

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS

Transport – Roads

787TH – Hong Kong – Zhuhai – Macao Bridge Hong Kong Section and North Lantau Highway Connection – investigation and preliminary design

Members are invited to recommend to Finance Committee the upgrading of **787TH** to Category A at an estimated cost of \$58.9 million in money-of-the-day prices for the investigation and preliminary design of the Hong Kong – Zhuhai – Macao Bridge Hong Kong Section and North Lantau Highway Connection.

PROBLEM

We need to build a boundary crossing between the Hong Kong Special Administrative Region (HKSAR) and the west bank of the Pearl River Delta to enhance Hong Kong's economic development and its status as a hub in the Pearl River Delta Region.

PROPOSAL

2. The Director of Highways (D of Hy), with the support of the Secretary for the Environment, Transport and Works, proposes to upgrade **787TH** to Category A at an estimated cost of \$58.9 million in money-of-the-day (MOD) prices to employ consultants to undertake an investigation study for the section of the proposed Hong Kong – Zhuhai – Macao Bridge (HZMB) between the boundary of HKSAR and the landing point at Northwest Lantau, i.e.

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Hong Kong Section (HKS), and the connecting road with the North Lantau Highway (NLH), i.e. North Lantau Highway Connection (NLHC), and to develop a conceptual design for the HKS of HZMB as well as a preliminary design for the NLHC.

PROJECT SCOPE AND NATURE

3. The scope of works of **787TH** comprises –
- (a) an investigation study of the HKS of HZMB and NLHC, including its longer term connection to Tai Ho, comprising -
 - (i) a review of the findings of previous studies, and examination of alignments and design options; and
 - (ii) impact assessments (environmental, traffic, marine and aviation, etc.);
 - (b) conceptual design of the HKS of HZMB;
 - (c) preliminary design of the NLHC; and
 - (d) associated site investigations and supervision.

_____ A location plan showing the HZMB and the NLHC is at Enclosure 1. A drawing
_____ showing the study area and tentative alignments of the HKS of HZMB and NLHC
is at Enclosure 2.

4. We plan to start the investigation study, conceptual and preliminary design works for the project in December 2003 for completion in October 2004.

JUSTIFICATION

5. In January 2003, the National Development and Reform Commission and the HKSAR Government jointly commissioned the Institution of Comprehensive Transportation to conduct a study, namely, “Transport Linkage between Hong Kong and Pearl River West”. The study was completed in July

2003. It concluded that the construction of a land transport link between HKSAR and the Pearl River West would contribute to the development of tourism, logistics, finance and trade in HKSAR, reinforce its status as an international shipping and aviation centre, and promote the economic integration between HKSAR and the Pearl River West. The study also confirmed the need for and urgency of such a link and recommended the construction of the HZMB and early commencement of various studies, including environmental impact assessment and hydrology study, to confirm its technical feasibility. It also recommended that the form, alignment and landing points of the HZMB should be finalised as soon as possible.

6. As announced following the Sixth Plenary Session of the Hong Kong/Guangdong Co-operation Joint Conference held in HKSAR on 5 August 2003, the State Council has given approval for the governments of HKSAR, Guangdong and Macao Special Administrative Region to proceed with the preparatory work for the HZMB. A HZMB Advance Work Coordination Group (AWCG) was then established by the three governments to coordinate and take forward the advance work for the HZMB, including studies on alignment, environmental impact and hydrology.

7. The first and second AWCG meetings were held in August and October 2003. The way in which the whole HZMB will be implemented will be discussed and agreed among the three governments. The HKSAR Government will be responsible for the NLHC connecting HZMB to the existing HKSAR road network and will construct this as a Public Works Programme project.

8. To determine the alignment, general layout, land requirement, environmental and other impacts, we need to carry out the investigation study for the HKS of HZMB and NLHC, covering possible initial connection to the road network at the southeast tip of the Airport Island and its longer term connection to Tai Ho. Such information is essential for defining the scope of the HKS of HZMB and NLHC and provide input for subsequent planning and decision.

9. We will also carry out site investigation works to provide geotechnical and geological information for subsequent design work. As we do not have the necessary in-house resources, we need to employ consultants to undertake the investigation study, conceptual and preliminary designs, and to supervise the associated site investigation works.

10. We have to carry out an environmental impact assessment (EIA) urgently in conjunction with the investigation study in order to identify the environmental impacts and the mitigation measures required.

