For discussion **PWSC(2021-22)6**
on 21 April 2021

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 706 – HIGHWAYS
Transport – Roads
766TH – Retrofitting of noise barriers on Po Lam Road North
817TH – Retrofitting of noise barriers on Po Ning Road

Members are invited to recommend to the Finance Committee the upgrading of **766TH** and **817TH** to Category A at estimated costs of $376.0 million and $241.7 million in money-of-the-day prices respectively.

PROBLEM

The existing dwellings adjacent to Po Lam Road North between Tseung Kwan O Village and King Lam Estate, and adjacent to Po Ning Road between Hau Tak Estate and Yu Ming Court are affected by excessive traffic noise and it is necessary to implement noise mitigation measures on these road sections.

PROPOSAL

2. The Director of Highways proposes, with the support of the Secretary for the Environment, to upgrade **766TH** to Category A at an estimated cost of $376.0 million in money-of-the-day (MOD) prices for retrofitting noise barriers on the section of Po Lam Road North and the nearby road sections between Tseung Kwan O Village and King Lam Estate.

/3. …..

3. The Director of Highways also proposes, with the support of the Secretary for the Environment, to upgrade **817TH** to Category A at an estimated cost of $241.7 million in MOD prices for retrofitting noise barriers on the section of Po Ning Road and the nearby road sections between Hau Tak Estate and Yu Ming Court.

4. Details of the above projects are at **Enclosures 1** and **2** respectively.

Environment Bureau
Highways Department
April 2021

766TH – Retrofitting of noise barriers on Po Lam Road North

PROJECT SCOPE AND NATURE

The proposed scope of works under the project includes –

(a) retrofitting of the following noise barriers and enclosure on or near the section of Po Lam Road North between Tseung Kwan O Village and King Lam Estate:
   (i) two sections of 3 metres high and about 170 metres in length vertical noise barrier along the verge of the eastbound carriageway of Po Lam Road North;
   (ii) a section of 3 metres high and about 55 metres in length vertical noise barrier along the verge of the westbound carriageway of Po Lam Road North;
   (iii) two sections of 5 metres high and about 160 metres in length vertical noise barrier along the verge of the westbound carriageway of Po Lam Road North;
   (iv) a section of 5 metres high and about 50 metres in length vertical noise barrier along the verge of the northbound carriageway of Po Hong Road;
   (v) a section of 6.5 metres high and about 50 metres in length cantilevered noise barrier along the verge of the westbound carriageway of Po Lam Road North;
   (vi) two sections of 6.7 metres high and about 50 metres in length cantilevered noise barrier along the verge of the westbound carriageway of Po Lam Road North;
   (vii) a section of 6.7 metres high and about 50 metres in length cantilevered noise barrier along the verge of the eastbound carriageway of Po Fung Road;
   (viii) a section of 6.7 metres high and about 40 metres in length cantilevered noise barrier along the verge of the westbound carriageway of Po Fung Road; and
   (ix) a section of 7 metres high and about 60 metres in length noise semi-enclosure along the verge of the westbound carriageway of Po Lam Road North;

/(b) …..

(b) laying of low noise surfacing materials on Po Lam Road North between Tseung Kwan O Village and King Lam Estate,

(c) implementation of associated works including lighting, slope, drainage, traffic aids, utilities and landscaping works, and

(d) implementation of an environmental monitoring and audit (EM&A) programme for the works in (a) to (c) above.

——— The layout plans and sections of the proposed works are at **Annex 1 to Enclosure 1**.

2. We will give priority to road resurfacing with low noise surfacing materials, whose cost is lower than erecting noise barriers, to alleviate road traffic noise. We considered adopting different combinations of low noise road resurfacing and noise barriers to come up with the most cost effective mitigation scheme in order to reduce the extent of noise barriers and semi-enclosures, and hence the overall construction cost.

3. The proposed works will be commenced upon obtaining funding approval from the Finance Committee (FC) for completion in around four years.

JUSTIFICATIONS

4. To mitigate the traffic noise impact of existing roads on neighbouring residents, it is the Government's policy, where practicable and subject to availability of resources, to study the implementation of direct noise mitigation measures on existing roads generating traffic noise at neighbouring residents at levels exceeding 70 dB(A)[1]. Such measures include retrofitting of noise barriers and enclosures on roads, and road resurfacing with low noise materials.

/5. …..

---

[1] Road traffic noise level is specified in terms of L_{10}(1 hour) which is the noise level exceeded for 10% of a one-hour period and is generally measured at peak traffic flow. The traffic noise limit of 70 dB(A) for residential premises as stipulated in the Hong Kong Planning Standards and Guidelines is adopted as the criterion for studying the implementation of noise mitigation measures under existing policy.

5. Currently, a total of some 675 dwellings near the section of Po Lam Road North between Tseung Kwan O Village and King Lam Estate are affected by traffic noise at levels exceeding 70 dB(A). The proposed project comprises road resurfacing with low noise materials and retrofitting of noise barriers and semi-enclosure on or near the above road sections to come up with the most cost effective mitigation scheme in order to mitigate the traffic noise impact of the affected dwellings. With the proposed measures, the traffic noise of about 643 dwellings will be reduced to levels at 70 dB(A) or below with significant reduction up to 16 dB(A). To harmonise the aesthetic design of the proposed noise barriers and semi-enclosure with the surrounding environment as well as to attain their required acoustic performance, some of the noise panels will be of absorptive panel design while some will be of translucent or transparent panel design. The artist impressions of the proposed works are at **Annex 2 to Enclosure 1**. Details of the traffic noise improvement of the proposed project are at **Annex 3 to Enclosure 1**.

FINANCIAL IMPLICATIONS

6. We estimate that the capital cost of the proposed project will be $376.0 million in MOD prices, broken down as follows –

			$ million (in MOD prices)
(a)	Noise barriers and semi-enclosures		239.4[2]
	(i) Superstructure	76.5	
	(ii) Foundation	162.9[3]	
(b)	Laying of low noise surfacing materials and associated lighting, slope, drainage, traffic aids and landscaping works		57.1
(c)	Consultants' fees		5.5
	(i) Contract administration	1.2	
	(ii) Management of resident site staff (RSS)	4.3	

/(d) …..

[2] Noise barriers and semi-enclosures cover construction of substructure and superstructure of the barriers and semi-enclosures.

[3] Foundation works cover construction of piles and all related works including tests and monitoring.

		$ million (in MOD prices)
(d)	Remuneration of RSS	39.9
(e)	Contingencies	34.1
	Total	376.0

7. We propose to engage consultants to take up the contract management and site supervision works of the project. A breakdown of the estimates for consultants' fees and RSS costs by man-month is at **Annex 4 to Enclosure 1**.

8. Subject to funding approval, we plan to phase the expenditure as follow –

Year	**$ million (in MOD prices)**
2021-22	12.3
2022-23	34.2
2023-24	77.3
2024-25	110.6
2025-26	79.2
2026-27	39.0
2027-28	23.4
	376.0

9. 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 for the period from 2021 to 2028.

/We …..

We will deliver the works under New Engineering Contract[4]. The contract will provide for price adjustments.

