

**For discussion  
on 5 January 2012**

**Legislative Council Panel on Transport**

**798TH – Improvement to Pok Oi Interchange**

**PURPOSE**

This paper serves to brief Members on the details of the improvement to Pok Oi Interchange and to seek Members' support of our proposal funding application to the Public Works Sub-committee (PWSC) and Finance Committee (FC) to upgrade the project to Category A at an estimated cost of \$264.8 million in money-of-the-day (MOD) prices

**PROJECT SCOPE AND NATURE**

2. The scope of **798TH** comprises –
  - (a) construction of a single lane flyover of about 150 metres (m) long adjacent to the northbound carriageway of Pok Oi Flyover and associated slip roads of a total length of about 590 m long connecting the ground level sections of Yuen Long Highway (YLH);
  - (b) construction of a slip road of about 400 m long connecting the southbound carriageway of Pok Oi Flyover to the ground level section of YLH;
  - (c) widening of about 400 m long northbound and 140 m long southbound existing carriageways of YLH north of Pok Oi Roundabout (the Roundabout);
  - (d) construction of a segregated left-turn lane of about 110 m long at the northern approach road (southbound) of the Roundabout;

- (e) extension of an existing subway underneath the segregated left-turn lane in (d) above;
- (f) installation of vertical noise barriers of about 200 m long and 2.5 m high along the southern approach road (northbound) of the Roundabout and relocation of existing noise barriers of about 30 m long and 3 m high along the northern approach road (southbound) of the Roundabout;
- (g) associated road, slope, landscaping, drainage, traffic aids and road lighting works; and
- (h) implementation of environmental mitigation measures and an environmental monitoring and audit (EM&A) programme for the works in (a) to (g) above.

Plans and sections of the proposed improvement works as well as an artist's impression showing the proposed flyover are at **Enclosure 1**.

3. Detailed design of the proposed works have substantially been completed. We plan to commence the construction works in the third quarter of 2012 for completion in mid 2015.

## **JUSTIFICATION**

4. The existing Pok Oi Interchange is a three-level interchange comprising the east-west at-grade Castle Peak Road (Yuen Long Section) at the bottom, which mainly links the traffic between Au Tau and Yuen Long Town Centre; the north-south YLH, in the form of a flyover (the Pok Oi Flyover) on the top, which mainly links the traffic between Tuen Mun or Tin Shui Wai and Kowloon or Sheung Shui; and the elevated Roundabout in the middle, i.e. the Roundabout, which connects with Castle Peak Road (Yuen Long Section) and YLH and mainly links the traffic heading for Kowloon, Sheung Shui, Au Tau, Yuen Long South and Yuen Long Town Centre.

5. Traffic in the northwest of New Territories travelling to and from various destinations has to route through the Roundabout. At present, traffic from Yuen Long South heading for Kowloon (via Shap Pat Heung

Roundabout then Tai Lam Tunnel) or Sheung Shui (via San Tin Highway); or traffic from the southbound carriageway of YLH, north of the Roundabout, heading for Au Tau, Yuen Long South or Yuen Long Town Centre, has to route through the Roundabout. Under such traffic arrangement, the Roundabout has been operating beyond its capacity with a design flow/capacity (DFC) ratio<sup>1</sup> exceeding 1.0, resulting in congestion. At peak hours, long traffic queues of about 1 kilometre (km) and 0.5 km are observed respectively at the southbound approach road and northbound approach road of the Roundabout. Traffic on these approach roads has to move at a crawling speed of 10 to 15 km per hour. If there was no traffic congestion, traffic could proceed at a speed of 50 km per hour on these approach roads. These long traffic queues often tail back to the mainlines of YLH resulting in obstruction to the through traffic. For example, it takes about 6 minutes for traffic on the southbound carriageway of YLH (via the Roundabout) heading for Yuen Long Town Centre or Shap Pat Heung Roundabout to route through the 1 km long traffic queue at peak hours. However, when no traffic queue occurs, it only takes less than 1 minute for the traffic to route through the same road section with a saving of about 5 minutes for the journey.

