**

20. The project does not require any land acquisition.

**/BACKGROUND .....**

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<sup>3</sup> 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/m<sup>3</sup>), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

**BACKGROUND INFORMATION**

21. We included **103CD** “Drainage improvement in Northern Hong Kong Island – Hong Kong West drainage tunnel” and **104CD** to Category B in September 2000.

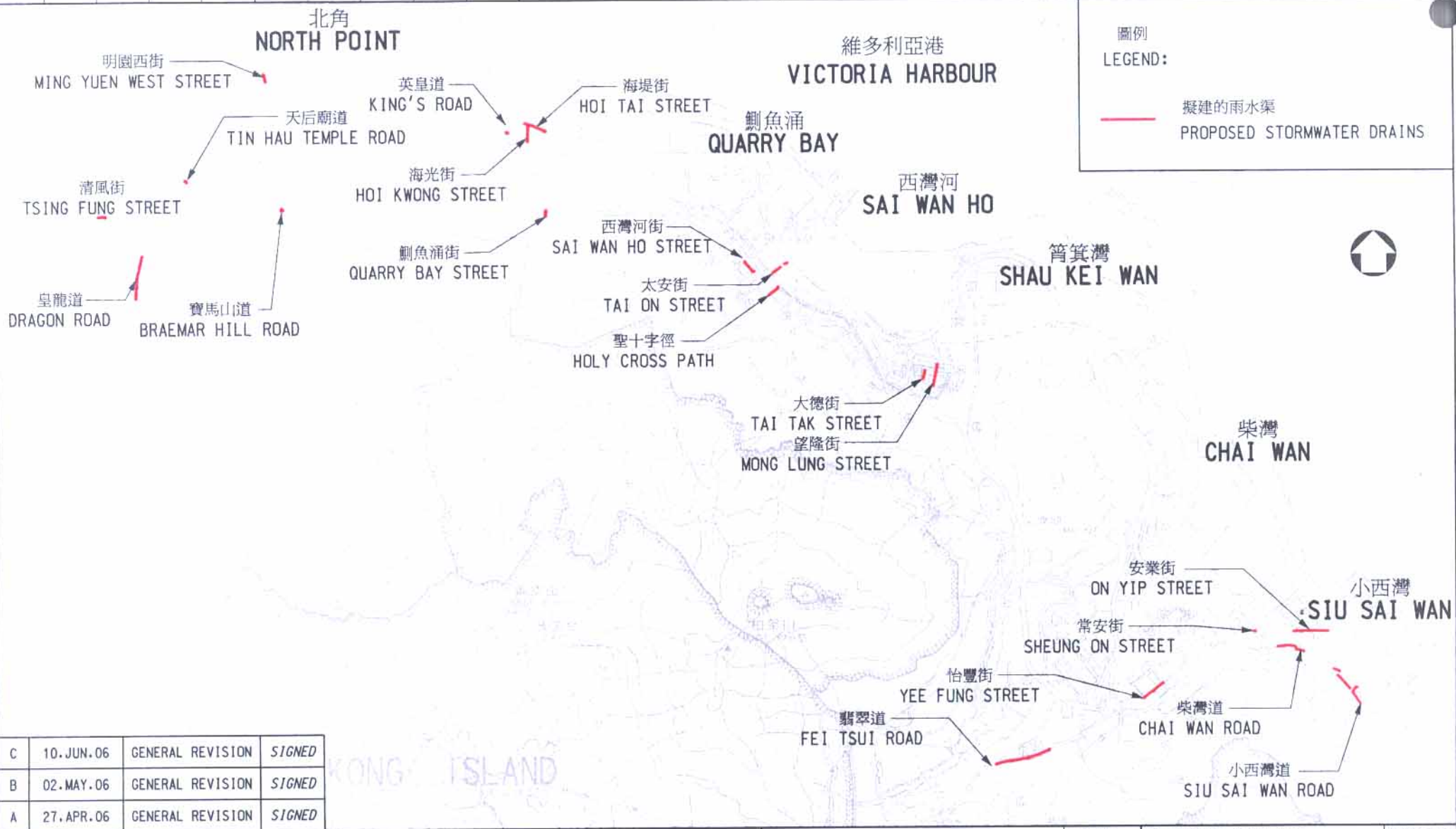
22. In May 2002, we engaged consultants to undertake site investigation, surveys, traffic impact assessment and detailed design for the drainage improvement works in the Eastern district on Hong Kong Island under **104CD** at an estimated cost of \$4 million in MOD prices. We have charged this amount to block allocation **Subhead 4100DX** “Drainage works, studies and investigations for items in Category D of the Public Works Programme”. We have substantially completed the detailed design.

23. The proposed drainage works will not involve any removal of trees or planting proposals.

24. We estimate that the proposed works will create about 35 jobs (28 for labourers and another seven for professional/technical staff) providing a total employment of 600 man-months.

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Environment, Transport and Works Bureau  
June 2006



圖例  
LEGEND:

— 擬建的雨水渠  
PROPOSED STORMWATER DRAINS

C	10. JUN. 06	GENERAL REVISION	SIGNED
B	02. MAY. 06	GENERAL REVISION	SIGNED
A	27. APR. 06	GENERAL REVISION	SIGNED

圖則名稱 drawing title  DRAINAGE IMPROVEMENT IN NORTHERN HONG KONG ISLAND - EASTERN LOWER CATCHMENT WORKS  港島北部雨水排放系統改善計劃 - 東部下游集水區工程	繪畫 drawn	SIGNED	C.K.LAM	日期 date	28. MAR. 06	圖則編號 drawing no.	DPM/104CD/1804C	比例 scale 1:30 000
	核對 checked	SIGNED	M.Y.WONG	日期 date	10. APR. 06			
	批核 approved	SIGNED	W.C.LAM	日期 date	10. APR. 06	保留版權 COPYRIGHT RESERVED		
	部門 office	工程管理部 PROJECT MANAGEMENT DIVISION			香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION			



**104CD – Drainage improvement in Northern Hong Kong Island  
– lower catchment improvement**

**Breakdown of the estimates for consultant's fees**

<b>Consultants' staff costs</b>		<b>Estimated man- months</b>	<b>Average MPS* salary point</b>	<b>Multiplier (Note 1)</b>	<b>Estimated fee (\$ million)</b>
(a) Contract administration (Note 2)	Professional	-	-	-	0.4
	Technical	-	-	-	0.4
(b) Site supervision by resident site staff of the consultants (Note 3)	Professional	15	38	1.6	1.3
	Technical	46	14	1.6	1.3
Total consultants' staff costs					<u>3.4</u>

\*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' fees for contract administration are based on the lump sum fees calculated in accordance with the consultancy agreement which the Director of Drainage Services has agreed with the consultants undertaking the design and construction of the project. The construction phase of the assignment for the proposed works will only be executed upon Finance Committee's approval to upgrade the proposed works to Category A.
3. We will only know the actual man months and actual costs after the completion of the construction works.