10. We estimate the annual recurrent expenditure arising from the proposed works to be about $1.1 million.

PUBLIC CONSULTATION

11. The Housing & Environmental Hygiene Committee of the Sai Kung District Council was consulted on the proposed project on 11 July 2019, and its members agreed that the project should be carried out to alleviate the traffic noise impact on nearby residents. The scheme and plans of the proposed project were gazetted under the Roads (Works, Use and Compensation) Ordinance (Cap. 370) (the Ordinance) on 11 and 18 October 2019 respectively. One objection on proposed road scheme was received during the consultation period of gazettal. After the meeting with the objector, the objector withdrew his objection unconditionally on 17 March 2020. Hence, the project was authorised under the Ordinance with the notice of authorisation gazetted on 17 and 24 April 2020.

12. The aesthetic design of the proposed noise barriers was submitted to the Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS)[5] for consultation in October 2019, and received support and endorsement from members of the committee.

13. We consulted the Panel on Environmental Affairs of the Legislative Council on 22 February 2021 on the proposed works. Members supported the submission of the funding proposal to the Public Works Subcommittee for consideration. During the Panel meeting, members requested for information on improving the noise reduction performance and/or to reduce the construction and maintenance cost of noise barriers. We submitted the supplementary information to the Panel on Environmental Affairs on 15 March 2021.

/**ENVIRONMENTAL** …..

---

[4] New Engineering Contract is a suite of contracts developed by the Institution of Civil Engineers, United Kingdom. It is a contract form that emphasises a spirit of mutual trust, cooperation and collaborative risk management between contract parties.

[5] The ACABAS comprises representatives of the Hong Kong Institute of Architects, the Hong Kong Institution of Engineers, the Hong Kong Institute of Planners, academic institutions, Architectural Services Department, Highways Department, Housing Department and Civil Engineering and Development Department. It 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

14. The proposed project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We have conducted an environmental review and the conclusion is that the works concerned will benefit neighbouring residents with reduction in traffic noise levels after completion and will not cause other adverse environmental impact.

15. To minimise short-term impacts during construction, we will implement mitigation measures to control the nuisances caused by construction noise, dust and site run-off in compliance with the established standards and guidelines. We will also carry out the EM&A programme to ensure proper implementation of the recommendations of the environmental review.

16. At the planning and design stages, we have considered the design and construction sequences of the proposed works to reduce the generation of construction waste where possible. 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 at public fill reception facilities[6]. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste and the use of non-timber formwork to further reduce the generation of construction waste.

17. 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, and 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 and non-inert construction waste at public fill reception facilities and landfills respectively through implementing a trip-ticket system.

/18. …..

---

[6] 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 at public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

18. We estimate that the proposed works will generate in total 13 000 tonnes of construction waste. We will reuse about 2 400 tonnes of inert construction waste (18%) on site and deliver around 10 300 tonnes of inert construction waste (79%) to public fill reception facilities for subsequent reuse. We will dispose of the remaining 300 tonnes of non-inert construction waste (3%) at landfills. The total cost for disposal of the construction waste at public fill reception facilities and landfills is estimated to be about $0.79 million, based on a unit charge rate of $71 per tonne for disposal at public fill reception facilities and $200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N).

HERITAGE IMPLICATIONS

19. 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

20. No land resumption is required for the proposed project.

BACKGROUND INFORMATION

21. We upgraded the proposed project to Category B in 2006. Subsequently, we engaged a consultant to conduct further feasibility study, including preliminary site investigation, to provide preliminary feasible options for the project and relevant advance design information so as to conduct the detailed design in a faster and smoother manner in future. In October 2018, we engaged consultants to carry out site investigation in more detail and subsequently the detailed design for the proposed works at an estimated cost of about $4.8 million. The cost has been paid under **Subhead 6100TX** "Highway works, studies and investigations for items in Category D of the Public Works Programme". The detailed design of the proposed works has been completed in February 2021.

/22. …..

22. Of the 683 trees within the project boundary, 506 trees will be preserved. The proposed project will involve removal of 177 trees, including 176 trees to be felled, one tree to be transplanted elsewhere. Besides, one important tree[7] will be affected during the implementation of the project. A summary of trees of particular interest affected is provided at **Annex 5 to Enclosure 1**. We will incorporate planting proposals as part of the project, including estimated quantities of 177 trees and 9 000 shrubs.

23. We estimate that the proposed works will create about 85 jobs (65 for labourers and 20 for professional or technical staff), providing a total employment of 3 600 man-months.

---

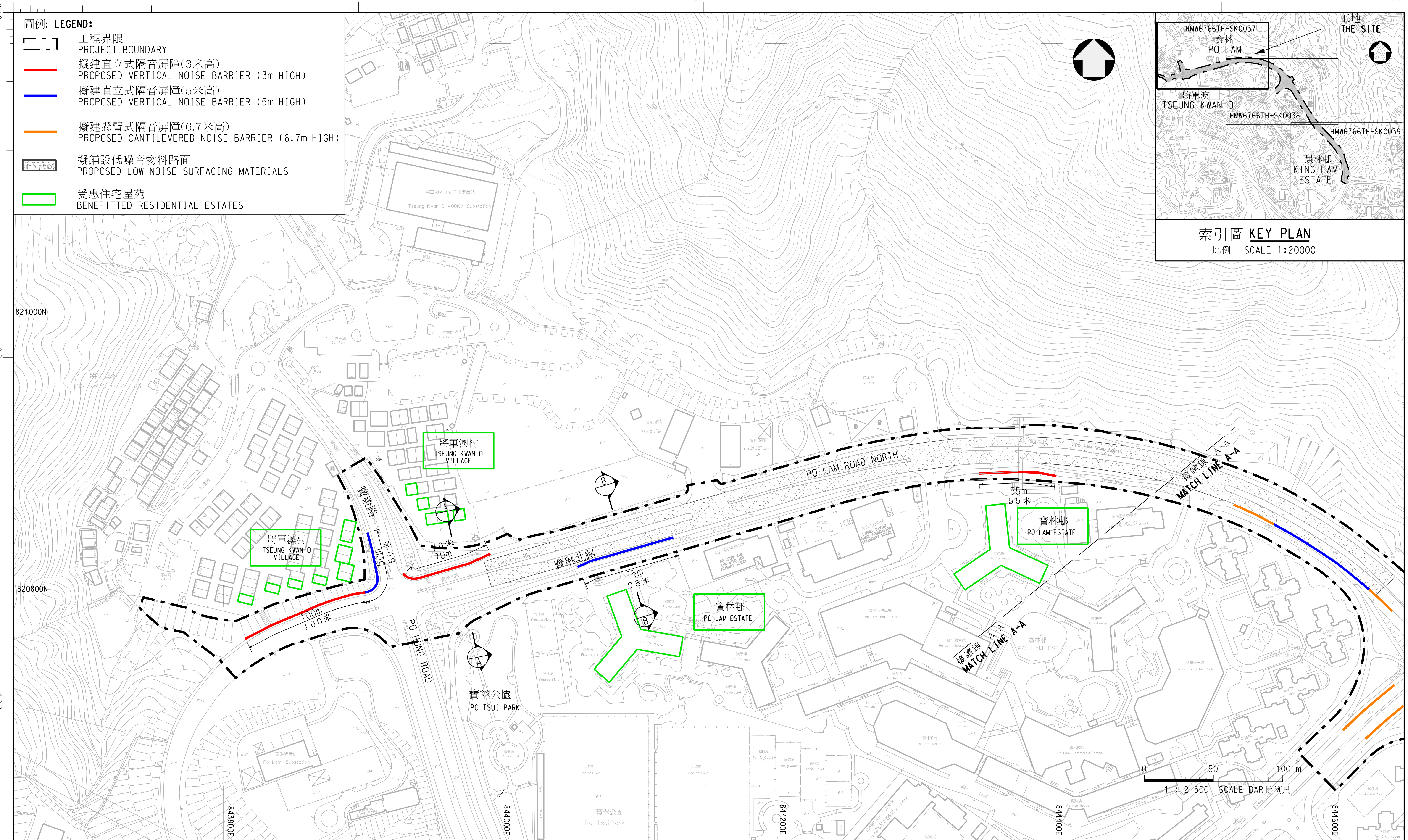
[7] An "important tree" refers to trees on the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –

