

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

### **HEAD 704 – DRAINAGE**

**Environmental Protection – Sewerage and sewage treatment**

**363DS – Provision of interception facilities at Jordan Valley box culvert**

Members are invited to recommend to Finance Committee the upgrading of **363DS** to Category A at an estimated cost of \$588.0 million in money-of-the-day prices for the provision of interception facilities at Jordan Valley box culvert.

### **PROBLEM**

Polluted dry weather flow in the existing Jordan Valley box culvert (JVBC) is one of the major sources of water pollution to the Kai Tak Approach Channel (KTAC).

### **PROPOSAL**

2. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade **363DS** to Category A at an estimated cost of \$588.0 million in money-of-the-day (MOD) prices for the construction of dry weather flow interception facilities and associated works at the JVBC.

**/PROJECT .....**

## PROJECT SCOPE AND NATURE

3. The scope of **363DS** comprises –
- (a) construction of an interception compound with automatic penstocks and associated desilting facilities at JVBC near Kai Fuk Road;
  - (b) construction of a pumping station;
  - (c) construction of a stormwater bypass box culvert;
  - (d) upgrading of about 80 metres (m) of an existing trunk sewer along Kai Fuk Road;
  - (e) rehabilitation works within the affected sections of JVBC in association with the construction of the proposed interception facilities; and
  - (f) ancillary works.

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

4. Subject to the funding approval by the Finance Committee, we plan to commence construction of the proposed works in December 2010 for completion of items (a), (b), (c) and (d) in June 2013 and items (e) and (f) in June 2014. Tender has already been invited to enable works to commence as soon as possible after funding approval.

## JUSTIFICATION

5. At present, stormwater from Kowloon Bay, Ngau Tau Kok and Jordan Valley is discharged into KTAC through JVBC, an underground seven-cell reinforced concrete stormwater drainage culvert. The polluted dry weather flow in JVBC has contributed to poor water quality and odour nuisance in KTAC. The Environmental Protection Department completed a study on the control of water pollution at JVBC in 2008. The study has recommended interception of the polluted dry weather flow at the downstream of JVBC<sup>1</sup> in addition to removal of expedient connections for controlling the pollution at source.

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<sup>1</sup> The proposed intercepting facilities in this project are equipped with automatic penstocks such that they would intercept and divert polluted dry weather flow from JVBC to the sewer system during non-rainy days in both the dry and wet seasons. During heavy rains, the penstocks will automatically open for discharging the stormwater.

6. Upon commissioning of the interception facilities, the polluted dry weather flow in JVBC will be intercepted at an interception compound located at the downstream and pumped into an existing trunk sewer along Kai Fuk Road. The intercepted flow will eventually be conveyed to the Stonecutters Island sewage treatment works for proper treatment prior to disposal, thereby preventing the polluted flow from entering KTAC through JVBC and alleviating the odour nuisance.

7. The proposed interception compound will be equipped with automatic penstocks and desilting facilities to remove the grits and solids present in the flow. We will also need to construct a pumping station next to the interception compound to pump the intercepted polluted flow to the adjacent sewerage system, upgrade about 80 m of the existing trunk sewer along Kai Fuk Road, and carry out structural rehabilitation works within affected sections of the JVBC for proper functioning of the interception facilities. The project also covers construction of a stormwater bypass box culvert to help divert stormwater during exceptionally heavy rainstorms and emergency situations.

