For discussion **PWSC(2023-24)33**
on 27 February 2024

ITEMS FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS
Transport – Interchanges/ bus termini
87TI – Improvement works at Tsuen Tsing Interchange

Members are invited to recommend to the Finance Committee the upgrading of **87TI** to Category A at an estimated cost of $581.4 million in money-of-the-day prices.

PROBLEM

We need to carry out improvement works at Tsuen Tsing Interchange (TTI) to alleviate the traffic pressure at TTI and its associated approach roads.

PROPOSAL

2. The Director of Highways, with the support of the Secretary for Transport and Logistics, proposes to upgrade **87TI** to Category A at an estimated cost of $581.4 million in money-of-the-day (MOD) prices.

/PROJECT …..

PROJECT SCOPE AND NATURE

3. The proposed scope of works under **87TI** comprises –

(a) construction of a traffic lane of about 300 metres (m) in length to allow exclusive left-turning traffic movement from the down ramp of Tsuen Wan Road westbound (Tuen Mun bound) to Tsing Tsuen Road (Tsing Yi bound);

(b) construction of a single-lane vehicular bridge of approximately 90 m in length and associated slip road of approximately 210 m in length at Texaco Road (westbound) to connect to an existing vehicular bridge section above TTI towards Tsing Yi which has yet to be opened to traffic;

(c) construction of a single-lane slip road of approximately 80 m in length connecting the down ramp of Tsuen Wan Road eastbound (Kowloon bound) to Texaco Road (Ma Tau Pa Road bound);

(d) widening a section of Texaco Road (eastbound) of about 100 m in length north of TTI;

(e) widening part of the roundabout at TTI and improving its junctions; and

(f) associated ancillary works including drainage, traffic aids, public lighting and landscaping works.

A layout plan with cross sections of the project is at **Enclosure 1**.

4. We plan to commence the proposed works upon obtaining funding approval from the Finance Committee (FC) for target completion in around three years. To commence the construction works as soon as possible, the Highways Department (HyD) initiated parallel tendering for the construction works contract

/in …..

in June 2023, and the returned tender prices have been reflected in the estimated cost of the project. The works contract will only be awarded after obtaining FC's funding approval.

JUSTIFICATION

5. TTI is the transportation hub of Tsuen Wan, Kwai Chung and Tsing Yi Districts, connecting arterial roads such as Tsuen Wan Road, Texaco Road and Tsing Tsuen Road. At present, the traffic flow at the roads around TTI is relatively high during peak hours and slow-moving traffic is often observed at the roundabout and the associated approach roads. We envisage that the traffic flow of relevant road sections will continue to grow, resulting in further traffic congestion. The design flow/capacity (DFC) ratio[1] of TTI is expected to reach 1.19 in 2026 and 1.29 in 2031, indicating that it will exceed its capacity. It is anticipated that traffic through the roundabout will be slow from time to time by then.

6. In view of the above, we propose to carry out improvement works to TTI with an aim to relieve its traffic loading by minimising the number of vehicles entering the roundabout as far as possible. The project comprises the construction of a new traffic lane for vehicles to turn left from the down ramp of Tsuen Wan Road (westbound) to Tsing Tsuen Road to go directly towards Tsing Yi, bypassing the roundabout. In the meantime, we propose to construct a single-lane vehicular bridge to divert the at-grade traffic from Texaco Road (westbound) towards Tsing Yi to a section of the existing vehicular bridge above TTI which is not yet in operation, thus avoiding the need to use the roundabout and easing the traffic flow thereat.

7. With a view to further alleviating the traffic pressure at TTI, the project also comprises the construction of a single-lane slip road connecting the down ramp of Tsuen Wan Road (eastbound) to Texaco Road. Upon completion of the proposed works, motorists can use the new slip road to access Texaco Road (Ma Tau Pa Road bound), without having to go through the roundabout.

/8. …..

---

[1] Design flow/capacity (DFC) ratio reflects the performance of a non-signalised junction. A DFC ratio below 1.00 indicates that the junction is operating within capacity, while a DFC ratio greater than 1.00 denotes overcapacity.

