

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

**HEAD 706 – HIGHWAYS
Transport – Roads
759TH – Shenzhen Western Corridor
736TH – Deep Bay Link**

Members are invited to recommend to Finance Committee –

- (a) the upgrading of part of **759TH**, entitled “Shenzhen Western Corridor – detailed design and associated site investigations” to Category A, at an estimated cost of \$66.1 million in money-of-the-day prices;
- (b) the upgrading of part of **736TH**, entitled “Deep Bay Link – detailed design and associated site investigations” to Category A, at an estimated cost of \$60.8 million in money-of-the-day prices; and
- (c) the retention of the remainder of **759TH** and **736TH** in Category B.

/PROBLEM

PROBLEM

The capacity of the existing vehicular boundary crossings between the Hong Kong Special Administrative Region (HKSAR) and Shenzhen is insufficient to cope with the present and expected future traffic demand between the two areas.

PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport, proposes to upgrade part of **759TH** and **736TH** to Category A at an estimated cost of \$66.1 million and \$60.8 million respectively in money-of-the-day (MOD) prices to employ consultants to undertake the detailed design and associated site investigation works for the proposed Shenzhen Western Corridor (SWC) and Deep Bay Link (DBL).

PROJECT SCOPE AND NATURE

3. The scope of works of **759TH** includes –

- (a) a 3.2-kilometre dual three-lane carriageway spanning across Deep Bay from Ngau Hom Shek in the north west part of the New Territories of the HKSAR to the HKSAR's boundary of SWC;
- (b) traffic control and surveillance system (TCSS); and
- (c) associated civil, structural, E&M, marine, geotechnical, landscape and drainage works, fire services, environmental mitigation measures, street lighting, traffic aids and directional signs.

4. The part of **759TH** that we now propose to upgrade to Category A comprises –

- (a) detailed design of the proposed works described in paragraph 3 above;
- (b) associated site investigations and supervision; and
- (c) preparation of tender documents and assessment of tenders.

/A

A site plan and the typical sections of SWC are at Enclosures 1 and 2 respectively.

5. The scope of works of **736TH** includes –

- (a) a 5.4-kilometre dual three-lane carriageway, linking SWC at its landing point in Ngau Hom Shek with the Yuen Long Highway (YLH) at Lam Tei;
- (b) an interchange to connect with other necessary access roads;
- (c) slip roads in the Hung Shui Kiu and Ha Tsuen areas;
- (d) turnaround facilities with weighing station and vehicle recovery base at Ha Tsuen;
- (e) TCSS; and
- (f) associated civil, structural, electrical and mechanical (E&M), geotechnical, landscape and drainage works, fire services, environmental mitigation measures, street lighting, traffic aids and directional signs.

6. The part of **736TH** that we now propose to upgrade to Category A comprises –

- (a) detailed design of the proposed works described in paragraph 5 above;
- (b) associated site investigations and supervision; and
- (c) preparation of tender documents and assessment of tenders.

A site plan and the typical sections of DBL are at Enclosures 3 and 4 respectively.

7. The exact alignment of SWC and DBL may need to be adjusted in the course of detailed design and to address any objections that may be lodged after the gazetting of the road scheme.

8. We plan to start the detailed design of SWC and DBL in early 2002 and will then proceed with the tendering exercises for the construction works. We intend to commence construction of SWC and DBL in mid 2003 and strive to complete at the target date of end 2005, if possible. The current project estimate for SWC and DBL are \$2.8 billion and \$6.4 billion (in September 2001 prices) respectively.

JUSTIFICATION

9. The three existing vehicular boundary crossings at Lok Ma Chau, Man Kam To and Sha Tau Kok are nearly saturated. The average total daily vehicular traffic using the three boundary crossings in 2001 was 34 300, representing a 41% growth over the past five years and an average annual growth of 7%. We expect that the traffic flow will exceed their handling capacity within the next five years. The estimated average daily two-way traffic demand in 2001, 2006, 2011 and 2016, assuming SWC can be commissioned in 2005/2006, are as follows –

Cross Boundary Points	2001	2006	2011	2016
	(two-way vehicle/day)			
Lok Ma Chau	24 100	24 800	24 700	25 000
Man Kam To	7 800	9 700	9 800	10 000
Sha Tau Kok	2 400	2 200	2 400	2 300
SWC	-	28 400	46 100	80 000
Total	34 300	65 100	83 000	117 300

The Governments of both Shenzhen and the HKSAR recognise the need to remove these potential bottle-necks to trade and traffic. However, there are difficulties in further expanding the facilities in these existing crossings because they are located near the city centre of Shenzhen City. Over 80% of the cross-boundary traffic have to go through the main roads within the city centre of Shenzhen City, causing serious traffic congestion and environmental problems. On the Hong Kong side, the congested situation at the crossings has resulted in tailbacks at San Sham Road, Man Kam To Road and Sha Tau Kok Road during peak hours. During peak seasons, the vehicular queues from the Lok Ma Chau crossing have extended to Fanling Highway and San Tin Highway.

