

**Plan for Review of Use of
New Low Noise Road Surfacing Material(s)
for Tung Chung New Town Extension (West)
(EP No. EP-519/2016)**

September 2022

Environmental Permit No. EP- 519/2016

Tung Chung New Town Extension (West)

Environmental Team Leader Certification

Reference Document /Plan

Document to be Certified:	Plan for Review of Use of New Low Noise Road Surfacing Material(s)
Date of Document:	September 2022
Date received by ETL:	8 September 2022

Reference EP Condition

Environmental Permit Condition:	2.23
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The Permit Holder shall, no later than three months before the commencement of construction of roadworks, submit a Plan with the following information for review of the use of new low noise road surfacing materials to Director for approval:

- (i) The environmental benefits, including but not limited to reduction of traffic noise impacts, of adopting the new low noise road surfacing material(s) as an alternative noise mitigation measure to the material(s) currently in use;
- (ii) The extent and locations of providing the new road surfacing material(s) for the roadworks covered by this Permit with justifications; and
- (iii) Reduction in traffic noise impacts at specific sensitive receivers and minimisation of the extent of noise barriers for the roadworks covered by this Permit as a resulting of applying the new road surfacing material(s).

ETL Certification

I hereby certify that the above reference document complies with the above referenced condition of EP-519/2016.



Daniel Sum
Environmental Team Leader

Date: 9 September 2022

Your Ref.

By Post

Our Ref. 198377-0561

Date 9 September 2022

Sustainable Lantau Office
Civil Engineering and Development Department
13/F, North Point Government Offices
333 Java Road, North Point
Hong Kong

For the attention of Mr. Gary YUNG / Ms. Carol LAM

Dear Sir / Madam,

Agreement No. CE 59/2017 (EP)
Independent Environmental Checker for Tung Chung New Town Extension – Investigation Plan for Review of Use of New Low Noise Road Surfacing Material(s)

We refer to the Plan for Review of Use of New Low Noise Road Surfacing Material(s) for Tung Chung New Town Extension (West) (TCW) dated September 2022 and certified by the Environmental Team Leader of TCW on 9 September 2022. Please note we have no adverse comments on the captioned submission. The captioned submission is hereby verified in accordance with the requirement stipulated in Condition 2.23 of EP-519/2016.

Should you have any query, please feel free to contact the undersigned at 2608 7314 (chuawo@binnies.com) or our Edward Lau at 6848 5737 (iec.tcnte@gmail.com or lauky@binnies.com).

Yours faithfully,
for and on behalf of
BINNIES HONG KONG LIMITED



MANUEL CHUA
INDEPENDENT ENVIRONMENTAL CHECKER

cc: ET Leader / TCW – Mott (Attn: Mr. Daniel SUM) [by Email: daniel.sum@mottmac.com]
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1. Project Description

The development of Tung Chung New Town Extension (TCNTE), comprising Tung Chung East (TCE) and Tung Chung West (TCW), is a mega-scale and complex project aiming to provide land to meet the future housing economic and social development needs of Hong Kong. Due to the fact that the proposed works are geographically separated, the implementation of mega-scale Project is divided into two packages, namely TCE and TCW respectively. In accordance with the tight delivery programme, the Project will be implemented in phases under separate contracts for the developments of TCE and TCW. This Plan only covers the details of the use of new low noise road surfacing material(s) for Tung Chung West (TCW). For the review in Tung Chung East (TCE) area, if applicable, it will be covered by separate submission(s).

2. Scope of Works for Tung Chung New Town Extension

The Tung Chung New Town Extension project (the Project) comprises the following elements:

- (i) reclamation of the seabed by a non-dredged method at TCE to form a total of about 130 hectares of land;
- (ii) construction of about 4.9 kilometers of seawalls, with an eco-shoreline, three drainage box culvert outfalls, three circulation drains and a seawater intake at TCE;
- (iii) provision of infrastructure for Tung Chung Area 58, including construction of a single two-lane road with a footpath and the associated utility works;
- (iv) site formation works at TCW;
- (v) construction of the River Park including a visitor centre at TCW;
- (vi) construction of proposed open space;
- (vii) construction of sustainable urban drainage systems at TCW;
- (viii) construction of roads, footpaths, cycle tracks and the associated junction / road improvement works;
- (ix) engineering infrastructure works covering drainage, sewerage, waterworks (including a fresh water service reservoir, a salt water service reservoir and a salt water pumping station), common utility tunnels and landscaping works; and
- (x) implementation of environmental mitigation measures and environmental monitoring and audit programme for the works.

