

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS

Transport – Railways

66TR – Smart and Green Mass Transit System in East Kowloon

Members are invited to recommend to Finance Committee the upgrading of part of **66TR** to Category A as **67TR** “Smart and Green Mass Transit System in East Kowloon – investigation and design” at an estimated cost of \$262.5 million in money-of-the-day prices.

PROBLEM

The northern uphill areas of Kwun Tong are densely populated, with busy road traffic in the district. With the gradual completion of the housing development projects in the areas, the demand for transportation will continue to increase. We need to provide a convenient and fast smart and green mass transit system for the over 300 000 residents in the uphill areas to connect to the existing railway network and to facilitate the commuting of the public to and from different areas of Kowloon and Hong Kong Island. To implement this system, we need to conduct investigation, design and associated site investigation works.

PROPOSAL

2. The Director of Highways proposes to upgrade part of **66TR** to Category A as **67TR** at an estimated cost of \$262.5 million in money-of-the-day (MOD) prices to conduct investigation, design and associated site investigation works for the Smart and Green Mass Transit System in East Kowloon. The proposal is supported by the Secretary for Transport and Logistics.

PROJECT SCOPE AND NATURE

3. Subject to the findings of the investigation and design, the scope of **66TR** (“Proposed Project”) mainly comprises –

- (a) construction of the smart and green mass transit system of about 7 km long (including viaducts of about 6 km long, tunnel of about 1 km long and 8 stations) from Choi Hung East near the existing MTR Choi Hung Station via Choi Wan, Shun Lee, Shun On, Sau Mau Ping, Po Tat and Ma Yau Tong to Yau Tong East near the existing MTR Yau Tong Station;
- (b) construction of the depot and system-wide facilities, such as signalling system, operation control and monitoring facilities, power supply and charging facilities, passenger facilities and fare collection system, etc.;
- (c) construction of pedestrian linkage facilities connecting the stations and On Tai Estate, On Tat Estate and the area in the vicinity of Anderson Road; and
- (d) the associated civil, geotechnical, landscaping, road and drainage works, ancillary buildings, electrical and mechanical installations, re-provisioning of facilities affected by the proposed works and environmental mitigation measures, etc.

4. The part of **66TR** proposed to be upgraded to Category A (i.e. **67TR**) (“the Item”) comprises –

- (a) review the alignment and station locations of the Proposed Project, formulate design schemes and carry out feasibility study on suggestions to extend the system to different areas;

/(b)

- (b) liaise and invite system suppliers and operators in the market to submit Expression of Interest (EOI)¹ for the Proposed Project, and analyse feedback given therein for reference in the formulation of technical details, implementation approach, procurement and financial arrangements for the Proposed Project;
- (c) complete the assessment of the impact of the Proposed Project on the environment, traffic, heritage, land and other related aspects, formulate mitigation measures, and carry out gazettal of the Proposed Project;
- (d) carry out financial assessment of the Proposed Project, covering financial analysis, risk assessment and cost benefit analysis, and formulate financing modes, including to explore the use of property development rights (e.g. atop the proposed depot site) as funding support, and make relevant land use planning application, as well as develop suitable contract procurement arrangements, prepare tender documents and provide assistance in tendering;
- (e) formulate operation, management and maintenance-related technical details, and assist with the development of relevant regulatory regime for the operation of the system²; and
- (f) conduct site investigation and associated supervision works.

5. After obtaining funding approval from the Finance Committee (FC) of the Legislative Council (LegCo), we plan to commence the Item immediately so as to expedite the completion of the aforementioned tasks and statutory procedures. The work under the Item and the statutory procedures will be carried out concurrently as far as possible. We plan to invite suppliers and operators to submit /EOI

¹ The Government will invite relevant suppliers and operators to submit EOI in the second half of 2024 with the following objectives –

- (a) to ascertain the interest and capability of suppliers and operators in constructing and operating the system; and
- (b) to invite feedback from relevant suppliers and operators on a series of topics including –
 - (i) design, construction, operation and maintenance requirements of the system;
 - (ii) project implementation approach and procurement arrangements;
 - (iii) required construction and testing periods;
 - (iv) ways to enhance the commercial viability of the system; and
 - (v) exploring the feasibility of expanding or adjusting the system alignment, etc.