10. The Crosslinks Further Study completed in March 2001 has assessed the future cross-boundary traffic demand and confirmed the need for constructing the fourth land boundary crossing of SWC together with the connecting road, DBL, to satisfy the future demand. The SWC would alleviate the situation at the nearly saturated existing land boundary crossings, facilitate the further development of the container port of Hong Kong, enhance trade between Hong Kong and Southern China, facilitate further economic development particularly in areas of finance, logistics and tourism, and strengthen the position of Hong Kong as the hub of the Pearl River Delta area. The SWC can be expected to bring about substantial economic benefits to Hong Kong. The Study estimates that the net benefit of SWC would be \$175 billion (in 1998 prices) over a 20-year planning horizon from 2000 to 2020.

11. SWC and DBL would be connected to the YLH at Lam Tei, where traffic could gain access to Route 3 Country Park Section (Route 3 (CPS)) to the east and Tuen Mun Road to the west. We are now planning for Route 10 from Lam Tei to North Lantau to provide an alternative expressway to motorists. Strategically speaking, the four boundary crossings, namely Sha Tau Kok, Man Kam To, Lok Ma Chau and SWC would be served by four north-south road links, i.e. Tolo Highway, Route 3 (CPS), Route 10 and Tuen Mun Road to form a comprehensive network as shown at Enclosure 5.

12. We assessed Route 3 (CPS) and Tuen Mun Road together would be able to cope with the increased traffic in the initial years of commissioning of SWC although they would be operating close to or slightly above capacity in the peak periods. The Yuen Long and Tuen Mun District Councils (TMDC) are concerned about the traffic impact on Tuen Mun Road and strongly urge for the early implementation of Route 10 northern section which links DBL to Sham Tseng. To address such concerns and to provide further safeguard against congestion on Tuen Mun Road, we plan to bring forward the completion of the Route 10 northern section to 2007. The southern section will be completed in 2008.

13. We commenced the Investigation and Planning (I&P) for SWC in August 2001 and have established a conceptual design on its preferred alignment. The associated land, marine, drainage and environmental impact assessment studies on the affected areas are on-going for completion by the end of 2002. As for DBL, we are carrying out the Investigation and Preliminary Design (I&PD) and have established its alignment. We are finalising the impact assessments associated with land, environment, drainage and traffic for the project.

14. The detailed design for SWC and DBL requires a variety of specialist inputs. The scope comprises –

- (a) the design of the main viaduct with a bridge over a navigation channel and the drainage and geotechnical engineering design of foundations;
- (b) traffic engineering input to develop traffic management measures including lane change-over requirements to accommodate the different traffic configuration in the Mainland;
- (c) TCSS; and
- (d) environmental assessment input for the implementation of the recommended environmental mitigation measures.

Furthermore, we need to conduct site investigation works to provide additional geotechnical information for the detailed design works. As we do not have the necessary in-house resources, we need to engage consultants to undertake the detailed design and to supervise the associated site investigation works.

FINANCIAL IMPLICATIONS

15. We estimate the cost of these parts of the projects of **759TH** and **736TH** to be \$66.1 million and \$60.8 million in MOD prices respectively, made up as follows –

Estimate for 759TH (Shenzhen Western Corridor)

	\$ million
(a) Consultants' fees	37.0

- (i) review of investigation and planning, carrying out detailed design, preparation of tender documents and assessment of tenders 33.6

/(ii)

(ii) supervision of site investigations	1.8	
(iii) Electrical and Mechanical Services Trading Fund (EMSTF) charges	1.6	
(b) Site investigations	23.3	
(c) Contingencies	6.0	
	<hr/>	
Sub-total	66.3	(in September 2001 prices)
(d) Provision for price adjustment	(0.2)	
	<hr/>	
Total:	66.1	(in MOD prices)
	<hr/>	

Estimate for 736TH (Deep Bay Link)

		\$ million
(e) Consultants' fees		43.4
(i) review of investigation and preliminary design, carrying out detailed design, preparation of tender documents and assessment of tenders	40.9	
(ii) supervision of site investigations	1.0	
(iii) EMSTF charges	1.5	
(f) Site investigations		12.0

/(g)

(g) Contingencies	5.5	
Sub-total	60.9	(in September 2001 prices)
(h) Provision for price adjustment	(0.1)	
Total:	60.8	(in MOD prices)

A breakdown by man-months of the estimate for consultants' fees is at Enclosure 6.

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

Estimate for 759TH

Year	\$ million (Sep 2001)	Price Adjustment Factor	\$ million (MOD)
2001 – 2002	0.1	1.00000	0.1
2002 – 2003	53.7	0.99700	53.5
2003 – 2004	10.5	1.00398	10.5
2004 – 2005	2.0	1.01101	2.0
	66.3		66.1

Estimate for 736TH

Year	\$ million (Sep 2001)	Price Adjustment Factor	\$ million (MOD)
2001 – 2002	1.7	1.00000	1.7
2002 – 2003	47.8	0.99700	47.7
2003 – 2004	9.4	1.00398	9.4

/2004

2004 – 2005	2.0	1.01101	2.0
	<hr/>		<hr/>
	60.9		60.8
	<hr/>		<hr/>

17. We have derived the MOD estimate on the basis of the Government's latest forecast of trend labour and construction prices for the period 2001 to 2005. We will employ consultants on a lump-sum basis with provision for price fluctuation as the duration of the detailed design will exceed 12 months. The consultants will supervise the site investigation works under contracts to be awarded through a competitive tendering process.

18. The proposed detailed design and site investigations for SWC and DBL have no annual recurrent financial implications.