6. Furthermore, with the future development of Yuen Long Town, it is anticipated that the traffic congestion problem at the Roundabout will be further aggravated. If the proposed improvement works cannot be timely implemented, the congestion problem will become more serious as the DFC ratio of the Roundabout will rise to 1.38 in 2016 and further soar to 1.45 in 2021. At that time, the traffic queue at the northern approach road will exceed 1.5 km. Unacceptable and prolonged delay to the motorists routing through the Roundabout will be inevitable. Taking the same example of vehicles from the southbound carriageway of YLH (via the Roundabout), it will take about 9 minutes to route through the 1.5 km long traffic queue by then. With the timely completion of the proposed improvement works, the journey time for routing through the Roundabout can be shortened by about 8 minutes.

7. Upon completion of the proposed improvement works in 2015, traffic from Sheung Shui (via San Tin Highway) and Kowloon (via Tai Lam Tunnel) heading for Yuen Long South and traffic from Yuen Long South heading for Sheung Shui and Kowloon (via Tai Lam Tunnel) can bypass the

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<sup>1</sup> Design flow/capacity (DFC) ratio is a design parameter which measures the degree of saturation of traffic at a priority junction. A DFC ratio above 1.0 indicates the presence of traffic queues. A DFC ratio of 0.85 is generally used in junction design which indicates a desirable traffic flow condition.

Roundabout using the new southbound and northbound slip roads respectively. With a reduction in the number of vehicles using the Roundabout, persistent traffic queues at both northern and southern approach roads of the Roundabout will no longer occur, thereby shortening the journey time for traffic to route through the Roundabout by as much as 8 minutes and receding the DFC ratio of the Roundabout to a desirable level of 0.85. At the same time, the proposed improvement works will also provide sufficient reserve capacity for the Roundabout to cope with the anticipated traffic growth in the area.

## FINANCIAL IMPLICATIONS

8. We estimate the cost of the project to be \$264.8 million in MOD prices, which is made up as follows –

	<b>\$ million</b>
(a) Flyover	106.8
(i) foundation	76.6
(ii) superstructure	30.2
(b) Slip roads and carriageway widening	52.8
(c) Segregated left-turn lane	11.2
(d) Subway extension	3.2
(e) Noise barriers	13.2
(f) Associated road, slope, landscaping, drainage, traffic aids and road lighting works	12.7
(g) Environmental mitigation measures	1.9
(h) Consultants' fees	2.3

		<b>\$ million</b>
(i)	Contingencies	19.5
	Sub-total	223.6
		(in September 2011 prices)
(j)	Provision for price adjustment	41.2
	Total	264.8
		(in MOD prices)

## **PUBLIC CONSULTATION**

9. We consulted the Shap Pat Heung Rural Committee and the Traffic and Transport Committee (T&TC) of the Yuen Long District Council on 7 September 2007 and 21 September 2007 respectively. Members of both Committees supported the proposal.

10. We gazetted the proposed works under the Roads (Works, Use and Compensation) Ordinance (Cap. 370) (the Ordinance) on 22 May 2009. We received two objections of which the details are at **Enclosure 2**. Despite the Administration's explanations, both objectors did not withdraw the objections and they are treated as unresolved objections<sup>2</sup>. Having considered the unresolved objections, the Chief Executive-in-Council authorised the proposed works without modifications under the Ordinance on 4 May 2010. The notice of authorisation was gazetted on 28 May 2010. Members of the T&TC of Yuen Long District Council urged for early implementation of the project at its meetings on 30 September 2010 and 20 July 2011.

11. We consulted the Advisory Committee on the Appearance of Bridges and Associated Structures<sup>3</sup> on the aesthetic design of the proposed flyover under the project. The Committee accepted the proposed aesthetic design on 16 June 2009. The relevant artist's impression is at **Enclosure 1**.

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<sup>2</sup> Under the Ordinance, an objection which is not withdrawn or withdrawn with conditions is treated as an unresolved objection and will be submitted to the Chief Executive-in-Council for consideration.

