

**For discussion
on 21 January 2009**

LEGISLATIVE COUNCIL PANEL ON ENVIRONMENTAL AFFAIRS

PWP Item Nos. 805TH – Retrofitting of noise barriers on Fanling Highway (MTR Fanling Station to Wo Hing Road)

807TH – Retrofitting of noise barriers on Fanling Highway (Po Shek Wu Road to MTR Fanling Station)

PURPOSE

This paper seeks Members' support for the submission of proposals to upgrade **805TH** "Retrofitting of noise barriers on Fanling Highway (MTR Fanling Station to Wo Hing Road)" and **807TH** "Retrofitting of noise barriers on Fanling Highway (Po Shek Wu Road to MTR Fanling Station)" to Category A at the estimated costs of \$231.4 million for **805TH** and \$474.4 million for **807TH** in September 2008 prices, prior to submission to the Public Works Subcommittee for consideration with a view to seeking the Finance Committee's funding approval.

PROPOSAL AND JUSTIFICATION

2. To mitigate the noise impact of existing roads on neighbouring residents, it is the Government's policy to implement direct engineering solutions, where practicable, by way of retrofitting of barriers and enclosures and resurfacing with low noise material on existing roads with a traffic noise level exceeding the limit of 70 dB(A)¹.

3. At present, about 1 600 dwellings adjacent to the section of Fanling Highway between MTR Fanling Station and Wo Hing Road are exposed to excessive traffic noise levels between 71 and 78 dB(A) and about 1 500 dwellings adjacent to the section of Fanling Highway between Po Shek Wu Road and MTR Fanling Station are exposed to excessive traffic noise levels between 71 and

¹ L₁₀(1 hour), the noise level exceeded for 10% of a one-hour period, is 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.

79 dB(A). In line with the aforementioned policy, we propose to retrofit noise barriers on these two road sections in order to mitigate the noise impact. Upon completion of the projects, about 1 500 and 1 400 dwellings along the above two sections of Fanling Highway will benefit with reduction in traffic noise levels of 1 to 14 dB(A) and 1 to 17 dB(A) respectively. Overall, the number of dwellings with traffic noise levels not exceeding the noise limit of 70 dB(A) as a result of **805TH** and **807TH** will be about 1 100 and 1 300 respectively.

4. The scope of **805TH** comprises –

- (a) retrofitting of single-leaf cantilevered noise barriers of 720 metres (m) in length and seven metres in height along the verge of westbound carriageway of Fanling Highway between MTR Fanling Station and Wo Hing Road;
- (b) retrofitting of single-leaf cantilevered noise barriers of 500 m in length and seven metres in height along the central divider of Fanling Highway between MTR Fanling Station and Wo Hing Road;
- (c) retrofitting of single-leaf cantilevered noise barriers of 200 m in length and seven metres in height along the verge of the slip road from westbound carriageway of Fanling Highway towards Pak Wo Road;
- (d) retrofitting of vertical noise barriers of about 190 m in length and three metres in height along the verge of eastbound carriageway of Fanling Highway between MTR Fanling Station and Wo Hing Road;
- (e) associated road, drainage, street lighting and landscaping works; and
- (f) implementation of an environmental monitoring and audit (EM&A) programme for works mentioned in (a) to (e) above.

5. The scope of **807TH** comprises –

- (a) retrofitting of single-leaf cantilevered noise barriers of 1 110 m in length and seven metres in height along the verge of westbound carriageway of Fanling Highway between Po Shek Wu Road and MTR Fanling Station;
- (b) retrofitting of single-leaf cantilevered noise barriers of about 370 m in length and seven metres in height along the verge of eastbound carriageway of Fanling Highway between Po Shek Wu Road and MTR Fanling Station;

- (c) retrofitting of single-leaf cantilevered noise barriers of about 775 m in length and seven metres in height along the central divider of Fanling Highway between Po Shek Wu Road and MTR Fanling Station;
- (d) retrofitting of double-leaf cantilevered noise barriers of about 350 m in length and seven metres in height along the central divider of Fanling Highway near MTR Fanling Station;
- (e) retrofitting of vertical noise barriers of about 315 m in length and three metres in height along the verges of both eastbound and westbound carriageway of Fanling Highway near Kei Leng Roundabout and Ka Fuk Estate;
- (f) retrofitting of vertical noise barriers of about 135 m in length and two metres in height along the top of the existing wall on the roadside of westbound carriageway of Fanling Highway near MTR Fanling Station;
- (g) associated road, drainage, street lighting and landscaping works; and
- (h) implementation of an EM&A programme for works mentioned in (a) to (g) above.

Layout plans with cross sections of the proposed works under **805TH** and **807TH** are at Enclosures 1 and 2 respectively. We plan to commence the construction works for the two projects in September 2009 for completion in August 2012.

FINANCIAL IMPLICATIONS

6. We estimate the capital costs² of the proposed works to be \$231.4 million for **805TH**, and \$474.4 million for **807TH** in September 2008 prices.

