

**For discussion
on 28 January 2008**

Legislative Council Panel on Transport

**Reconstruction and Improvement of Tuen Mun Road and
Widening of Tuen Mun Road at Tsing Tin Interchange**

PURPOSE

This paper seeks Members' views on our proposal to upgrade the following two projects under the Public Works Programme (PWP) to Category A in order to carry out the proposed construction works –

PWP Item No. 746TH – Reconstruction and Improvement of Tuen Mun Road; and

PWP Item No. 801TH – Widening of Tuen Mun Road at Tsing Tin Interchange.

746TH RECONSTRUCTION AND IMPROVEMENT OF TUEN MUN ROAD

BACKGROUND

2. Tuen Mun Road (TMR) is a major link between Tuen Mun and Kowloon, running from Yuen Long Highway at Lam Tei Interchange to Tsuen Wan Road, with slip roads connecting with Castle Peak Road in Tsuen Wan. TMR was designed and built in the 1970s. Most of its at-grade sections have already reached the end of their service life and are now in a state beyond economical repair. It is necessary to upgrade TMR according to the current design standards as far as practicable.

PROJECT SCOPE AND NATURE

3. The scope of works for **746TH** comprises –
- (a) reconstruction of about 13.4 kilometres (km) at-grade sections of TMR and resurfacing of about 2.1 km of TMR on highway structures between Tsuen Wan and Sam Shing Hui;
 - (b) improvement of the road design of TMR according to the current expressway standards as far as practicable, including the widening of traffic lanes, provision of hard shoulders 3.65 metre (m) wide and improvement of sightlines, gradients, road curvature, super-elevation, etc.;
 - (c) modification of highway structures including viaducts, bridges, box culverts, underpasses, footbridges, subways, as well as demolition and reprovision of a footbridge;
 - (d) lengthening of the merging/diverging lanes at the interchanges at Sham Tseng and Siu Lam, and the exit ramp from Tsing Long Highway to westbound TMR;
 - (e) replacement of barriers at the central median along the at grade road by concrete profile barriers and reprovisioning of barriers along the edge of the at-grade road and the edge parapets of bridges and viaducts to current standards;
 - (f) upgrading works to roadside slopes;
 - (g) installation along TMR –
 - (i) a semi-enclosure about 520 m long and 9.0 m high at Castle Peak Bay;
 - (ii) cantilevered noise barriers about 180 m long and 5.6 m high and 740 m

long and 7.6 m high at Tsing Lung Tau¹;

- (iii) cantilevered noise barriers about 260 m long and 8.3 m high and vertical noise barriers about 605 m long and 2 m high at Anglers' Beach;
 - (iv) a semi-enclosure about 225 m long and 9 m high; cantilevered noise barriers about 355 m long and 8.3 m high and vertical noise barriers about 60 m long and 1.5 m high at Sham Tseng;
 - (v) cantilevered noise barriers about 480 m long and 8 m high and vertical noise barriers about 520 m long and 4 m high at Yau Kom Tau;
 - (vi) a semi-enclosure about 130 m long and 5.5 m high and cantilevered noise barriers about 2 060 m long and 8 m high at Tsuen Wan; and
- (h) upgrading of the traffic control and surveillance system (TCSS);
 - (i) installation of a fire fighting system; and
 - (j) associated civil, structural, landscaping works and works on environmental mitigation, drainage, road lightings, water mains and traffic aids.

A plan showing the proposed works is at Enclosure 1.

4. We have substantially completed the detailed design for the project. We plan to commence construction in May 2008 for completion in phases by April 2014.

¹ The proposed noise barriers at Tsing Lung Tau, which encompass the scope of works under Public Works Programme Item No. 786TH "Retrofitting of noise barriers on Tuen Mun Road at Tsing Lung Tau", have been subsumed under PWP Item 746TH. We upgraded PWP Item 786TH to Category B in October 2004.

JUSTIFICATION

5. The existing section of TMR between Tsuen Wan and Sam Shing Hui is a dual three-lane carriageway about 15.5 km long. It comprises about 13.4 km at-grade roads and 2.1 km bridge structures. The road has been in service for more than 25 years. Most of its at-grade sections have already reached the end of their service life² and are now beyond economical repair.

6. The annual maintenance cost for every square metre (m²) of TMR is about \$43, which is about 22% higher than that for both the adjacent Yuen Long Highway and San Tin Highway. In the past three years from April 2004 to March 2007, TMR had experienced an average of 407 lane closures per annum for road resurfacing works. This frequency is disproportionately higher than the 164 and 93 lane closures per annum for Yuen Long Highway (8.5 km long) and San Tin Highway (6.6 km long) respectively. This significantly affects the smooth operation of TMR. It is expected that the situation will become worse with the continued aging of the road. It is necessary to reconstruct the at-grade sections of TMR in order to reduce the frequency of repairing and the resulting traffic disruptions.

7. TMR was built according to the design standards over 25 years ago. Its design is not completely in line with current expressway standards. While the safety of motorists is assured³, it is necessary to upgrade TMR according to the current expressway standards as far as practicable in order to improve the traffic flow and further enhance road safety. The reconstruction programme will include the widening of lanes, provision of hard shoulders, improvement of sightlines, gradients, road curvature, super-elevation, etc.

8. The merging/diverging lanes of the existing interchanges at Sham Tseng and Siu Lam and the exit ramp from Tsing Long Highway to

² The design service life of at-grade road pavement is 20 years while that for highway bridge structures is 120 years.

³ The Report on Enhancement of Highway Safety issued by the Independent Expert Panel on Tuen Mun Road Incident in December 2003 stated that :
“Having examined the past accident statistics, the Panel considers that Tuen Mun Road is intrinsically safe as seen by its accident rates, which are about average for all expressways...” (Page vii, para. 20)
“The Panel considers that the marginally lower standards of Tuen Mun Road at a few locations, due to changes in standards over time, mainly affect the comfort of motorists but not their safety...” (Page 118, para. 10.22)

westbound TMR, with lengths ranging from 64 m to 90 m, are too short to meet current traffic engineering standards of 89 m to 210 m. It is necessary to lengthen the merging/diverging lanes at these locations to enable motorists to enter and exit TMR more smoothly and safely.

9. In order to construct hard shoulders on both sides of TMR and lengthen the merging/diverging lanes, it is necessary to form space by cutting and filling slopes, constructing retaining walls and widening the existing bridges/viaducts. We will take the opportunity to improve the affected slopes up to current standards.

10. In order to provide better vehicle containment and enhance road safety, we will replace the barriers along the central median of TMR with standard concrete profile barriers. We will also rebuild the barrier/edge parapets, with modifications where necessary, when the edge of the at-grade road and bridge/viaducts are realigned under the project.

11. There are about 300 man-made slopes along TMR. These slopes were mostly constructed together with TMR back in the 1970s. We will take the opportunity to upgrade these roadside man-made slopes along TMR to the current standards and design, as well as implement necessary mitigation measures for any natural terrain hazards identified.

12. In November 2000, the Administration promulgated a policy to address the noise impact of existing roads on neighbouring residents. Under this policy, direct engineering solutions by way of retrofitting of barriers and enclosures, and resurfacing with low noise material, will be implemented where practicable on existing roads where the noise level exceeds the limit of 70 dB(A) $L_{10}(1 \text{ hour})$ ⁴.