<sup>3</sup> The Advisory Committee on the Appearance of Bridges and Associated Structures, which comprises representatives of the Hong Kong Institute of Architects, Hong Kong Institution of Engineers, Hong Kong Institute of Planners, an academic institution, Architectural Services Department, Highways Department, Housing Department and Civil Engineering and Development Department, is responsible for vetting the design of bridges and other structures associated with the highway system, including noise barriers and enclosures, from the aesthetic and visual impact points of view.

## **ENVIRONMENTAL IMPLICATIONS**

12. The project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO) and an environmental permit is required for the construction and operation of the project. In March 2009, the Environmental Impact Assessment (EIA) report for the project was approved under the EIAO. The EIA report concluded that the environmental impact of the project can be controlled to within the criteria under EIAO and the Technical Memorandum on EIA Process. We shall implement the measures recommended in the approved EIA report. The key measures include provision of noise barriers for nearby planned schools, provision of movable noise screens at works locations and frequent cleaning and watering of the site, etc.

13. At the planning and design stages, we have considered measures to reduce the generation of construction waste where possible and to manage the waste, details of which are at **Enclosure 3**.

## **HERITAGE IMPLICATIONS**

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

## **LAND ACQUISITION**

15. No private land is required to be resumed for implementation of the project. Though no structure will be cleared, clearance of crops, fruit trees, flowers and fences within Government lands is required. Ex-gratia allowance will be paid to the affected cultivators in line with the established policy. We will also consider granting relevant ex-gratia allowance, such as that for “Tun Fu” ceremonies, where appropriate.

## **TREE PROPOSAL**

16. The proposed works will involve removal of 417 trees, including 395 trees to be felled and 22 trees to be transplanted within the

project site. All trees to be removed are not important trees<sup>4</sup>. We will incorporate planting proposal as part of the project, including an estimated of 444 trees and 72 600 shrubs which will produce about 5 700 square metres of planting area in total.

## **WAY FORWARD**

17. We intend to seek funding support of the PWSC and FC of the Legislative Council in February and April 2012 respectively to upgrade the project for the improvement to Pok Oi Interchange to Category A. Subject to funding approval by the FC, we plan to commence the construction works in the third quarter of 2012 for completion in mid 2015.