FINANCIAL IMPLICATIONS

11. We estimate the cost of this item to be \$58.9 million in MOD prices (see paragraph 12 below), made up as follows –

		\$ million	
(a) Consultants' fees		29.5	
(i) review of the findings of previous studies, and examination of alignments and design options	0.4		
(ii) impact assessments (environmental, traffic, marine and aviation, etc.)	14.4		
(iii) conceptual and preliminary design	13.0		
(iv) supervision of site investigation	1.7		
(b) Site investigation		26.0	
(c) Contingencies		4.0	
	Sub-total	59.5	(in September 2003 prices)

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(d) Provision for price adjustment	(0.6)	
Total:	58.9	(in MOD prices)

A breakdown by man-months of the estimate for consultants' fees is at Enclosure 3.

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

Year	\$ million (Sep 2003)	Price Adjustment Factor	\$ million (MOD)
2003 – 2004	25.0	1.00000	25.0
2004 – 2005	34.5	0.98225	33.9
	59.5		58.9

13. We have derived the MOD estimate on the basis of the Government's forecast of trend labour and construction prices for the period 2003 to 2005. We will employ consultants on a lump-sum basis without provision for price adjustment as the duration of the consultancy will not exceed 12 months. The consultants will supervise the site investigation works under a contract to be awarded through competitive tendering.

14. The proposed conceptual and preliminary design and site investigation works have no recurrent financial implications.

PUBLIC CONSULTATION

15. We briefed the Legislative Council Panel on Transport on 29 September 2003 on our plan to submit funding application to this subcommittee for conducting the investigation study and preliminary design. Members had no objection to our funding proposal for these studies but requested supplementary information on the proposed location of the landing point and the traffic impact of HZMB. We issued an information paper to the Panel on 21 October 2003 to address Members' concern.

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16. On 13 October 2003, we briefed the Advisory Council on the Environment (ACE) on the HZMB project, and the choice of location for the landing point and alignments. Members supported our proposal to conduct further studies on our proposed landing points and alignments. We will consult the Islands District Council and Green Groups during the process of the investigation and preliminary design, when sufficient information is available.

ENVIRONMENTAL IMPLICATIONS

17. The proposed HKS of HZMB and the NLHC are designated projects under Schedule 2 of the EIA Ordinance and an environmental permit is required for the construction and operation of the projects. We completed a Preliminary Environmental Review (PER) for the HKS of HZMB and NLHC in December 2002. The PER has evaluated possible landing points of the HZMB and alignments of the connecting highways, and identified alignment options for a detailed EIA study. We will carry out an EIA study to address the potential environmental impacts of the projects in details. We will submit the EIA report to the Director of Environmental Protection under the EIA Ordinance for approval and will follow the statutory procedures of making the EIA report available for comments by the public and the ACE.

18. The proposed conceptual and preliminary design would not give rise to any adverse environmental impacts. We will implement environmental pollution control measures to control 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 to plan and design the works in such a way to minimise generation of C&D materials and to reuse/recycle C&D materials as much as possible at the construction stage.

LAND ACQUISITION

19. The proposed conceptual and preliminary design and site investigation works do not require any land acquisition.

BACKGROUND INFORMATION

20. We upgraded **787TH** to Category B in January 2003.

21. To ensure timely collection of information for the future EIA study, D of Hy engaged consultants to undertake an Ecological Baseline Survey for the project at an estimated cost of \$1.3 million under **Subhead 6100TX** "Highways works, studies and investigations for items in Category D of the Public Works Programme" in September 2003.

22. In October 2002, D of Hy engaged consultants to undertake a PER at an estimated cost of \$1.3 million under **Subhead 6100TX**. We examined a large number of locations along the west coast of HKSAR, including Black Point in Tuen Mun, San Shek Wan in Northwest Lantau, Yi O and Peaked Hill in Southwest Lantau etc, for the possible locations of landfalls. The landing points at Southwest Lantau would result in the shortest distance from Zhuhai and Macao, but they were not acceptable as there is a potential site for designation as a Marine Park in the area. At Black Point, there were concerns on ecological grounds as it is the major feeding ground for a comparatively denser population of dolphins. We propose that the landing point of the HKS of HZMB should best be at Northwest Lantau while Black Point is less favourable.

