

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

### **HEAD 706 – HIGHWAYS**

#### **Transport – Roads**

#### **870TH – Feasibility Study on Route 11 (between North Lantau and Yuen Long)**

Members are invited to recommend to the Finance Committee the upgrading of **870TH** to Category A at an estimated cost of \$87.7 million in money-of-the-day prices for carrying out a feasibility study on Route 11 (between North Lantau and Yuen Long) and associated site investigation works.

### **PROBLEM**

We need to carry out a feasibility study (the Study) to establish the technical feasibility and the scope of Route 11 (between North Lantau and Yuen Long) (hereafter referred to as the Route 11) to meet the traffic demand arising from the developments in the Northwest New Territories (NWNT) and North Lantau.

### **PROPOSAL**

2. The Director of Highways, with the support of the Secretary for Transport and Housing, proposes to upgrade **870TH** to Category A at an estimated cost of \$87.7 million in money-of-the-day (MOD) prices for carrying out the Study and the associated site investigation works.

**/PROJECT .....**

**PROJECT SCOPE AND NATURE**

3. The scope of **870TH** comprises –
- (a) an engineering feasibility and infrastructure study for the implementation of Route 11, which includes establishing the engineering technical feasibility and formulating the works implementation strategy;
  - (b) an alignment options study, which includes assessing the planning and configurations of the roads;
  - (c) a port operations, and marine traffic impact and safety study arising from Route 11 crossing the channel between Tsing Lung Tau and North Lantau;
  - (d) a preliminary environmental review, which includes assessing the possible environmental impacts arising from the works, recommending associated mitigating measures and carrying out preparation works for the environmental impact assessment pursuant to the Environmental Impact Assessment Ordinance (Chapter 499);
  - (e) consultation exercises with relevant stakeholders and the public; and
  - (f) employment and supervision of contractors for conducting the associated site investigation works.

———— A plan showing the preliminary alignment of Route 11 is at Enclosure 1.

4. Subject to funding approval of the Finance Committee (FC), we plan to commence the Study in the first half of 2018 for completion by 2020.

**/JUSTIFICATION .....**

## JUSTIFICATION

5. At present, within the NWNT, the population in Tuen Mun and Yuen Long are about 500 000 and 600 000<sup>1</sup> respectively. There is a number of major trunk roads within the region, including Tuen Mun Road, Yuen Long Highway, Castle Peak Road, San Tin Highway, Kam Tin Highway, Kong Sham Western Highway and Tsing Long Highway (including Tai Lam Tunnel and its connecting roads), etc., for the intra-district and inter-district connections, which facilitate commuting to and from the NWNT. In addition, the construction of the Tuen Mun-Chek Lap Kok Link (TM-CLKL) is in full swing. When the project is completed, it will become the most direct route to connect the NWNT with the Hong Kong-Zhuhai-Macao Bridge (HZMB) Boundary Crossing Facilities, Hong Kong International Airport (HKIA) and North Lantau.

6. In view of the future proposed developments in the NWNT, including the Hung Shui Kiu New Development Area (HSK NDA), Yuen Long South (YLS) development, housing developments along the West Rail Line, Yuen Long Industrial Estate Extension, the proposed logistics and other industrial developments in Tuen Mun Areas 38 and 49 and the rezoning of land parcels within the region, we reviewed in 2015 the overall traffic demands of the NWNT in the next 10 years or even in the longer term. In July 2015, we reported to the Legislative Council Panel on Transport our planning work in respect of the NWNT Traffic and Infrastructure Review (please refer to LC Paper CB(4)1306/14-15(04) for details). Regarding the long term planning of the major trunk roads of NWNT, we have already pointed out that we would bid for resources to conduct a feasibility study on Route 11 which links up North Lantau and Yuen Long.