8. On the other hand, the project will make use of part of the central median to widen the traffic lane of a section of Texaco Road (eastbound) north of TTI. Upon completion of the proposed works, the smooth traffic flow along the concerned road section could still be maintained even when there are vehicles parked on the roadside for loading and unloading. In addition, the roundabout will be partially widened and junction improvement works will be carried out.

9. It is anticipated that the aforementioned proposed improvement works will substantially improve the vehicular traffic of the roundabout upon its completion. The DFC ratio of TTI is estimated to decrease to 0.79 in 2031 and is sufficient to cope with the anticipated traffic flow at least until 2041 (the DFC ratio is estimated to be around 0.83).

FINANCIAL IMPLICATIONS

10. We estimate the capital cost of the project to be $581.4 million in MOD prices, with breakdown as follows –

		$million (in MOD prices)
(a)	Exclusive left-turning traffic lane from the down ramp of Tsuen Wan Road to Tsing Tsuen Road	143.7
(b)	Single-lane vehicular bridge and associated slip road at Texaco Road (westbound)	141.5
(c)	Other road improvement works (including construction of slip road and widening of traffic lane and roundabout, etc.)	99.2

/(d) …..

			$million (in MOD prices)
(d)	Associated ancillary works including drainage, traffic aids, public lighting and landscaping works		73.3
(e)	Consultants' fees for		6.9
	(i) contract administration[2]	4.5	
	(ii) management of resident site staff (RSS)	2.4	
(f)	Remuneration of RSS		63.9
(g)	Contingencies		52.9
	Total		581.4

11. We propose to engage consultants to undertake the contract administration and site supervision of the project. A breakdown of the estimates for consultants' fees and RSS costs by man-months is at **Enclosure 2**.

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

Year	**$ million (in MOD prices)**
2024 – 25	66.4
2025 – 26	162.2

/**Year** …..

[2] Contract administration includes monitoring of construction progress, contract management, management of accounts.

Year	$ million (in MOD prices)
2026 – 27	204.7
2027 – 28	98.7
2028 – 29	31.0
2029 – 30	18.4
	581.4

13. We have derived the MOD estimates on the basis of the Government's latest forecast on trend rate of change in the prices of public sector building and construction output for the period from 2024 to 2030. Subject to funding approval, we will deliver the construction works under the New Engineering Contract (NEC) form[3] with provision for price adjustments.

14. We estimate the annual recurrent expenditure arising from the project to be about $1.4 million.

15. During the design stage of the project, we have optimised the alignment of the exclusive left-turning traffic lane from the down ramp of Tsuen Wan Road to Tsing Tsuen Road with a view to reducing the extent of slope cutting at the adjacent rock slope and minimising the amount of construction works. We have also carried out detailed site investigation to gather geological information and enhanced the foundation design of the proposed vehicular bridge accordingly in order to minimise impact on nearby retaining walls during construction, and also lower the construction cost.

/PUBLIC …..

---

[3] NEC is a suite of contracts developed by the Institution of Civil Engineers, United Kingdom. It is a contract form that emphasises cooperation, mutual trust and collaborative risk management between contracting parties.

PUBLIC CONSULTATION

16. HyD consulted the Traffic and Transport Committee (the Committee) of the Tsuen Wan District Council and the Kwai Tsing District Council respectively on the project in February 2021. Both Committees supported the project.

17. The scheme and plan of the project were gazetted under the Roads (Works, Use and Compensation) Ordinance (Cap. 370) on 16 and 23 April 2021. No objection was received during the statutory period and the project was thus authorised accordingly. The relevant authorisation notice was gazetted on 23 and 30 July 2021.

18. HyD has consulted the Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS)[4] on the aesthetic design of the new vehicular bridge of the project. ACABAS accepted the proposed aesthetic design.

19. We consulted the Panel on Transport of the Legislative Council on 16 June 2023. Members supported the submission of the funding proposal to the Public Works Subcommittee for consideration.

ENVIRONMENTAL IMPLICATIONS

20. TTI and Texaco Road are exempted projects under the Environmental Impact Assessment Ordinance (Cap. 499). Nevertheless, HyD has conducted an Environmental Review on the project. Based on the review result, the project will not cause adverse impact on the environment.

/21. …..