13. At present, about 5 200 dwellings adjacent to TMR at six locations in Tsuen Wan, Yau Kom Tau, Sham Tseng, Anglers' Beach, Tsing Lung Tau and Castle Peak Bay are exposed to excessive traffic noise of up to 84 dB(A) $L_{10}(1 \text{ hour})$. In line with the above policy for mitigating traffic noise from existing roads, we will take the opportunity to install noise barriers and semi-enclosures on these road sections in order to reduce the noise impact. The proposed noise barriers and semi-enclosures would lower the existing traffic noise levels on the affected sensitive receivers by 1 to 21 dB(A) $L_{10}(1 \text{ hour})$ benefiting about 4 100 dwellings.

⁴ $L_{10}(1 \text{ hour})$ is the noise level exceeded for 10% of a one-hour period, generally used for road noise at peak traffic flow. The noise limit of 70 dB(A) for residential premises as stipulated in the Hong Kong Planning Standards and Guidelines is adopted as the administrative guideline for retrofitting projects identified under the policy introduced in 2000.

14. The existing TCSS consists of a closed circuit television (CCTV) system and traffic congestion indicators⁵ along TMR. We will take the opportunity to upgrade the TCSS to enhance the efficiency and effectiveness of traffic and incident management. The upgrading works include replacement of the existing cables, addition of eight cameras for the CCTV system, and installation of variable message signs to provide instant traffic information to motorists.

15. We will also take this opportunity to install a fire fighting system to enhance fire fighting ability along TMR in accordance with current standards.

FINANCIAL IMPLICATIONS

16. We estimate the cost of the project to be \$4,620.5 million in money-of-the-day (MOD) prices made up as follows –

	\$ million
(a) Roads and drains	691.0
(b) Earthworks	629.6
(c) Modifications to highway structures	252.9
(d) Slope upgrading works	714.5
(e) Noise mitigation measures	594.0
(i) semi-enclosures	280.0
(ii) cantilevered noise barriers	286.0
(iii) vertical noise barriers	28.0
(f) TCSS	244.5
(g) Landscaping works	261.4
(h) Fire fighting system	105.3

⁵ A traffic congestion indicator is a message sign advising motorists on traffic condition ahead well before they enter the expressway.

		\$ million	
(i)	Site investigation and structural condition survey	97.1	
(j)	Consultant's fees	386.2	
	(i) construction supervision and contract administration	14.9	
	(ii) resident site staff cost	371.3	
(k)	Contingencies	397.6	
	Sub-total	4,374.1	(in September 2007 prices)
(l)	Provision for price adjustment	246.4	
	Total	4,620.5	(in MOD prices)

17. Item (a) under paragraph 16 includes road pavements, street furniture, traffic signs, road markings, drainage and temporary traffic arrangement measures. Item (b) under paragraph 16 includes slope cutting, embankment filling and retaining wall construction. Item (i) under paragraph 16 includes carrying out site investigation works which cannot be done during the detailed design stage due to access difficulties and also a condition survey on the highway structures to be modified under the project.

PUBLIC CONSULTATION

18. We consulted the Traffic and Transport Committee (T&TC) of the Tuen Mun District Council (TMDC), Tsuen Wan District Council (TWDC) and Yuen Long District Council (YLDC) on 10 November 2006, 28 November 2006 and 14 December 2006 respectively on the proposed reconstruction and improvement of TMR, including the noise barrier schemes. Members of the three district councils generally supported the projects and urged for their early implementation. Some TMDC members requested the provision of a bus-bus interchange (BBI) at Siu Lam and an emergency exit at So Kwun Wat; and enhancement of the traffic flow capacity at Sham Tseng Interchange. We explained to these members that

we would examine the feasibility and practicability of their proposals. We are now investigating the provision of the BBI at Siu Lam and improvement to Sam Tseng Interchange as separate projects and have been keeping the TMDC and TWDC informed of the development. As regards the provision of an emergency exit at So Kwun Wat, we found that it is not technically feasible due to operational difficulties.

19. We gazetted the road scheme for the proposed improvement works to TMR under the Roads (Works, Use and Compensation) Ordinance (the Ordinance) (Cap. 370) on 4 May 2007 and received 115 objections. Six of these objections have subsequently been withdrawn unconditionally and 66 withdrawn conditionally⁶. The objectors of the remaining 43 objections have maintained their objections or have not indicated their withdrawal. Details of the objections are as follows –

- (a) Two objectors objected to the provision of cantilevered noise barrier fronting only two blocks of Rhine Garden and requested the provision of a semi-enclosure to protect the entire premises. They also requested the Administration to consider the provision of indirect technical remedies in the form of window insulation and air-conditioning if their proposal is found impractical.

We explained to the objectors that extension of the noise barriers or provision of a semi-enclosure to protect the concerned premises was technically infeasible as the noise structure would obstruct the sightline of motorists thereby, hence causing road safety hazards. Also, the objectors' requests for indirect technical remedies could not be acceded to as it is not government policy to provide indirect technical remedies, such as double glazed windows and air-conditioning, for buildings affected by traffic noise from existing roads.

⁶ Under the Ordinance, an objection that is withdrawn unconditionally is treated as if the objector has not lodged the objection. An objection which is not withdrawn or withdrawn with conditions is treated as an unresolved objection which is then submitted to the Chief Executive-in-Council for consideration.

The objectors then further requested the Administration to consider -

- (i) the extension of the semi-enclosure at Rhine Terrace, a building of approximately 270 m to the east, towards Rhine Garden as much as possible;
- (ii) the extension of the Tuen Mun bound cantilevered noise barrier up the small hill fronting Blocks 3 and 4 of Rhine Garden;
- (iii) the construction of a portal spanning over a road outside Rhine Garden near its connection to TMR as a support for the installation of noise barriers;
- (iv) the laying of low noise road surfacing on the section of TMR fronting the concerned premises; and
- (v) greening on the rocky slopes at Sham Tseng Interchange.

We explained to the objectors that extension of the semi-enclosure is limited by traffic safety considerations. The proposed construction of a portal over the road outside Rhine Garden for supporting noise barriers would also not be structurally feasible. To address the objectors' concerns, we proposed to modify the road scheme by extending the Tuen Mun bound cantilevered noise barriers by approximately 100 m up the small hill fronting Blocks 3 and 4 of Rhine Garden; laying low noise road surfacing on the road section fronting the concerned premises and greening up the rock slopes at Sham Tseng Interchange. Despite our explanation and the proposed modifications to the road scheme, the two objectors maintained their objections.

- (b) Two objections are related to the originally proposed cantilevered noise barriers at Castle Peak Bay. The objectors considered that the proposed noise barriers could not adequately address the noise problem and requested full noise enclosures. They also raised concern on the noise and air pollution arising from the construction works and the safety and privacy of residents due to the road being nearer the affected premises. Objectors of one of the objections were of the view that widening should be made towards the hillside and that the proposed reconstruction of TMR without additional lanes was not adequate to meet traffic demand. The objectors were also concerned about the possible loss of trees and considered that Government should provide subsidies for air conditioning and double glazed windows to residents in the light of the nuisance caused during construction.