## FINANCIAL IMPLICATIONS

8. We estimate the cost of the proposed works to be \$588.0 million in MOD prices (please see paragraph 9 below), broken down as follows –

	<b>\$ million</b>
(a) Interception compound, pumping station and associated desilting facilities	342.0
(i) civil engineering works	198.3
(ii) electrical and mechanical works	143.7
(b) Stormwater bypass box culvert	37.0
(c) Upgrading of the existing trunk sewer along Kai Fuk Road	19.3
(d) Rehabilitation works within the affected sections of the existing JVBC	9.3

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		<b>\$ million</b>
(e)	Ancillary works including landscaping works and roadworks	8.3
(f)	Environmental mitigation measures	4.3
(g)	Consultants' fees	3.4
(i)	contract administration	1.5
(ii)	management of resident site staff	1.9
(h)	Remuneration of resident site staff	51.0
(i)	Contingencies	47.4
	Sub-total	522.0 (in September 2010 prices)
(j)	Provision for price adjustment	66.0
	Total	588.0 (in MOD prices)

\_\_\_\_\_ A breakdown of the estimates for the consultants' fees and resident site staff costs by man-months is at Enclosure 2.

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

Year	\$ million (September 2010)	Price adjustment factor	\$ million (MOD)
2010 – 2011	17.5	1.00000	17.5
2011 – 2012	82.9	1.04250	86.4
2012 – 2013	174.7	1.09463	191.2
2013 – 2014	146.8	1.14936	168.7
2014 – 2015	59.3	1.20682	71.6

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Year	\$ million (September 2010)	Price adjustment factor	\$ million (MOD)
2015 – 2016	30.9	1.27169	39.3
2016 – 2017	9.9	1.34163	13.3
	522.0		588.0

10. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2010 to 2017. We will deliver the proposed works under a re-measurement contract because of uncertain underground conditions that may affect the depth of the foundations of the interception compound and the pumping station. The contract will provide for price adjustment.

11. We estimate the additional annual recurrent expenditure arising from the proposed works to be \$4.0 million. Based on the current level of expenditure on operation and day-to-day maintenance of sewerage facilities, the recurrent expenditure will be taken into consideration when determining the sewage charges and trade effluent surcharge rates in future.

## **PUBLIC CONSULTATION**

12. We consulted the Environment and Hygiene Committee of the Kwun Tong District Council and the Housing and Infrastructure Committee of the Kowloon City District Council on 16 April 2009 and 23 April 2009 respectively. Members all supported the implementation of the proposed works.

13. We consulted the Legislative Council Panel on Environmental Affairs on 24 May 2010 on the proposed works. Members raised no objection to our plan to submit the funding proposal to the Public Works Subcommittee. Nevertheless, some Members requested the Administration to provide supplementary information on implications of the proposed works to Stonecutters Island sewage treatment works and the enforcement actions taken to combat illegal discharges and expedient connections within the catchment of KTAC. The Administration provided the supplementary information to the Panel on 29 June 2010.

**/ENVIRONMENTAL .....**

**ENVIRONMENTAL IMPLICATIONS**

14. The proposed pumping station is a designated project under the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). We obtained an Environmental Permit (EP) for the construction and operation of the pumping station on 11 August 2009 under the EIA Ordinance. The other proposed works mentioned in paragraph 3 above are non-designated project. We have completed a Preliminary Environmental Review (PER) in August 2009 to address the environmental impact of the works. The PER concluded that the project would not cause adverse long-term environmental impact with mitigation measures in place. We shall implement the project in full compliance with the requirements of the EP as well as the PER recommendations.

15. For short-term impacts during construction, we will control noise, dust and site run-off to levels within the established standards and guidelines through implementation of mitigation measures, such as the use of silenced construction plants to reduce noise generation, water-spraying to reduce emission of fugitive dust, and proper treatment of site run-off before discharge. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good site practice are properly implemented on site. We have included in paragraph 8(f) above a sum of \$4.3 million (in September 2010 prices) in the project estimates for implementation of the environmental mitigation measures.

16. We have considered optimization of the design in the planning and design stages to reduce the generation of construction waste where possible. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste at public fill reception facilities<sup>2</sup>. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further reduce the generation of construction waste.

17. 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

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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.

will ensure that the day-to-day operations on site comply with the approval 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 at public fill reception facilities and landfills respectively through a trip-ticket system.