² In view that this will be a brand new system in Hong Kong, the Government will formulate relevant regulatory framework and legislation for the operation of the new system, and undertake the legislative work.

EOI in the second half of 2024. Upon receipt of the EOIs, we will promptly analyse the feedback, while carrying out the investigation and design, financial assessment, and preparation of tender documents, etc. in tandem. Subject to the findings of the financial assessment and analysis of the feedback from the EOI, the Government will explore the financial arrangement and financing modes for the Proposed Project, including making reference to the “Rail plus Property” model used on railway projects. We strive to invite tenders for construction of the Proposed Project in 2026 with an aim to awarding the contract in 2027. We estimate that the entire investigation and design work (including financial assessment, tendering, tender evaluation, and award of the contract) will be completed within approximately 3.5 years. Subject to the smart and green mass transit system eventually adopted, we will stipulate in the tender documents the requirement for the tenderers to complete the construction works as soon as possible, with the aim of completing the Proposed Project by 2033 or earlier.

6. In order to expedite the implementation of the Proposed Project, we have invited tenders for the investigation and design in parallel. We have made reference to the returned tender price and updated the estimated cost and cash flow estimate for the Item. As the returned tender price is lower than the original estimated cost, the funding application to the FC is \$14 million (approximately 5%) lower than the estimate previously submitted to the LegCo Panel on Transport. The consultancy will only be awarded upon obtaining FC’s funding approval. Meanwhile, we have commenced the relevant planning and advance preparation work for the investigation and design proactively so as to facilitate the consultant team to complete all tasks expeditiously and efficiently.

JUSTIFICATION

7. At present, residents in the northern uphill areas of Kwun Tong who wish to take the railway need to use the road-based transport feeder services to gain access to the nearby railway stations. In order to meet the commuting needs of residents in the northern uphill areas of Kwun Tong, we consider it necessary to provide a mass transit system to connect the uphill areas to the existing railway network. In this regard, the Chief Executive announced in the “2023 Policy Address” to implement a smart and green mass transit system in East Kowloon with an aim to improving the overall transportation of East Kowloon and unleashing development potential. The Proposed Project has also been incorporated in the “Hong Kong Major Transport Infrastructure Development Blueprint” promulgated by the Transport and Logistics Bureau in December 2023.

8. With a length of about 7 km, the proposed Smart and Green Mass Transit System in East Kowloon will connect the uphill areas of Kwun Tong, including Choi Wan, Shun Lee, Shun On, Sau Mau Ping, Po Tat and Ma Yau Tong. The preliminary alignment includes elevated sections passing through New Clear Water Bay Road, Lee On Road, Shun On Road, Sau Mau Ping Road, Po Lam Road, Lei Yue Mun Road, etc. and a tunnel section of about 1 km long passing through Lam Tin North. Please refer to **Enclosure 1** for the preliminary alignment and the photomontage of the proposed Smart and Green Mass Transit System in East Kowloon.

9. The implementation of the proposed system can provide light and green transport feeder services in the northern uphill areas of Kwun Tong to the nearby railway stations and major public transport interchanges, facilitating access to MTR Choi Hung Station and Yau Tong Station, thus reducing the impact of traffic congestion on the over 300 000 residents in the area and providing more commuting options for them. Furthermore, during the investigation and design stage, we will study carefully the station locations and related pedestrian linkage facilities, such as pedestrian walkway to the area in the vicinity of Anderson Road with a view to providing convenient connections in response to the commuting needs of the residents of On Tai Estate and On Tat Estate.

10. The proposed system is a light and green transit system of medium to low carrying capacity, which will adopt environmentally friendly and smart technologies and operate on a dedicated corridor to improve the transport efficiency, safety and convenience. In addition, the system will adopt rubber tyres, which have better climbing capability when compared to heavy rail system. Besides, the smart and green mass transit system typically does not require the installation of overhead lines, and its electrical and mechanical supporting systems as well as its maintenance and repair works are relatively simple, making it suitable for use in developed or congested areas. It is therefore expected that implementing a smart and green mass transit system will be a more cost-effective option.