7. The construction of Route 11 is to match the large-scale developments at HSK NDA and YLS in order to increase the housing and economic land supply in Hong Kong. Concomitant with Tin Shui Wai, Yuen Long and Tuen Mun New Towns, HSK NDA and YLS developments will become a major new town development cluster in the western part of Hong Kong. For HSK NDA, the first population intake is currently anticipated in 2024. Other major works will commence successively and the whole HSK NDA will be completed in 2037/38. By that time, 61 000 new housing flats will be provided to accommodate a new population of about 176 000, and about 150 000 employment opportunities will be created, bringing job opportunities closer to residents living in HSK, Tin Shui Wai, Tuen Mun and Yuen Long. For YLS development, the first population intake is currently anticipated in 2027. Upon completion of the project by 2038, it will provide 28 500 housing flats to accommodate about 85 400 new population and about 10 500 employment opportunities.

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<sup>1</sup> According to the “Profile of Hong Kong Population Analysed by District Council District, 2015” issued by the Census and Statistics Department of the Government in July 2016, the population of Tuen Mun and Yuen Long were 495 900 and 607 200 respectively.

8. The proposed Route 11 will be a strategic highway to support the proposed developments in the NWNT. Based on the latest traffic forecast currently available, after the commissioning of TM-CLKL, even with the completion of Tuen Mun Western Bypass (TMWB), the traffic congestion of Tuen Mun Road, Tai Lam Tunnel and Ting Kau Bridge would get serious during peak hours in around 2036. Subject to the findings of the Study and if Route 11 is to be commissioned before 2036, the traffic conditions at Tuen Mun Road, Tai Lam Tunnel and Ting Kau Bridge during peak hours would improve. In other words, Route 11 can relieve the traffic congestion on the roads to and from the NWNT upon its completion. The volume/capacity ratios<sup>2</sup> of the major roads in the NWNT during the morning peak hours are tabulated as follows –

Major Roads	Without Route 11		With Route 11
	2031	2036	2036
<b>Tuen Mun Road (Siu Lam Section)</b>	1.3	1.3	1.1
<b>Tuen Mun Road (Sham Tseng Section)</b> – <i>West of Tsing Lung Tau</i>	1.2	1.2	1.1
<b>Tai Lam Tunnel</b>	1.2	1.3	1.1
<b>Ting Kau Bridge</b>	1.1	1.2	0.9

9. Furthermore, Route 11 will provide the third vehicular access to Lantau Island in addition to Tsing Ma Bridge/Kap Shui Mun Bridge and TM-CLKL. The incident of temporary closure of Kap Shui Mun Bridge due to an accidental clash by a vessel on 23 October 2015 had caused great concerns to the society about the need for improving the robustness of the land transport system linking HKIA, Lantau Island and the urban areas.

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<sup>2</sup> A volume to capacity (v/c) ratio is used to reflect the traffic situation during peak hours. A v/c ratio less than 1.0 means the situation is acceptable. A v/c ratio above 1.0 indicates the onset of mild congestion and a v/c ratio between 1.0 and 1.2 indicates a manageable degree of congestion. A v/c ratio higher than 1.2 means the congestion is getting serious.

10. We understand that many objections were received during the implementation of ex-Route 10, including the environmental impacts, cost-effectiveness of the project, and how the new road could share the traffic flows of Tuen Mun Road and Tai Lam Tunnel, etc. Therefore, when we carry out feasibility study for Route 11, in addition to making reference to the latest planning and development parameters, we will also review the views on the ex-Route 10 and have a collective consideration. We will consult the relevant District Councils, Rural Committees and the public as appropriate when there are preliminary findings.

11. Route 11 is a complex and large-scale project. Based on past experience in the implementation of large-scale transport infrastructure project, generally it will take more than 10 years from preliminary planning to commissioning to go through the investigation<sup>3</sup>, detailed design<sup>4</sup> and construction<sup>5</sup> stages. If Route 11 cannot be implemented in time, there would be very severe traffic congestion in Tuen Mun Road, Ting Kau Bridge and Tai Lam Tunnel during morning peak hours in around 2036. Therefore, it is necessary to commence the feasibility study on Route 11 at this stage to facilitate the development of the NWNT in a timely manner and to cope with the associated traffic demand. After completing the Study, the Government will consider the way forward according to the results of the Study and the availability of resources. If it is decided to continue with the implementation of Route 11, we have to follow the established public works procedures in carrying out the investigation, detailed design, and construction. We will apply the required funding from the Legislative Council in phases. Detailed implementation timetable of different stages would be ascertained gradually having regard to a number of factors including the views of the stakeholders, construction difficulties and the progress of statutory procedures.