23. On Northwest Lantau, we have now identified two possible sites near San Shek Wan Headland as suitable locations to provide the landing point for the HKS of HZMB, and two possible alignments for the connecting infrastructure with the existing road network and strategic facilities. The two possible alignments are Alignments 1 and 2 as shown in Enclosure 2. Alignment 1 runs in a short tunnel underneath the south of Sha Lo Wan, exits at Hau Hok Wan and crosses the Airport Island at the southern air cargo area to join the local road network. Alignment 2 has the landing further north which will reduce the coastal area affected. This option crosses the Airport Channel, runs along the south coast of the Airport Island and joins the local road network at the southeast tip of the Airport Island. Both options could be further extended and linked up with the NLH near Tai Ho as traffic builds up in the longer term.

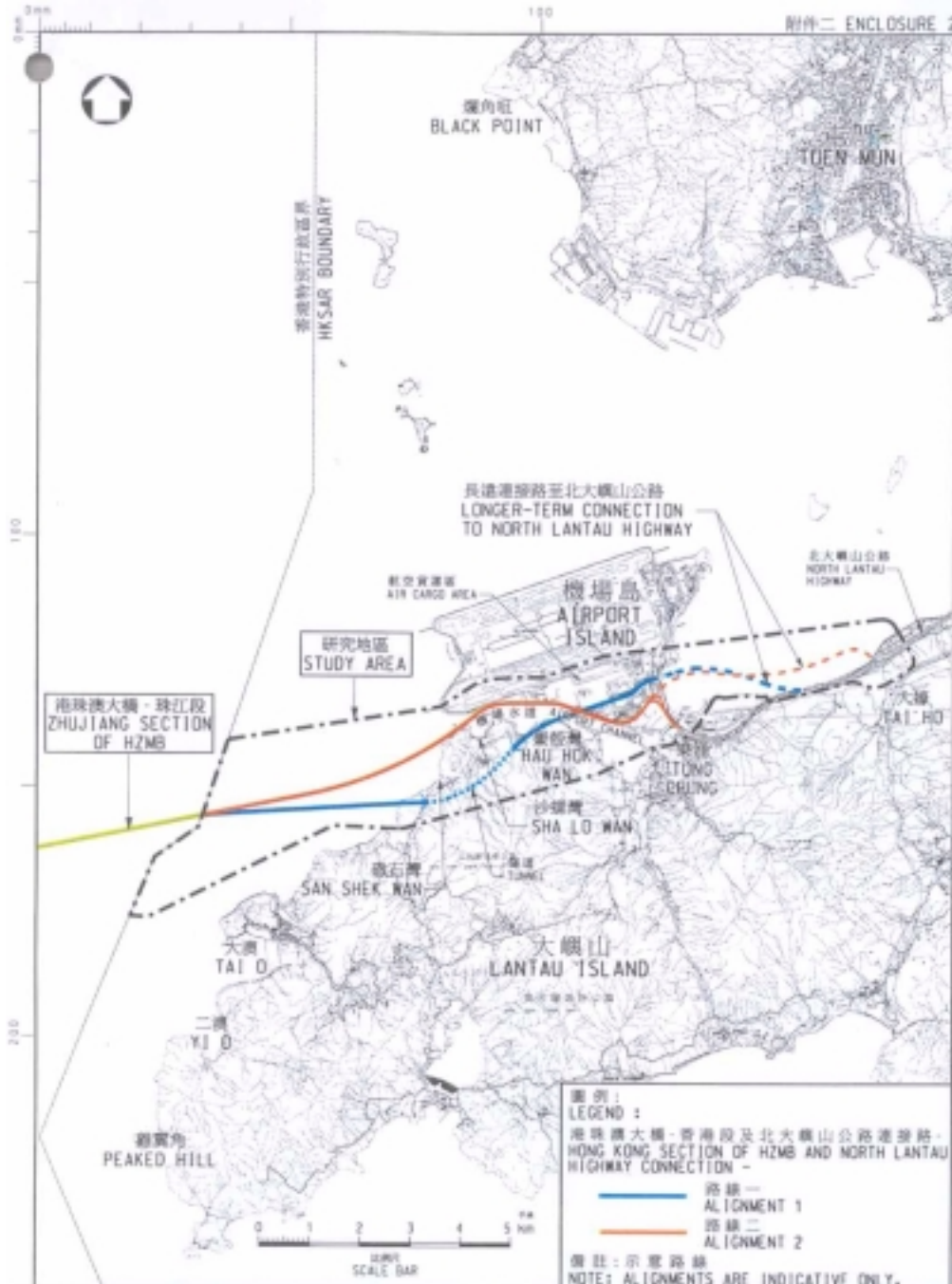
24. The proposed conceptual and preliminary design and site investigation works will not directly involve any tree removal or planting proposals. We will require the consultant to take into consideration the need for tree preservation during the planning and design stages of projects. We will also incorporate tree planting proposals, where possible, in the construction phase in the future.