7. We estimate that the proposed works will create about 184 jobs (35 for professional/technical staff and another 149 for labourers) for **805TH** providing a total employment of about 4 780 man-months, and 371 jobs (71 for professional/technical staff and another 300 for labourers) for **807TH** providing a total employment of about 9 800 man-months.

² These are the latest estimates. We will finalize the project costs and estimated new job opportunities and include a cost breakdown prior to submitting the proposals to the Public Works Subcommittee for consideration.

INTERIM TRAFFIC ARRANGEMENT

8. For both **805TH** and **807TH**, both eastbound and westbound carriageway of Fanling Highway between Po Shek Wu Road and Wo Hing Road will be temporarily reduced from three lanes to two lanes when necessary during the construction period. The contractor will be required to maintain at least two lanes for each bound of carriageway at all times during the entire construction period. Closure of two lanes at nighttime for both eastbound and westbound carriageway for this section of Fanling Highway is required to facilitate the safe installation of the cantilevered panels of noise barriers. Such two-lane closure at nighttime will be minimized as far as practicable.

9. We have conducted traffic impact assessments for **805TH** and **807TH** to assess the impacts of the temporary traffic diversion during the construction period. The traffic impact assessments have concluded that the proposed temporary traffic arrangement will not cause significant adverse impacts to road users.

ENVIRONMENTAL IMPLICATIONS

10. **805TH** and **807TH** are not designated projects under the Environmental Impact Assessment Ordinance. Nevertheless, we completed the environmental studies for the two projects in October 2008. The studies concluded that the projects would not cause adverse long-term environmental impact.

11. The aesthetic design of the proposed noise barriers will be in harmony with the environment. The panels for the proposed cantilevered-type noise barriers and vertical-type noise barriers are generally of transparent type. In line with the prevailing greening policy of the Government, we propose to use green walls with embedded plants for the lower part of some sections of noise barriers along the roadsides of both eastbound and westbound carriageway of Fanling Highway for the two projects. A typical drawing showing the perspective view of the proposed noise barriers is at **Enclosure 3**. The aesthetic design was supported by the North District Council and the Advisory Committee on the Appearance of Bridges and Associated Structures³ (ACABAS) as described in paragraphs 20 to 21 below.

³ 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.

12. To minimize short-term construction impacts, we will control the nuisances caused by noise, dust and site run-off to within the established standards and guidelines through the implementation of mitigation measures. We will also carry out the EM&A programme to ensure proper implementation of the recommendations of the environmental assessment.

13. We have considered measures in the planning and design stages to reduce the generation of construction waste where possible. In the design of the pile caps, we have raised the levels and reduce the sizes of the pile caps in order to minimise the quantity of construction waste generated from excavation for pile caps. In addition, we will require the contractor to reuse insert construction waste (e.g. excavated materials) 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 facilities⁴. 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.

14. We will also 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 insert 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-insert 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.

15. We estimate that the project **805TH** will generate in total about 51 700 tonnes of construction waste. Of these, we will reuse about 24 500 tonnes (47.4%) of inert construction waste on site and deliver 18 700 tonnes (36.2%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 8 500 tonnes (16.4%) 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 \$1,567,400 for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne⁵ at landfills).

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

⁵ The 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/m³), nor the cost to provide new landfills (which are likely to be more expensive) when the existing ones are filled.

16. We estimate that the project **807TH** will generate in total about 91 050 tonnes of construction waste. Of these, we will reuse about 44 200 tonnes (48.5%) of inert construction waste on site and deliver 33 850 tonnes (37.2%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 13 000 tonnes (14.3%) 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 \$2,538,950 for this project (based on the unit costs in paragraph 15 above).

17. The proposed retrofitting of noise barriers will involve removal of 43 no. of trees, including 37 no. of trees to be felled and 6 no. of trees to be transplanted within the project site for **805TH** and 247 no. of trees, including 179 no. of trees to be felled and 68 no. of trees to be transplanted within the project site for **807TH**. All the trees to be removed are not important trees⁶. We will incorporate planting proposals as part of the projects, including estimated quantities of 110 and 190 no. of trees for **805TH** and **807TH** respectively, 6 000 and 17 900 no. of shrubs for **805TH** and **807TH** respectively (including shrubs on green walls and planters), and 2 500 and 15 200 m² of grassed area for **805TH** and **807TH** respectively.

HERITAGE IMPLICATIONS

18. The projects **805TH** and **807TH** 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

19. The two proposed projects do not require land resumption.

⁶ An “important tree” refers to trees on the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria -

- (a) trees of over 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 person 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.

PUBLIC CONSULTATION

20. We consulted the North District Council on **805TH** and **807TH** on 8 January 2007 and 17 November 2008 respectively. We briefed Members on the details of the projects, including the scope, design of the noise barriers, landscape design and the implementation programme. Members supported the two projects.

21. We also consulted the ACABAS on the aesthetic designs of the noise barriers on 19 August 2008 and 16 December 2008. The Committee accepted the proposed aesthetic designs.