PUBLIC CONSULTATION

19. We consulted the Tuen Mun Rural Committee and TMDC on 31 August 2001 and 3 September 2001 respectively. They supported the SWC and DBL projects in principle but raised the following concerns –

- (a) Without additional connecting roads in place, such as Route 10 from North Lantau to Yuen Long Highway (NLYLH), that are capable of absorbing the additional traffic generated by both projects, the opening of DBL and SWC would increase traffic demand on Tuen Mun Road, resulting in unacceptable traffic congestion along Tuen Mun Road and local roads in Tuen Mun district. TMDC members unanimously requested the Administration to synchronize the construction of Route 10 (NLYLH) with SWC and DBL.
- (b) They also raised various issues relating to the acquisition of land, compensation and re-housing arrangements and grave removal. We agreed that we would look into the above in connection with the established government policies in land clearance, resumption and re-housing. Also, we would refine the designs of the projects with a view to further reducing the impacts.

/(c)

- (c) They also raised concern over the environmental impacts arising from the construction and operation of the projects to Tuen Mun residents. We undertook to carry out Environmental Impact Assessment (EIA) studies and would incorporate the recommended mitigation measures in the detailed design to meet the requirements of the EIA Ordinance.

20. We consulted the Ha Tsuen Rural Committee (HTRC) and the Traffic and Transport Committee of the Yuen Long District Council (YLDC/T&TC) on 5 and 11 September 2001 respectively. They supported the SWC and DBL projects but raised the following concerns –

- (a) Some members of YLDC/T&TC considered that before the completion of Route 10 (NLYLH), YLH and Tuen Mun Road were unlikely to be able to cope with the additional traffic arising from both projects. They requested the provision of a branch road off DBL at Ngau Hom Shek to Route 3 (CPS) via Tin Shui Wai to relieve such traffic congestion. During the detailed design, we will consider the possibility of providing an additional local link between DBL and Route 3 (CPS).
- (b) The representatives from HTRC strongly objected to the proposed tunnel at Hung Shui Kiu to be built under the Permitted Burial Ground YL/55 on fung-shui grounds. We have reviewed and revised the alignment so that it does not require a tunnel going through the burial ground.
- (c) Some members of HTRC and YLDC/T&TC requested for the provision of access roads to local areas in Yuen Long. We agreed to look into this and accommodate their requests as far as possible in the course of the detailed design.

21. We briefed the Advisory Council on the Environment on 17 September 2001 on the SWC and DBL projects. We have also initiated contacts with some green groups so that their comments can be incorporated in the early stage of the projects. We shall continue to liaise with them, and will ensure that their concerns are duly addressed in the EIA studies.

22. We consulted the Legislative Council Panel on Transport on 26 October 2001. Panel members raised concern that the SWC and DBL traffic, upon opening, would cause unacceptable congestion at Tuen Mun town centre and Tuen Mun Road, and considered that the planning of the supporting infrastructure, especially the northern section of Route 10 (NLYLH), should be co-ordinated with the SWC and DBL programme. At the same time, Panel members had received comments from various bodies and members of the public regarding Route 10. The Panel discussed the Route 10 project on 23 November 2001 and organized a public hearing together with the concerned parties on 8 November 2001 and 17 December 2001. A further meeting will be held on 11 January 2002. We will further discuss with the Panel on the appropriate timing for Route 10 and on ways to ensure better interface between the local highway network and SWC and DBL.

ENVIRONMENTAL IMPLICATIONS

23. The SWC and DBL projects are designated projects under Schedule 2 of the EIA Ordinance. We are carrying out the EIA studies for SWC and DBL to meet the requirements of the EIA Ordinance. We will incorporate the recommended mitigation measures into the detailed design of the projects. We will submit the EIA reports to the Director of Environmental Protection for approval under the EIA Ordinance and will follow the statutory procedures of making the EIA report available for comments by the public and the Advisory Council on the Environment. We shall obtain environmental permits for the projects prior to the commencement of construction.

24. The proposed detailed design works will not give rise to any adverse environmental implications. We will implement standard environmental pollution control measures to manage the environmental impacts of the associated site investigation works. The site investigation works will only generate a minimal amount of construction and demolition (C&D) materials. We will require the consultants for detailed design to fully consider measures to minimize the generation of C&D materials and to reuse/recycle C&D materials as much as possible in the future implementation of construction contracts.

LAND ACQUISITION

25. The proposed detailed design and site investigations for SWC and DBL do not require land acquisition. However, land acquisition will be required before the commencement of construction of the projects. The details and scope of the land acquisition required will be ascertained in the detailed design stage.

BACKGROUND INFORMATION

26. The Review of Hong Kong's Capacity to Cope with Additional Traffic Movement Associated with the Proposed New Cross-Border Transport Links completed in 1996 identified the need for SWC and DBL. We subsequently carried out two studies to examine the associated traffic and engineering issues, namely –

- (a) Feasibility Study for Additional Cross-border Links Stage 1 – Investigations on Traffic Demand. The study commenced in April 1997 and was completed in March 2000; and
- (b) Feasibility Study for Additional Cross-border Links Stage 2 – Investigations on Environmental, Ecology, Land Use Planning, Land Acquisition, Economic/ Financial Viability and Preliminary Project Feasibility/ Preliminary Design. The study commenced in November 1997 and was completed in March 2001.