18. We estimate that the project will generate in total about 50 000 tonnes of construction waste. Of these, we will reuse 17 200 tonnes (34%) of inert construction waste on site and deliver 27 800 tonnes (56%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 5 000 tonnes (10%) 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 \$1.4 million for this project (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne<sup>3</sup> at landfills).

## HERITAGE IMPLICATIONS

19. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

## LAND ACQUISITION

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

## BACKGROUND INFORMATION

21. In May 2008, we upgraded **363DS** to Category B. In September 2008, we engaged consultants to undertake site investigation, surveys, impact assessments and detailed design for the proposed works at an estimated cost of \$11.6 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.

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

22. Of the 24 trees within the project boundary, five trees will be preserved. We have transplanted 14 trees elsewhere and felled four trees (of which three are dead trees). We will transplant one more tree within the project site. All affected trees are not important trees<sup>4</sup>. We will incorporate proposals of compensatory planting and green roofs as part of the project, including planting of estimated quantities of 54 trees and 3 600 square metres of grassed area.

23. We estimate that the proposed works will create about 186 jobs (150 for labourers and another 36 for professional/technical staff) providing a total employment of 6 900 man-months.

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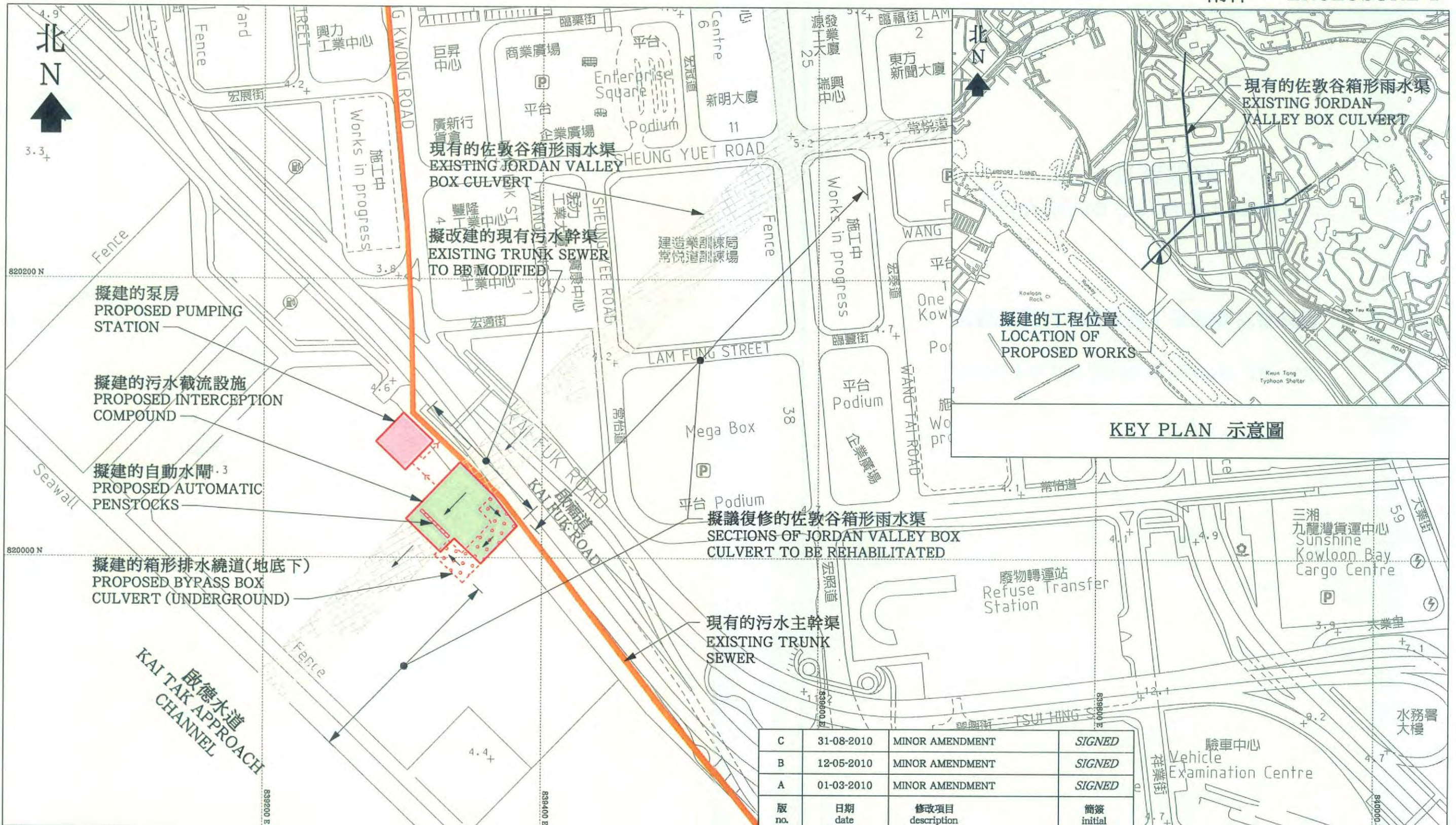
Environment Bureau  
November 2010