22. We gazetted the road schemes of **805TH** and **807TH** under the Roads (Works, Use and Compensation) Ordinance (the Ordinance) on 11 April 2008 and received no objection. The Permanent Secretary for the Transport and Housing (Transport) authorised the road schemes of **805TH** and **807TH** under the Ordinance on 19 June 2008. The notices of authorisation were gazetted on 27 June 2008.

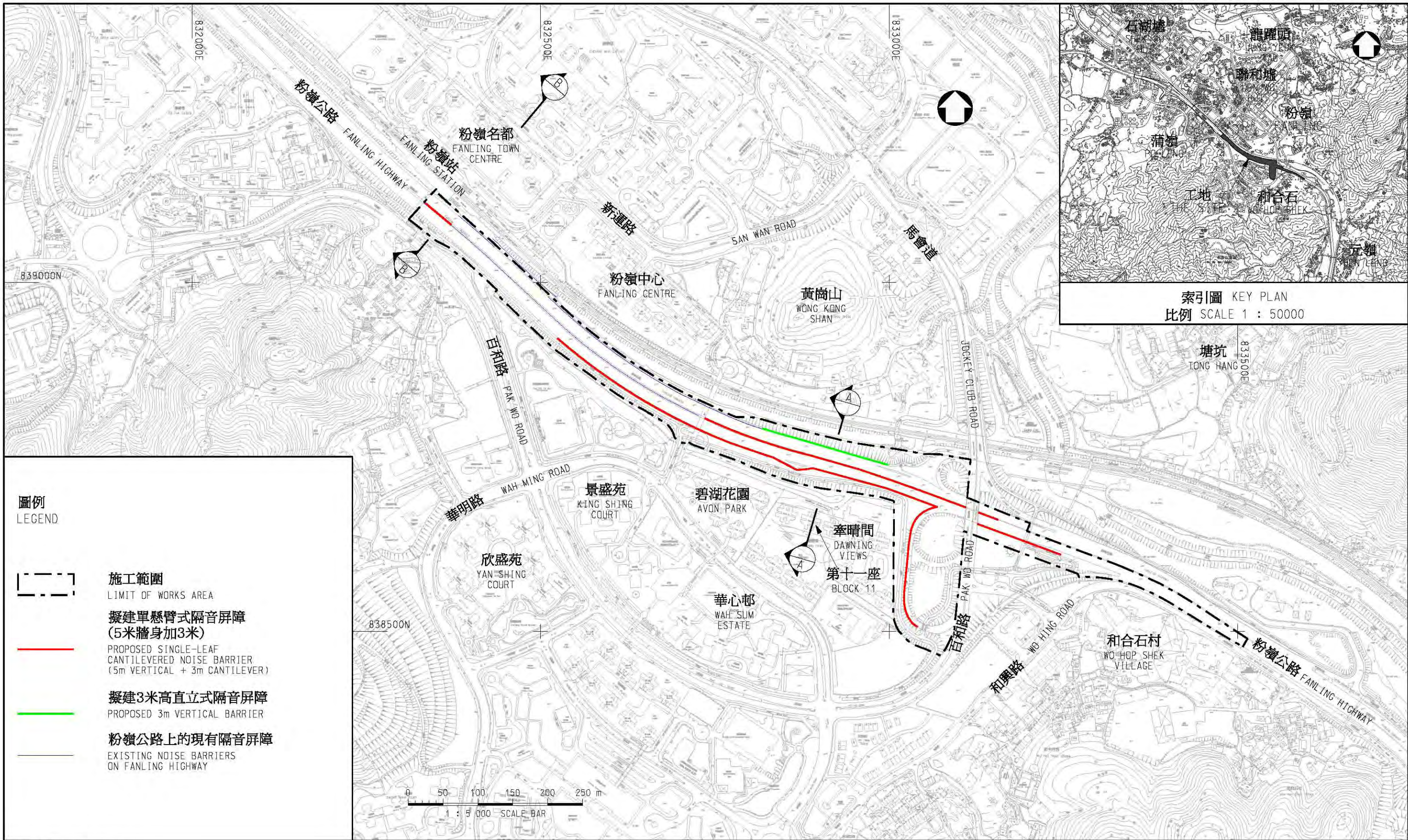
ADVICE SOUGHT

23. Members are invited to support our proposal to seek the Public Works Subcommittee's support in April 2009 for upgrading **805TH** and **807TH** to Category A, with a view to seeking Finance Committee's funding approval.