3. Implementation Programme

The Contract No NL/2020/05 – Tung Chung New Town Extension – Site Formation and Infrastructure Works at Ma Wan Chung (i.e. Contract 5) at TCW has been awarded in May 2021 and is scheduled for completion in 2025. The main contractor for Contract No. NL/2020/05 is Build King – Richwell Civil Joint Venture (BKRCJV).

The Contract No NL/2020/06 – Tung Chung New Town Extension – Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1 (i.e. Contract 6) at TCW has been awarded in May 2021 and is scheduled for completion in 2025. The main contractor for Contract No. NL/2020/06 is China Railway Group Limited (CREC).

The detailed design for the first phase of site formation and infrastructure works at TCE and TCW (First Phase development) has been completed, while the detailed design for the remaining phase of site formation and infrastructures works is in progress.



4. Submission under EP

In view that only Contract 6 has construction of roadworks with the application of low noise road surfacing materials in TCW, this submission is prepared based on the latest information of Contract 6 according to the relevant requirements contained in the EM&A Manual, EIA Report and EP. Please find the enclosed Plan for Review of Use of New Low Noise Road Surfacing Material(s) below for TCW. This submission will be revised if there is any update of the information.



Civil Engineering and Development Department
The Government of the Hong Kong Special Administrative Region

PLAN FOR REVIEW OF USE OF NEW LOW NOISE ROAD SURFACING MATERIAL(S)

I	08/09/22		
Rev	Date	Prepared By Simon Mak Environmental Officer	Approved By Paul Chan Project Manager

**PLAN FOR REVIEW OF USE OF NEW LOW NOISE ROAD SURFACING
MATERIAL(S) REV. I**

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Approved EIA (Extracted from the EIA Report (AEIAR-
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Appendix B

Figure 2 of Environment Permit No.: EP-519/2016

PLAN FOR REVIEW OF USE OF NEW LOW NOISE ROAD SURFACING MATERIAL(S) REV. I

1 INTRODUCTION

The Plan is prepared by China Railway Engineering Group Limited (known as CREC) in accordance with the Condition 2.23 of the Environmental Permit No. EP-519/2016 dated 09/08/2016.

This Plan only covers the details of the use of new low noise road surfacing material(s) (LNRS materials) for Tung Chung West (TCW). For the review in Tung Chung East (TCE) area, if applicable, it will be covered by separate submission(s). This Plan will be revised if there is any update of the information.

1.1 PROJECT BACKGROUND

1.1.1 An Environmental Impact Assessment (EIA) for Tung Chung New Town Extension (TCNTE) was prepared during the P&E (Planning and Engineering) Study and submitted under the Environmental Impact Assessment Ordinance (EIAO) in December 2015, and was subsequently approved in April 2016 (AEIAR-196/2016). An Environmental Permit (EP) was also issued by Director of Environmental Protection (DEP) in August 2016 (EP-519/2016). Civil Engineering and Development Department (CEDD) has then appointed Arup to undertake the Tung Chung New Town Extension (West) – Design and Construction under the Agreement No. CE 70/2015 (CE) (hereafter named as the Project).

1.1.2 According to the approved EIA Report (AEIAR-196/2016) (Section 4.5.4), the mitigation measures for road traffic noise for Tung Chung West (TCW) is given in Appendix A. Those mitigation measures include the following.

- Some residential buildings at Area 60 with façade with no openable window;
- Some residential buildings at Area 60 with architectural fins of about 1.5m long;
- Residential building at Area 42 with façade with no openable window;
- Low Noise Road Surfacing (LNRS) materials along Chung Mun Road of approx. 210m long, Road L29 (i.e. Road L24 as stated in the EIA Report) of approx. 160m long and Road L30 of approx. 160m long;
- 4m high school boundary wall of approx. 50m long for the school at Mun Tung Estate; and
- 5m high vertical barrier of approx. 120m long with 3m cantilevered arm at 45° at the junction between Chung Mun Road and Road L29.