25. We estimate that the proposed work will create about 70 jobs comprising 50 professional/technical staff and 20 labourers, totalling 800 man-months.

Environment, Transport and Works Bureau
October 2003



工程計劃項目第 7877H 號 - 港珠澳大橋 香港段及北大嶼山公路連接路 - 勘察及初步設計 PMP ITEM NO. 7877H - HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG SECTION AND NORTH LANTAU HIGHWAY CONNECTION - INVESTIGATION AND PRELIMINARY DESIGN		日期 08/03/2018 圖號 01/001 日期 11/08/2018 圖號 01/001	日期 08/03/2018 圖號 01/001 日期 11/08/2018 圖號 01/001	項目編號 PMP 7877H HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG SECTION AND NORTH LANTAU HIGHWAY CONNECTION - INVESTIGATION AND PRELIMINARY DESIGN	公眾工程處 MAJOR WORKS PROJECT MANAGEMENT OFFICE	運輸及房屋局 TRANSPORT AND INFRASTRUCTURE DEPARTMENT 路政處 HIGHWAYS DEPARTMENT 香港 HONG KONG
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圖例：
LEGEND :
 港珠澳大橋-香港段及北大嶼山公路連接路-
 HONG KONG SECTION OF HZMB AND NORTH LANTAU
 HIGHWAY CONNECTION -

—— 路線一
 ALIGNMENT 1

—— 路線二
 ALIGNMENT 2

備註：示意路線
 NOTE: ALIGNMENTS ARE INDICATIVE ONLY.

圖則名稱 drawing title 工務計劃項目第787TH號 - 港珠澳大橋 香港段及北大嶼山公路連接路 - 勘察及初步設計 PWP ITEM NO. 787TH - HONG KONG - ZHUHAI - MACAO BRIDGE HONG KONG SECTION AND NORTH LANTAU HIGHWAY CONNECTION - INVESTIGATION AND PRELIMINARY DESIGN	設計 designed W.K. LAI 18/08/03	繪圖 drawn Y.L. SHIU 18/08/03	圖則編號 drawing no. HMW6787TH-SP0005	比例 scale 1:100000
	覆核 checked W.K. LAI 26/08/03	批准 approved W.C. LAU 26/10/03	版權所有 COPYRIGHT RESERVED  HIGHWAYS DEPARTMENT 路政署 HONG KONG	

Enclosure 3 to PWSC(2003-04)49

**787TH – Hong Kong – Zhuhai – Macao Bridge Hong Kong Section and
North Lantau Highway Connection – investigation and preliminary design**

**Breakdown of estimates for consultants' fees and site investigation works (in
September 2003 prices)**

Consultants' staff costs			Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a)	Review of the	Professional	3	38	2.0	0.3
	findings of previous studies, and examination of alignments and design options	Technical	3	14	2.0	0.1
(b)	Impact assessments (environmental, traffic, marine and aviation etc.)	Professional	85	38	2.0	9.8
		Technical	120	14	2.0	4.6
(c)	Conceptual and preliminary design	Professional	80	38	2.0	9.2
		Technical	100	14	2.0	3.8
(d)	Supervision of site investigation	Professional	12	38	1.6	1.1
		Technical	20	14	1.6	0.6
						<hr/>
Total consultant's staff costs						29.5
Out-of pocket expenses (Note 2)						
(e)	Site investigation					26.0
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Total						<u>55.5</u>

* MPS = Master Pay Scale

Notes

1. A multiplier of 2.0 is applied to the average MPS point to arrive at the full staff costs, including the consultants' overheads and profit, as the staff will be employed in the consultants' offices. A multiplier of 1.6 is applied to the average MPS point in the case of resident site staff supplied by the consultants. (As at 1 October 2002, MPS pt. 38 = \$57,730 per month and MPS pt. 14 = \$19,195 per month.)
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 D of Hy. We will know the actual man-months and fees only after we have selected the consultants through the usual competitive lump-sum fee bid system.