

## 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 – western lower catchment works

Members are invited to recommend to Finance Committee the upgrading of **104CD** to Category A at an estimated cost of \$373.3 million in money-of-the-day prices for the drainage improvement works in Wan Chai, Central and Western districts, and decking of the nullah adjacent to Queen's College.

### PROBLEM

The northern part of Hong Kong Island is susceptible to flooding during heavy rainstorms due to the inadequate capacity of the existing drainage systems in the area. The nullah adjacent to Queen's College has posed odour problem affecting the quality of living environment.

### PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for Development, proposes to upgrade **104CD** to Category A at an estimated cost of \$373.3 million in money-of-the-day (MOD) prices for the drainage improvement works in Wan Chai, Central and Western districts, and decking of the nullah adjacent to Queen's College.

/PROJECT .....

## PROJECT SCOPE AND NATURE

3. The scope of **104CD** comprises -
  - (a) construction of about 4.2 kilometres of stormwater drains of diameter ranging from 375 millimetres (mm) to 2 100 mm;
  - (b) construction of about 100 metres (m) of single cell box culvert with internal cell dimensions ranging from 2.1 m in width and 2.1 m in height to 2.7 m in width and 2.4 m in height; and
  - (c) decking of about 250 m of nullah adjacent to Queen's College and provision of ancillary works.

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A site plan and typical sections of the proposed works are at Enclosure 1.

4. We plan to commence construction in May 2008 for completion in October 2012.

## JUSTIFICATION

5. The residential and commercial districts in Northern Hong Kong Island, including 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 increased the size of paved areas. 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 overall drainage systems as a whole are still inadequate to meet the required flood protection standard. Flooding often occurs during heavy rainstorms.

6. To alleviate the flooding problem, we propose to upgrade **104CD** for the construction of stormwater drains in Wan Chai, Central and Western districts. Upon completion of the proposed works, the standard of flood protection in these districts will be improved generally to withstand rainstorms with a return period<sup>1</sup> of one in 50 years.

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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.

7. Separately, we also propose to proceed with the decking of the nullah adjacent to Queen's College to contain any odour problem associated with the nullah. The decking will also bring improvement to the quality of living environment as land obtained from the decking will be used for footpath widening with shrubs planting provided at the roadside.

## FINANCIAL IMPLICATIONS

8. We estimate the cost of the proposed works to be \$373.3 million in MOD prices (see paragraph 9 below), made up as follows –

		<b>\$ million</b>	
(a)	Construction of	291.8	
	(i) stormwater drains	233.9	
	(ii) box culvert	4.4	
	(iii) nullah decking and provision of ancillary works	53.5	
(b)	Consultants' fees for	31.3	
	(i) contract administration	1.8	
	(ii) resident site staff cost	29.5	
(c)	Environmental mitigation measures	3.5	
(d)	Contingencies	32.7	
	Sub-total	359.3	(in September 2007 prices)
(e)	Provision for price adjustment	14.0	
	Total	373.3	(in MOD prices)

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

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

<b>Year</b>	<b>\$ million (Sept 2007)</b>	<b>Price adjustment factor</b>	<b>\$ million (MOD)</b>
2008 – 2009	35.0	1.00750	35.3
2009 – 2010	60.4	1.01758	61.5
2010 – 2011	80.4	1.02775	82.6
2011 – 2012	71.5	1.03803	74.2
2012 – 2013	60.3	1.05619	63.7
2013 – 2014	36.4	1.07732	39.2
2014– 2015	15.3	1.09886	16.8
	359.3		373.3

10. We have derived the MOD estimates 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 2008 to 2015. We will tender the proposed works under a standard re-measurement contract because of uncertainties of the existence and alignment of the underground utilities and the ground condition. The contract will provide for price adjustments because the contract period will exceed 21 months.