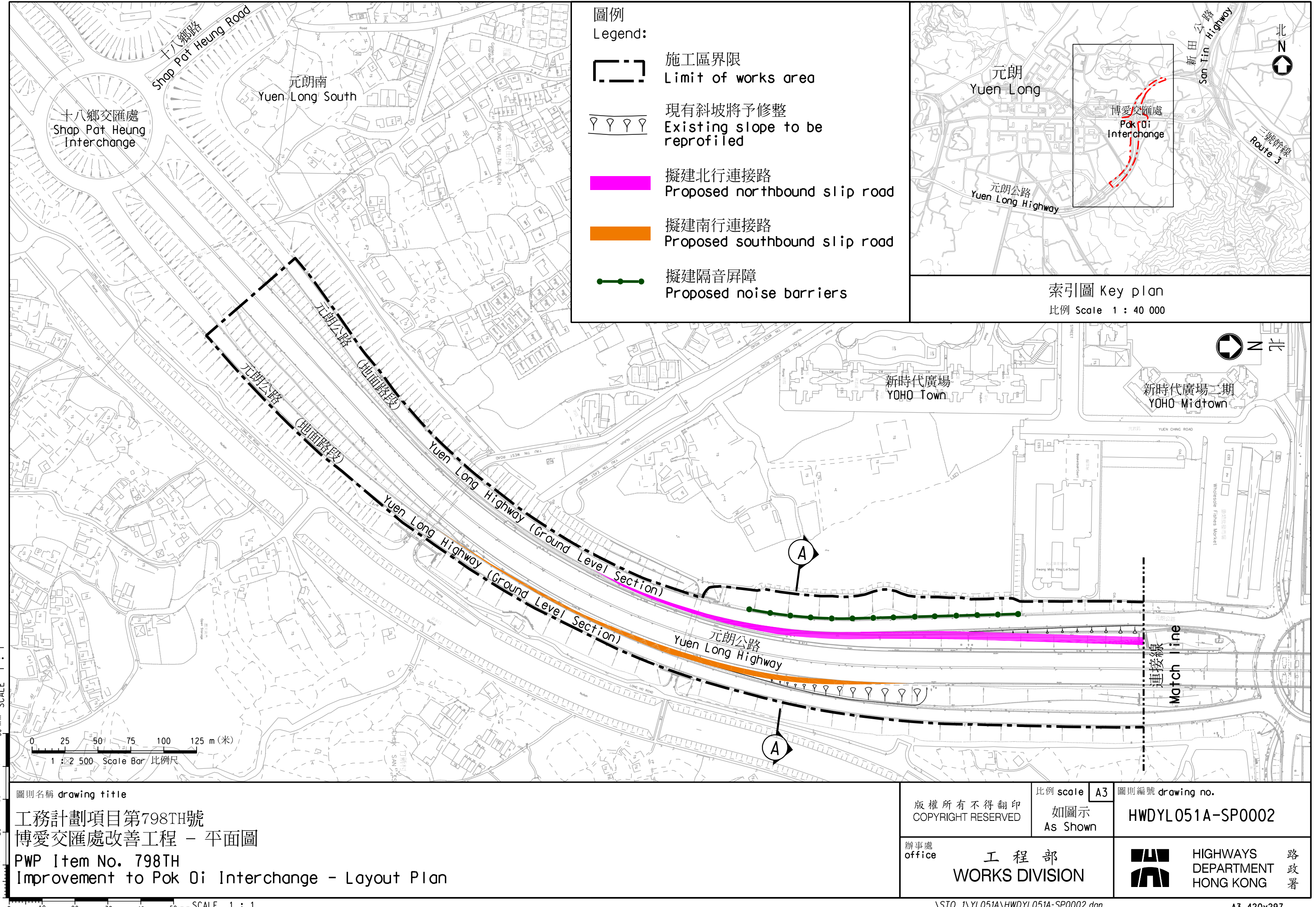
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## **Transport and Housing Bureau December 2011**

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<sup>4</sup> “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 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 certain like aerial roots, trees growing in unusual habitat; or
- (e) trees with trunk diameter equal or exceeding 1.0 metre (m) (measured at 1.3m above ground level), or with height/canopy spread equal or exceeding 25m.



50 mm SCALE 1 : 1  
 0 25 50 75 100 125 m (米)  
 1 : 2 500 Scale Bar 比例尺

圖則名稱 drawing title  
 工務計劃項目第798TH號  
 博愛交匯處改善工程 - 平面圖  
 PWP Item No. 798TH  
 Improvement to Pok Oi Interchange - Layout Plan