Both of these studies (also known as “Crosslinks Further Study”) were funded under **Subhead 700** “General other non-recurrent” but the Preliminary Project Feasibility Studies, which formed part of the Stage 2 study, were funded under **Subhead 6100TX** “Highway Works, studies and investigations for items in Category D of the Public Works Programme”.

27. We upgraded **736TH** and **759TH** to Category B in September 1999 and October 2001 respectively.

28. We engaged consultants in September 1999 to undertake I&PD of DBL at an estimated cost of \$12.7 million in MOD prices under **Subhead 6100TX**, and engaged consultants in August 2001 to undertake I&P of SWC at a cost of \$14.5 million in MOD under **Subhead 6100TX**.

29. We estimated that the proposed detailed design and site investigations will create some 170 jobs comprising 105 professional/technical staff and 65 labourers, totalling 1 330 man-months.

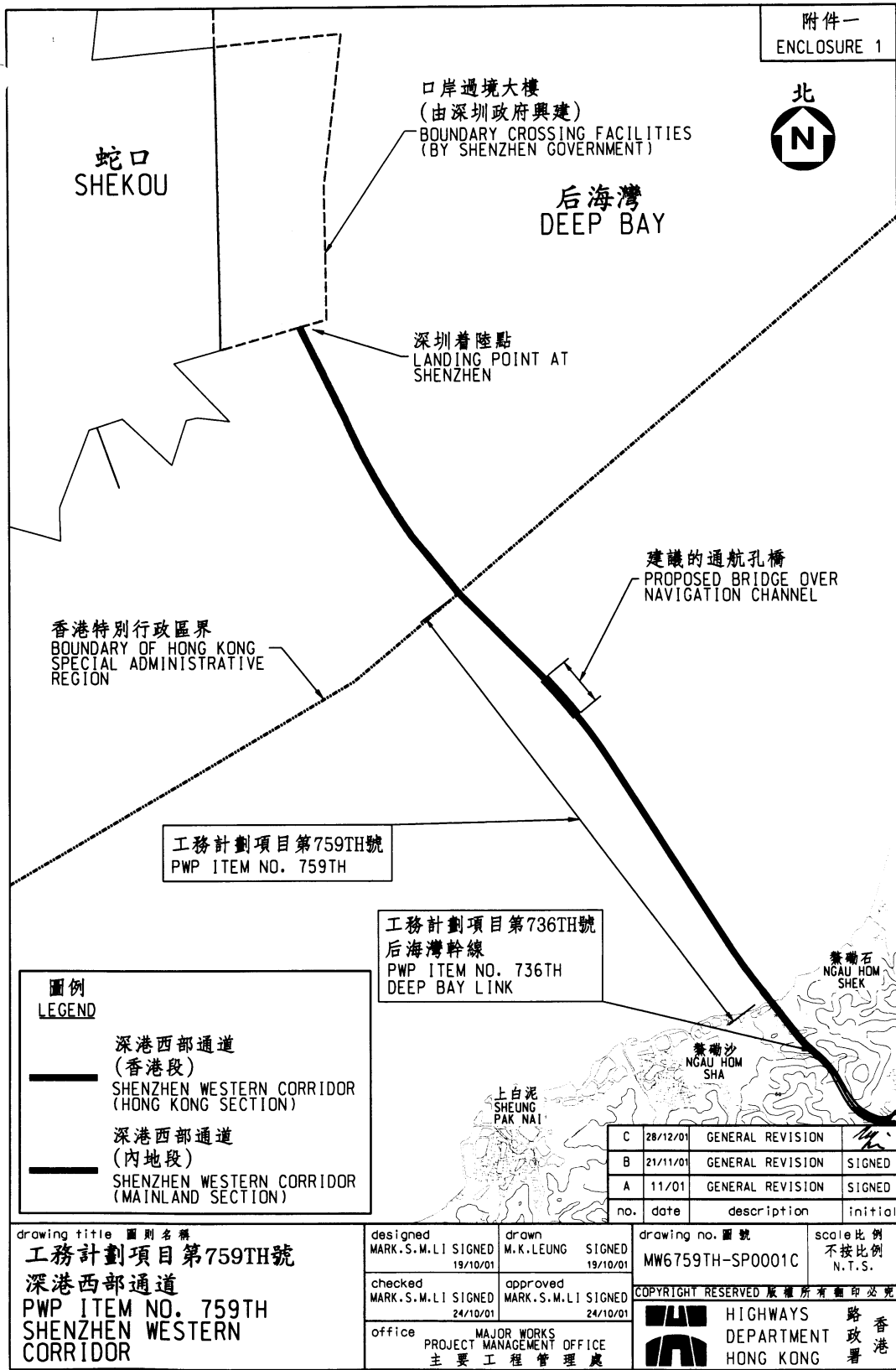
Fast-track Programme

30. We envisage that SWC and DBL, if constructed timely and speedily, will benefit Hong Kong in the following ways –

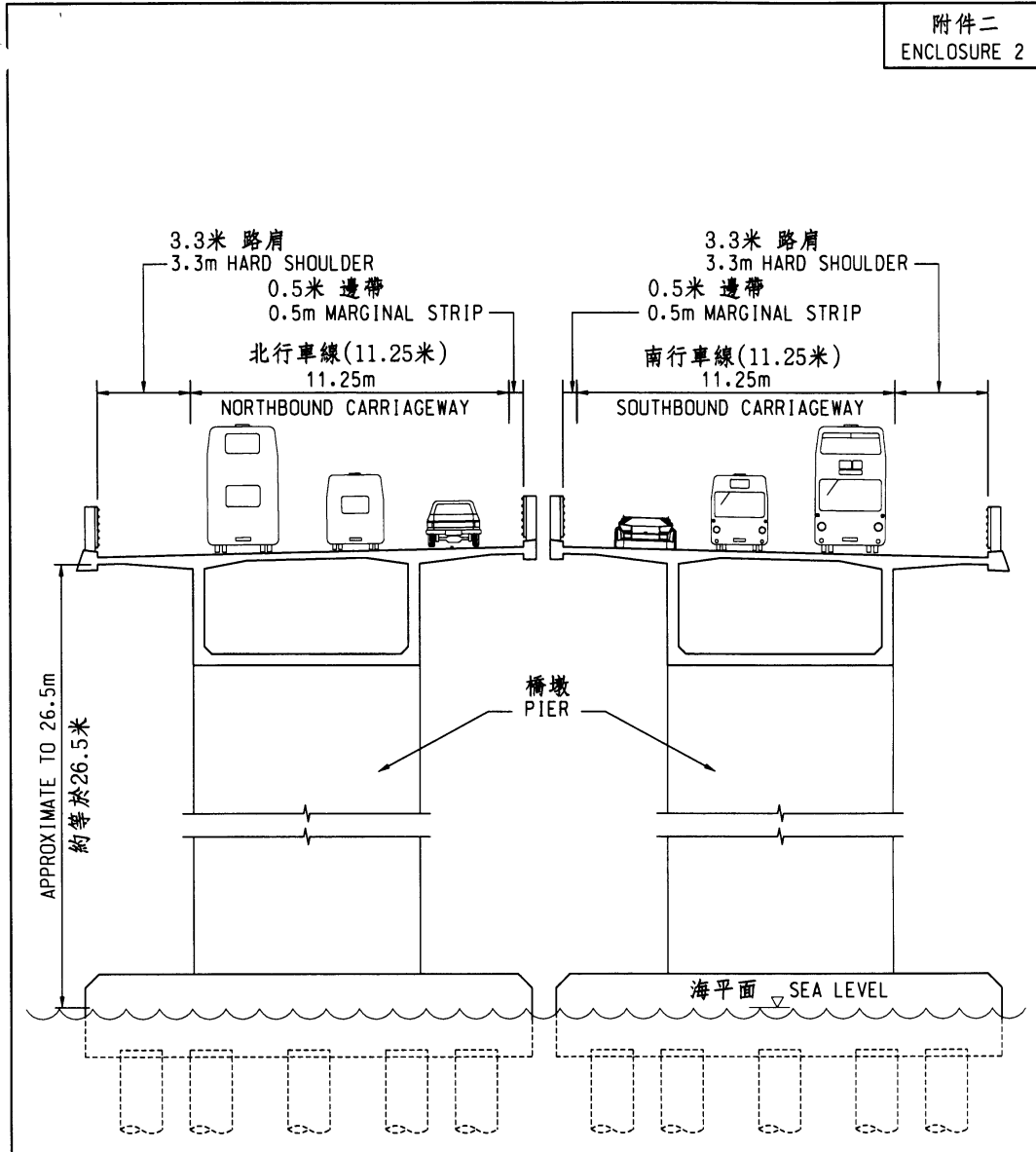
- (a) provide a competitive edge in enhancing Hong Kong's existing infrastructure in roadwork, port and logistic facilities, and in the well established areas of insurance, financial, communication, and legal systems over our neighbouring countries;
- (b) allow Hong Kong to tap the full potential of the economic powerhouse of the Pearl River Delta with China's accession to the World Trade Organization (WTO); and
- (c) create more job opportunities and help stimulate and stabilise the economy of Hong Kong in the next few years.

31. We, therefore, propose an exceptionally fast-track programme for the SWC and DBL projects to quickly capitalise on the above advantages.

32. One of the key factors to make the exceptionally fast-track programme possible is to commence the detailed design of SWC and DBL in early 2002 pending completion of the EIA studies. We will work closely with the consultants to choose an alignment with appropriate structural forms and construction methods which are acceptable from the environmental point of view. Besides, we will fulfil the requirements under the EIA Ordinance and devise mitigation measures to minimize impacts on the environment.