## FINANCIAL IMPLICATIONS

12. We estimate the cost of the Study and the associated site investigation works to be \$87.7 million, with breakdown as follows –

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- <sup>3</sup> Investigation stage covers preliminary design, consultation of stakeholders, carrying out environmental impact assessment and applying Environmental Permit according to the Environmental Impact Assessment Ordinance (Chapter 499), gazettal of the road scheme and applying authorization of the associated works according to the Roads (Works, Use and Compensation) Ordinance (Chapter 370), etc.
- <sup>4</sup> Detailed design stage covers detailed design, land resumption and handling the associated compensation, preparation of contract documents and tendering, etc.
- <sup>5</sup> Construction stage covers actual construction, testing and commissioning, handing over the completed works to the management and maintenance parties, etc.

		\$ million	
(a)	Consultants' fees	61.0	
	(i) engineering feasibility and infrastructure study	24.3	
	(ii) alignment options study	11.0	
	(iii) port operations and marine traffic impact and safety study	9.1	
	(iv) preliminary environmental review	12.3	
	(v) consultation exercises with relevant stakeholders and the public	3.0	
	(vi) supervision of associated site investigation works	1.3	
(b)	Site investigation works	12.6	
(c)	Contingencies	6.5	
	Sub-total	80.1	(in September 2017 prices)
(d)	Provision for price adjustment	7.6	
	Total	87.7	(in MOD prices)

13. In view of the complex and multi-disciplinary nature of the study requirements, we propose to engage consultants to undertake the Study and supervise the associated site investigation works. A breakdown of the estimates for the consultants' fees by man-months is at Enclosure 2.

14. Subject to funding approval, we project to phase the expenditure as follows –

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Year	\$ million (Sept 2017)	Price adjustment factor	\$ million (MOD)
2017-18	3.6	1.00000	3.6
2018-19	27.9	1.05125	29.3
2019-20	34.7	1.10907	38.5
2020-21	13.9	1.17007	16.3
	<hr/> 80.1 <hr/>		<hr/> 87.7 <hr/>

15. 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 from 2017 to 2021. We will engage consultants to undertake the Study on a lump sum basis. We will tender the proposed site investigation works under a standard re-measurement contract because the quantity of works involved may vary depending on actual ground conditions. The contract will provide for price adjustment.

16. The Study and the associated site investigation works will not give rise to any recurrent consequences.

## **PUBLIC CONSULTATION**

17. Members of the Tuen Mun District Council discussed the external connectivity of road network of Tuen Mun at the Traffic and Transport Committee meeting on 14 November 2014 and at the District Council meeting on 6 January 2015 and in general requested expeditious implementation of Route 11. Members of the Yuen Long District Council passed a member's motion at the Traffic and Transport Committee meeting on 22 July 2016 requesting the Government to expedite the study to construct Route 11 (North Lantau and Yuen Long) to cope with the future traffic demand in Yuen Long.

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18. We consulted the Legislative Council Panel on Transport on the funding application of the project on 17 March 2017. The Panel supported submitting the funding proposal to the Public Works Subcommittee (PWSC) for consideration. The supplementary information requested by the members was submitted on 15 June 2017.

## **ENVIRONMENTAL IMPLICATIONS**

19. The proposed Route 11 is a designated project under the Environmental Impact Assessment Ordinance (Chapter 499) and an Environmental Impact Assessment for the proposed Route 11 will be carried out. However, the Study is not a designated project and will not cause long-term adverse environmental impacts. We have included in the project estimates the cost of implementing suitable pollution control measures to mitigate short-term environmental impacts arising from the site investigation works under the Study.