(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 an 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 trees with trunk diameter equal or exceeding 1.0 metre (measured at 1.3 metres above ground level), or with height/canopy spread equal or exceeding 25 metres.



圖則名稱 drawing title

工務計劃項目第766TH -寶琳北路加建隔音屏障工程 - 平面圖
(三張圖中的第一張)

PUBLIC WORKS PROGRAMME ITEM NO. 766TH - RETROFITTING OF NOISE BARRIERS ON PO LAM ROAD NORTH - LAYOUT PLAN
(SHEET 1 OF 3)

圖則編號 drawing no. HMW6766TH-SK0037

比例 scale 1:2500

HIGHWAYS DEPARTMENT HONG KONG 路政署 香港

R:\Team 2\6766TH\DRAWING\SK0037\HMW6766TH-SK0037.dgn

A3 420 x 297

0mm 100 200 300 400

844400E 844600E 844800E

820800N 820600N

PO LAM ROAD NORTH

MATCH LINE A-A 接續線 A-A

MATCH LINE B-B 接續線 B-B

55m 55米

85m 85米

50m 50米

40m 40米

英明苑 YING MING COURT

欣明苑 YAN MING COURT

寶琳北路 PO LAM ROAD NORTH

寶翠公園

寶琳邨 PO LAM ESTATE

寶琳 PO LAM

將軍澳 TSEUNG KWAN O

工地 THE SITE

景林邨 KING LAM ESTATE

HMW6766TH-SK0037

HMW6766TH-SK0038

HMW6766TH-SK0039

索引圖 KEY PLAN

比例 SCALE 1:20000

圖例: LEGEND:

- 工程界限 PROJECT BOUNDARY
- 擬建直立式隔音屏障(3米高) PROPOSED VERTICAL NOISE BARRIER (3m HIGH)
- 擬建直立式隔音屏障(5米高) PROPOSED VERTICAL NOISE BARRIER (5m HIGH)
- 擬建懸臂式隔音屏障(6.5米高) PROPOSED CANTILEVERED NOISE BARRIER (6.5m HIGH)
- 擬建懸臂式隔音屏障(6.7米高) PROPOSED CANTILEVERED NOISE BARRIER (6.7m HIGH)
- 擬鋪設低噪音物料路面 PROPOSED LOW NOISE SURFACING MATERIALS
- 受惠住宅屋苑 BENEFITTED RESIDENTIAL ESTATES

0 50 100 m米

1 : 2 500 SCALE BAR 比例尺

圖則名稱 drawing title

工務計劃項目第766TH -寶琳北路加建隔音屏障工程 - 平面圖 (三張圖中的第二張)

PUBLIC WORKS PROGRAMME ITEM NO. 766TH - RETROFITTING OF NOISE BARRIERS ON PO LAM ROAD NORTH - LAYOUT PLAN (SHEET 2 OF 3)

圖則編號 drawing no. HMW6766TH-SK0038

比例 scale 1:2500

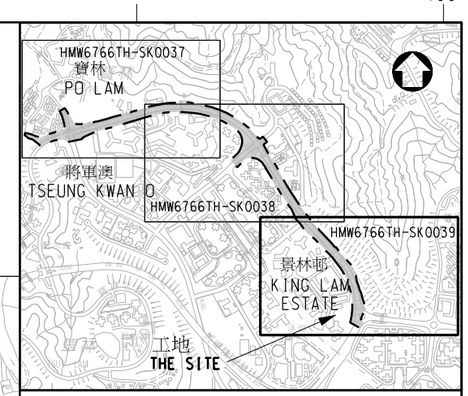
HIGHWAYS DEPARTMENT HONG KONG 路香政港署

R:\Team 2\6766TH\DRAWING\SK0038\HMW6766TH-SK0038.dgn

A3 420 x 297

圖例: **LEGEND:**

- 工程界限 PROJECT BOUNDARY
- 擬建半密閉式隔音屏障(7米高) PROPOSED NOISE SEMI-ENCLOSURE (7m HIGH)
- 擬鋪設低噪音物料路面 PROPOSED LOW NOISE SURFACING MATERIALS
- 受惠住宅屋苑 BENEFITTED RESIDENTIAL ESTATES



索引圖 KEY PLAN
比例 SCALE 1:20000

圖則名稱 drawing title

工務計劃項目第766TH -寶琳北路加建隔音屏障工程 - 平面圖
(三張圖中的第三張)

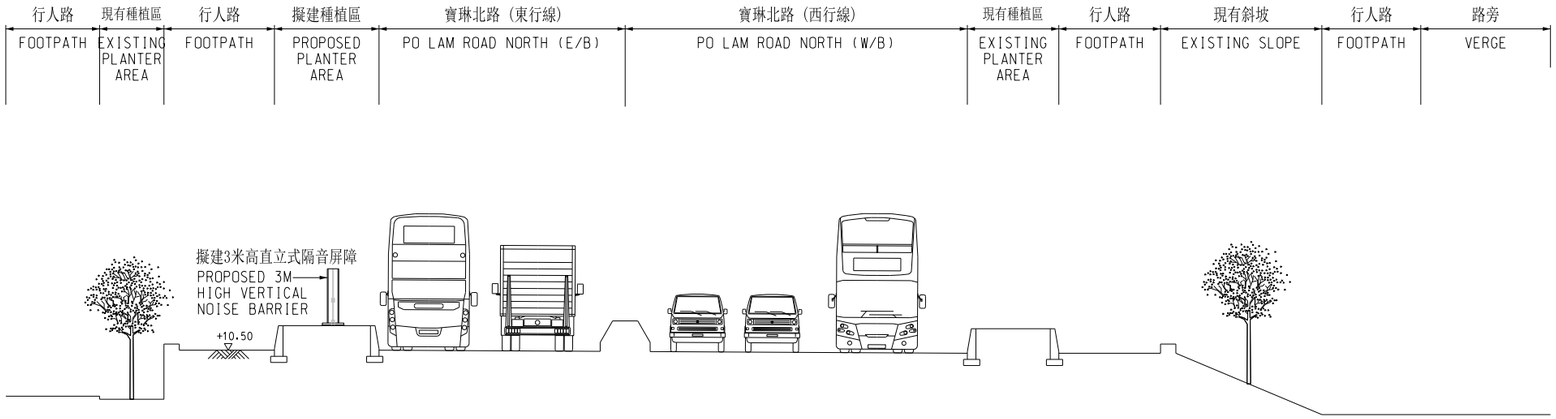
PUBLIC WORKS PROGRAMME ITEM NO. 766TH - RETROFITTING OF NOISE BARRIERS ON PO LAM ROAD NORTH - LAYOUT PLAN
(SHEET 3 OF 3)