11. On the other hand, the dedicated elevated corridor will be separated from road-based traffic along the corridor and not be affected by traffic conditions. Depending on the smart and green mass transit system to be adopted eventually, the journey time from Po Tat to Yau Tong or Choi Hung areas is estimated to be about 10 to 15 minutes. Compared with road transport, it is estimated that using the Smart and Green Mass Transit System in East Kowloon in the peak hours will save journey time by about a half, i.e. about 10 to 20 minutes.

12. Given that this will be the first time to introduce the smart and green mass transit system in Hong Kong, apart from the requirements of technical details, financial assessment and procurement arrangements, the regulatory regime and the legislation for the operation of the system will also need to be formulated. Besides, unlike the contracts of public works projects in general which mainly cover the construction works, the contract of the smart and green mass transit system will cover design, construction, operation and maintenance. The relevant details required to be followed up are relatively complicated. These tasks involve a wide range of professional disciplines, and we need to engage a team of consultants with relevant professional background and experience to conduct the above-mentioned tasks and supervise the associated site investigation works, and to ensure that the Proposed Project can be implemented as scheduled such that the technical, financial and operational issues relating to the Project can be identified and properly handled before proceeding to the tendering and construction stages.

13. In addition, the proposed Smart and Green Mass Transit System in East Kowloon will have a very extensive scope of works and will run along hilly terrain. Part of the alignment and stations will have to be constructed on carriageways with congested underground utilities. Also, part of the corridor and depot will be constructed on steep slopes requiring extensive site formation works. The Project involves relatively complex site investigation works. In particular, part of the alignment is adjacent to the restored Ma Yau Tong Central Landfill and therefore we need to carry out site investigation works in part of the areas, including vertical boreholes and trial pits, etc. for conducting geological assessment. On the other hand, there are geological uncertainties in the tunnel section of the Proposed Project between Ma Yau Tong and Yau Tong East, thus a relatively complex horizontal directional drilling is required in the tunnel section. In estimating the cost of the site investigation works under the Item, we have confirmed that the estimates are similar to the returned tender prices of recent projects of similar nature.

FINANCIAL IMPLICATIONS

14. We estimate the cost of the Item to be \$262.5 million in MOD prices, which includes the expenditure on the associated site investigation works, broken down as follows –

	\$ million (in MOD prices)
(a) Consultants' fees for investigation and design work	151.9

/(i)

(i)	review the alignment and station locations of the Proposed Project, formulate design schemes and carry out feasibility study on suggestions to extend the system to different areas	50.0
(ii)	liaise and invite system suppliers and operators in the market to submit EOI for the Proposed Project, and analyse feedback given therein	6.4
(iii)	complete the assessment of the impact of the Proposed Project on the environment, traffic, heritage, land and other related aspects, formulate mitigation measures, and carry out gazettal of the Proposed Project	32.4
(iv)	carry out financial assessment of the Proposed Project, covering financial analysis, risk assessment and cost benefit analysis, and formulate financing modes, including to explore the use of property development rights (e.g. atop the proposed depot site) as funding support, and make relevant land use planning application, as well as develop suitable contract procurement arrangements, prepare tender documents and provide assistance in tendering	54.7
(v)	formulate operation, management and maintenance-related technical details, and assist with the development of relevant regulatory regime for the operation of the system	8.4
(b)	Site investigation	78.8
(c)	Relevant supervision fees for site investigation works	7.9
(d)	Contingencies	<u>23.9</u>
Total		<u>262.5</u>
		/15.

15. The breakdown of the estimate of the consultants' fees and relevant supervision fees for site investigation works is at **Enclosure 2**.