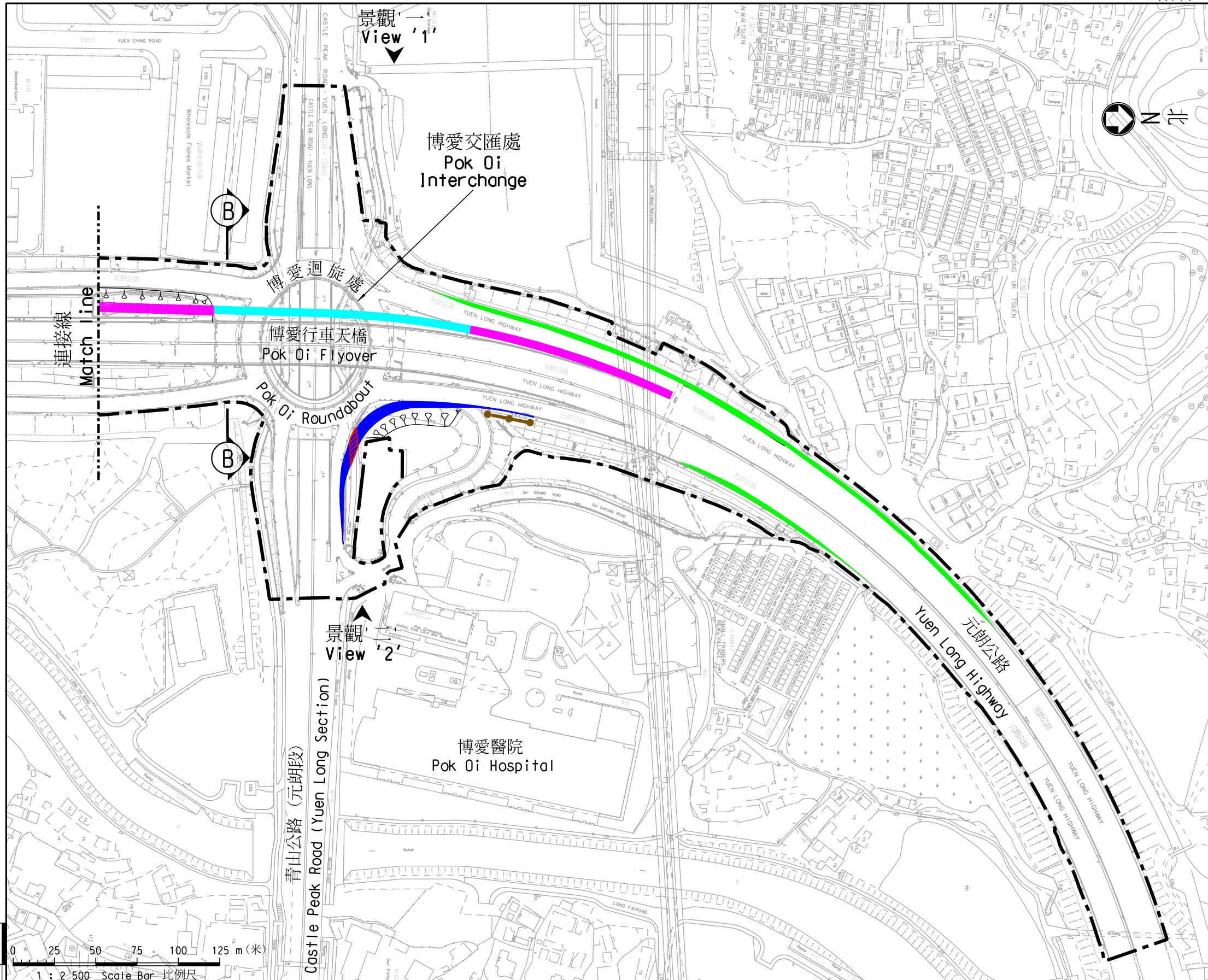
圖例  
 Legend:

- 施工區界限  
Limit of works area
- 現有斜坡將予修整  
Existing slope to be reprofiled
- 擬建北行連接路  
Proposed northbound slip road
- 擬建南行連接路  
Proposed southbound slip road
- 擬建隔音屏障  
Proposed noise barriers

索引圖 Key plan  
 比例 Scale 1 : 40 000

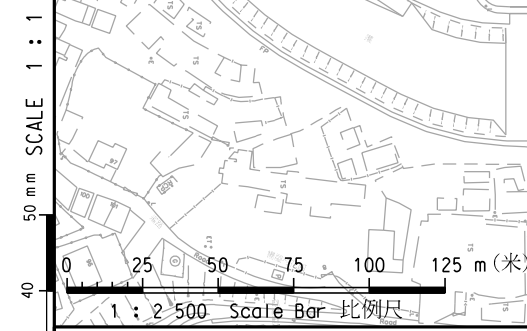
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辦事處 office	工程 部 WORKS DIVISION	HIGHWAYS DEPARTMENT HONG KONG 路政署