To address the objectors' concern, we proposed to modify the road scheme by replacing cantilevered noise barriers with semi-enclosures outside Castle Peak Bay. We explained to the residents that we would closely monitor works progress to ensure minimal disturbance. We assured them that there was adequate clearance between the road and the building in addition to the presence of barriers, etc. and the safety and privacy of residents would not be compromised. We explained that we had taken care to minimize the cutting of trees during design and included planting proposals. We also advised the representatives of the objectors of one objection of the technical constraints in widening the road towards the hillside. As regards the suggestion for additional lanes, we explained that no traffic need for such had been identified. Also, the objectors' request for subsidies could not be acceded to as it is not government policy to provide indirect technical remedies, such as double glazed windows and air-conditioning, for buildings affected by traffic noise from existing roads. The objectors of one objection withdrew their objection conditionally after noting the modified proposal and the explanations. Another objector withdrew his objection unconditionally.

- (c) One objector considered that there should be noise mitigation measures outside Greenview Terrace to protect the adjacent residents. She was also concerned that there would be tree felling on the slopes facing Greenview Terrace, causing environmental degradation.

To address the objector's concern, we proposed to modify the road scheme by extending two layers of proposed cantilevered noise barriers westwards to cover Greenview Terrace. We also advised that the widening of the section of TMR fronting Greenview Terrace would be carried out in the median area and that the slopes facing Greenview Terrace would not be affected. The objector withdrew her objection conditionally after noting the modified proposal and the explanation.

- (d) Two objections were of the view that the proposed cantilevered noise barriers at the Sam Shing Hui section of TMR could not effectively protect Kam Fai Garden nearby. They requested the Administration to provide a noise enclosure in lieu of the cantilevered noise barriers. To address their concern, we proposed to provide a semi-enclosure at the eastbound carriageway of TMR fronting Kam Fai Garden as a replacement of the cantilevered noise barriers to help reduce traffic noise generated from vehicles climbing uphill. However, as there is a proposal to construct a new slip road connecting TMR Town Centre section with TMR expressway at the said location under a separate project⁷, we proposed to implement the semi-enclosure under the upcoming project, subject to further study and the results of the gazettal of that project. Noting our explanation and proposals, one objection was withdrawn unconditionally and the other was maintained.

⁷ We upgraded **819TH** "Traffic improvements to Tuen Mun Road Town Centre Section" to Category B in March 2007.

- (e) 108 objections expressed concerns that the provision of cantilevered barriers outside The Panorama would not effectively mitigate the traffic noise generated by heavy vehicles travelling up the slip road between Castle Peak Road and TMR during night-time. The objectors requested the provision of a semi-enclosure in lieu of cantilevered noise barrier along the slip road.

To address their objections, we have modified the road scheme to incorporate an additional semi-enclosure 130 m long along the upramp of the slip road.

Subsequent to our explanation and offer of incorporating an additional semi-enclosure 130 m long along the upramp of the slip road, four objectors withdrew their objections unconditionally and 64 objectors withdrew their objections conditionally subject to the implementation of the proposed modifications. The remaining 40 objectors have either mismatched signatures on their withdrawal reply slips compared to those on the corresponding objection letters or not indicated their withdrawal. These objections are therefore regarded as unresolved.

20. Having considered the unresolved objections and the proposed modifications, the Chief Executive-in-Council authorised the proposed works under the Ordinance on 15 January 2008. The notice of authorisation will be gazetted on 25 January 2008.

21. We briefed the Legislative Council Panel on Transport (the Panel) on the progress of the project on 24 November 2006. Members supported the early implementation of the project.

22. We have consulted the Appearance of Bridges and Associated Structures⁸ on the aesthetic design of the proposed noise barriers under the project. The Committee accepted the proposed aesthetic design.

⁸ The Advisory Committee on the Appearance of Bridges and Associated Structures, which comprises representatives of the Hong Kong Institute of Architects, the Hong Kong Institution of Engineers, Architectural Services Department, Highways Department, Housing Department, Planning Department and Civil Engineering and Development Department, is responsible for vetting the

ENVIRONMENTAL IMPLICATIONS

23. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We have carried out an environmental review including noise, air and water quality impacts during construction as well as landscape, visual and waste management issues. The review concluded that the project would not cause long-term environmental impacts. Nevertheless, we will implement all the recommended mitigation measures to mitigate environmental impacts to within the established standards and guidelines.

24. We have considered minimising the cutting of existing slopes and maximizing the angle of cut slopes through optimal road alignment design and using pre-cast concrete components in the planning and design stages to reduce the generation of construction waste as much as possible. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated rock and soil materials) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of construction waste to public fill reception facilities⁹. We will encourage the contractor to maximize the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

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

26. We estimate that the project will generate about 2 752 500 tonnes of construction waste. Of these, we will reuse about 2 190 000

design of bridges and other structures associated with the public highway system, including noise barriers and semi-enclosures, from the aesthetic and visual impact points of view.

⁹ Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public reception facilities requires a licence issued by the Director of Civil Engineering and Development.

tonnes (79.6%) of inert construction waste on site and deliver about 540 000 tonnes (19.6%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of about 22 500 tonnes (0.8%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be about \$17.4 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne¹⁰ at landfills).

HERITAGE IMPLICATIONS

27. The project will not affect any declared monuments, proposed monuments and graded historic buildings identified by the Antiquities and Monuments Office. In accordance with the archaeological impact assessment conducted in March 2003 during the investigation and preliminary design assignment (IPDA), some archaeological remains were found adjacent to the TMR site boundary near So Kwun Wat and Siu Lam. The consultants recommended that the works should be carefully monitored at the above locations and further investigation and evaluation will be carried out if necessary.

LAND ACQUISITION

28. The project does not require resumption of private land. However, land clearance will affect 22 structures and 6 families in Tsuen Wan and 170 structures and 9 families in Tuen Mun. The Director of Housing will offer these families accommodation in public housing or temporary housing areas in line with the existing housing policy. We will charge the land acquisition and clearance costs, estimated to be \$7.2 million, to **Head 701** "Land Acquisition". A breakdown of the land clearance costs is at Enclosure 2. We have reviewed the design of the project to minimise the land clearance cost.

TREE PROPOSAL

¹⁰ This estimate has taken into account the cost of developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90/m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

29. Of the about 9 300 no. of trees within the project boundary, about 4 100 no. of trees may be preserved. The proposed works will involve the removal of about 5 200 no. of trees including about 5 190 trees to be felled and about 10 no. of trees to be replanted within the project site. All of the trees to be removed are not important trees¹¹. We will incorporate planting proposals as part of the project, including estimated quantities of about 157 000 no. of trees, 108 500 no. of shrubs and 283 000 square metres of grassed area.

TEMPORARY TRAFFIC DIVERSION PROPOSALS

30. TMR is a major trunk road linking Tsuen Wan with the Northwest New Territories area. We presented the contingency measures to deal with traffic incidents and emergencies in TMR during implementation of this project to TMDC in July 2007. We will further liaise with the TWDC and TMDC on the temporary measures to minimize the impacts of project implementation on the traffic and report regularly about the progress and performance of the temporary traffic arrangements.

801TH WIDENING OF TUEN MUN ROAD AT TSING TIN INTERCHANGE

BACKGROUND

31. The capacity of the existing section of Tuen Mun Road at Tsing Tin Interchange is insufficient to cope with future traffic demand.