---

[4] The membership of ACABAS comprises representatives of the Hong Kong Institute of Architects, the Hong Kong Institution of Engineers, the Hong Kong Institute of Planners, Architectural Services Department, HyD, Housing Department, Civil Engineering and Development Department, and a representative from the architecture or relevant faculty of a local academic institution. It is responsible for vetting the design of bridges and other structures associated with the public highway system from the aesthetic and visual impact points of view.

21. To minimise the impact on the environment during construction, HyD will implement suitable mitigation measures, including the adoption of quiet powered mechanical equipment, movable temporary noise barriers, regular water spraying at works sites and provision of wheel-washing facilities to minimise the noise impact and dust generation during construction. The cost of implementing such measures has been included in the project estimates.

22. At the planning and design stages, HyD has considered the alignment, design and construction procedures of the proposed works with a view to reducing the generation of construction waste where possible. In addition, HyD will require the contractor to reuse inert construction waste (e.g. use of excavated materials for backfilling) 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[5]. HyD will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

23. At the construction stage, HyD will 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. HyD will ensure that the day-to-day operations on site comply with the approved plan and will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. HyD will control the disposal of inert and non-inert construction waste at public fill reception facilities and landfills respectively through a trip-ticket system.

24. HyD estimates that the project will generate in total about 90 000 tonnes of construction waste. Of these, HyD will reuse about 9 250 tonnes (10%) of inert construction waste on site and deliver 78 750 tonnes (88%) of inert construction waste to public fill reception facilities for subsequent reuse. HyD will dispose of the remaining 2 000 tonnes (2%) of non-inert construction waste at

/landfills …..

---

[5] Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

landfills. The total cost for disposal of construction waste at public fill reception facilities and landfill sites is estimated to be about $7.58 million for the project (based on a unit charge rate of $87 per tonne for disposal at public fill reception facilities and $365 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

HERITAGE IMPLICATIONS

25. The project will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites / buildings / structures, sites of archaeological interest, all sites / buildings / structures in the new list of proposed grading items; and government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

26. The project will only involve government land. No land resumption is required.

TRAFFIC IMPLICATIONS

27. The project will not cause significant traffic impact during construction. HyD will maintain the existing number of traffic lanes during peak hours. Nevertheless, some individual work procedures such as heavy lifting operation in vicinity of the existing traffic lane, may require temporary road closures to protect the safety of road users and site personnel. HyD will schedule such operations to be carried out during night time or hours with less traffic as far as practicable to minimise the impact of the works on road users. To facilitate the construction works, HyD will implement temporary traffic arrangements (TTA) and set up a traffic management liaison group to discuss and vet the TTA. This group comprises representatives from the contractor, the Hong Kong Police Force, the Transport Department and other relevant government departments. During the construction period, HyD will also display publicity boards on site, providing details of the TTA and the anticipated completion dates of individual sections of works. In addition, HyD will maintain close liaison with the local community and set up a telephone hotline for public enquiries.

/BACKGROUND …..

BACKGROUND INFORMATION

28. HyD commissioned an investigation study for the project in May 2019 at a cost of about $3.30 million.

29. HyD also commenced the site investigation and detailed design for the project in December 2021 at a cost of about $19.40 million. Such cost and the cost of the abovementioned investigation study were funded by block allocation **Subhead 6100TX** "Highway works, studies and investigations for items in Category D of the Public Works Programme". The investigation study, site investigation and detailed design for the project have been substantially completed. The aforementioned work helps finalise the scope and cost estimate of the project for seeking funding approval from the FC.

30. There are 540 trees within the project boundary, among which 333 trees will be preserved. The project will require the removal of 207 trees, including 195 trees to be felled and 12 trees to be transplanted to the adjacent locations outside the project boundary. It has been confirmed that all affected trees are not trees of particular interest[6]. HyD will incorporate tree planting proposals into the project, including the compensatory planting of 46 new trees.

/31. …..