16. With reference to the consultancy fees for other transport infrastructure projects in the past two years, and with due consideration to the uniqueness of the investigation and design work under the Item as described in paragraph 12 above, the consultancy fee for the Item is considered reasonable. Please see the table below for relevant details –

Projects	Smart and Green Mass Transit System in East Kowloon³	Tsing Yi – Lantau Link	Improvement Works to Lion Rock Tunnel
Consultancy fee for investigation and preliminary design (\$ million) (in September 2023 prices)	139	155	125
Estimated man-months for consultancy work			
Professional	500	517	445
Technical	746	981	682

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

Year	\$ million (in MOD prices)
2024 – 25	46.3
2025 – 26	105.8
2026 – 27	88.2
2027 – 28	13.7

/Year

³ Unlike the other transport infrastructure projects, the Proposed Project will involve the operation, repair and maintenance of the smart and green mass transit system and the associated financial and technical requirements. Therefore, apart from formulating design schemes and completing the impact assessments, the consultant team is also required to conduct detailed financial assessment, formulate financial arrangements, develop suitable contract procurement arrangements, formulate operation and maintenance requirements and assist with the development of relevant regulatory regime for the operation of the system, etc.

Year	\$ million (in MOD prices)
2028 – 29	8.5
	<hr/>
	262.5
	<hr/>

18. We have derived the MOD estimate 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 between 2024 and 2029. Subject to funding approval, we will engage a team of professional consultants to undertake the investigation and design work under the Item on a lump sum basis. As for the site investigation works under the Item, it will be tendered under a standard re-measurement contract because the quantity of works involved may vary depending on actual ground conditions. The Item will be delivered under New Engineering Contract. The contract will provide for price adjustments, and enhance project management and cost-effectiveness via promoting cooperation, mutual trust and collaborative risk management between contract parties.

19. The Item will not give rise to any recurrent expenditure.

PUBLIC CONSULTATION

20. We consulted the Legislative Council Panel on Transport on the Proposed Project on 15 December 2023. Members generally supported the implementation of the Smart and Green Mass Transit System in East Kowloon as soon as possible. We also consulted the Traffic and Transport Committees of Kwun Tong District Council and Wong Tai Sin District Council on 18 January 2024 and 20 February 2024 respectively on the Proposed Project. The Committees expressed their support for the Proposed Project, with individual members providing comments related to the preliminary alignment, environmental impact and project implementation programme, etc., such as extending the alignment westward to Tsz Wan Shan and Chuk Yuen areas, providing an intermediate station at Lam Tin North, and extending the alignment eastward to Tsui Lam and Hong Shing areas. According to our preliminary assessment, these suggestions would involve considerable technical difficulties, such as the need to identify sufficient space in populated and congested areas to build stations and elevated structures, etc. Nevertheless, we will, in parallel with pressing ahead the alignment from Choi Hung East to Yau Tong East, exchange views with suppliers and operators on the feasibility of extending or adjusting the alignment in the invitation for EOI. We will also request the consultants during the investigation and design stages to make reference to the views of the suppliers and operators and carry out feasibility study on the suggestions, and explore making provisions for future extension.

ENVIRONMENTAL IMPLICATIONS

21. The proposed Smart and Green Mass Transit System in East Kowloon is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (EIAO) (Chapter 499), which requires an environmental permit for its construction and operation. The Highways Department will conduct an environmental impact assessment in accordance with the requirements of the EIAO to assess the impact of the project on the environment and recommend appropriate mitigation measures. Nevertheless, the investigation, site investigation works and design are not designated projects and will not cause long-term adverse impact on the environment. We have included in the project estimates the cost of implementing suitable pollution control measures to mitigate short-term environmental impact arising from the site investigation works under the Item.

22. The Item and the associated site investigation works will only generate minimal construction waste. We will require the consultant team to fully consider measures to minimise the generation of construction waste and to reuse or recycle construction waste as much as possible in the future implementation of the construction works.

HERITAGE IMPLICATIONS

23. The Item and the associated site investigation works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded heritage sites / historic buildings / historic structures, sites of archaeological interest, all heritage sites / buildings / structures in the list of newly proposed grading items, and government historic sites identified by the Antiquities and Monuments Office. We will conduct heritage impact assessment for the implementation of the Proposed Project under the environmental impact assessment. If necessary, we will recommend appropriate mitigation measures.

LAND ACQUISITION

24. The associated site investigation works in the Item will not require any land acquisition. The Item will examine the extent of land acquisition and/or clearance required for the implementation of the Proposed Project.