PROJECT SCOPE AND NATURE

32. The scope of **801TH** comprises –

¹¹ “Important trees” refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –

- (a) trees of 100 years old or above;
- (b) trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument and trees in memory of important persons or events;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of overall tree size, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- (e) trees with trunk diameter equal or exceeding 1.0 metre (measured at 1.3 metre above ground level), or with height/canopy spread equal or exceeding 25 metres.

- (a) widening of a section of TMR about 240 metre (m) long from dual-two lane to a dual three-lane configuration;
- (b) installation of cantilevered noise barriers of a total length of approximately 190 m ranging from 7 to 8 m in height along the slow lanes of TMR and laying of 195 m long low noise surfacing on each bound of TMR across the full width of the road;
- (c) realignment of four slip roads leading to/from Tsing Tin Interchange with a total length of 380 m;
- (d) associated works including drainage, slope improvement, road lighting, landscaping and traffic aids; and
- (e) implementation of an environmental monitoring and audit (EM&A) programme for the works mentioned in paragraph 32(a) to 32(d) above.

—— A site plan with a cross section of the proposed works is at Enclosure 3.

33. We have substantially completed the detailed design of the project. We plan to commence the construction works in May 2008 for completion in November 2009.

JUSTIFICATION

34. Tsing Tin Interchange connects the Tuen Mun town centre with TMR. It is a dual two-lane carriageway and is currently heavily used. According to the traffic forecast of the Transport Department, this Interchange will not have adequate capacity to cater for the anticipated traffic demand. It is therefore necessary to increase the traffic capacity of this section.

35. The projected volume/capacity (v/c) ratios¹² of TMR at Tsing Tin Interchange during peak hours in 2009, 2011 and 2016 with and without the proposed widening are tabulated below –

V/C ratio of TMR at Tsing Tin Interchange	Year			
	2008	2009	2011	2016
With the proposed road widening works	–	0.7	0.8	0.9
Without the proposed road widening works	1.0	1.1	1.2	1.4

36. To provide space for the widening of TMR, it is necessary to realign four existing slip roads leading to/from TMR at Tsing Tin Interchange. We will also upgrade the existing slopes supporting the slip roads to meet the prevailing standards in conjunction with the realignment works.

FINANCIAL IMPLICATIONS

37. We estimate the cost of this project to be \$60.6 million in MOD prices, made up as follows –

	\$ million
(a) Roads and drains	16.8
(b) Environmental mitigation measures	23.8
(i) noise barriers	23.3
(ii) low noise surfacing	0.5
(c) Slope improvement, road lighting and traffic aids	10.2
(d) Landscaping works	3.5

¹² Volume to capacity (v/c) ratio is an indicator which reflects the performance of a road. A v/c ratio equal to or less than 1.0 means that a road has sufficient capacity to cope with the volume of vehicular traffic under consideration and the resultant traffic will flow smoothly. A v/c ratio above 1.0 indicates the onset of congestion; that above 1.2 indicates more serious congestion with traffic speeds deteriorating progressively with further increase in traffic.

		\$ million	
(e)	Consultants' fees	0.5	
	(i) EM&A ¹³ programme	0.3	
	(ii) Electrical and Mechanical Services Trading Fund ¹⁴ (EMSTF) charges	0.2	
(f)	Contingencies	4.8	
	Sub-total	59.6	(in September 2007 prices)
(g)	Provision for price adjustment	1.0	
	Total	60.6	(in MOD prices)

PUBLIC CONSULTATION

38. We consulted the Traffic and Transport Committee of TMDC on 10 November 2006. Members supported the project and requested its early implementation. We consulted the Leisure and Culture Committee (LCC) of TMDC on 14 August 2007 on the tree felling and planting proposals and the permanent and temporary alienation of part of Castle Peak Road (San Hui) Park. We took into account Members' concern for felling of trees within the Park and their desire for preservation. A site visit was arranged for the LCC members during which we explained our proposal for tree felling and transplanting and the reasons for doing so. Members supported our proposal.

39. We consulted the Environment, Hygiene and District Development Committee of TMDC on 21 September 2007 on the findings of the Environmental Impact Assessment (EIA) study of the project. Members had no adverse comments but requested us to consider the installation of noise barriers along TMR from Tseng Choi Street to Tuen

¹³ We will engage consultants to implement an EM&A programme at an estimated cost of \$300,000 to ensure timely and effective implementation of the recommended environmental mitigation measures.

¹⁴ Since the establishment on 1 August 1996 under the Trading Fund Ordinance, the EMSTF charges government departments for design and technical consultancy services for electrical and mechanical installations provided by the Electrical and Mechanical Services Department. The services rendered for this project include providing technical advice to the Government on high mast lighting works and their impacts on the project from maintenance and general operation points of view.

Mun Heung Sze Wui Road. We explained to Members that the feasibility of the said noise barriers was under investigation in a separate project¹⁵.

40. We have consulted the Appearance of Bridges and Associated Structures¹⁶ on the aesthetic design of the proposed noise barriers under the project. The Committee accepted the proposed aesthetic design.

41. We gazetted the proposed works under the Roads (Works, Use and Compensation) Ordinance (Cap. 370) (the Ordinance) on 27 July 2007 and received no objection. The works was authorised under the Ordinance on 11 October 2007 and the notice of authorisation was gazetted on 18 October 2007.

ENVIRONMENTAL IMPLICATIONS

42. The project is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and an environmental permit is required for the construction and operation of the project. The key environmental concern is traffic noise. We have completed the EIA report for the project and the report was exhibited for public inspection between 14 December 2007 and 12 January 2008 under the EIA Ordinance. No public comments were received and the EPD is in the process of making a decision on the EIA report.

43. The EIA report concluded that the environmental impacts of the project could be controlled to within established criteria under the EIA Ordinance and the Technical Memorandum on EIA Process. We will implement the mitigation measures as recommended in the EIA report and the EM&A manual.

44. The key environmental mitigation measures include the installation of cantilevered noise barriers and laying of low noise road surfacing along the full width of the road at the widened section of TMR.

¹⁵ We upgraded **810TH** "Retrofitting of noise barriers on Tuen Mun Road Town Centre Section" to Category B in January 2007.

¹⁶ The Advisory Committee on the Appearance of Bridges and Associated Structures, which comprises representatives of the Hong Kong Institute of Architects, the Hong Kong Institution of Engineers, Architectural Services Department, Highways Department, Housing Department, Planning Department and Civil Engineering and Development Department, is responsible for vetting the design of bridges and other structures associated with the public highway system, including noise barriers and semi-enclosures, from the aesthetic and visual impact points of view.

45. For impacts during the construction stage, we will control noise, dust and site run-off nuisance to comply with established criteria through the implementation of appropriate mitigation measures in the works contract. We will implement an EM&A programme during the course of construction to ensure that proactive measures are adopted to avoid the occurrence of adverse environmental impacts to the public.

46. We have considered measures in the planning and design stages to minimise the generation of construction waste where possible. These measures include the reviews of the extent for road reconstruction works and road alignments. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste to public fill reception facilities. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

47. We will also require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation measures to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively through a trip-ticket system.

48. We estimate that the project will generate about 14 720 tonnes of construction waste. Of these, we will reuse about 1 746 tonnes (12%) of inert construction waste on site and deliver 11 300 tonnes (77%) of inert construction waste to public fill reception facilities¹⁷ for subsequent reuse. In addition, we will dispose of about 1 674 tonnes (11%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be about \$0.5 million for this project (based on an unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne¹⁸ at landfills).