圖則編號 drawing no.	比例 scale
HMW6766TH-SK0039	1:2500

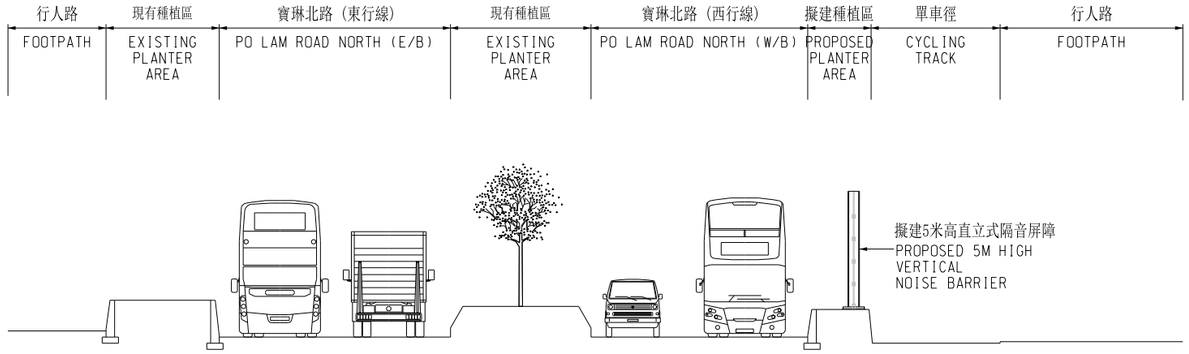
HIGHWAYS DEPARTMENT HONG KONG 路香政港署

R:\Team 2\6766TH\DRAWING\SK0039\HMW6766TH-SK0039.dgn

A3 420 x 297



切面圖 SECTION A-A



切面圖 SECTION B-B

圖則名稱 drawing title

工務計劃項目第766TH-寶琳北路加建隔音屏障工程-切面圖
（兩張圖中的第一張）

PUBLIC WORKS PROGRAMME ITEM NO.766TH - RETROFITTING OF NOISE BARRIERS ON PO LAM ROAD NORTH - SECTIONS
(SHEET 1 OF 2)

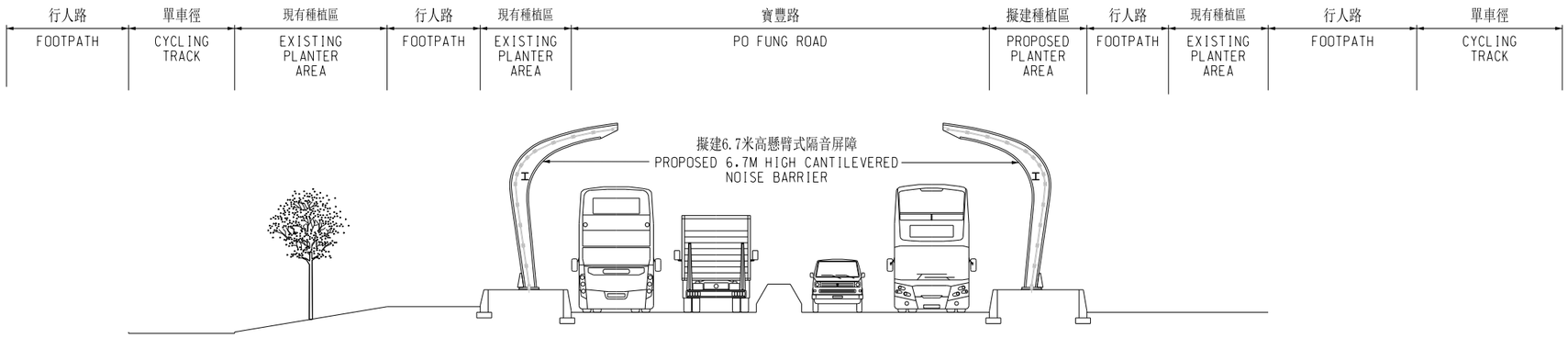
圖則編號 drawing no.
HMW6766TH-SK0043

比例 scale
N.T.S
不按比例

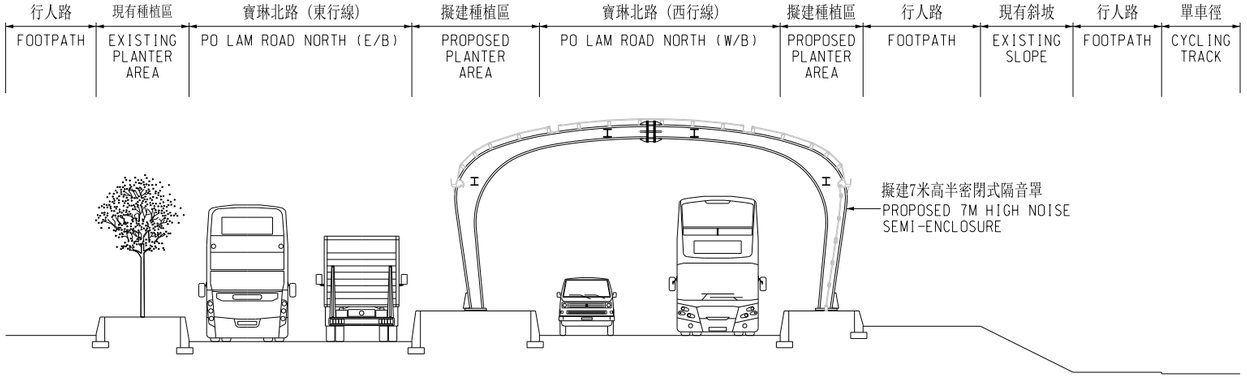
HIGHWAYS DEPARTMENT HONG KONG 香港 路政署

R:\Team 2\6766TH\DRAWING\SK0043\HMW6766TH-SK0043.dgn

A3 420 x 297



切面圖 SECTION C-C



切面圖 SECTION D-D

圖則名稱 drawing title

工務計劃項目第766TH-寶琳北路加建隔音屏障工程-切面圖
（兩張圖中的第二張）

PUBLIC WORKS PROGRAMME ITEM NO.766TH - RETROFITTING OF NOISE BARRIERS ON PO LAM ROAD NORTH - SECTIONS
(SHEET 2 OF 2)