ATTACHMENT

- Enclosure 1 – Drawing Nos. HMW6805TH-SP0001 & SP0002
- Enclosure 2 – Drawing Nos. HMW6807TH-SP0001 & SP0002
- Enclosure 3 – Drawing No. HMW6807TH-SP0003

Environmental Protection Department
January 2009



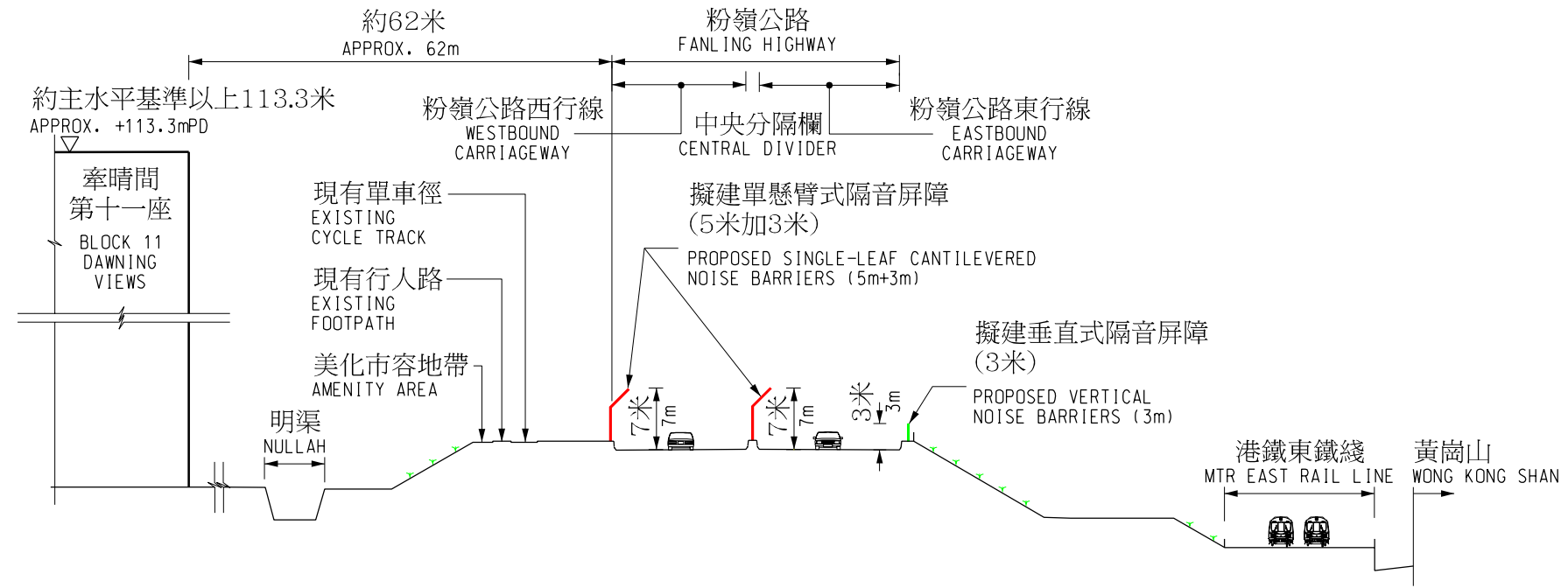
圖例
LEGEND

- 施工範圍
LIMIT OF WORKS AREA
- 擬建單懸臂式隔音屏障
(5米牆身加3米)
PROPOSED SINGLE-LEAF
CANTILEVERED NOISE BARRIER
(5m VERTICAL + 3m CANTILEVER)
- 擬建3米高直立式隔音屏障
PROPOSED 3m VERTICAL BARRIER
- 粉嶺公路上的現有隔音屏障
EXISTING NOISE BARRIERS
ON FANLING HIGHWAY