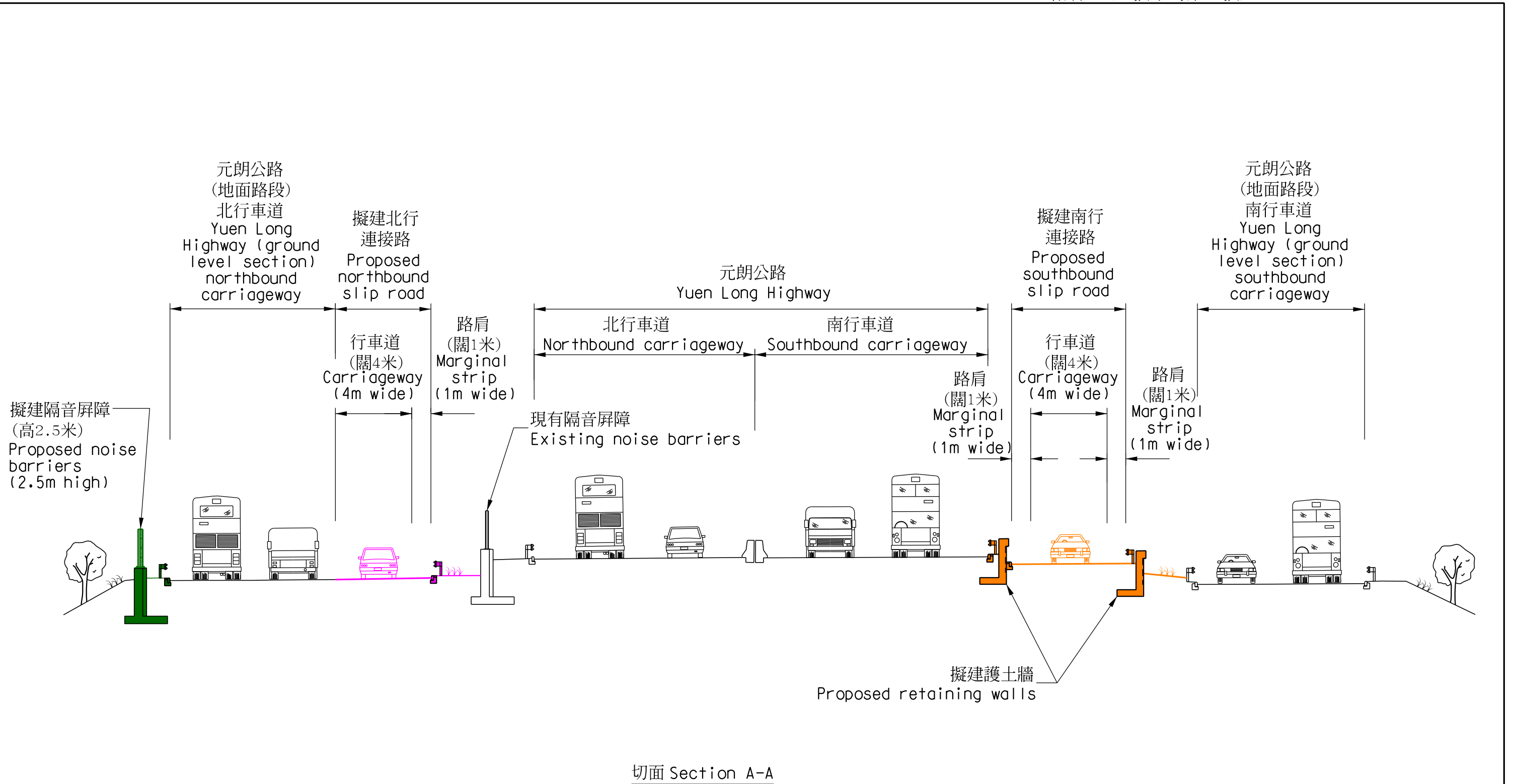
**圖例**  
Legend:

-  施工區界限  
Limit of works area
-  現有斜坡將予修整  
Existing slope to be reprofiled
-  擬建行車天橋  
Proposed flyover
-  擬建北行連接路  
Proposed northbound slip road
-  擬擴闊的行車道  
Proposed carriageway widening
-  擬建分隔左轉線  
Proposed segregated left-turn lane
-  擬建行人隧道伸延段  
Proposed subway extension
-  現有隔音屏障將予後移及重置  
Existing noise barriers to be setback and re-provisioned