20. The proposed site investigation works will only generate very little construction waste. We will require the consultants to fully consider measures to minimize the generation of construction waste and to reuse/recycle construction waste as much as possible in the future implementation of the construction projects.

## **HERITAGE IMPLICATIONS**

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

## **LAND ACQUISITION**

22. The Study and the associated site investigation works do not require any land acquisition.

## **BACKGROUND INFORMATION**

23. Route 11 is based on the concept of Public Works Programme (PWP) Item No. **519TH** “Route 10 – North Lantau to Yuen Long Highway” (ex-Route 10). Background information on ex-Route 10 and other roads is at Enclosure 3. The layout plan of the alignment of ex-Route 10 is at Enclosure 4.

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24. We reviewed in 2015 the overall long-term external traffic demands for the NWNT and considered there was a need to study the feasibility of Route 11. Thus, we upgraded PWP Item No. **870TH** to Category B in October 2015.

25. The Study and the associated site investigation works will not directly involve any tree removal or planting proposals. We will require the consultants to take into consideration the need for tree preservation during the Study.

26. We estimate that the Study and the associated site investigation works will create about 30 jobs (3 for labourers and 27 for professional/technical staff)<sup>6</sup> providing a total employment of 850 man-months.

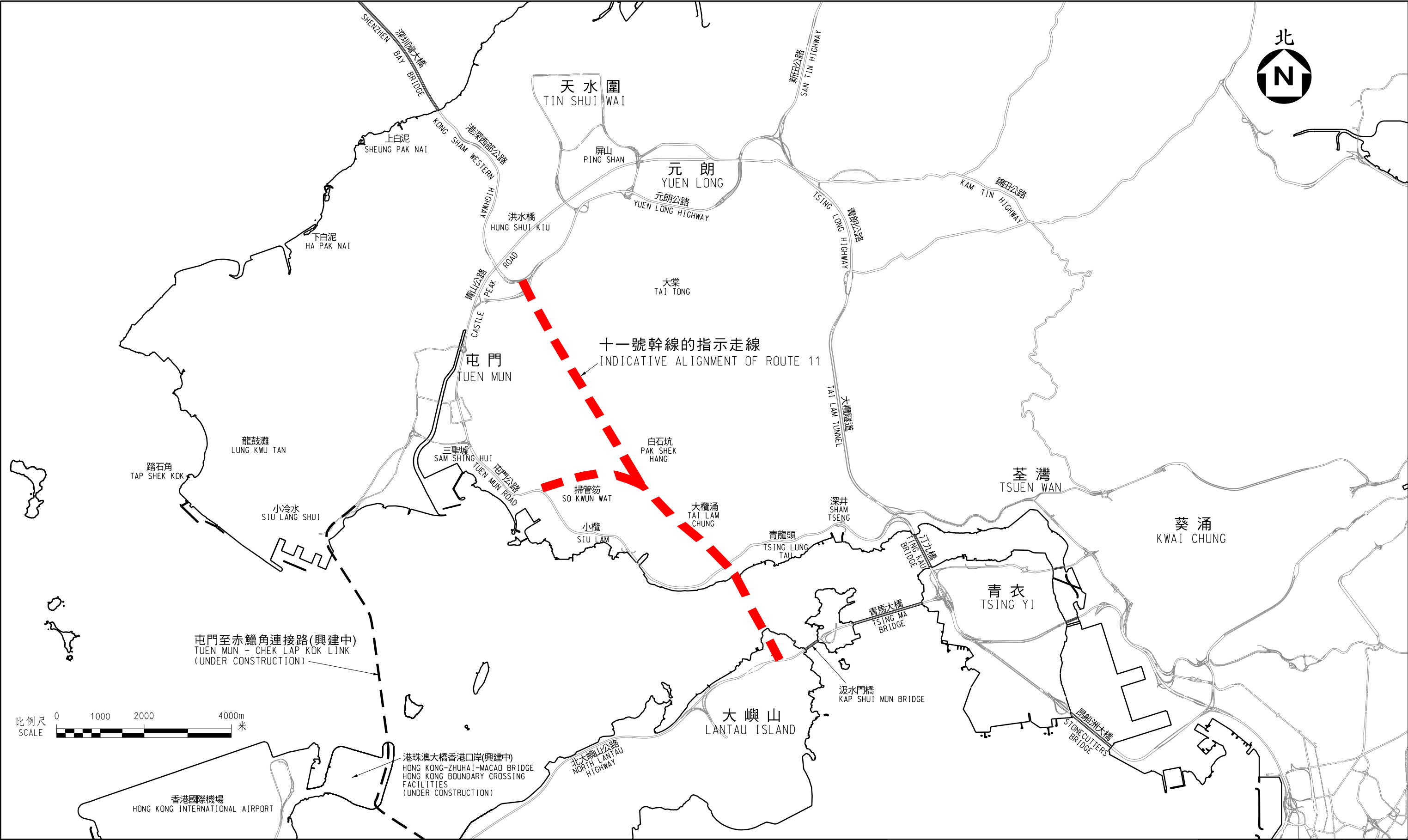
27. In June 2017, we submitted PWSC(2017-18)16 which invited Members to recommend to the FC the upgrading of **870TH** to Category A. The paper was not yet included in the PWSC agenda in the 2016-17 legislative session. This paper supersedes PWSC(2017-18)16 to update the works programme and phasing of expenditure.