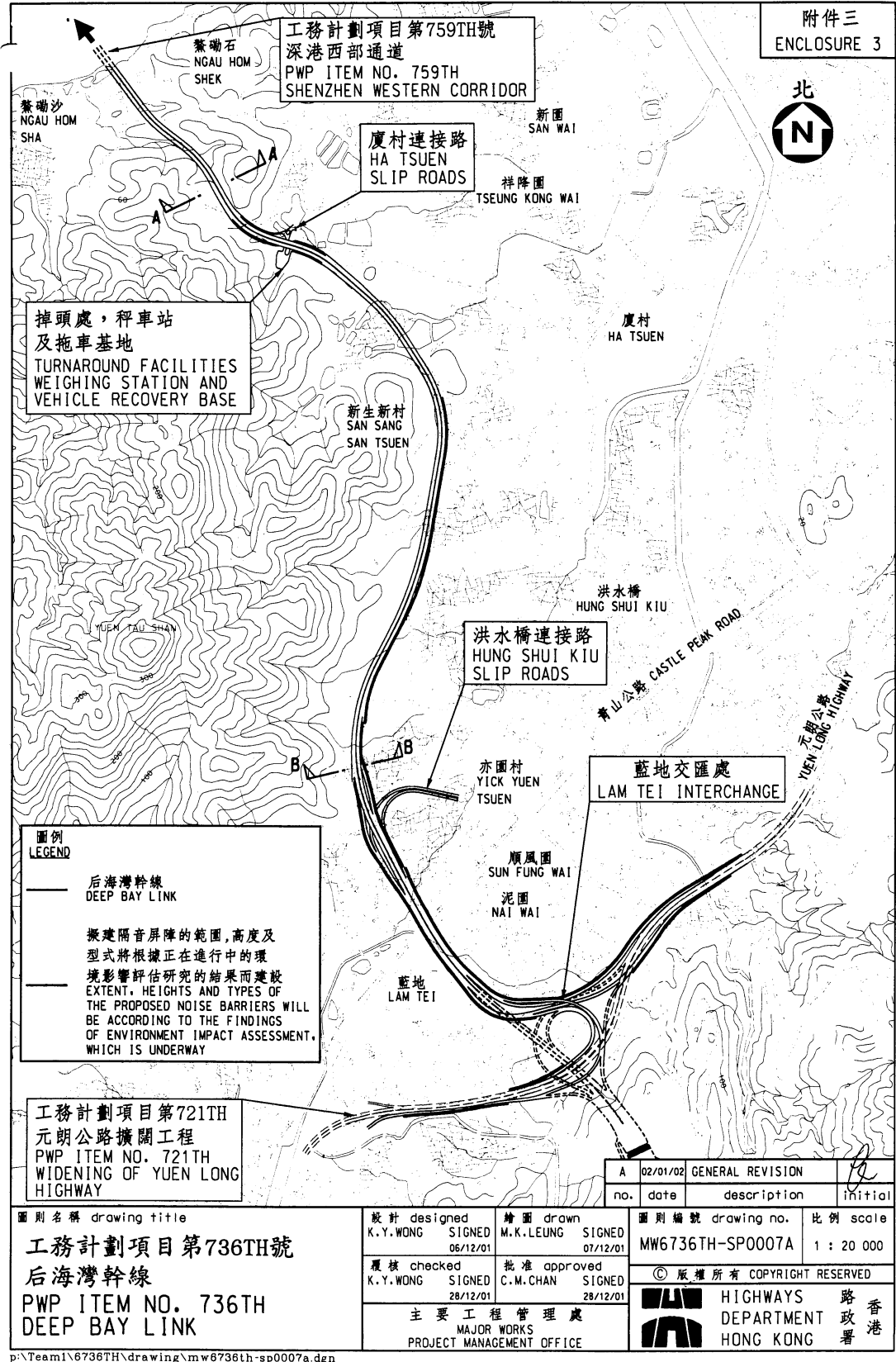
附件二
ENCLOSURE 2



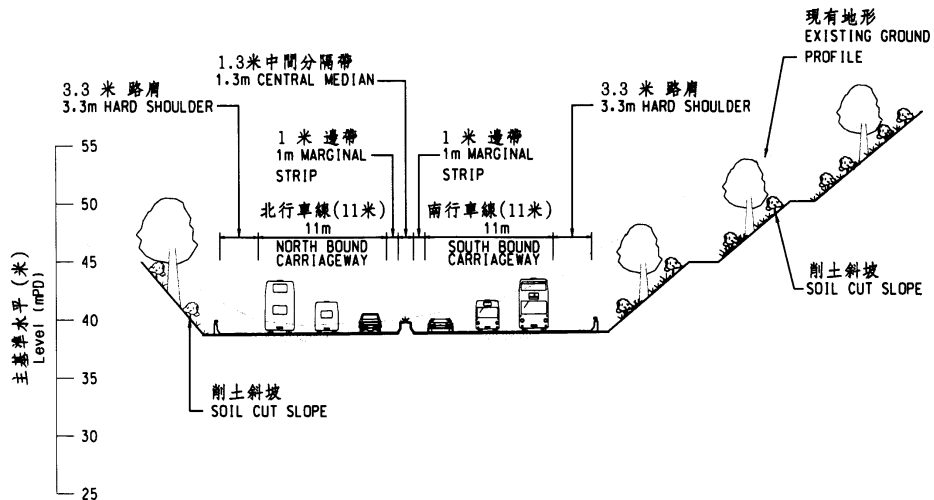
高架道路的典型切面
TYPICAL SECTION OF VIADUCT

- 註釋 NOTES:
1. 除在其他方面指定外所有量度以米為單位
1. ALL DIMENSIONS SHOWN ARE IN METRE UNLESS OTHERWISE STATED.
 2. 橋樑結構形狀將可能在詳細設計階段作出修改
2. STRUCTURAL FORMS OF THE BRIDGE ARE SUBJECT TO REFINEMENTS IN THE DETAILED DESIGN STAGE.