¹⁷ Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulations. Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

¹⁸ This estimate has taken into account the cost for development, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for

49. Of the 550 trees within the project boundary, 503 will be preserved. The proposed works will involve the removal of 47 trees including 40 trees to be felled and seven to be transplanted within the project site. All trees to be removed are not “important trees”¹⁹. We will incorporate planting proposals as part of the project, including estimated quantities of 47 trees and 2 855 shrubs.

HERITAGE IMPLICATIONS

50. The project will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interests and Government historic sites identified by the Antiquities and Monuments Office.

LAND ACQUISITION

51. The proposed works do not require any land acquisition.

THE WAY FORWARD FOR THE TWO PROJECTS

52. We intend to seek the funding support of the Public Works Sub-Committee and Finance Committee of the Legislative Council on 20 February 2008 and 25 April 2008 respectively to upgrade both projects to Category A. Subject to funding approval, we plan to start construction works for **746TH** in May 2008 for completion in phases by April 2014. As for **801TH**, we plan to start construction works in May 2008 for completion in November 2009.

existing landfill sites (which is estimated at \$90/m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

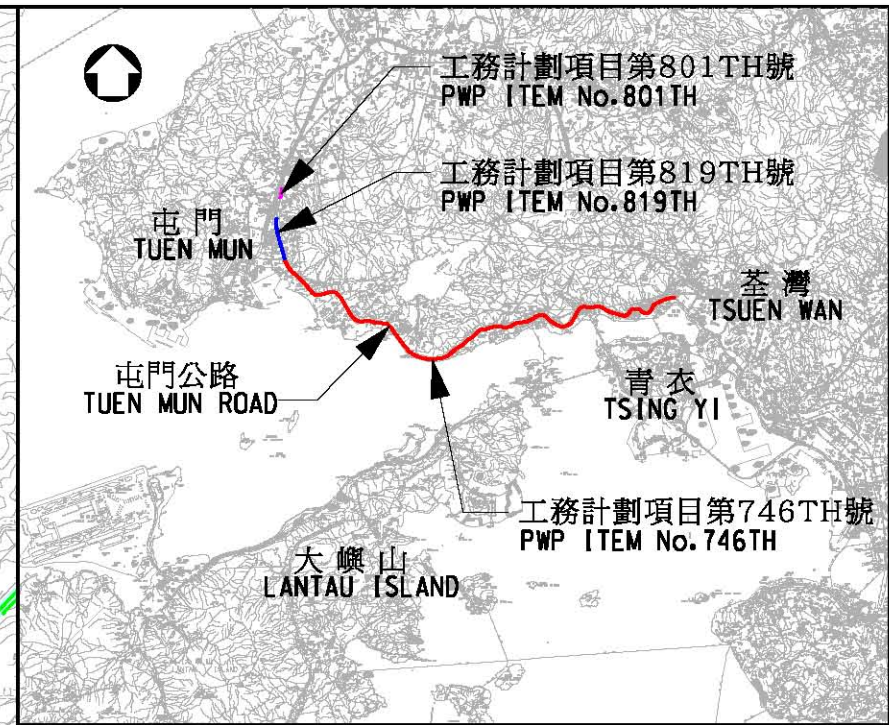
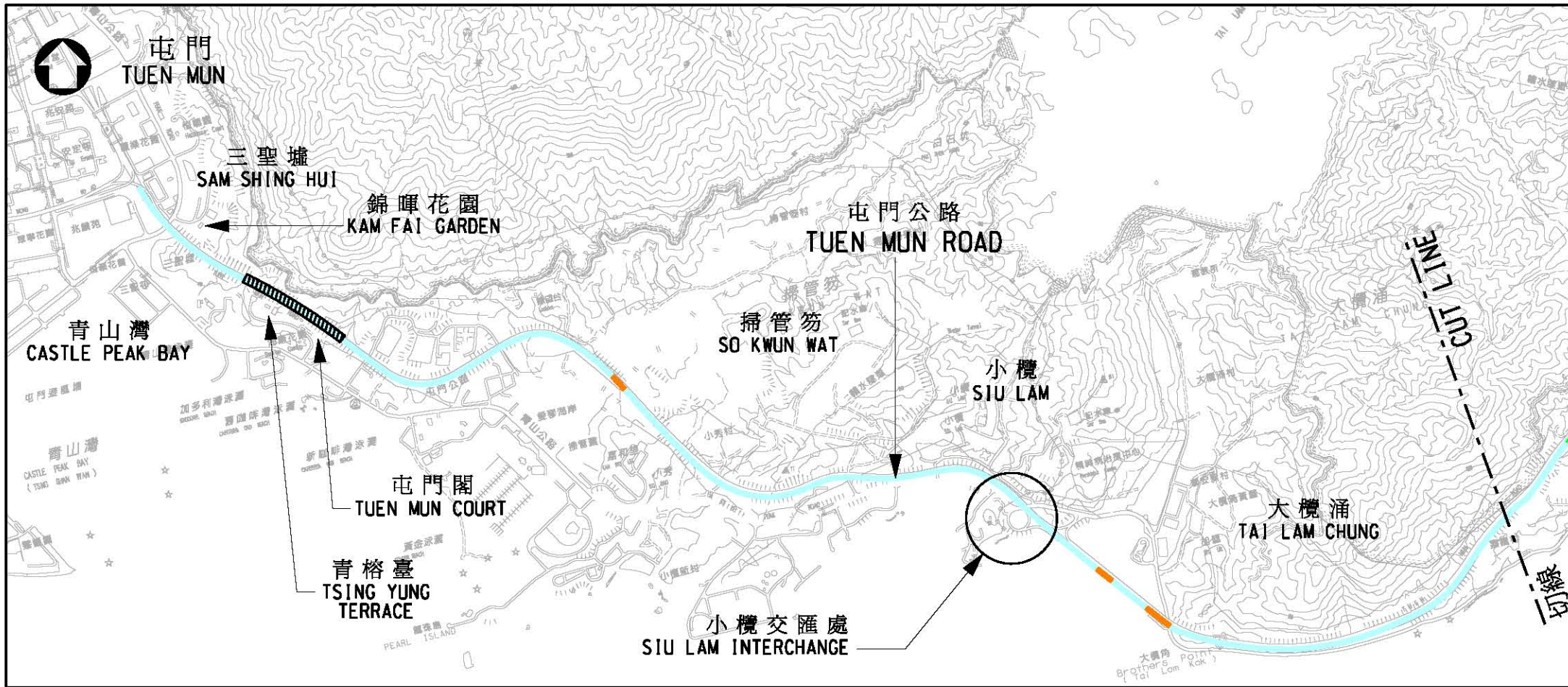
¹⁹ “Important trees” refer to trees in the Register of Old and Valuable Trees, and any other trees that meet one or more of the following criteria –

- (a) trees over 100 years old or above;
- (b) trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of a monastery or heritage monument, and trees in memory of important persons or event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- (e) trees with trunk diameter equal or exceeding 1.0 metre (measured at 1.3 metre above ground level), or with height/canopy spread equal or exceeding 25 m.