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Transport and Housing Bureau  
October 2017

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<sup>6</sup> 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 Study and the supervision of the associated site investigation works.



<p>圖則名稱 plan title</p> <p>工務計劃項目第870TH號</p> <p>十一號幹線(北大嶼山至元朗) - 指示平面圖</p> <p>PWP ITEM NO. 870TH</p> <p>ROUTE 11 (BETWEEN NORTH LANTAU AND YUEN LONG) - INDICATIVE LAYOUT PLAN</p>	<table> <tr> <td>圖則編號 plan no.</td><td>比例 scale</td></tr> <tr> <td>HMW6870TH-SK0023</td><td>1:80000</td></tr> <tr> <td colspan="2"> <p>© 版權所有 COPYRIGHT RESERVED</p> <p> HIGHWAYS DEPARTMENT HONG KONG 路政署</p> </td></tr> </table>	圖則編號 plan no.	比例 scale	HMW6870TH-SK0023	1:80000	<p>© 版權所有 COPYRIGHT RESERVED</p> <p> HIGHWAYS DEPARTMENT HONG KONG 路政署</p>	
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**870TH – Feasibility Study on  
Route 11 (between North Lantau and Yuen Long)**

**Breakdown of estimates for consultants' fees  
(in September 2017 prices)**

<b>Consultants' staff costs</b> (Note 1)		<b>Estimated man-months</b>	<b>Average MPS* salary point</b>	<b>Multiplier</b> (Note 2)	<b>Estimated fee (\$ million)</b>
(a) engineering feasibility and infrastructure study	Professional	122	38	2.0	19.2
	Technical	93	14	2.0	5.1
(b) alignment options study	Professional	60	38	2.0	9.5
	Technical	28	14	2.0	1.5
(c) port operations and marine traffic and safety study	Professional	43	38	2.0	6.8
	Technical	41	14	2.0	2.3
(d) preliminary environmental review	Professional	58	38	2.0	9.1
	Technical	58	14	2.0	3.2
(e) consultation exercises with relevant stakeholders and the public	Professional	14	38	2.0	2.2
	Technical	14	14	2.0	0.8
(f) supervision of associated site investigation works	Professional	5	38	2.0	0.8
	Technical	10	14	2.0	0.5
<b>Total</b>					<b>61.0</b>

\* MPS = Master Pay Scale

**Notes**

1. The actual man-months and fees will only be known after selection of the consultants through the usual competitive bidding system.
2. A multiplier of 2.0 is applied to the average MPS salary point to estimate the full staff costs of consultants' staff, including overheads and profit, as the employed staff will work in the consultants' offices (subject to Finance Committee's approval, MPS point 38 = \$78,775 per month and MPS point 14 = \$27,485 per month).