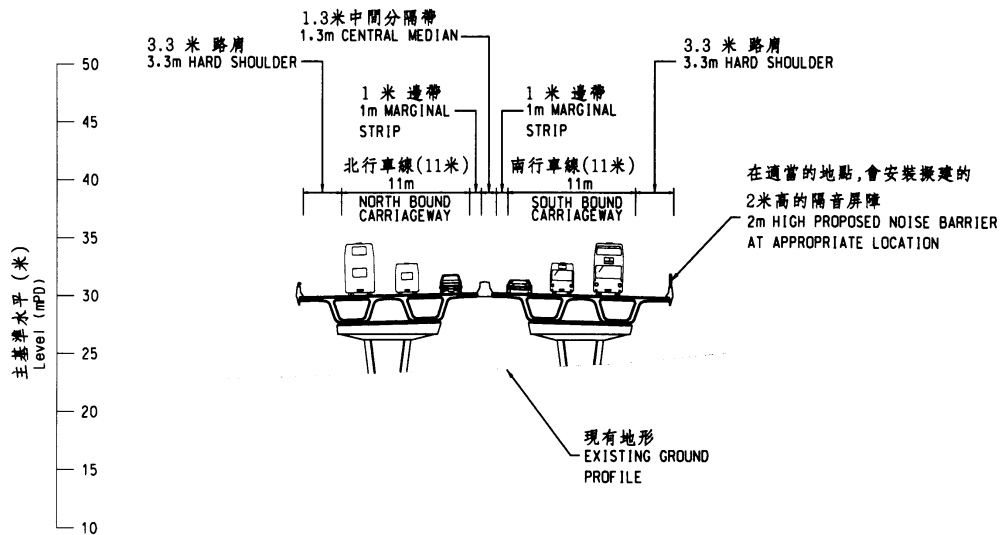
圖則名稱 drawing title 工務計劃項目第759TH號 深港西部通道 - 切面圖 PWP ITEM NO. 759TH SHENZHEN WESTERN CORRIDOR - SECTIONS	設計 designed MARK.S.M.LI 11/12/01	繪圖 drawn M.K.LEUNG 11/12/01	圖則編號 drawing no. MW6759TH-SP0003	比例 scale 1:200
	覆核 checked MARK.S.M.LI 28/12/01	批准 approved MARK.S.M.LI 28/12/01	© 版權所有 COPYRIGHT RESERVED	
主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE			 HIGHWAYS 路 DEPARTMENT 政 HONG KONG 署	



附件四
ENCLOSURE 4



切面 A - A
SECTION A - A



切面 B - B
SECTION B - B

B	28/12/01	GENERAL REVISION	KWJ
A	21/11/01	GENERAL REVISION	SIGNED
no.	date	description	initial

drawing title 圖則名稱
工務計劃項目第736TH號
后海灣幹線 - 切面圖
PWP ITEM NO. 736TH
DEEP BAY LINK
- SECTIONS

designed
K.Y. WONG SIGNED
29/10/01

drawn
M.K. LEUNG SIGNED
29/10/01

checked
K.Y. WONG SIGNED
06/11/01

approved
P.H. CHAN SIGNED
06/11/01

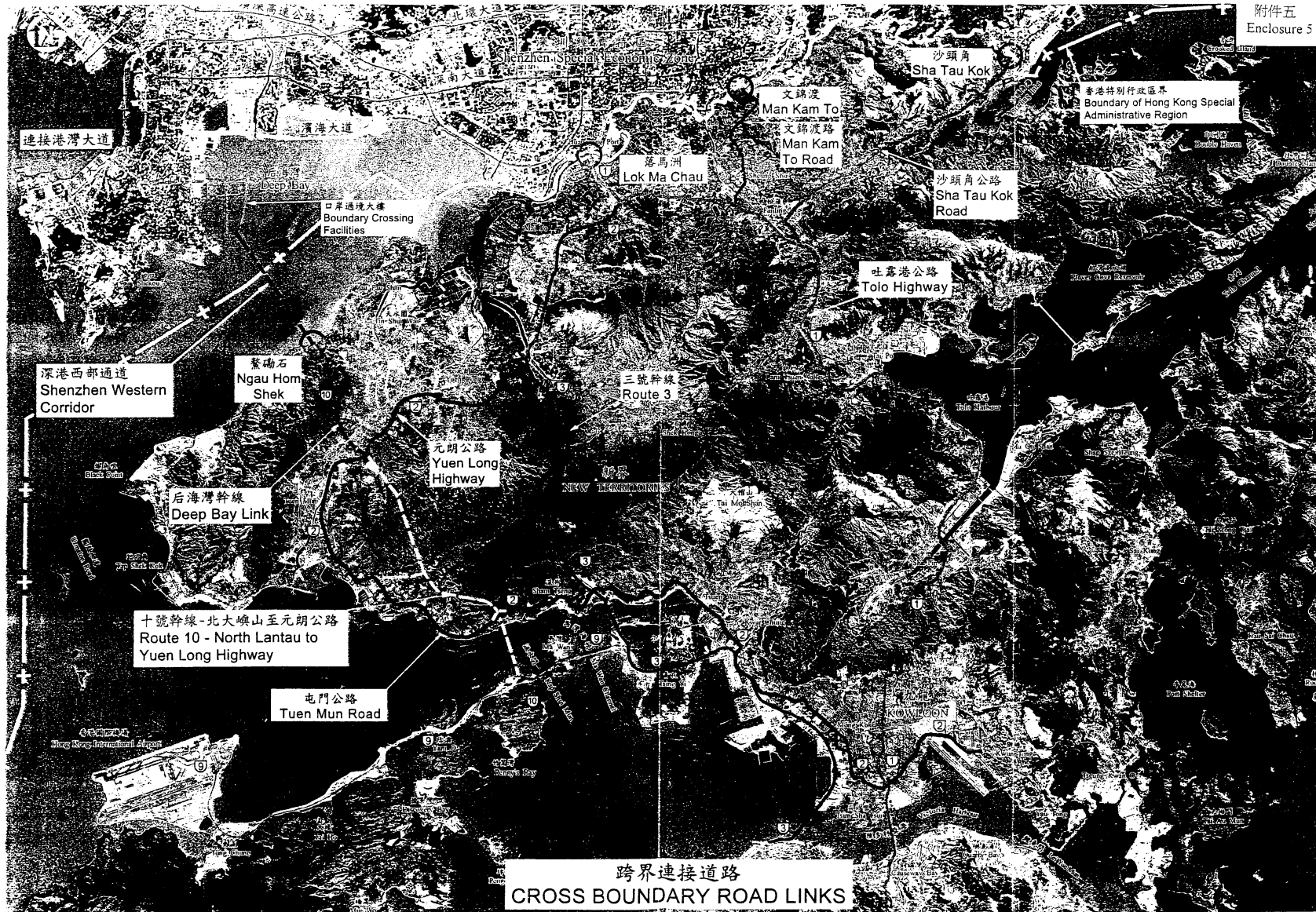
office
MAJOR WORKS
PROJECT MANAGEMENT OFFICE
主要工程管理局