11. We estimate the annual recurrent expenditure arising from this project to be about \$0.25 million.

## **PUBLIC CONSULTATION**

12. We consulted the Planning, Traffic and Environmental Protection Committee of the Wan Chai District Council on 24 July 2007 regarding the proposed nullah decking works. Members supported the proposal.

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13. We also consulted the Planning, Traffic and Environmental Protection Committee of the Wan Chai District Council on 25 September 2007 and the Food, Environment, Hygiene and Works Committee of the Central and Western District Council on 13 and 28 September 2007 regarding the proposed drainage improvement works. Members supported the proposal.

14. We gazetted the proposed nullah decking works under the Roads (Works, Use and Compensation) Ordinance on 12 October 2007 and did not receive any objection. The road scheme was authorised on 9 January 2008.

15. We consulted the Legislative Council Panel on Development on the proposed works by circulation of an information paper on 14 January 2008. Members raised no objection to the proposed works.

## **ENVIRONMENTAL IMPLICATIONS**

16. The drainage and nullah decking projects are not designated projects under the Environmental Impact Assessment Ordinance. We have completed the Environmental Review for the proposed works and concluded that the projects will not cause any long term adverse environmental impacts.

17. For short term impacts during construction, we will control noise, dust and site run-off within the established standards and guidelines through implementation of mitigation measures in the works contract, such as the use of temporary noise barriers and silenced construction plants to reduce noise generation, water-spraying to reduce emission of fugitive dust, and temporary drains to dispose site run-off. We have included \$3.5 million (in September 2007 prices) in the project estimates for implementation of the environmental mitigation measures.

18. We have considered ways in the planning and design stages to reduce the generation of construction waste where possible. For example, we have designed the alignment of the proposed drainage works in such a manner that excavation and demolition of existing structures will be minimised. In addition, we will require the contractor to reuse inert construction waste including excavated soil for backfilling on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste to public

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fill reception facilities<sup>2</sup>. We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

19. We will also require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively through a trip-ticket system.

20. We estimate that the project will generate in total about 80 000 tonnes of construction waste. Of these, we will reuse about 48 500 tonnes (60.6%) of inert construction waste on site, deliver 22 000 tonnes (27.5%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of about 9 500 tonnes (11.9%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be about \$1.8 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne<sup>3</sup> at landfills.)

## HERITAGE IMPLICATIONS

21. This project will not affect any heritage site, i.e. all declared monuments, graded historic buildings and sites of archaeological interests. Three graded historic buildings including the Sikh Temple, Central Market and Pedder Building are located in the vicinity of the project. We will implement monitoring measures to ensure that these historic buildings will not be affected during construction of the works.

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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 inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

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

## TRAFFIC IMPACTS

22. We have completed a traffic impact assessment for the proposed works and worked out mitigation measures to minimise possible disruption to traffic during construction of the drains. We will establish a Traffic Management Liaison Group (TMLG) under the contract and invite representatives from Transport Department, Hong Kong Police Force, Highways Department, the relevant District Offices, public transport operators and utility undertakings to attend the TMLG meetings, and every temporary traffic arrangement will have to be agreed by TMLG before implementation. We will discuss and scrutinise proposed temporary traffic management measures before implementation. The TMLG will also take into account relevant factors such as site restrictions, traffic conditions, pedestrian safety, access to buildings/shop fronts and provision of emergency vehicles access in considering the temporary traffic arrangements. We will also display notice boards on site to explain the reason of temporary traffic arrangements and indicate the expected completion date of the works.

## LAND ACQUISITION

23. The project does not require any land acquisition.

## BACKGROUND INFORMATION

24. We included **104CD** in Category B in September 2000.

25. In July 2006, we upgraded part of **104CD** to Category A as **146CD** “Drainage improvement in Northern Hong Kong Island – Eastern Lower Catchment Works” at an approved project estimate of \$37.5 million for carrying out the drainage improvement works in Eastern district. The construction works commenced in November 2006 for completion in October 2008.