ADVICE SOUGHT

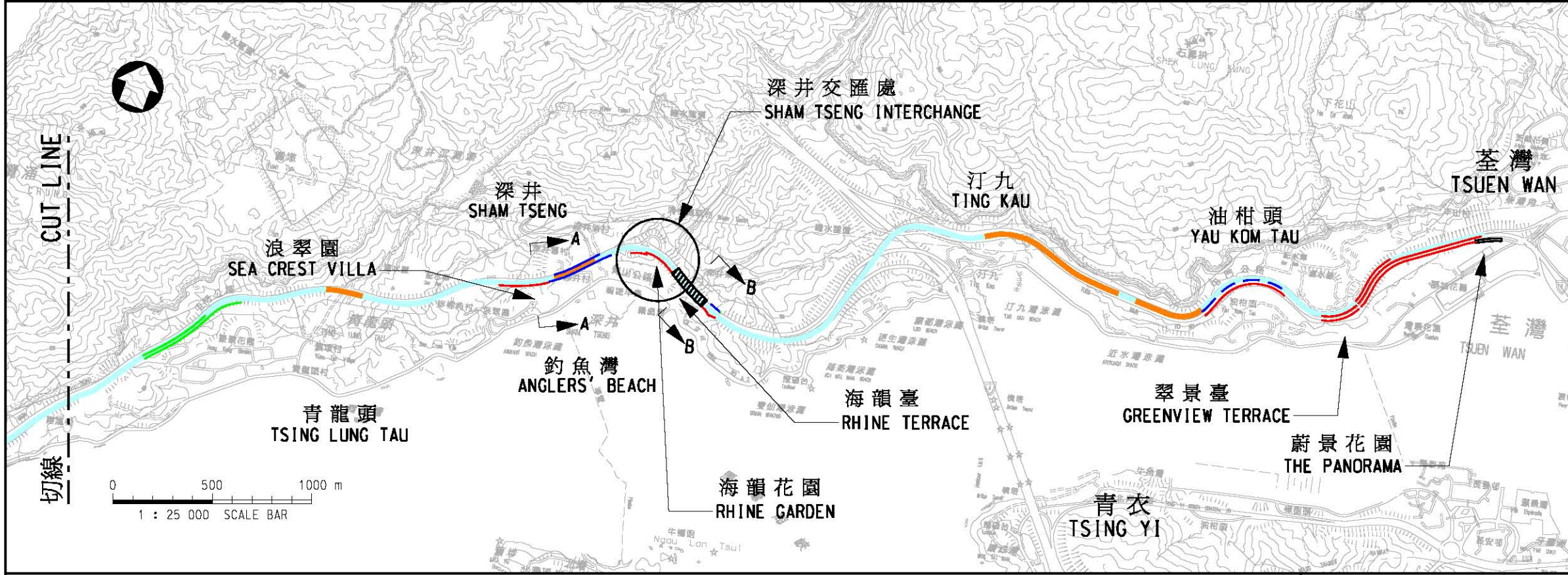
53. Members are invited to offer views on this paper.

Transport and Housing Bureau
January 2008



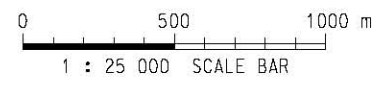
索引圖
KEY PLAN

比例 SCALE 1:250 000



圖例
LEGEND

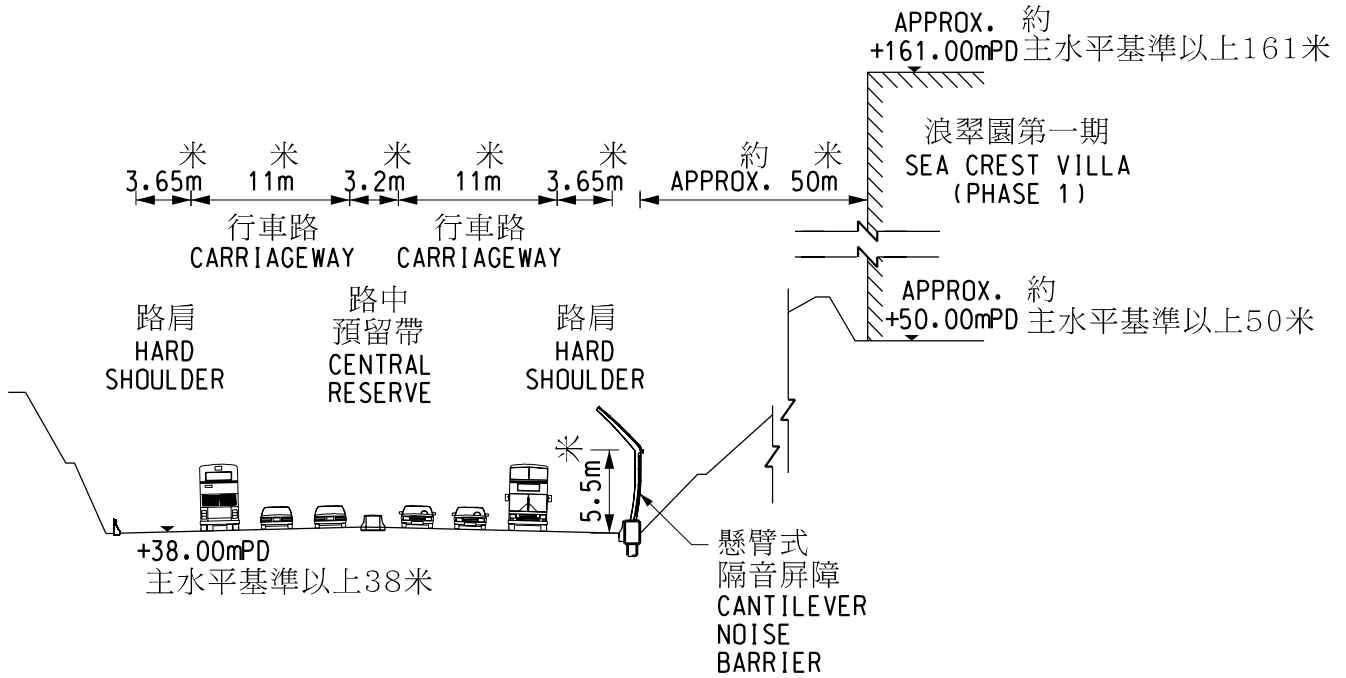
- 擬重建/改善的地面路段
AT-GRADE ROAD SECTIONS TO BE RECONSTRUCTED/IMPROVED
- 擬改善的現有行車橋/高架道路
EXISTING VEHICULAR BRIDGES /VIADUCTS TO BE IMPROVED
- 擬建之1.5/2米高直立式隔音屏障
PROPOSED 1.5/2m HIGH VERTICAL NOISE BARRIER
- 擬建之4米高直立式隔音屏障
PROPOSED 4m HIGH VERTICAL NOISE BARRIER
- 擬建之5.6/7.6米高懸臂式隔音屏障
PROPOSED 5.6/7.6m HIGH CANTILEVER NOISE BARRIER
- 擬建之8/8.3米高懸臂式隔音屏障
PROPOSED 8/8.3m HIGH CANTILEVER NOISE BARRIER
- 擬建之9米高半封閉式隔音屏障
PROPOSED 9m HIGH SEMI-ENCLOSURE
- 擬建之5.5米高半封閉式隔音屏障
PROPOSED 5.5m HIGH SEMI-ENCLOSURE



