For discussion on 22 February 2021

ITEM FOR LEGISLATIVE COUNCIL PANEL ON ENVIRONMENTAL AFFAIRS

766TH – Retrofitting of Noise Barriers on Po Lam Road North 817TH – Retrofitting of Noise Barriers on Po Ning Road

PURPOSE

This paper seeks Members' views on the proposal to upgrade Public Works Programme (PWP) Item Nos. **766TH** "Retrofitting of Noise Barriers on Po Lam Road North" and **817TH** "Retrofitting of Noise Barriers on Po Ning Road" to Category A at the estimated costs of \$376.0 million and \$241.7 million in money-of-the-day (MOD) prices respectively.

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 MOD prices for retrofitting noise barriers on the section of Po Lam Road North between Tseung Kwan O Village and King Lam Estate.

3. The Director of Highways 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 between Hau Tak Estate and Yu Ming Estate.

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

Environment Bureau Highways Department February 2021

766TH – Retrofitting of Noise Barriers on Po Lam Road North

PROJECT SCOPE

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 section 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) 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 section plans of the proposed works are at Annex 1 to Enclosure 1.

2. We plan to commence the proposed works upon obtaining funding approval from the Finance Committee (FC) for completion in around four years.

JUSTIFICATIONS

3. 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.

4. 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 retrofitting of noise barriers and semi-enclosure, and road resurfacing with low noise materials on or near the above road section 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). Details of the traffic noise improvement of the proposed project are at Annex 2 to Enclosure 1.

¹ Road traffic noise level is specified in terms of $L_{10}(1 \text{ hour})$ 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.

Enclosure 1

FINANCIAL IMPLICATIONS

5. We estimate the capital cost of the proposed project to be \$376.0 million in MOD prices.

ENVIRONMENTAL IMPLICATIONS

6. 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.

7. 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.

8. At the planning and design stage, 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 facilities². 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.

9. At the construction stage, we will require the contractor to submit for approval a waste management plan, 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

² 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.

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.

10. 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 for the proposed works (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)).

11. Of the 683 number (no.) of trees within the project boundary, 506 no. of trees will be preserved. The proposed project will involve removal of 177 no. of trees, including 176 no. of trees to be felled, one tree to be transplanted elsewhere. Besides, one important tree ³ will be affected during the implementation of the project. A summary of important trees affected is provided at Annex 3 to Enclosure 1. We will incorporate planting proposals as part of the project, including estimated quantities of 177 no. of trees and 9 000 no. of shrubs.

HERITAGE IMPLICATIONS

- (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 m (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.

³ 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 –

12. 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

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

PUBLIC CONSULTATION

14. 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.

15. The aesthetic design of the proposed noise barriers will be in harmony with the surrounding environment. Translucent panels will be used as far as possible provided that the noise reduction performance of the barriers will not be affected. We consulted the Advisory Committee on the Appearance of Bridges and Associated Structures $(ACABAS)^4$ on the design in October 2019, and received support and endorsement from the committee.

WAY FORWARD

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. We plan to seek funding approval from the FC for the proposed works under **766TH** after consulting the Public Works Subcommittee. Members are invited to comment on the proposed funding application.



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附件1 附錄1 (第1頁,共5頁) Annex 1 of Enclosure 1 (Sheet 1 of 5)



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PWP Item No. 766TH - Retrofitting of noise barriers on Po Lam Road North

| 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 dwellings by the respective level of reduction in traffic noise

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

| | Number of Dwellings | | | | | |
|-----------------------------------|--|---|--|--|--|--|
| Traffic Noise Level (dB(A)) | 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

Summary of "Important tree" affected

| Project No.: | 766TH | - | Pro | oject Title: | : | | Retr | ofitting of no | oise barriers | on Po Lam Roa | nd North | | | | |
|---------------|-----------------------|--------------|---------------|-------------------------------|------------------------|---------------------|----------------------|----------------|---------------------------------------|-----------------------|---|---------------------|---------------------------------|------------------------------------|---|
| | Species | Measurements | | Amenity value ¹ | Form | Health condition | Structural condition | Suitab | oility for transplanting ² | Conservation | Recommendation | Department to | | | |
| Tree ref. no. | Scientific name | Chinese name | Height (m) | DBH ⁴ (mm) | Crown spread (m) | | (Goo | d/Fair/Poor) | | (High/Medium /Low) | Remarks | status ³ | (Retain / Transplant / Fell) | provide expert advice to LandsD | Additional Remarks |
| 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 |

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).

¹Amenity 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.

²Assessment 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.

817TH – Retrofitting of Noise Barriers on Po Ning Road

PROJECT SCOPE

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:
 - 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 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 plan and section plan of the proposed works are at Annex 1 to Enclosure 2.

2. We plan to commence the proposed works upon obtaining funding approval from the Finance Committee (FC) for completion in around four years.

JUSTIFICATIONS

3. 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.

4. 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 retrofitting of noise barriers and semi-enclosures, and road resurfacing with low noise materials on or near the above road section 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 to 19 dB(A). Details of the traffic noise improvement of the proposed project are at Annex 2 to Enclosure 2.

FINANCIAL IMPLICATIONS

5. We estimate the capital cost of the proposed project to be \$241.7 million in MOD prices.

ENVIRONMENTAL IMPLICATIONS

6. 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

¹ Road traffic noise level is specified in terms of $L_{10}(1 \text{ hour})$ 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.

levels after completion and will not cause other adverse environmental impact.

7. 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.

8. At the planning and design stage, 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 facilities². 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.

9. At the construction stage, we will require the contractor to submit for approval a waste management plan, 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.

10. 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. For the proposed works, the total cost for disposal of the construction waste at public fill reception facilities and

² 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.

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)).

11. Of the 221 number (no.) of trees within the project boundary, 158 no. of trees will be retained. The proposed project will involve the removal of 63 no. of trees, including 62 no. of trees to be felled, one tree to be transplanted elsewhere. All trees to be removed are common trees that are not important trees³. We will incorporate planting proposals as part of the project, including estimated quantities of 63 no. of trees and 12 000 no. of shrubs.

HERITAGE IMPLICATIONS

12. 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

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

PUBLIC CONSULTATION

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

³ 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 m (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.

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. No objection was received during the statutory period. Hence the project was authorised under the Ordinance with notice of authorisation gazetted on 21 and 28 February 2020.

15. The aesthetic design of the proposed noise barriers will be in harmony with the surrounding environment. Translucent panels will be used as far as possible provided that the noise reduction performance of the barriers will not be affected. We consulted the Advisory Committee on the Appearance of Bridges and Associated Structures (ACABAS)⁴ for consultation in October 2019, and received support and endorsement from the committee.

WAY FORWARD

16. We plan to seek funding approval from the FC for the proposed works under **817TH** after consulting the Public Works Subcommittee. Members are invited to comment on the proposed funding application.

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

附件2 附錄1 (第1頁,共2頁) Annex 1 of Enclosure 2 (Sheet 1 of 2)

切面圖 SECTION A-A

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

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附件2 附錄1 (第2頁,共2頁) Annex 1 of Enclosure 2 (Sheet 2 of 2)

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PWP Item No. 817TH - Retrofitting of noise barriers on Po Ning Road

| 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 dwellings by the respective level of reduction in traffic noise

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

| | Number of Dwellings | | | | | | |
|-----------------------------------|--|---|--|--|--|--|--|
| Traffic Noise Level (dB(A)) | 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 | | | | | |