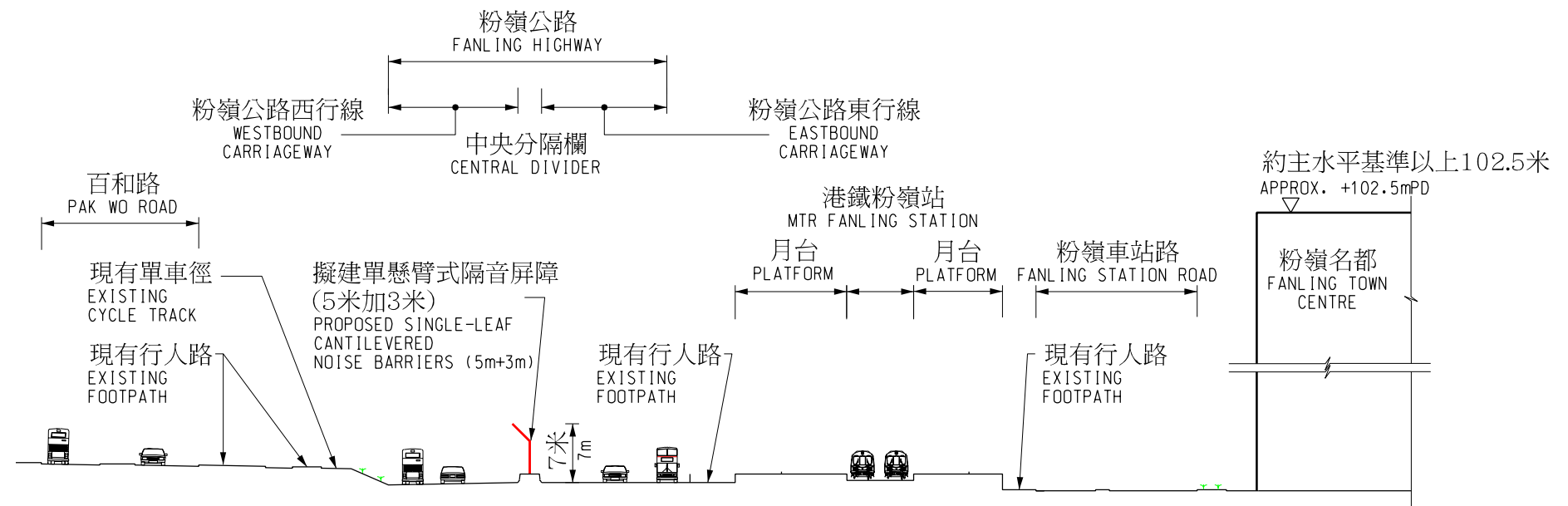
圖則名稱 drawing title

工務計劃項目第805TH號 - 介乎港鐵粉嶺站至和興路的粉嶺公路隔音屏障加建工程
PWP ITEM NO. 805TH - RETROFITTING OF NOISE BARRIERS ON FANLING HIGHWAY (MTR FANLING STATION TO WO HING ROAD)
- 平面圖 LAYOUT PLAN

設計 designed C.W.MOK 09/01/09	SIGNED	繪圖 drawn Y.L.LAW 09/1/09	SIGNED	圖則編號 drawing no. HMW6805TH-SP001	比例 scale 如圖示 AS SHOWN