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<sup>4</sup> An “important tree” refers to trees in the Register of Old and Valuable Trees, or any other trees that which meet one or more of the following criteria –

- (a) trees of 100 years old or above;
- (b) trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument, and trees in memory of an important person or event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- (e) trees with trunk diameter equal or exceeding 1.0 metre (m) (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.





KEY PLAN 示意圖

圖則名稱 drawing title

工務計劃項目第363DS號 -  
 佐敦谷箱形雨水渠污水截流工程  
 PWP ITEM No. 363DS -  
 PROVISION OF INTERCEPTION FACILITIES AT JORDAN VALLEY  
 BOX CULVERT

C	31-08-2010	MINOR AMENDMENT	SIGNED
B	12-05-2010	MINOR AMENDMENT	SIGNED
A	01-03-2010	MINOR AMENDMENT	SIGNED
版 no.	日期 date	修改項目 description	簡簽 initial
繪畫 drawn	日期 date	W.Y. HUI	25-01-2010
核對 checked	日期 date	C.M. CHONG	25-01-2010
批核 approved	日期 date	W.K. NG	25-01-2010

部門 office  
 顧問工程管理部  
 CONSULTANTS MANAGEMENT DIVISION

圖則編號 drawing no.  
**DCM/2009/017C**  
 比例 scale  
 N.T.S.

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 HONG KONG  
 SPECIAL ADMINISTRATIVE REGION



**363DS – Provision of interception facilities at Jordan Valley box culvert**

**Breakdown of the estimates for consultants’ fees and resident site staff costs  
(in September 2010 prices)**

			<b>Estimated man- months</b>	<b>Average MPS* salary point</b>	<b>Multiplier (Note 1)</b>	<b>Estimated fee (\$ million)</b>
(a)	Consultants’ fees	Professional	-	-	-	1.0
	for contract administration (Note 2)	Technical	-	-	-	0.5
					Sub-total	1.5
(b)	Resident site staff costs <sup>(Note 3)</sup>	Professional	395	38	1.6	36.8
		Technical	505	14	1.6	16.1
					Sub-total	52.9
Comprising –						
(i)	Consultants’ fees for management of resident site staff				1.9	
(ii)	Remuneration of resident site staff				51.0	
					<b>Total</b>	<b>54.4</b>

\* MPS = Master Pay Scale

**Notes**

1. A multiplier of 1.6 is applied to the average MPS salary point to estimate the cost of resident site staff supplied by the consultants. (As at now, MPS point 38 = \$58,195 per month and MPS point 14 = \$19,945 per month.)
2. The consultants’ staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the design and construction of the project. The construction phase of the assignment will only be executed subject to Finance Committee’s approval to upgrade **363DS** to Category A.
3. The actual man-months and actual costs will only be known after completion of the construction works.