---

[6] Trees of particular interest are defined in paragraph 3.3.1 of the Guidelines for Tree Risk Assessment and Management Arrangement (10th Edition) promulgated by the Development Bureau in 2023. Examples of trees of particular interest are listed as follows:

- Old and Valuable Trees (OVTs) and trees that are potentially registrable in the Register of OVTs;
- Trees of 100 years old or above;
- Trees with trunk diameter equal to or exceeding 1.0 m (measured at 1.3 m above ground level), or with height/canopy spread equal to or exceeding 25 m;
- Stonewall trees or trees of outstanding form (taking account of overall tree sizes, shape and any special features);
- Rare tree species listed in "Rare and Precious Plants of Hong Kong" published by Agriculture, Fisheries and Conservation Department;
- Endangered plant species protected under the Protection of Endangered Species of Animals and Plants Ordinance (Cap. 586);
- Trees species listed in the Forestry Regulations (Cap. 96A) under the Forests and Countryside Ordinance (Cap. 96);
- Well-known Fung Shui trees;
- Landmark trees with evidential records to support the historical or cultural significance of the trees;
- Trees which may arouse widespread public concerns; and
- Trees which may be subject to strong local objections on removal.

31. We estimate that the project will create about 162 jobs (129 for labourers and 33 for professional/technical staff), providing a total employment of about 5 172 man-months.

32. As mentioned in paragraph 4 above, we invited tenders for the proposed works in parallel. Based on the returned tender prices, we have updated the project estimate to $581.4 million in MOD prices. To ensure that the contractor is capable of coping with the challenges during the construction period, such as the limited working space and busy traffic at TTI, and completing the proposed works on a cost-effective basis, we have specified in the tender documents requesting the contractors to submit detailed technical proposal in the tender bids. After careful assessment, we considered that the contractors had proposed feasible construction methodologies which could also effectively utilise the limited space of the construction site with a view to enhancing construction efficiency and reducing the construction cost. The latest project estimate has taken into account the savings in construction cost arising from the optimised construction methods and should be adequate to implement the proposed works.

Transport and Logistics Bureau
February 2024

(a) 擬建專供左轉行車道
PROPOSED EXCLUSIVE LEFT-TURN LANE

(b) 擬建行車天橋及連接路
PROPOSED VEHICULAR BRIDGE AND SLIP ROAD

(c) 擬建連接荃灣路下行引道至德士古道的連接路
PROPOSED SLIP ROAD CONNECTING TSUEN WAN ROAD DOWN RAMP TO TEXACO ROAD

(d) 擬擴闊現有行車線
PROPOSED WIDENING OF EXISTING LANE

(e) 擬擴闊迴旋處及相關路口改善工程
PROPOSED WIDENING OF ROUNDABOUT AND ASSOCIATED JUNCTION IMPROVEMENT WORKS

荃青交匯處
TSUEN TSING INTERCHANGE

青荃路 TSING TSUEN ROAD
往青衣方向 TSING YI BOUND
往九龍方向 KOWLOON BOUND
往屯門方向 TUEN MUN BOUND
往馬頭涌道方向 MA TAU PA ROAD BOUND
荃灣路 TSUEN WAN ROAD
德士古道 TEXACO ROAD
往大窩口方向 TAI WO HAU BOUND
楊屋道 YEUNG UK ROAD
葵福路 KWAI FUK ROAD
永基路 WING KEI ROAD
CUT LINE A-A

插圖 A
Inset A

位置圖 LOCATION PLAN
比例 SCALE 1:20000

0 25 50 m (米)
1 : 1 500 SCALE BAR 比例尺

圖例 LEGEND:

- 施工區界限 LIMIT OF WORKS SITE
- 擬建專供左轉行車道 PROPOSED EXCLUSIVE LEFT-TURN LANE
- 擬建行車天橋 PROPOSED VEHICULAR BRIDGE
- 擬建接駁至行車天橋的連接路 PROPOSED SLIP ROAD TO VEHICULAR BRIDGE
- 擬建連接荃灣路下行引道至德士古道的連接路 PROPOSED SLIP ROAD CONNECTING TSUEN WAN ROAD DOWN RAMP TO TEXACO ROAD
- 擬擴闊現有行車線 PROPOSED WIDENING OF EXISTING LANE
- 擬擴闊迴旋處及相關路口改善工程 PROPOSED WIDENING OF ROUNDABOUT AND ASSOCIATED JUNCTION IMPROVEMENT WORKS
- 擬重建的行人過路處 PROPOSED RECONSTRUCTION OF PEDESTRIAN CROSSING
- 擬議削坡 PROPOSED SLOPE CUTTING
- 現有行車天橋尚未啟用部分 EXISTING VEHICULAR BRIDGE NOT YET OPENED TO TRAFFIC
- 現有行車線 EXISTING TRAFFIC LANE
- 擬新增行車線 PROPOSED NEW TRAFFIC LANE