26. In January 2005, we engaged consultant to undertake site investigation, surveys, traffic impact assessment and detailed design for the proposed drainage improvement works in the Wan Chai, Central and Western districts, and the decking of the nullah adjacent to Queen’s College at a cost of \$6.9 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 of the proposed works.

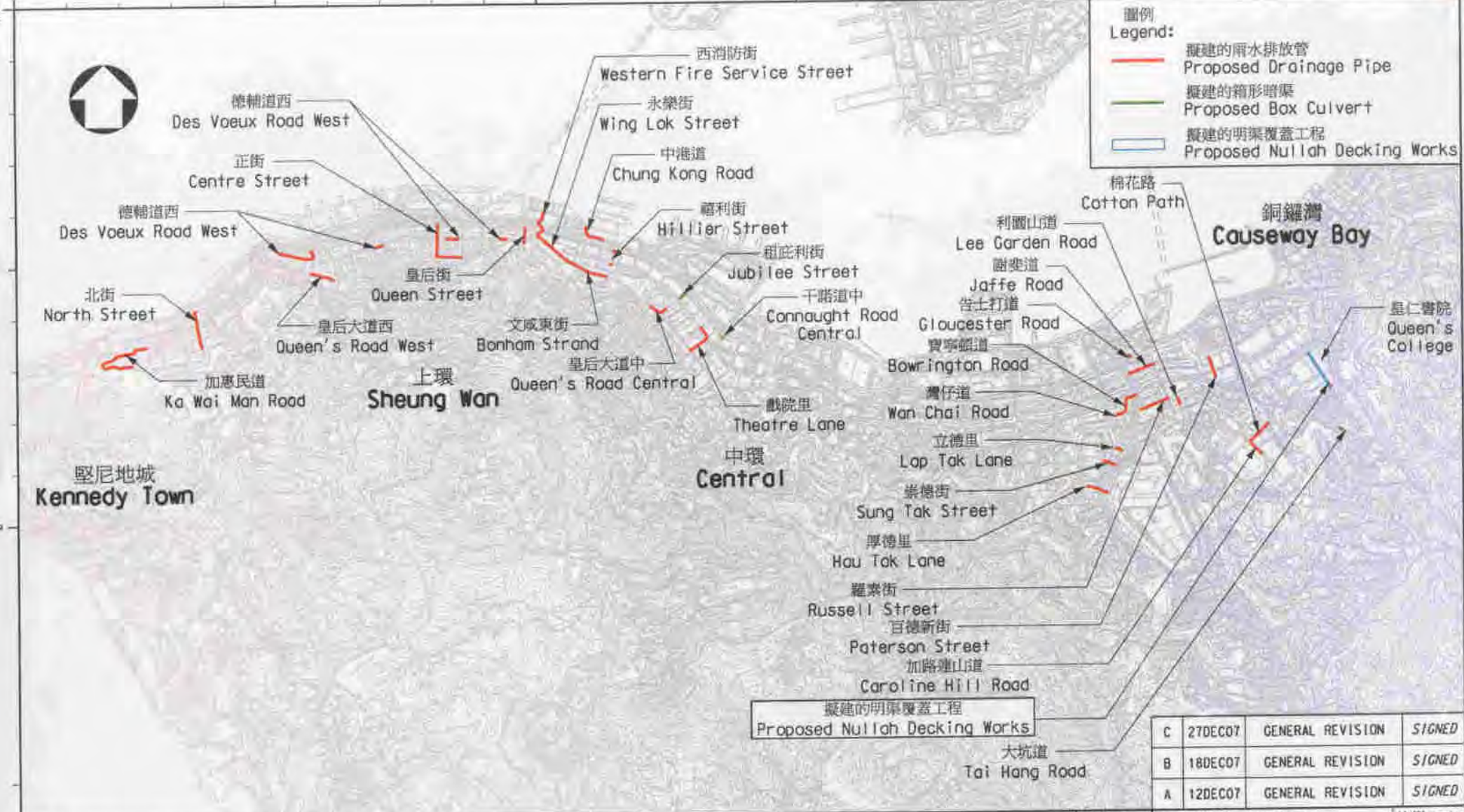
27. The proposed works will not involve any removal of trees. We will incorporate planting proposal as part of the project, including estimated quantities of 615 shrubs.