覆核 checked K.C.HUNG 09/01/09	SIGNED	批准 approved C.W.CHOW 09/01/09	SIGNED	© 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 香港	



切面 SECTION A - A



切面 SECTION B - B

圖則名稱 drawing title

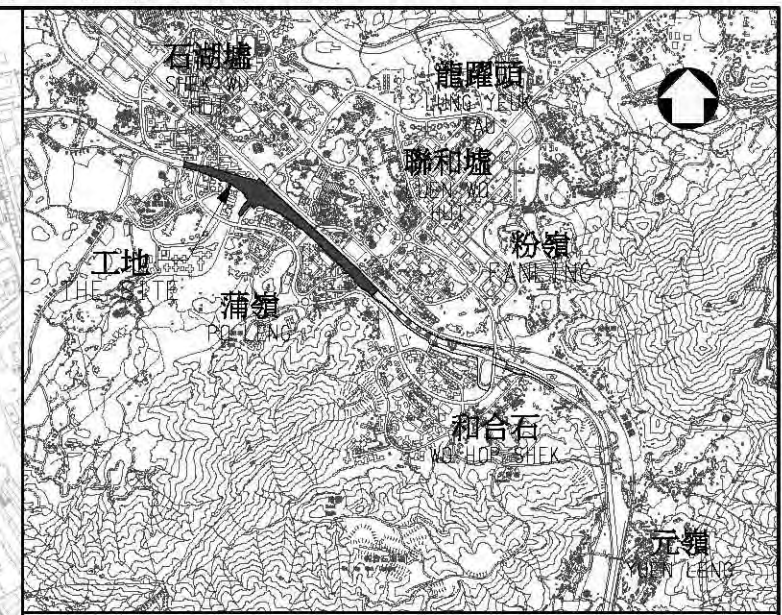
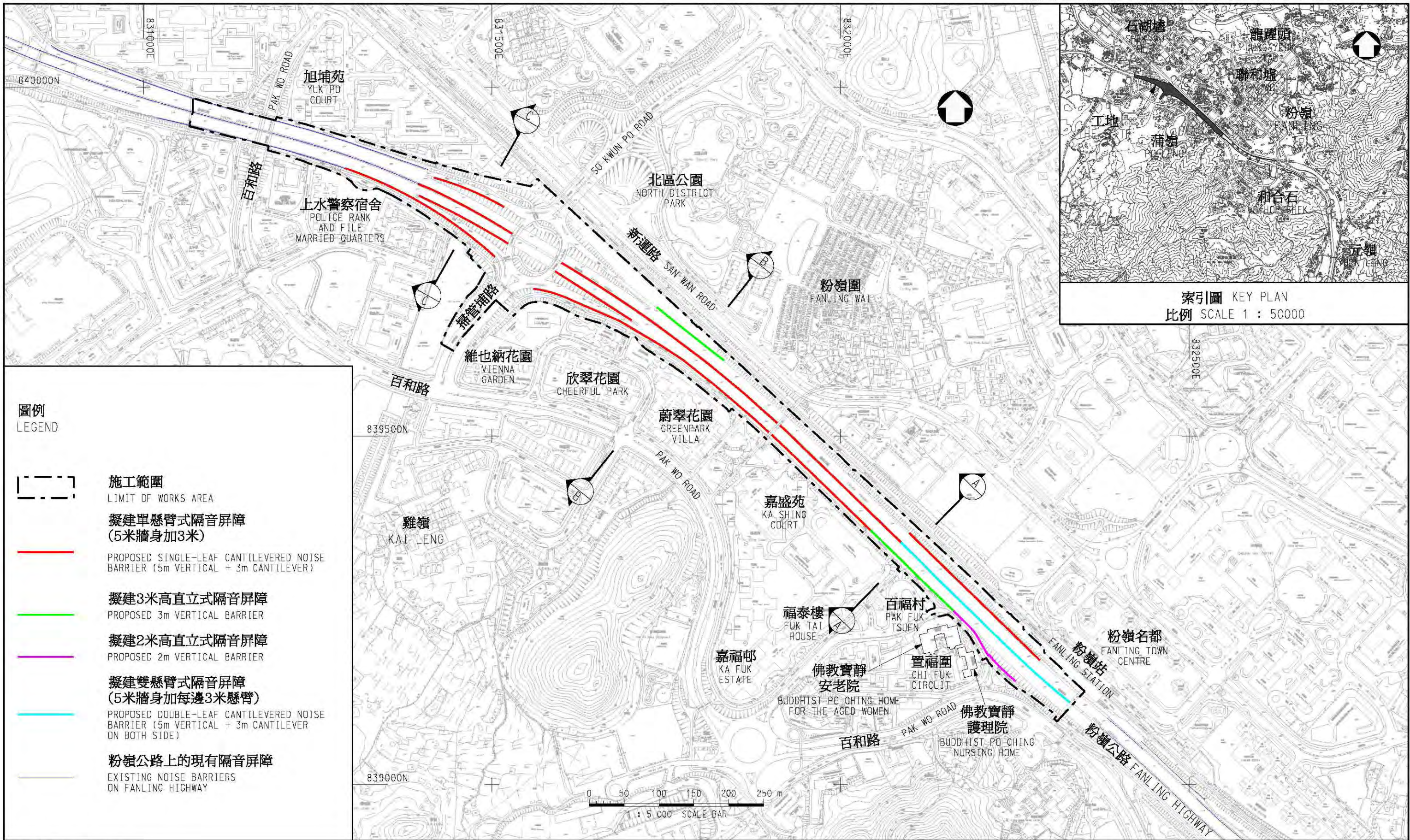
工務計劃項目第805TH號 - 介乎港鐵粉嶺站至和興路的粉嶺公路隔音屏障加建工程
PWP ITEM NO. 805TH - RETROFITTING OF NOISE BARRIERS ON FANLING HIGHWAY (MTR FANLING STATION TO WO HING ROAD)