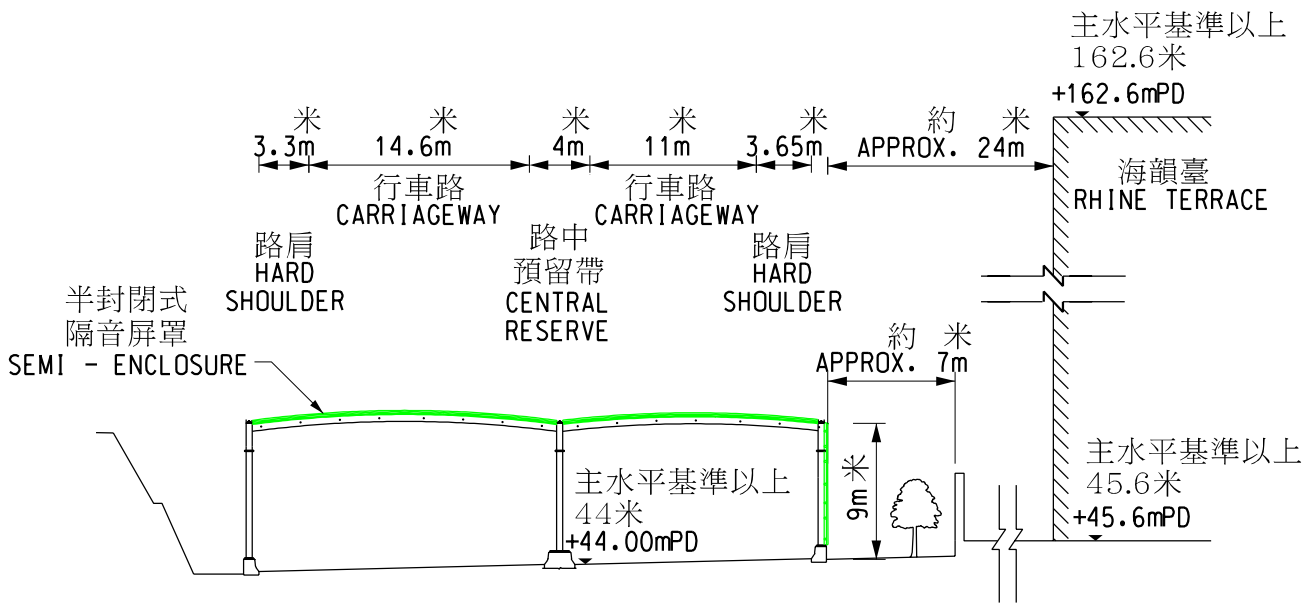
圖則名稱 drawing title

工務計劃項目第746TH號-屯門公路重建及改善工程
PWP ITEM No.746TH - RECONSTRUCTION AND IMPROVEMENT OF TUEN MUN ROAD

設計 designed	SIGNED	繪圖 drawn	SIGNED	圖則編號 drawing no.	比例 scale
C.Y.TANG	18/01/08	W.L.LAM	18/01/08	HMW6746TH-SPO005	1:25 000 OR AS SHOWN
覆核 checked	SIGNED	批准 approved	SIGNED	© 版權所有 COPYRIGHT RESERVED	
S.C.WONG	18/01/08	P.D.MORGAN	18/01/08	HIGHWAYS DEPARTMENT HONG KONG 路政署	
主要工程管理局 MAJOR WORKS PROJECT MANAGEMENT OFFICE					




橫切面 SECTION A-A
不按比例 NOT TO SCALE



橫切面 SECTION B-B
不按比例 NOT TO SCALE

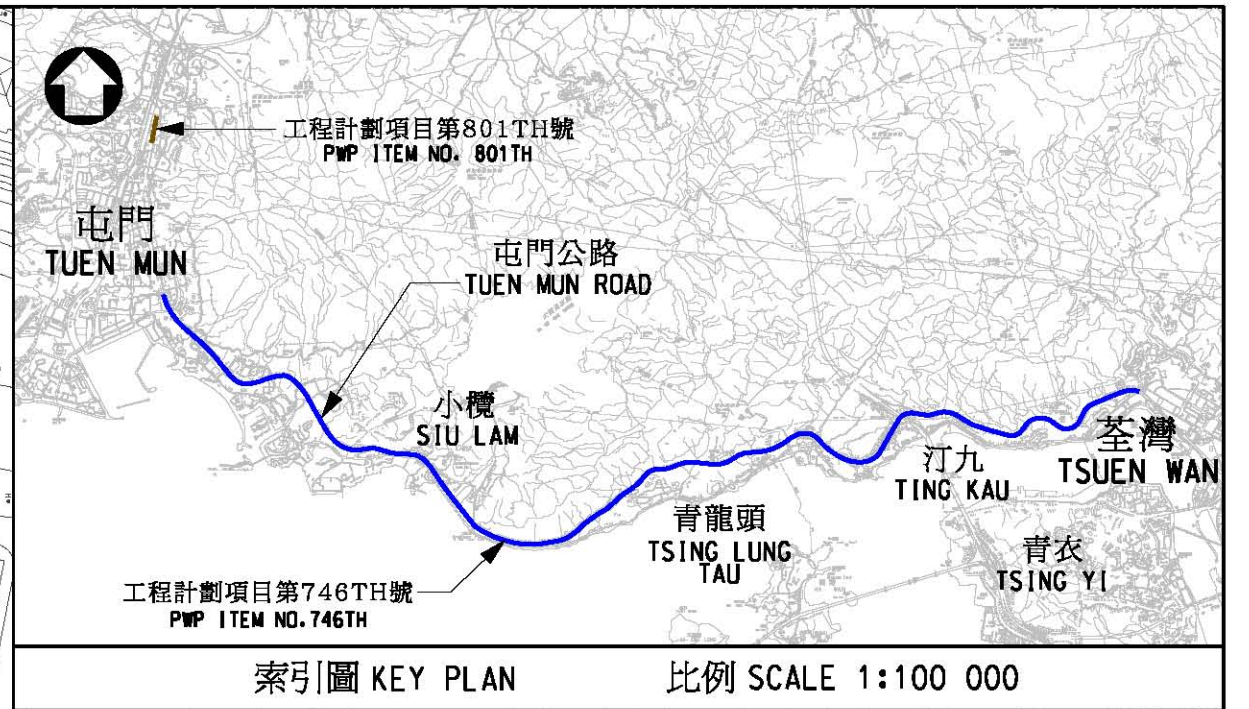
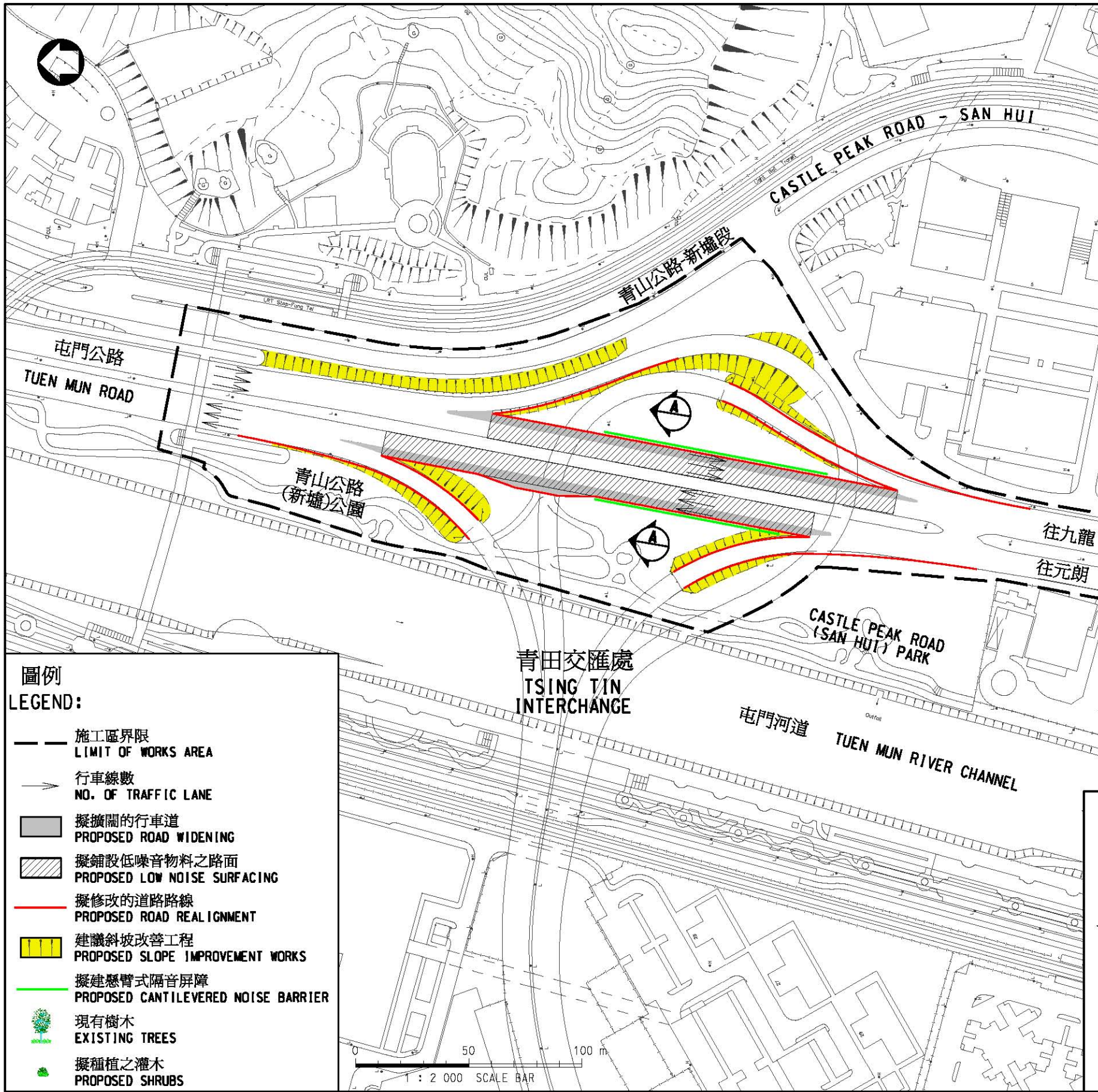
圖例
LEGEND