1.1.3 The approved EIA Report had recommended road traffic noise mitigation measures along Chung Mun Road, Road L29 and Road L30. During the detailed design of the Project, a review on the traffic noise mitigation measures recommended in the approved EIA Report has been conducted. After the discussion on the LNRS materials maintenance arrangement during the road traffic noise assessment and meetings among CEDD, EPD, HyD & Planning Department (PlanD) on 25 March 2020, a conclusion was made that full extent

PLAN FOR REVIEW OF USE OF NEW LOW NOISE ROAD SURFACING MATERIAL(S) REV. I

of LNRS materials along Chung Mun Road and an exclusion of 30m LNRS materials at the run-in/out to Area 42 at Road L30 would be adopted (Please refer to Figure 1.1). A separate noise assessment conducted with the exclusion of 30m LNRS materials at the run-in/out to Area 42 at Road L30 and the same extent of LNRS materials along Chung Mun Road and Road L29 stated in the approved EIA demonstrated that road traffic noise levels at noise sensitive receivers would comply with relevant noise criteria (presented in "Technical Note on Revised Mitigation Measures for Road Traffic Noise (May 2020)").

- 1.1.4** According to the approved EIA Report, Chung Mun Road as a district distributor road is a designated project under Item A.1 of Schedule 2 (Part I) under the EIAO. According to the EP's condition 2.33, the road traffic noise mitigation measures on Chung Mun Road are given in Figure 2 of that EP as given in **Appendix B**.
- 1.1.5** It should be noted that the approved EIA Report had recommended road traffic noise mitigation measures along Road L29 and Road L30 as well. However, since Road L29 and Road L30 are not district distributors and hence they are not DP, the mitigation measures for Road L29 and Road L30 are not included in the EP. Nevertheless, those mitigation measures would still need to be implemented.

1.2 ENHANCEMENT OF DEVELOPMENT INTENSITY OF PUBLIC HOUSING SITES

- 1.2.1** An increase of the Gross Floor Area (GFA), flat number and population of public housing sites (Areas 23, 42 & 46) was proposed by Housing Department (HD) according to the requirements on the Legislative Council Brief "Enhancement of the Development Intensity of Public Housing Sites". According to the planning parameter provided in July 2019, the total population for TCW housing sites (Areas 23, 42 & 46) of Scenario 2 (B2) and Scenario 3 (L) are 27,828 and 31,454 respectively.
- 1.2.2** Following the Executive Council's approval, the Government would enhance the development intensity of public housing sites such that their maximum domestic plot ratio will be allowed to increase beyond the current 20% cap by up to 10% points (i.e. maximum 30% in total) where their technical feasibility permits and with the approval of the Town Planning Board as appropriate.
- 1.2.3** On 9 September 2019, CEDD issued an additional Services to Arup to investigate the feasibility to enhance the development intensity of public housing sites in TCW.
- 1.2.4** In accordance with the prevailing policy on enhancing the development intensity of public housing sites, CEDD has explored the feasibility to suitably increase the development intensity of the TCNTE to meet the increasing pressure to address the public housing shortage. Having considered the existing development characters and intensities in TCNTE, a scenario to increase the development intensity of public housing sites is proposed ("Scenario 2 (B2)"), in which the development intensity of public housing sites (Areas 23, 42 & 46) is to be increased based on full utilisation of site area, the permitted plot ratio (P/R), site area, domestic and non-domestic GFA permitted on the approved

PLAN FOR REVIEW OF USE OF NEW LOW NOISE ROAD SURFACING MATERIAL(S) REV. I

OZP, reduced average flat size, population-per-flat, flat number, population proposed by Housing Department (HD).

- 1.2.5** Subject to the technical feasibility of development parameters under “Scenario 2 (B2)”, further increase in domestic plot ratio for public housing development in Areas 23, 42 & 46, GFA, flat number and population of public housing sites proposed by HD in accordance with the 2018 ExCo Policy on "Enhancement of the Development Intensity of Public Housing Sites", i.e. the maximum domestic PR of the public housing sites will be allowed to increase beyond the current 20% cap by up to 10% points (maximum 30% in total or percentage allowed to increase), might be explored. This further increase in domestic PR is defined as “Scenario 3 (L)”.