**Information on PWP Item No. 519TH “Route 10 – North Lantau to Yuen Long Highway” and other roads**

A PWP Item No. **519TH** entitled “Route 10 – North Lantau to Yuen Long Highway” (ex-Route 10) was in Category C in 1993 and a feasibility study was carried out in 1995. The scope of the works of **519TH** “Route 10 – North Lantau to Yuen Long Highway” consisted of three parts –

- (a) Southern Section (section between North Lantau and So Kwun Wat);
- (b) Northern Section (section between So Kwun Wat and Yuen Long Highway);
- (c) other associated civil, geotechnical, landscape, road and drainage works, traffic control and surveillance system (TCSS) for the Southern and Northern Sections.

2. The Southern Section of ex-Route 10 was gazetted under the Roads (Works, Use and Compensation) Ordinance (Chapter 370), in 2000 and 2002. For the Northern Section, the funding proposal for its detailed design was rejected in the meeting of the FC on 8 March 2002. Subsequently, in view of the development of the Hong Kong-Shenzhen Western Corridor, the traffic and transport infrastructure in the NWNT and Lantau was reviewed again in 2002, which comprised formulating feasible road networks and including ex-Route 10 in the review, and establishing the implementation programme and the relative priorities of the recommended roads. Therefore, it was gazetted in 2003 that the Government decided not to follow the original plan to execute the works for ex-Route 10 Southern Section.

3. The Government consulted the Legislative Council Panel on Transport on the result of the review in 2007 (please refer to LC Paper CB(1)2023/06-07(05) for details), and proposed to implement the TM-CLKL and the TMWB to provide a new strategic road linking the NWNT, HZMB Hong Kong Boundary Crossing Facilities, North Lantau and HKIA, and to provide a more direct route for vehicles commuting between the NWNT and Northwest Lantau. Ex-Route 10 was retained as a long term option for consideration when there was further development in the NWNT. The Members in general supported the above suggestions.

4. Upon commissioning of the Hong Kong-Shenzhen Western Corridor (now known as Shenzhen Bay Bridge) and Deep Bay Link (now known as Kong Sham Western Highway), the Transport Department numbered the road linking Shenzhen Port Area and Lam Tei as Route 10, and renamed the road linking North Lantau and Yuen Long as Route 11.

5. Funding for TM-CLKL was approved by the Legislative Council in 2013, and its construction is currently under way. Apart from providing a more direct route for vehicles commuting between the NWNT and Northwest Lantau, TM-CLKL upon completion can also spare some capacity of existing roads (including Tuen Mun Road) to ease traffic. For TMWB, the Highways Department has consulted stakeholders many times on its alignment, portal and design in the past few years. Having considered the comments of various parties and upon further planning, the Highways Department consulted the relevant District Councils and Rural Committees in the latter half of last year on the latest proposed alignment and they had no objection to the investigation study which is based on the latest proposed alignment. The Highways Department commissioned the investigation study and preliminary design in October this year. The investigation study is expected to take about two years. The study will look into the environmental, traffic and other impact assessments, and will also review the project costs, implementation arrangement and timetable.

6. Regarding Tuen Mun Road, the Government upgraded the road to the current design standard as far as practicable. Improvement and reconstruction of the section of Tuen Mun Road from Tsuen Wan to Sham Shing Hui in Tuen Mun commenced in 2008. The works included reconstruction and resurfacing of pavement, widening of traffic lanes, provision of hard shoulders, improvement of the traffic control and surveillance system and retrofitting of noise barriers and noise enclosures. The works were completed in end 2014. However, there is limited space to further widen Tuen Mun Road. In the face of the growth in traffic brought about by long term development, we consider it necessary to explore other options to fulfil the long-term traffic demand of the NWNT.