- 切面圖 SECTIONS

設計 designed C.W.MOK 09/01/09	SIGNED	繪圖 drawn S.K.TSE 09/01/09	SIGNED	圖則編號 drawing no. HMW6805TH-SP0002	比例 scale 示意圖 DIAGRAMMATIC
覆核 checked K.C.HUNG 09/01/09	SIGNED	批准 approved C.W.CHOW 09/01/09	SIGNED	© 版權所有 COPYRIGHT RESERVED	

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MAJOR WORKS PROJECT MANAGEMENT OFFICE





索引圖 KEY PLAN
比例 SCALE 1 : 50000

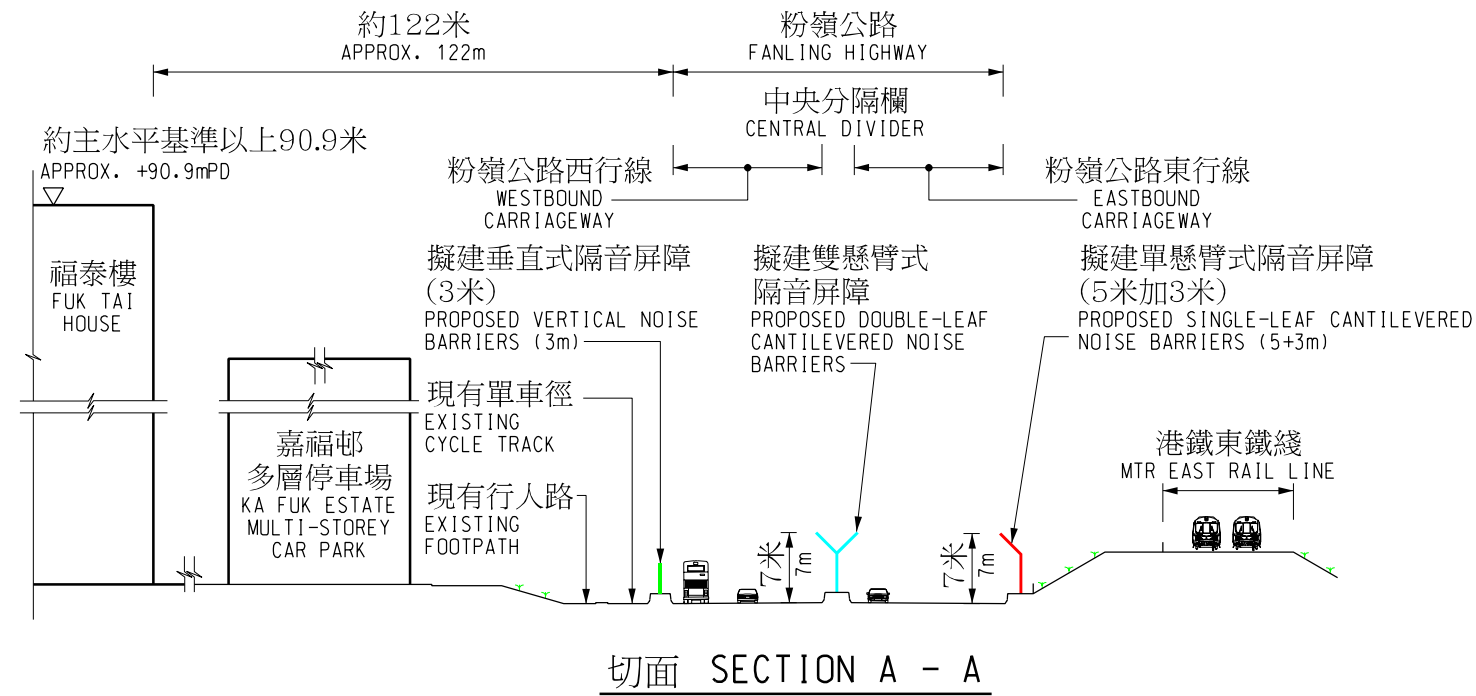
圖例
LEGEND

- 施工範圍**
LIMIT OF WORKS AREA
- 擬建單懸臂式隔音屏障**
(5米牆身加3米)
PROPOSED SINGLE-LEAF CANTILEVERED NOISE BARRIER (5m VERTICAL + 3m CANTILEVER)
- 擬建3米高直立式隔音屏障**
PROPOSED 3m VERTICAL BARRIER
- 擬建2米高直立式隔音屏障**
PROPOSED 2m VERTICAL BARRIER
- 擬建雙懸臂式隔音屏障**
(5米牆身加每邊3米懸臂)
PROPOSED DOUBLE-LEAF CANTILEVERED NOISE BARRIER (5m VERTICAL + 3m CANTILEVER ON BOTH SIDE)
- 粉嶺公路上的現有隔音屏障**
EXISTING NOISE BARRIERS ON FANLING HIGHWAY

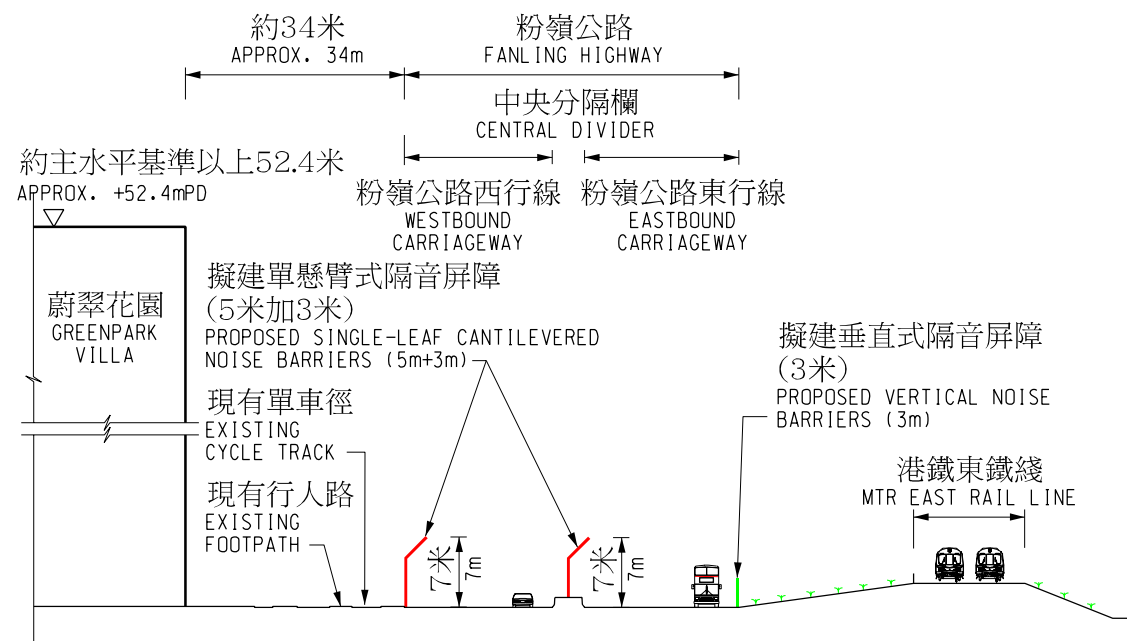
圖則名稱 drawing title

工務計劃項目第807TH號 - 介乎寶石湖路至港鐵粉嶺站的粉嶺公路隔音屏障加建工程
PWP ITEM NO. 807TH - RETROFITTING OF NOISE BARRIERS ON FANLING HIGHWAY (PO SHEK WU ROAD TO MTR FANLING STATION)
- 平面圖 LAYOUT PLAN