drawing no. 圖號
MW6736TH-SP0003B

scale 比例
1 : 500

COPYRIGHT RESERVED 版權所有 翻印必究

HONG KONG HIGHWAYS DEPARTMENT
香港路政署



Enclosure 6 to PWSC(2001-2002)92

759TH – Shenzhen Western Corridor

Breakdown of the estimate for consultants' fees (in September 2001 prices)

Consultants' staff costs			Estimated man- months	Average MPS* Salary point	Multiplier Factor	Estimated fee (\$ million)
(a)	Review of the findings of Investigation and Planning Assignment (including review of EIA, Traffic Impact Assessment & Drainage Impact Assessment)	Professional	29	38	2.4	4.2
		Technical	17	14	2.4	0.8
(b)	Detailed design	Professional	117	38	2.4	17.0
		Technical	169	14	2.4	7.9
(c)	Preparation of tender documents and assessment of tenders	Professional	23	38	2.4	3.3
		Technical	9	14	2.4	0.4
(d)	Supervision of site investigations	Professional	8	38	1.7	0.8
		Technical	30	14	1.7	1.0
(e)	EMSTF Charges					1.6
Total consultants' staff costs						37.0
Out-of-pocket expenses						
(a)	Site investigations					23.3
Total						60.3

* MPS = Master Pay Scale

Enclosure 6 to PWSC(2001-2002)92

736TH – Deep Bay Link

**Breakdown of the estimate for consultants' fees
(in September 2001 prices)**

Consultants' staff costs			Estimated man- months	Average MPS* Salary point	Multiplier Factor	Estimated fee (\$ million)
(a)	Review of the findings of Investigation and Preliminary Design Assignment (including review of EIA, Traffic Impact Assessment, Drainage Impact Assessment & preliminary design)	Professional	37	38	2.4	5.4
		Technical	16	14	2.4	0.7
(b)	Detailed design	Professional	147	38	2.4	21.3
		Technical	214	14	2.4	10.0
(c)	Preparation of tender documents and assessment of tenders	Professional	22	38	2.4	3.2
		Technical	7	14	2.4	0.3
(d)	Supervision of site investigations	Professional	6	38	1.7	0.6
		Technical	12	14	1.7	0.4
(e)	EMSTF Charges					1.5
	Total consultants' staff costs					<hr/> 43.4
Out-of-pocket expenses						
(a)	Site investigations					12.0
				Total		<hr/> 55.4

* MPS = Master Pay Scale

Enclosure 6 to PWSC(2001-2002)92

Notes

- (1) A multiplier of 2.4 is applied to the average MPS point to estimate the full staff costs including the consultants' overheads and profit, as the staff will be employed in the consultant's offices (As at 1.9.2001, MPS pt. 38 = \$60,395 per month, and MPS pt. 14 = \$19,510 per month). A multiplier of 1.7 is applied in the case of site staff supplied by the consultants.
- (2) Out-of-pocket expenses are the actual cost incurred. The consultants are not entitled to any additional payment for the overheads or profit in respect of these items.
- (3) The figures given above are based on estimates prepared by the Director of Highways. We will know the actual man-months and actual fees only when we have selected the consultants through the usual competitive lump-sum fee bid system.
- (4) Since the establishment of the EMSTF in 1 August 1996 under the Trading Funds Ordinance, government departments are required to pay for design and technical consultancy services for electrical and mechanical (E&M) installations provided by EMSD. The services rendered for this project include checking consultants' submissions on all E&M installations and providing technical advice to the Government on all E&M works and their impacts on the project.