BACKGROUND INFORMATION

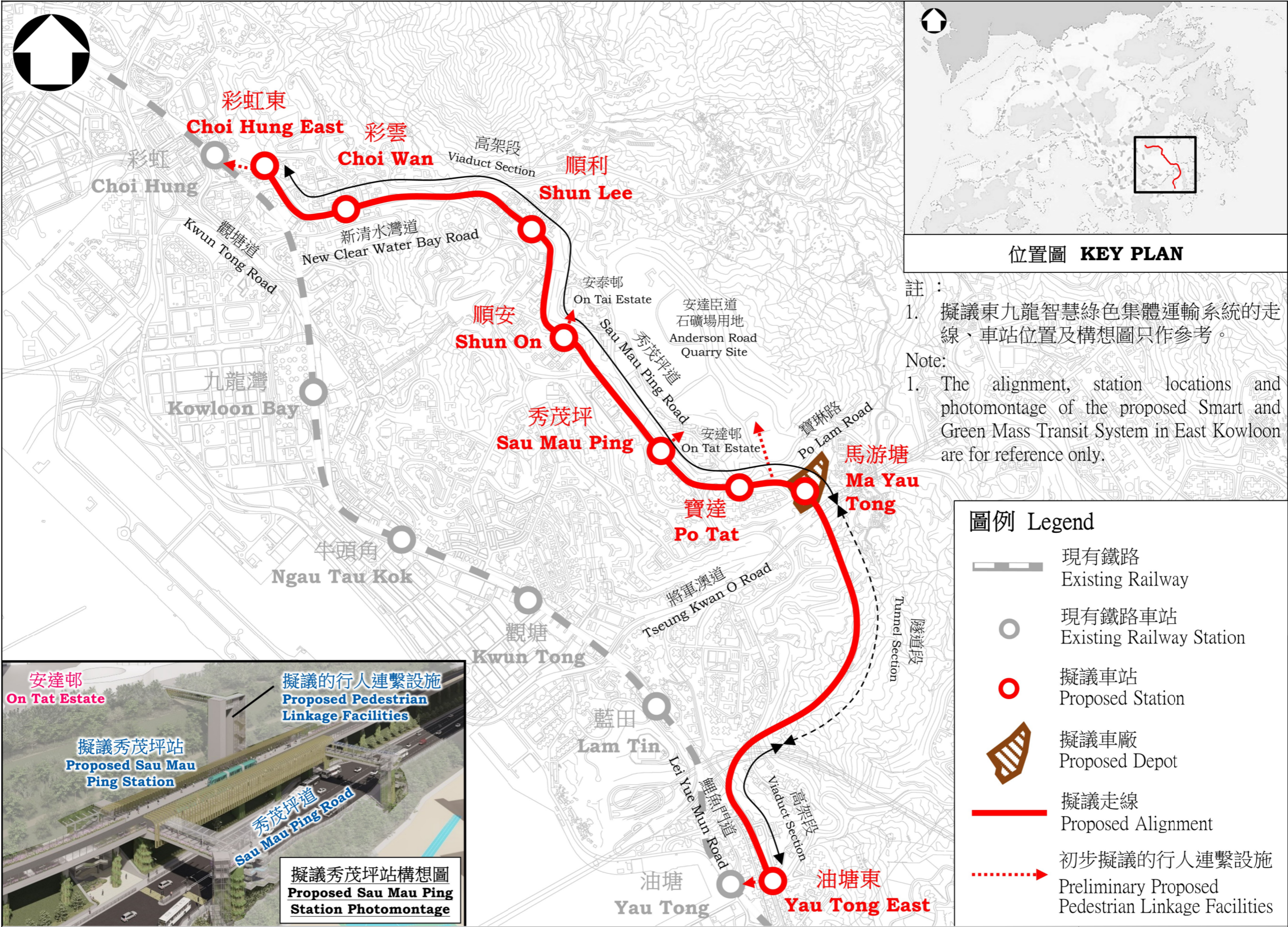
25. The Government originally proposed to build the East Kowloon Line as a heavy rail system to connect the Kwun Tong Line and the Tseung Kwan O Line. Owing to the hilly terrain along the corridor and the limited climbing capability of the heavy rail system, part of the railway sections under the original scheme would need to run deep underground. The transport benefit and cost-effectiveness were not desirable. After a comprehensive review of various technical challenges and transport benefits, the Government considers that it is necessary to introduce a Smart and Green Mass Transit System in East Kowloon to replace the underground heavy rail system.