隔音板
NOISE BARRIER PANEL

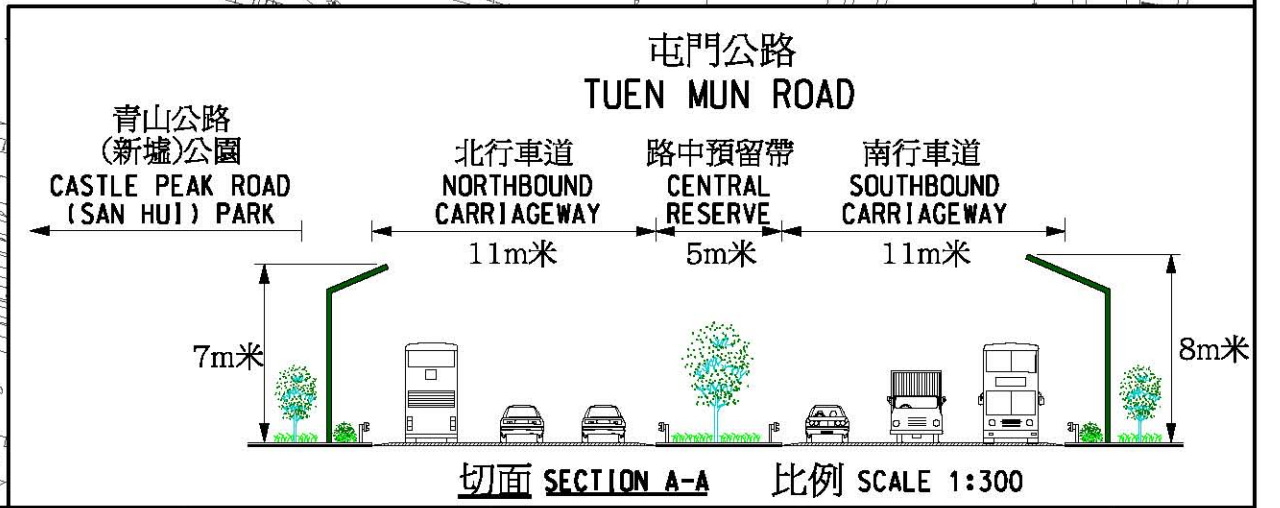
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	覆核 checked SIGNED S. C. WONG 14/01/08	批准 approved SIGNED P. D. MORGAN 14/01/08	© 版權所有 COPYRIGHT RESERVED	
	主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE		 HIGHWAYS DEPARTMENT 路香港 政署	

746TH – Reconstruction and Improvement of Tuen Mun Road**Breakdown of land clearance cost**

	\$ million (in Sep 2007 prices)
Clearance cost	7.200
(a) Compensation for crops	1.000
(b) Ex-gratia compensation for miscellaneous permanent improvements to farms	6.198
(c) “Tun Fu” ceremonial fees	0.002
(d) Interest payment on various ex-gratia compensations for private land	-
Total land clearance costs	7.200



- 圖例**
LEGEND:
- 施工區界限
LIMIT OF WORKS AREA
 - 行車線數
NO. OF TRAFFIC LANE
 - ▭ 擬擴闊的行車道
PROPOSED ROAD WIDENING
 - ▨ 擬鋪設低噪音物料之路面
PROPOSED LOW NOISE SURFACING
 - 擬修改的道路路線
PROPOSED ROAD REALIGNMENT
 - ▨ 建議斜坡改善工程
PROPOSED SLOPE IMPROVEMENT WORKS
 - 擬建懸臂式隔音屏障
PROPOSED CANTILEVERED NOISE BARRIER
 - 🌳 現有樹木
EXISTING TREES
 - 🌱 擬種植之灌木
PROPOSED SHRUBS



圖則名稱 plan title
工務計劃項目第801TH號 - 屯門公路近青田交匯處段道路擴闊工程
PWP ITEM NO. 801TH - WIDENING OF TUEN MUN ROAD AT TSING TIN INTERCHANGE

設計 designed M.D.TAM 14/01/08	SIGNED 14/01/08	繪圖 drawn W.L.LAM 14/01/08	SIGNED 14/01/08	圖則編號 plan no. HMW6801TH-SP0001	比例 scale 1:2000 OR AS SHOWN
覆核 checked K.C.LAI 14/01/08	SIGNED 14/01/08	批准 approved P.D.MORGAN 14/01/08	SIGNED 14/01/08	© 版權所有 COPYRIGHT RESERVED	
主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE				HIGHWAYS DEPARTMENT HONG KONG 路政署	