圖則名稱 drawing title  
 工務計劃項目第798TH號  
 博愛交匯處改善工程 - 平面圖  
 PWP Item No. 798TH  
 Improvement to Pok Oi Interchange - Layout Plan

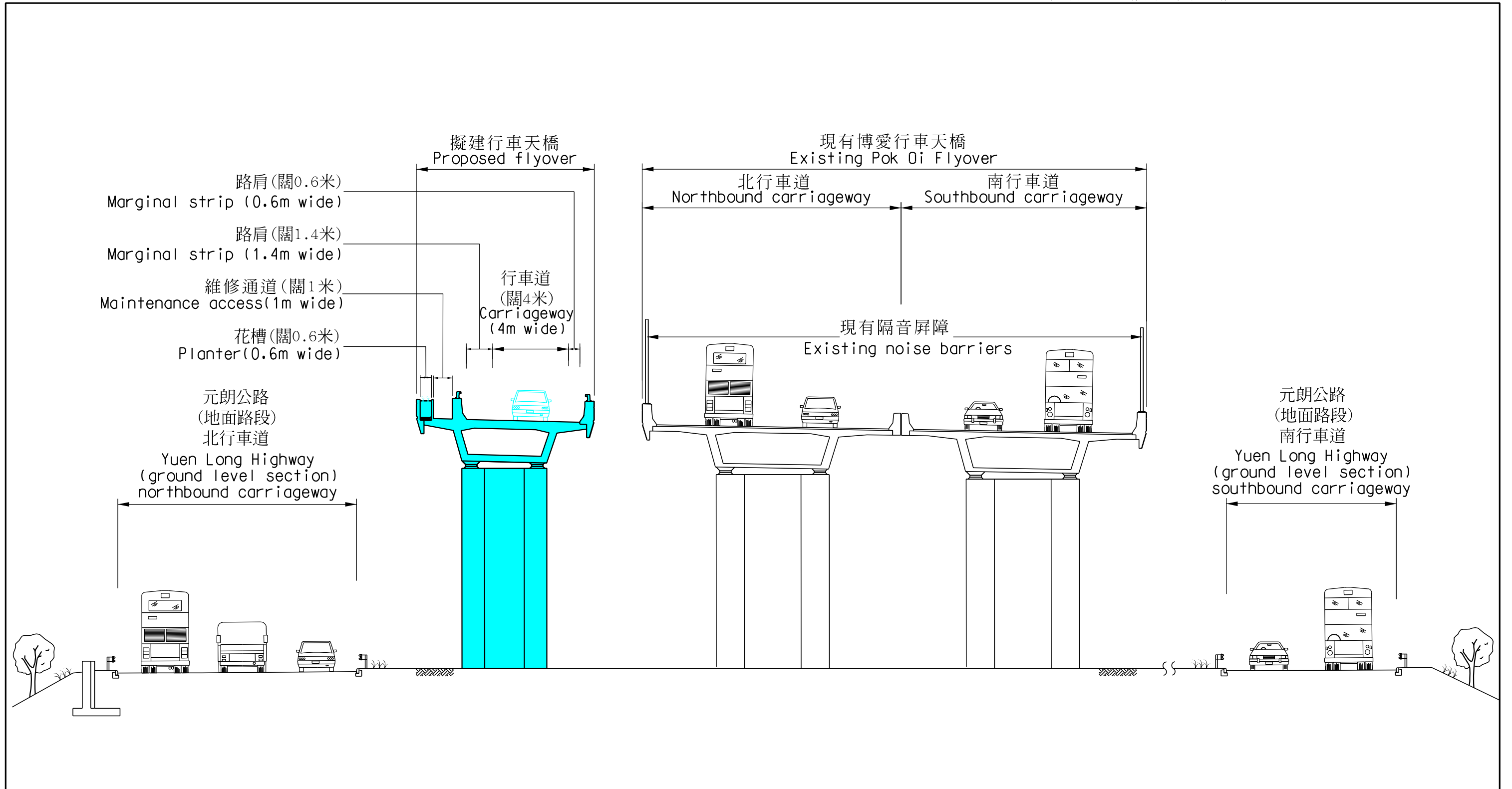
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切面 Section A-A