圖則編號 drawing no.
HMW6766TH-SK0044

比例 scale
N.T.S
不按比例

HIGHWAYS DEPARTMENT HONG KONG 路政署 香港

R:\Team 2\6766TH\DRAWING\SK0044\HMW6766TH-SK0044.dgn

A3 420 x 297

近英明苑現況
Present Situation Near Ying Ming Court

近英明苑完工後
Upon Completion of Proposed Works Near Ying Ming Court

圖則名稱 drawing title

工務計劃項目第766TH－寶琳北路加建隔音屏障工程－工程的外觀構思圖（兩張圖中的第一張）
PUBLIC WORKS PROGRAMME ITEM NO. 766TH - RETROFITTING OF NOISE BARRIERS ON PO LAM ROAD NORTH - ARTIST IMPRESSION OF PROPOSED WORKS (SHEET 1 OF 2)

圖則編號 drawing no.
HMW6766TH-SK0051

比例 scale
示意圖 DIAGRAMMATIC

HIGHWAYS DEPARTMENT HONG KONG 香港路政署

R:\Team 2\6766TH\DRAWING\SK0051\HMW6766TH-SK0051.dgn

A3 420 x 297

近景林邨現況
Present Situation Near King Lam Estate

近景林邨完工後
Upon Completion of Proposed Works Near King Lam Estate

圖則名稱 drawing title

工務計劃項目第766TH－寶琳北路加建隔音屏障工程－工程的外觀構思圖（兩張圖中的第二張）
PUBLIC WORKS PROGRAMME ITEM NO. 766TH - RETROFITTING OF NOISE BARRIERS ON PO LAM ROAD NORTH
- ARTIST IMPRESSION OF PROPOSED WORKS (SHEET 2 OF 2)

圖則編號 drawing no.
HMW6766TH-SK0052

比例 scale
示意圖
DIAGRAMMATIC

HIGHWAYS DEPARTMENT HONG KONG
香港 路政署

R:\Team 2\6766TH\DRAWING\SK0052\HMW6766TH-SK0052.dgn

A3 420 x 297

766TH - Retrofitting of noise barriers on Po Lam Road North

Breakdown of the number of dwellings by the respective level of reduction in traffic noise

Reduction in Traffic Noise (dB(A))	Number of Dwellings
16 - 18	1
13 - 15	2
10 - 12	18
7 - 9	34
4 – 6	128
1 – 3	428
Total	**611**

Breakdown of the number of affected dwellings by the respective traffic noise level

Traffic Noise Level (dB(A))	Number of Dwellings	
	Before Implementation of Mitigation Measures	After Implementation of Mitigation Measures
75 – 76	12	0
73 – 74	135	0
71 – 72	528	32
70 or below	N/A	643
Total	**675**	**675**

766TH – Retrofitting of noise barriers on Po Lam Road North

Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2020 prices)

			Estimated man-months	Average MPS* salary point	Multiplier (Note1)	Estimated fee ($ million)
(a)	Consultants' fees for contract administration (Note 2)	Professional	–	–	–	0.8
		Technical	–	–	–	0.2
					Sub-total	1.0#
(b)	Resident site staff (RSS) costs (Note 3)	Professional	126	38	1.6	17.3
		Technical	395	14	1.6	19.1
					Sub-total	36.4
	Comprising –					
	(i) Consultants' fees for management of RSS				3.5#	
	(ii) Remuneration of resident site staff				32.9#	
					Total	**37.4**

*MPS – Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS salary point to estimate the cost of RSS supplied by the consultants (as at now, MPS point 38 = $85,870 per month and MPS point 14 = $30,235 per month).
2. The consultant's staff cost for contract administration is calculated in accordance with the existing agreement for the design and construction of **766TH**. The construction phase of the assignment in respect of works will only be executed subject to FC's approval to upgrade **766TH** to Category A.
3. The actual man-months and actual costs will only be known after completion of the construction works.

Remarks

The cost figures in this Enclosure are shown in constant prices to correlate with the MPS salary point of the same year. The figures marked with # are shown in MOD prices in paragraph 6 of the main paper.

766TH - Retrofitting of noise barriers on Po Lam Road North

Summary of "Important tree" affected

Project No.: 766TH **Project Title:** Retrofitting of noise barriers on Po Lam Road North

Tree ref. no.	Species		Measurements			Amenity value[1]	Form	Health condition	Structural condition	Suitability for transplanting[2]		Conservation status[3]	Recommendation	Department to provide expert advice to LandsD	Additional Remarks
	Scientific name	Chinese name	Height (m)	DBH[4] (mm)	Crown spread (m)	(Good/Fair/Poor)				(High/Medium/ Low)	Remarks		(Retain / Transplant / Fell)		
T057	*Eucalyptus citriodora*	檸檬桉	15	1200	7	Fair	Fair	Fair	Fair	Low	Tree location is in conflict with the proposed works. The size of the tree is very large and the health condition is fair. The survival rate after transplanting is low. It is therefore recommended not to be transplanted.	Nil	Fell	Highways Department	(1) Preparation of intact and sufficient-sized root ball not practical; (2) Dead branches were observed

[1] Amenity value of a tree is assessed by its functional value for shade, shelter, screening, reduction of pollution and noise and other environmental factors, etc, and classified into the following categories-
Good: Important trees which should be retained by adjusting the design layout accordingly.

Fair: Trees that are desirable to be retained in order to create a pleasant environment, which includes healthy specimens of lesser importance than "Good" trees.

Poor: Trees that are dead, dying or potentially hazardous and should be removed.

[2] Assessment has taken into account conditions of the tree at the time of survey (including health, structure, age and root conditions), site conditions (including topography and accessibility) and intrinsic characters of tree species (survival rate after transplanting).

[3] Conservation status is based on the rarity and protection status of the species under relevant ordinances in Hong Kong, such as Rare and Precious Plants of Hong Kong, the International Union for Conservation of Nature Red List of threatened Species and the Forests and Countryside Ordinance.

[4] Diameter at Breast Height (DBH) of a tree refers to its trunk diameter at breast height (i.e. measured at 1.3 metres above ground level).

817TH – Retrofitting of noise barriers on Po Ning Road

PROJECT SCOPE AND NATURE

The proposed scope of works under the project includes

(a) retrofitting of the following noise barriers and enclosures on or near the section of Po Ning Road between Hau Tak Estate and Yu Ming Court:
   (i) a section of 5 metres high and about 260 metres in total length vertical noise barriers along the verge of westbound carriageway of Po Ning Road;
   (ii) two sections of 6.7 metres high and about 80 metres in total length cantilevered noise barriers along the verge of westbound carriageway of Po Ning Road;
   (iii) a section of 6.7 metres high and about 55 metres in total length cantilevered noise barriers along the verge of northbound carriageway of Sheung Ning Road;
   (iv) a section of 6.7 metres high and about 60 metres in total length cantilevered noise barriers along the verge of southbound carriageway of Sheung Ning Road; and
   (v) two sections of 7 metres high and about 80 metres in total length noise semi-enclosures along the verge of westbound carriageway of Po Ning Road;

(b) laying of low noise surfacing materials on Po Ning Road between Hau Tak Estate and Yu Ming Court;

(c) implementation of associated works including lighting, slope, drainage, traffic aids, utilities and landscaping works; and

(d) implementation of an environmental monitoring and audit (EM&A) programme for the works in (a) to (c) above.