圖則名稱 drawing title

工程計劃項目第87TI號
荃青交匯處改善工程 - 平面圖

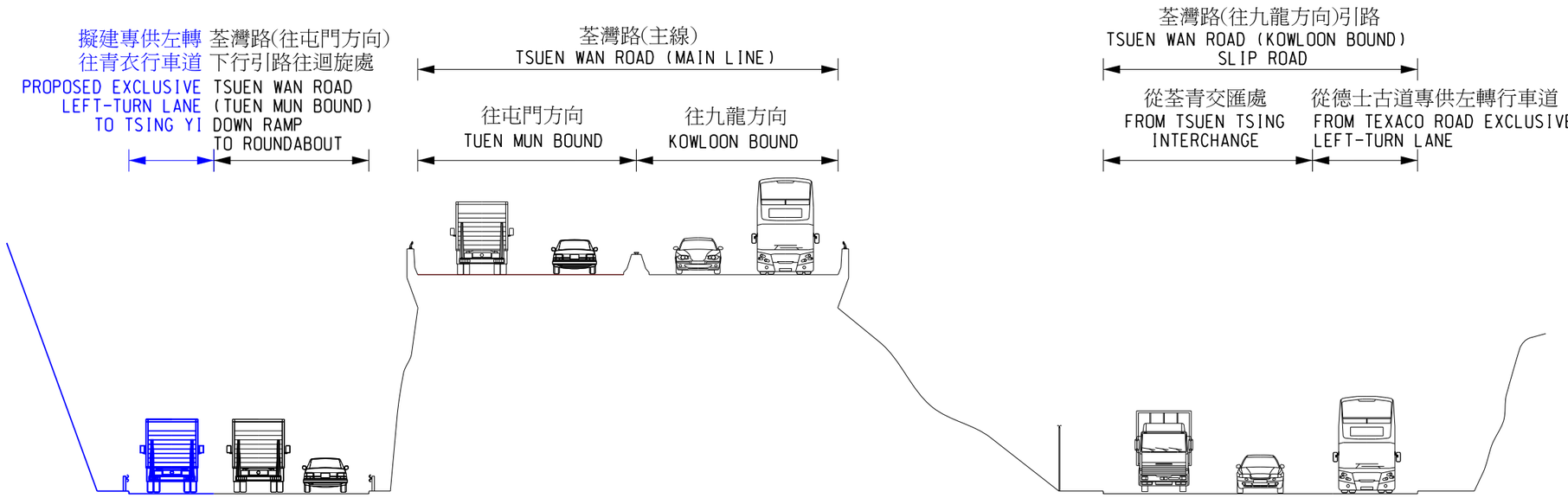
PWP ITEM NO. 87TI
IMPROVEMENT WORKS AT TSUEN TSING INTERCHANGE - LAYOUT PLAN

圖則編號 plan no.	比例 scale
HMW6087TI-SK00011	1:1500

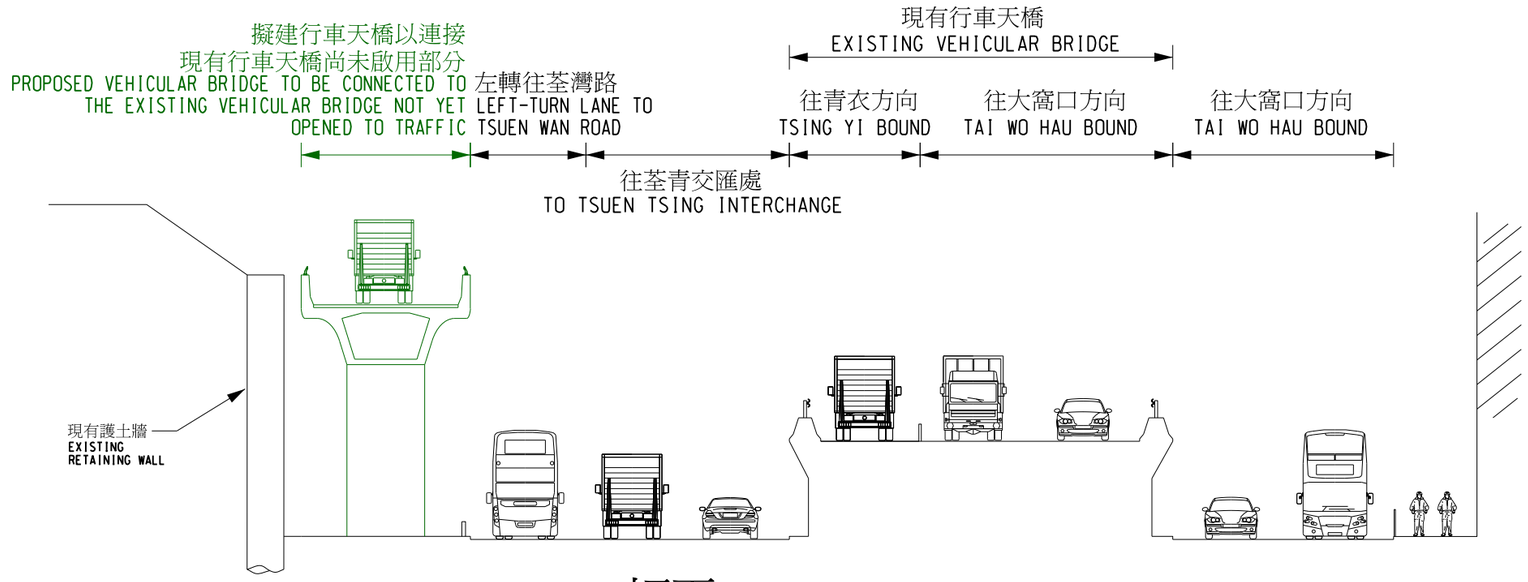
主要工程管理處
MAJOR WORKS PROJECT MANAGEMENT OFFICE

HIGHWAYS DEPARTMENT HONG KONG 香港政府 路政署

A3 420 x 297



切面 SECTION 1-1



切面 SECTION 2-2

圖則名稱 drawing title

工程計劃項目第87TI號
荃青交匯處改善工程 - 切面圖

PWP ITEM NO. 87TI
IMPROVEMENT WORKS AT TSUEN TSING INTERCHANGE - SECTIONS

圖則編號 plan no.	比例 scale
HMW6087TI-SK0012	N.T.S

主要工程管理處
MAJOR WORKS
PROJECT MANAGEMENT OFFICE

HIGHWAYS DEPARTMENT HONG KONG 香港路政署

A3 420 x 297

87TI – Improvement works at Tsuen Tsing Interchange

Breakdown of the estimates of consultants' fees and resident site staff costs (in September 2023 prices)

		Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee ($ million)
(a) Consultants' fee for contract administration (Note 2)	Professional	–	–	–	3.5
	Technical	–	–	–	0.5
				Sub-total	4.0#
(b) Resident site staff (RSS) costs (Note 3)	Professional	228	38	1.6	33.0
	Technical	496	14	1.6	25.7
				Sub-total	58.7
Comprising –					
(i) Consultants' fees for management of RSS					2.1#
(ii) Remuneration of RSS					56.6#
				Total	**62.7**

* MPS = Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS salary point to estimate the cost of RSS supplied by the consultants (as at now, MPS salary point 38 = $90,540 per month and MPS salary point 14 = $32,430 per month).

2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement relating to the project. The construction phase of the assignment will only be executed subject to the Finance Committee's approval to upgrade **87TI** to Category A.

3. The actual man-months and actual costs will only be known after completion of the construction works.

Remarks

The cost figures in this Enclosure are shown in constant prices to correlate with the MPS salary point of the same year. The cost figures marked with # are shown in money-of-the-day prices in paragraph 11 of the main text.