26. The associated site investigation works in the Item will not directly involve any tree removal or planting proposals. We will examine the impact on trees during construction stage, the need for tree preservation and tree planting proposals.

27. We estimate that the proposed investigation, design and the associated site investigation works will create about 60 jobs (30 for labourers and 30 for professional or technical staff)⁴ providing a total employment of 1,160 man-months.

Transport and Logistics Bureau
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⁴ The jobs for labourers to be created will mainly be responsible for carrying out site investigation works and the jobs for professional/technical staff to be created will mainly be responsible for carrying out the proposed investigation, design and supervising the associated site investigation works.



圖則名稱 drawing title

工務計劃項目第66TR號 - 東九龍智慧綠色集體運輸系統 - 初步方案

PWP ITEM No. 66TR - Smart and Green Mass Transit System in East Kowloon - Preliminary Scheme

圖號 drawing no.

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鐵路拓展處 RAILWAY DEVELOPMENT OFFICE



路政署
HIGHWAYS DEPARTMENT

**66TR(Part) – Smart and Green Mass Transit System in East Kowloon –
Investigation and Design**

**Breakdown of the estimates for consultants' fees and fees related to supervision of
site investigation works (in September 2023 prices)**

			Estimated man- months	Average MPS* salary point	Multiplier (Note 2)	Estimated fees (\$ million)	
(a) Consultants' fees for investigation and design work^(Note 1)							
(i) review the alignment and station locations of the Proposed Project, formulate design schemes and carry out feasibility study on suggestions to extend the system to different areas	Professional		164	38	2.0	29.7	
	Technical		247	14	2.0	16.0	
Sub-total						45.7	#
(ii) liaise and invite system suppliers and operators in the market to submit EOI for the Proposed Project, and analyse feedback given therein	Professional		21	38	2.0	3.8	
	Technical		31	14	2.0	2.0	
Sub-total						5.8	#
(iii) complete the assessment of impact of the Proposed Project on the environment, traffic, heritage, land and other related aspects, formulate mitigation measures, and carry out gazettal of the Proposed Project	Professional		108	38	2.0	19.6	
	Technical		160	14	2.0	10.4	
Sub-total						30.0	#
(iv) carry out financial assessment of the Proposed Project, covering financial analysis, risk	Professional		179	38	2.0	32.4	
	Technical		268	14	2.0	17.4	

		Estimated man- months	Average MPS* salary point	Multiplier (Note 2)	Estimated fees (\$ million)	
assessment and cost benefit analysis, and formulate financing modes, including to explore using property development rights (e.g. atop the proposed depot site) as funding support, and make relevant land use planning application, as well as develop suitable contract procurement arrangements, prepare tender documents and provide assistance in tendering						
				Sub-total	49.8	#
(v) formulate operation, management and maintenance-related technical details, and assist with the development of relevant regulatory regime for the operation of the system	Professional	28	38	2.0	5.1	
	Technical	40	14	2.0	2.6	
				Sub-total	7.7	#
(b) Supervision of site investigation works ^(Note 3)	Professional	28	38	1.6	4.1	
	Technical	64	14	1.6	3.2	
				Sub-total	7.3	#
				Total	146.3	#

* MPS = Master Pay Scale

Notes

1. The actual man-months and fees will only be known after selection of the consultants.

2. A multiplier of 2.0 is applied to the average MPS salary point to estimate the full staff costs of consultants' staff. A multiplier of 1.6 is applied to the average MPS salary point in the case of resident site staff supplied by the consultants. (As at today, MPS salary point 38 = \$90,540 per month and MPS salary point 14 = \$32,430 per month.)
3. The actual man-months and costs will only be known after completion of the site investigation works.

Remarks

The figures in this Enclosure are shown in constant prices to correlate with the MPS salary point of the same year. The figures marked with # are shown in money-of-the-day prices in paragraph 14.