——— The layout plans and sections of the proposed works are at **Annex 1 to Enclosure 2**.

/2. …..

2. We will give priority to road resurfacing with low noise surfacing materials, whose cost is lower than erecting noise barriers, to alleviate road traffic noise. We considered adopting different combinations of low noise road resurfacing and noise barriers to come up with the most cost effective mitigation scheme in order to reduce the extent of noise barriers and semi-enclosures, hence the overall construction cost.

3. The proposed works will be commenced upon obtaining funding approval from the Finance Committee (FC) for completion in around four years.

JUSTIFICATIONS

4. To mitigate the traffic noise impact of existing roads on neighbouring residents, it is the Government's policy, where practicable and subject to availability of resource, to study the implementation of direct noise mitigation measures on existing roads generating traffic noise at neighbouring residents at levels exceeding 70 dB(A)[1]. Such measures include retrofitting of noise barriers and enclosures on roads, and road resurfacing with low noise materials.

5. Currently, a total of some 624 dwellings near the section of Po Ning Road between Hau Tak Estate and Yu Ming Court are affected by traffic noise at levels exceeding 70 dB(A). The proposed project comprises road resurfacing with low noise materials and retrofitting of noise barriers and semi-enclosures on or near the above road sections to come up with the most cost effective mitigation scheme in order to mitigate the traffic noise impact of the affected dwellings. With the proposed measures, the traffic noise of about 583 dwellings will be reduced to levels at 70 dB(A) or below with significant reduction up 19 dB(A). To harmonise the aesthetic design of the proposed noise barriers and semi-enclosures with the surrounding environment as well as to attain their required acoustic performance, some of the noise panels will be of absorptive panel design while some will be of translucent or transparent panel design. The artist impressions of the proposed works are at **Annex 2 to Enclosure 2**. Details of the traffic noise improvement of the proposed project are at **Annex 3 to Enclosure 2**.

/**FINANCIAL** …..

---

[1] Road traffic noise level is specified in terms of L_{10}(1 hour) which is the noise level exceeded for 10% of a one-hour period and is generally measured at peak traffic flow. The traffic noise limit of 70 dB(A) for residential premises as stipulated in the Hong Kong Planning Standards and Guidelines is adopted as the criterion for studying the implementation of noise mitigation measures under existing policy.

FINANCIAL IMPLICATIONS

6. We estimate that the capital cost of the proposed project will be $241.7 million in MOD prices, broken down as follows –

			$ million (in MOD prices)
(a)	Noise barriers and semi-enclosures		156.5[2]
	(i) Superstructure	62.5	
	(ii) Foundation	94.0	
(b)	Laying of low noise surfacing materials and associated lighting, slope, drainage, traffic aids and landscaping works		34.0
(c)	Consultants' fees		3.6
	(i) Contract administration	1.0	
	(ii) Management of resident site staff (RSS)	2.6	
(d)	Remuneration of RSS		25.7
(e)	Contingencies		21.9
		Total	241.7

7. We propose to engage consultants to take up the contract management and site supervision works of the project. A breakdown of the estimates for consultants' fees and RSS costs by man-month is at **Annex 4 to Enclosure 2**.

/8. …..

[2] Noise barriers and semi-enclosures cover construction of substructure and superstructure of the barriers and semi-enclosures.

8. Subject to funding approval, we plan to phase the expenditure as follow –

Year	$ million (in MOD prices)
2021-22	7.9
2022-23	22.7
2023-24	49.7
2024-25	71.1
2025-26	50.9
2026-27	24.5
2027-28	14.9
	241.7

9. 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 for the period from 2021 to 2028. We will deliver the works under New Engineering Contract[3]. The contract will provide for price adjustments.

10. We estimate the annual recurrent expenditure arising from the proposed works to be about $0.7 million.

PUBLIC CONSULTATION

11. The Housing & Environmental Hygiene Committee of the Sai Kung District Council was consulted on the proposed project on 11 July 2019, and its

/members …..

[3] New Engineering Contract is a suite of contracts developed by the Institution of Civil Engineers, United Kingdom. It is a contract form that emphasises a spirit of mutual trust, cooperation and collaborative risk management between contract parties.

members agreed that the project should be carried out to alleviate the traffic noise impact on nearby residents. The scheme and plans of the proposed project were gazetted under the Roads (Works, Use and Compensation) Ordinance (Cap. 370) (the Ordinance) on 11 and 18 October 2019 respectively. No objection was received during the consultation period of gazettal. Hence, the project was authorised under the Ordinance with notice of authorisation gazetted on 21 and 28 February 2020.

12. The aesthetic design of the proposed noise barriers was submitted to the Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS) [4] for consultation in October 2019, and received support and endorsement from members of the committee.

13. We consulted the Panel on Environmental Affairs of the Legislative Council on 22 February 2021 on the proposed works. Members supported the submission of the funding proposal to the Public Works Subcommittee for consideration. During the Panel meeting, members requested for information on improving the noise reduction performance and/or to reduce the construction and maintenance cost of noise barriers. We submitted the supplementary information to the Panel on Environmental Affairs on 15 March 2021.

ENVIRONMENTAL IMPLICATIONS

14. The proposed project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We have conducted an environmental review and the conclusion is that the works concerned will benefit neighbouring residents with reduction in traffic noise levels after completion and will not cause other adverse environmental impact.

15. To minimise short-term impacts during construction, we will implement mitigation measures to control the nuisances caused by construction noise, dust and site run-off in compliance with the established standards and guidelines. We will also carry out the EM&A programme to ensure proper implementation of the recommendations of the environmental review.

/16. …..

[4] The ACABAS comprises representatives of the Hong Kong Institute of Architects, the Hong Kong Institution of Engineers, the Hong Kong Institute of Planners, academic institutions, Architectural Services Department, Highways Department, Housing Department and Civil Engineering and Development Department. It 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.

16. At the planning and design stages, we have considered the design and construction sequences of the proposed works to reduce the generation of construction waste where possible. 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 at public fill reception facilities[5]. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste and the use of non-timber formwork to further reduce the generation of construction waste.

17. 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, and 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 and non-inert construction waste at public fill reception facilities and landfills respectively through implementing a trip-ticket system.

18. We estimate that the proposed works will generate in total 8 200 tonnes of construction waste. We will reuse about 1 700 tonnes of inert construction waste (21%) on site and deliver around 6 300 tonnes of inert construction waste (77%) to public fill reception facilities for subsequent reuse. We will dispose of the remaining 200 tonnes of non-inert construction waste (2%) at landfills. The total cost for disposal of the construction waste at public fill reception facilities and landfills is estimated to be about $0.49 million, based on a unit charge rate of $71 per tonne for disposal at public fill reception facilities and $200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N).

HERITAGE IMPLICATIONS

19. 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 …..