28. We estimate that the proposed works will create about 124 jobs (100 for labourers and another 24 for professional/technical staff) providing a total employment of 5 350 man-months.

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Development Bureau  
January 2008





**圖例 Legend:**

- 擬建的雨水排水管 Proposed Drainage Pipe
- 擬建的箱形暗渠 Proposed Box Culvert
- 擬建的明渠覆蓋工程 Proposed Nullah Decking Works

圖則名稱 drawing title  
**PWP ITEM No.104CD**  
**DRAINAGE IMPROVEMENT IN NORTHERN HONG KONG ISLAND -**  
**WESTERN LOWER CATCHMENT WORKS**  
 工程項目編號 104CD  
 港島北部雨水排放系統改善計劃 - 西部下游集水區工程

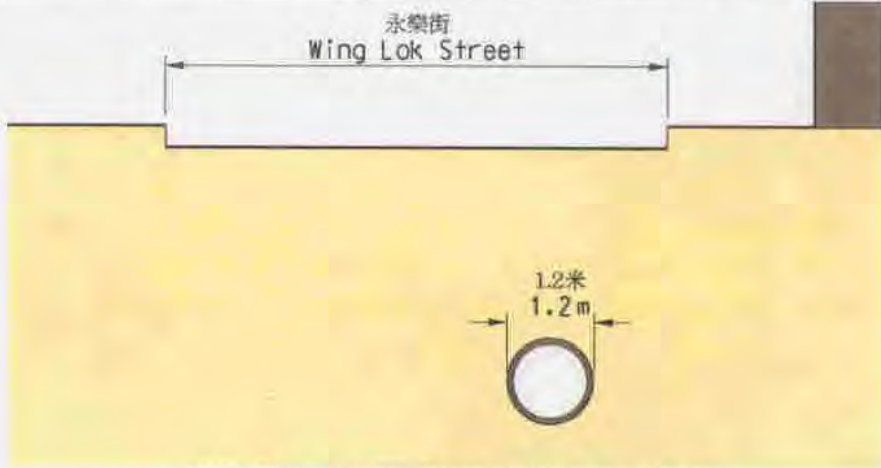
繪畫 drawn	SIGNED	C.K.LAM	日期 date	25OCT07
核對 checked	SIGNED	Y.L.CHENG	日期 date	22NOV07
批核 approved	SIGNED	M.H.LEUNG	日期 date	22NOV07
部門 office	工程管理部 PROJECT MANAGEMENT DIVISION			