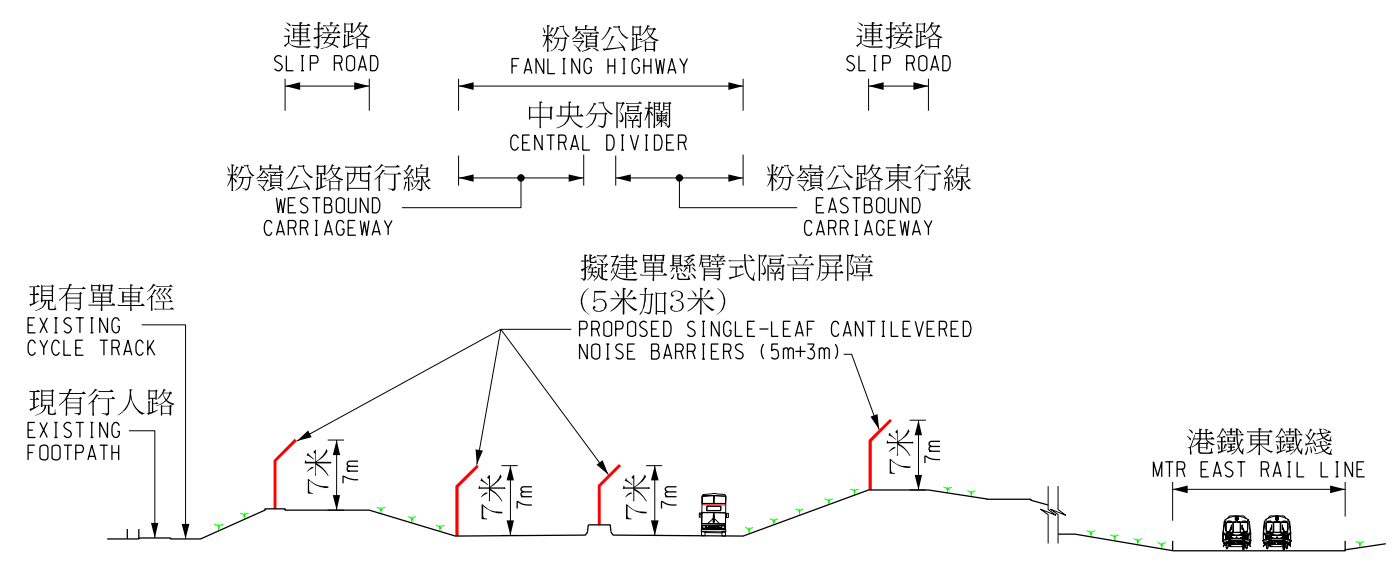
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C.W.MOK	09/01/09	Y.L.LAW	09/01/09
覆核 checked	SIGNED	批准 approved	SIGNED
K.C.HUNG	09/01/09	C.W.CHOW	09/01/09
圖則編號 drawing no.		比例 scale	
HMW6807TH-SP001		如圖示 AS SHOWN	
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主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE		HIGHWAYS DEPARTMENT HONG KONG 路政署	



切面 SECTION A - A




切面 SECTION B - B



切面 SECTION C - C

圖則名稱 drawing title

工務計劃項目第807TH號 - 介乎寶石湖路至港鐵粉嶺站的粉嶺公路隔音屏障加建工程
 PWP ITEM NO. 807TH - RETROFITTING OF NOISE BARRIERS ON FANLING HIGHWAY (PO SHEK WU ROAD TO MTR FANLING STATION)
 - 切面圖 SECTIONS

設計 designed	SIGNED	繪圖 drawn	SIGNED	圖則編號 drawing no.	比例 scale
C.W.MOK	09/01/09	S.K.TSE	09/01/09	HMW6807TH-SP0002	示意圖 DIAGRAMMATIC
覆核 checked	SIGNED	批准 approved	SIGNED	© 版權所有 COPYRIGHT RESERVED	
K.C.HUNG	09/01/09	C.W.CHOW	09/01/09	 HIGHWAYS DEPARTMENT HONG KONG 路 香 政 港 署	
主要工程管理處 MAJOR WORKS PROJECT MANAGEMENT OFFICE					



圖則名稱 drawing title
 工務計劃項目第805TH號 - 介乎港鐵粉嶺站至和興路的粉嶺公路隔音屏障加建工程
 工務計劃項目第807TH號 - 介乎寶石湖路至港鐵粉嶺站粉嶺公路隔音屏障加建工程
 PWP ITEM NO. 805TH - RETROFITTING OF NOISE BARRIERS ON FANLING HIGHWAY (MTR FANLING STATION TO WO HING ROAD)
 PWP ITEM NO. 807TH - RETROFITTING OF NOISE BARRIERS ON FANLING HIGHWAY (PO SHEK WU ROAD TO MTR FANLING STATION)
 - 典型景觀美化工程 TYPICAL LANDSCAPE WORKS

設計 designed	SIGNED	繪圖 drawn	SIGNED
C.W.MOK	09/01/09	Y.L.LAW	09/01/09
覆核 checked	SIGNED	批准 approved	SIGNED
K.C.HUNG	09/01/09	C.W.CHOW	09/01/09

圖則編號 drawing no. HMW6807TH-SP003
 比例 scale 示意圖
 DIAGRAMMATIC

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