---

[5] 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 at public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

LAND ACQUISITION

20. No land resumption is required for the proposed project.

BACKGROUND INFORMATION

21. We upgraded the proposed project to Category B in 2006. Subsequently, we engaged a consultant to conduct further feasibility study, including preliminary site investigation, to provide preliminary feasible options for the project and relevant advance design information so as to conduct the detailed design in a faster and smoother manner in future. In October 2018, we engaged consultants to carry out site investigation in more detail and subsequently the detailed design for the proposed works at an estimated cost of about $4.1 million. The cost has been paid under **Subhead 6100TX** "Highway works, studies and investigations for items in Category D of the Public Works Programme". The detailed design of the proposed works has been completed in February 2021.

22. Of the 221 trees within the project boundary, 158 trees will be retained. The proposed project will involve the removal of 63 trees, including 62 trees to be felled, one tree to be transplanted elsewhere. All trees to be removed are common trees that are not important trees[6]. We will incorporate planting proposals as part of the project, including estimated quantities of 63 trees and 12 000 shrubs.

23. We estimate that the proposed works will create about 55 jobs (45 for labourers and 10 for professional or technical staff), providing a total employment of 2 300 man-months.

---

[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 an 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 trees with trunk diameter equal or exceeding 1.0 metre (measured at 1.3 metres above ground level), or with height/canopy spread equal or exceeding 25 metres.

圖例: LEGEND:

- 工程界限 PROJECT BOUNDARY
- 擬建直立式隔音屏障(5米高) PROPOSED VERTICAL NOISE BARRIER (5m HIGH)
- 擬建懸臂式隔音屏障(6.7米高) PROPOSED CANTILEVERED NOISE BARRIER (6.7m HIGH)
- 擬建半密閉式隔音屏障(7米高) PROPOSED NOISE SEMI-ENCLOSURE (7m HIGH)
- 擬鋪設低噪音物料路面 PROPOSED LOW NOISE SURFACING MATERIALS
- 受惠住宅屋苑 BENEFITTED RESIDENTIAL ESTATES

寶琳 PO LAM
將軍澳 TSEUNG KWAN O
工地 THE SITE
翠林邨 TSUI LAM ESTATE
坑口 HANG HAU
寶康路
百勝角 PAK SHING KOK

索引圖 KEY PLAN
比例 SCALE 1:30000

寶琳北路 PO LAM ROAD NORTH
YING YIP ROAD 影業路
PO NING ROAD
寶寧路
FU NING GARDEN COMMERCIAL COMPLEX (4 STOREYS) 富寧花園商場(四層高)
寶寧里 PO NING LANE
寶順路 PO SHUN ROAD
SHEUNG NING ROAD 常寧路
HAU TAK ESTATE 厚德邨
CHUNG MING COURT 頌明苑
YU MING COURT 裕明苑
HANG HAU VILLAGE 坑口村
CHAP FUK ROAD
TSEUNG KWAN O HOSPITAL
TSEUNG KWAN O PO NING ROAD HEALTH CENTRE
FU NING GARDEN
HONG KONG AND MACAU LUTHERAN CHURCH PRIMARY SCHOOL
PO LEUNG KUK 1984 COLLEGE
Tseung Kwan O Government Primary School
Catholic Ming Yuen Secondary School
Queen Maud Secondary School
Hau Tak Shopping Centre
Hong Hau Sports Centre
Hong Hau Community Hall
Sheung Ning Playground
KEC Administrative Building
Tseung Kwan O Hospital Ambulatory Care Block

A
B
C
45米 45m
50米 50m
35米 35m
30米 30m
55米 55m
60米 60m
260米 260m

820000 N
819800 N
845200 E
845400 E
845600 E
845800 E

0 50 100 米 m
1 : 2 000 SCALE BAR 比例尺

圖則名稱 drawing title

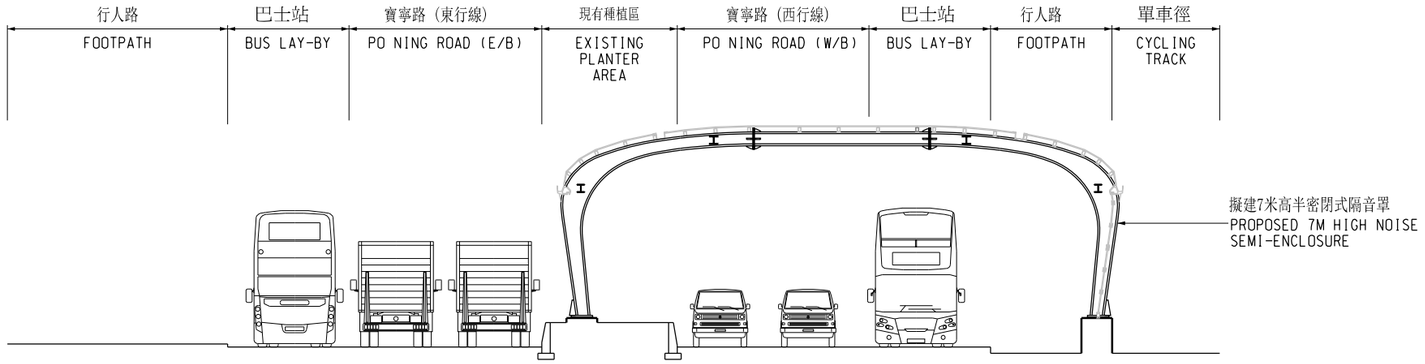
工務計劃項目第817TH -寶寧路加建隔音屏障工程 - 平面圖
PUBLIC WORKS PROGRAMME ITEM NO. 817TH - RETROFITTING OF NOISE BARRIERS ON PO NING ROAD - LAYOUT PLAN