C	27DEC07	GENERAL REVISION	SIGNED
B	18DEC07	GENERAL REVISION	SIGNED
A	12DEC07	GENERAL REVISION	SIGNED

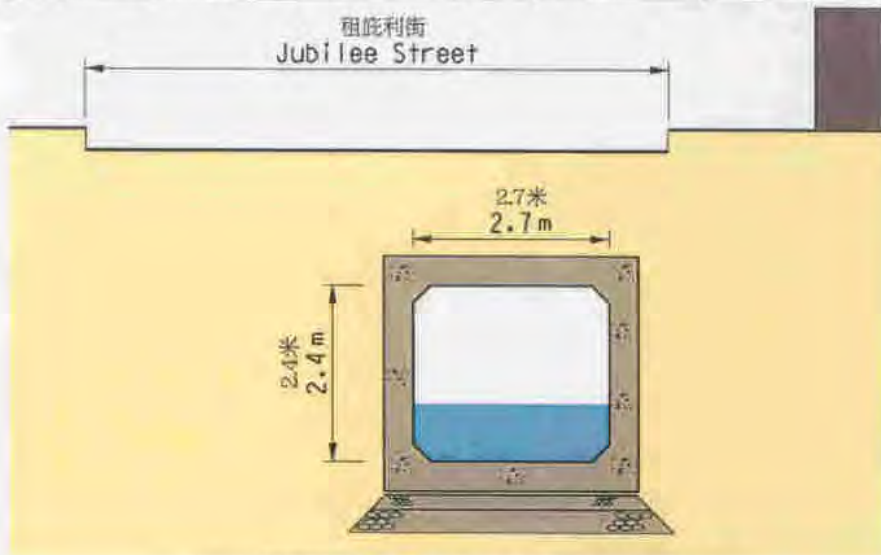
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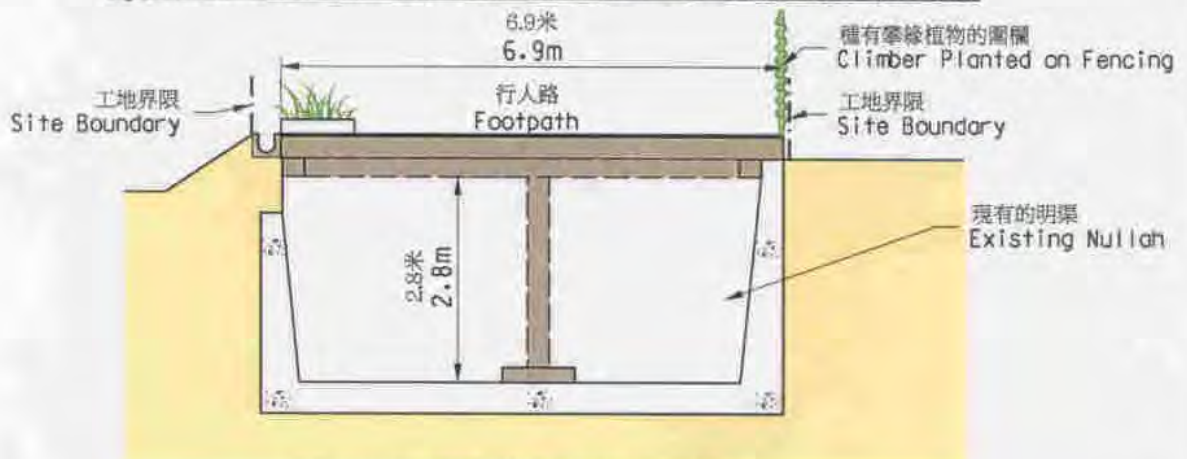
香港特別行政區政府渠務署  
 DRAINAGE SERVICES DEPARTMENT  
 GOVERNMENT OF THE HONG KONG  
 SPECIAL ADMINISTRATIVE REGION



位於永樂街的雨水排放管之典型切面  
Typical Section of Drainage Pipe at Wing Lok Street



位於租庇利街的箱型暗渠之典型切面  
Typical Section of Box Culvert at Jubilee Street



明渠覆蓋工程的典型橫切面  
Typical Section of Nullah Decking

C	05JAN08	GENERAL REVISION	SIGNED
B	18DEC07	GENERAL REVISION	SIGNED
A	12DEC07	GENERAL REVISION	SIGNED

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NORTHERN HONG KONG ISLAND -  
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港島北部雨水排放系統改善計劃  
- 西部下游集水區工程

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圖則編號 drawing no. DPM/104CD/1807C 比例 scale N.T.S.

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**Enclosure 2 to PWSC(2007-08)80**

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

**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) (in Sept 07 prices)</b>
(a) Contract administration (Note 2)	Professional	-	-	-	1.1
	Technical	-	-	-	0.7
(b) Site supervision by resident site staff of the consultants (Note 3)	Professional	154	38	1.6	14.0
	Technical	515	14	1.6	15.5
Total consultants’ staff costs					<hr/> 31.3 <hr/>

\*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 April 2007, MPS pt. 38 = \$56,945 per month and MPS pt. 14 = \$18,840 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.