圖則名稱 drawing title  
 工務計劃項目第798TH號  
 博愛交匯處改善工程 - 切面圖  
 PWP Item No. 798TH  
 Improvement to Pok Oi Interchange - Section

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切面 Section B-B

50 mm SCALE 1 : 1

圖則名稱 drawing title

工務計劃項目第798TH號  
博愛交匯處改善工程 - 切面圖  
PWP Item No. 798TH  
Improvement to Pok Oi Interchange - Section

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比例 scale A3  
1 : 200

圖則編號 drawing no.  
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DIVISION

HIGHWAYS  
DEPARTMENT  
HONG KONG  
路  
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景觀'一' View '1'

50 mm SCALE 1 : 1

圖則名稱 drawing title

工務計劃項目第798TH號  
博愛交匯處改善工程 - 擬建行車天橋的構思圖

PWP Item No. 798TH  
Improvement to Pok Oi Interchange - Artist's Impression of Proposed Flyover

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比例 scale A3  
示意圖  
Diagrammatic

圖則編號 drawing no.  
HWDYL051A-SP0006

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**Details of Objections in respect of  
Improvement to Pok Oi Interchange**

Objections lodged against the Proposed Works and Plans Gazetted  
under Roads (Works, Use and Compensation) Ordinance (Cap. 370)  
on 22 and 29 May 2009

During the statutory objection period, we received two objections of which both remained unresolved. Details of the objections are as follows –

2. Objector No. 1 requested that an additional noise barrier of 2.5m high should be provided on top of a 1.1m high concrete parapet wall along the nearside of the proposed flyover to minimize noise impact to the nearby residents. We explained to the objector that it had been revealed in the environmental impact assessment (EIA) study under the EIA Ordinance that the provision of a 1.1m high concrete parapet wall along the nearside of the proposed flyover and slip roads would be adequate to mitigate the traffic noise due to the project.

3. Objector No. 2 was concerned that the proposed works would likely increase the traffic burden of the local roads in Yuen Long. She also expressed concern over the problem of vehicle speeding near Shap Pat Heung Road. We explained to the objector that the proposed works itself would not bring about additional traffic to the concerned local roads as revealed in the traffic impact assessment (TIA) study conducted. Nevertheless, the Transport Department has agreed to review the traffic conditions of the concerned local roads and implement appropriate traffic improvement schemes as and when necessary. The Hong Kong Police Force has also agreed to take stringent enforcement and control actions against vehicle speeding.

4. Both objectors maintained the objections upon completion of the resolution process. Hence, the objections are treated as unresolved objections.

**Improvement to Pok Oi Interchange  
Measures on Reduction of Generation of Construction Waste and  
Management of Waste**

We will implement measures to reduce the generation of construction waste. Such measures include adopting retaining walls to minimise cutting of existing slopes in order to reduce the quantity of construction waste from excavation. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated materials for backfilling) on site or in other suitable construction sites as far as possible in order to minimise the disposal of inert construction waste at public fill reception facilities<sup>1</sup>. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste and non-timber formwork to further reduce the generation of construction waste.

2. At the construction stage, 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 at public fill reception facilities and landfills respectively through a trip-ticket system.

3. We estimate that the project will generate in total about 43 000 tonnes of construction waste. Of these, we will reuse about 18 000 tonnes (42%) of inert construction waste on site and deliver 21 000 tonnes (49%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 4 000 tonnes (9%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is

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<sup>1</sup> Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in public fill reception facilities requires a license issued by the Director of Civil Engineering and Development.

estimated to be about \$1.07 million for this project (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne<sup>2</sup> at landfills).

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<sup>2</sup> This estimate has taken into account the cost for 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 per m<sup>3</sup>), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.