圖則編號 drawing no. HMW6817TH-SK0012
比例 scale 1:2000

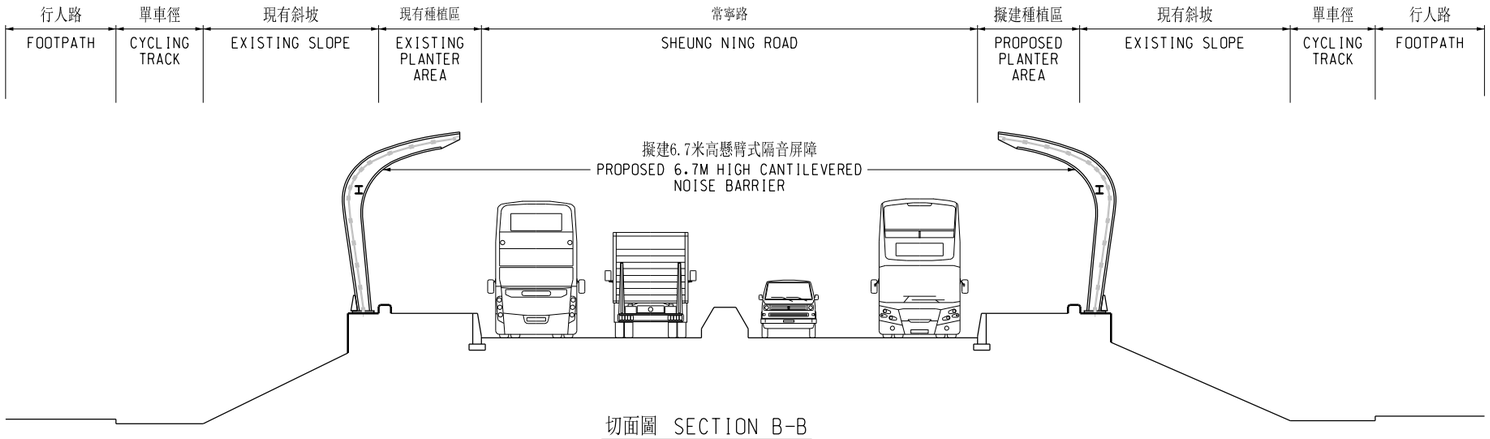
HIGHWAYS DEPARTMENT HONG KONG 路香政港署

R:\Team 2\6817TH\DRAWING\HMW6817TH-SK0012\HMW6817TH-SK0012.dgn

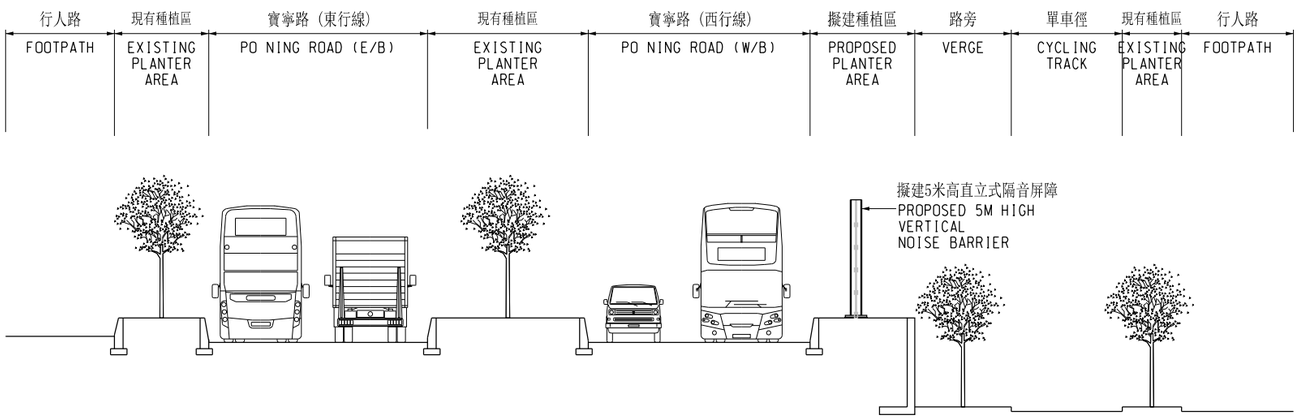
A3 420 x 297



切面圖 SECTION A-A



切面圖 SECTION B-B



切面圖 SECTION C-C

圖則名稱 drawing title

工務計劃項目第817TH -寶寧路加建隔音屏障工程 - 切面圖

PUBLIC WORKS PROGRAMME ITEM NO. 817TH - RETROFITTING OF NOISE BARRIERS ON PO NING ROAD - SECTIONS

圖則編號 drawing no.
HMW6817TH-SK0013

比例 scale
N.T.S
不按比例

HIGHWAYS DEPARTMENT HONG KONG 香港 路政署

R:\Team 2\6817TH\DRAWING\HMW6817TH-SK0013\HMW6817TH-SK0013.dgn

A3 420 x 297

近厚德邨現況
Present Situation Near Hau Tak Estate

近厚德邨完工後
Upon Completion of Proposed Works Near Hau Tak Estate

圖則名稱 drawing title

工務計劃項目第817TH－寶寧路加建隔音屏障工程－工程的外觀構思圖（兩張圖中的第一張）
PUBLIC WORKS PROGRAMME ITEM NO. 817TH - RETROFITTING OF NOISE BARRIERS ON PO NING ROAD - ARTIST IMPRESSION OF PROPOSED WORKS (SHEET 1 OF 2)

圖則編號 drawing no.
HMW6817TH-SK0016

比例 scale
示意圖
DIAGRAMMATIC

HIGHWAYS DEPARTMENT HONG KONG 路政署 香港

R:\Team 2\6817TH\DRAWING\HMW6817TH-SK0016\HMW6817TH-SK0016.dgn

A3 420 x 297

近常寧路現況
Present Situation Near Sheung Ning Road

近常寧路完工後
Upon Completion of Proposed Works Near Sheung Ning Road

圖則名稱 drawing title

工務計劃項目第817TH－寶寧路加建隔音屏障工程－工程的外觀構思圖（兩張圖中的第二張）
PUBLIC WORKS PROGRAMME ITEM NO. 817TH - RETROFITTING OF NOISE BARRIERS ON PO NING ROAD
- ARTIST IMPRESSION OF PROPOSED WORKS (SHEET 2 OF 2)

圖則編號 drawing no. HMW6817TH-SK0017

比例 scale 示意圖 DIAGRAMMATIC

HIGHWAYS DEPARTMENT HONG KONG 香港路政署

R:\Team 2\6817TH\DRAWING\HMW6817TH-SK0017\HMW6817TH-SK0017.dgn

A3 420 x 297

817TH - Retrofitting of noise barriers on Po Ning Road

Breakdown of the number of dwellings by the respective level of reduction in traffic noise

Reduction in Traffic Noise (dB(A))	Number of Dwellings
19 - 21	1
16 - 18	2
13 - 15	15
10 - 12	26
7 - 9	46
4 – 6	192
1 – 3	342
Total	**624**

Breakdown of the number of affected dwellings by the respective traffic noise level

Traffic Noise Level (dB(A))	Number of Dwellings	
	Before Implementation of Mitigation Measures	After Implementation of Mitigation Measures
75 – 76	24	0
73 – 74	127	3
71 – 72	473	38
70 or below	N/A	583
Total	**624**	**624**

817TH – Retrofitting of noise barriers on Po Ning Road

Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2020 prices)

			Estimated man-months	Average MPS* salary point	Multiplier (Note1)	Estimated fee ($ million)
(a)	Consultants' fees for contract administration (Note 2)	Professional	–	–	–	0.7
		Technical	–	–	–	0.1
					Sub-total	0.8#
(b)	Resident site staff (RSS) costs (Note 3)	Professional	81	38	1.6	11.1
		Technical	252	14	1.6	12.2
					Sub-total	23.3
	Comprising –					
	(i) Consultants' fees for management of RSS				2.1#	
	(ii) Remuneration of resident site staff				21.2#	
					Total	**24.1**

*MPS – Master Pay Scale

Notes

1. A multiplier of 1.6 is applied to the average MPS salary point to estimate the cost of RSS supplied by the consultants (as at now, MPS point 38 = $85,870 per month and MPS point 14 = $30,235 per month).
2. The consultant's staff cost for contract administration is calculated in accordance with the existing agreement for the design and construction of **817TH**. The construction phase of the assignment in respect of works will only be executed subject to FC's approval to upgrade **817TH** to Category A.
3. The actual man-months and actual costs will only be known after completion of the construction works.

Remarks

The cost figures in this Enclosure are shown in constant prices to correlate with the MPS salary point of the same year. The figures marked with # are shown in MOD prices in paragraph 6 of the main paper.