1.3 PURPOSE OF THIS PLAN

- 1.3.1** The purpose of this Plan is to review the use of new low noise road surfacing material(s) as a noise mitigation measure in TCW in accordance with Condition 2.23 of the Environmental Permit No. EP-519/2016 taking into consideration of the development in the area as mentioned in the EIA Report.

- 1.3.2** According to Condition 2.23 of EP, this Plan should include at least the following information:

- the environmental benefits, including but not limited to reduction of traffic noise impacts, of adopting the new low noise road surfacing material(s) as an alternative noise mitigation measure to the material(s) currently in use;
- the extent and locations of providing the new road surfacing material(s) for the roadworks covered by this Permit with justifications; and
- reduction in traffic noise impacts at specific sensitive receivers and minimization of the extent of noise barriers for the roadworks covered by this Permit as a resulting of applying the new road surfacing material(s).

PLAN FOR REVIEW OF USE OF NEW LOW NOISE ROAD SURFACING MATERIAL(S) REV. I

2 APPLICATION OF NEW LNRS MATERIALS

2.1 GENERAL

- 2.1.1** According to the “Interim Report on the Use of 6mm Nominal Maximum Aggregate Size Polymer Modified Stone Mastic Asphalt (PMSMA6) on Local Roads in Hong Kong” issued by Highways Department (HyD) in June 2021, both overseas and local experiences revealed that Polymer Modified Friction Course (PMFC), attributed to its porous nature, is susceptible to wear and tear making it not sufficiently durable as LNRS materials for many situations to sustain the local road conditions. Therefore, PMFC is not taken as a structural layer and its application on local roads will require laying on top of wearing course (“WC”) instead of base course (“BC”).
- 2.1.2** A new type of LNRS materials, namely the polymer modified stone mastic asphalt of 6mm nominal maximum aggregate size (PMSMA6) which was tested in the study (Agreement No. Hy(S)Q/024/2016). It was found that PMSMA6 is a better mix than PMFC in various aspects, in particular for resisting rutting. Such findings tally with the understanding that the engineering performance of PMSMA6 (which is structural layer) is superior to PMFC (which is non-structural layer). Therefore, PMSMA6 can be laid on BC directly while PMFC has to be laid on top of WC in general in their application on bituminous road surface.
- 2.1.3** For the environmental benefits, the optimized texture of PMSMA6 which is smooth enough in minimizing tyre vibration and with small open texture to reduce air pumping, gives the surfacing certain noise reduction potential. Such noise reduction mechanism could be more sustainable than PMFC. PMSMA6 is considered a better LNRS materials alternative for local road conditions, as compared with PMFC.
- 2.1.4** It is recommended the use of the PMSMA6 as LNRS materials for this project. According to the approved EIA Report (Section 4.5.4) (relevant figures extracted in Appendix A) and Environmental Permit (EP) (EP No. EP-519/2016) (Figure 2) (extracted in Appendix B) for TCNTE and the agreement in the inter-departmental meeting as stated in Section 1.1.3, the extent and locations of LNRS materials for the roadworks are shown on **Figure 1.1**. The adoption of LNRS materials are approx. 210m long along Chung Mun Road, approx. 160m long along Road L29 and approx. 130m long along Road L30. There is no minimization of the extent of the noise barriers (refer to NB1 as shown in Appendix B) for the roadworks as resulting of applying the new road surfacing materials.
- 2.1.5** The lengths of road sections with Low Noise Road Surfacing (LNRS) materials along Chung Mun Road is approx. 210m long; Road L29 is approx. 160m long and Road L30 is approx. 130m long. The specific sensitive receivers where the traffic noise impacts will be reduced due to the provision of LNRS materials includes:
- Mun Tung Estate
 - Hong Chi Shiu Pong Morninghope School

PLAN FOR REVIEW OF USE OF NEW LOW NOISE ROAD SURFACING MATERIAL(S) REV. I

- YMCA of Hong Kong Christian College
- Caritas Charles Vath College
- Public Housing Development in Area 42

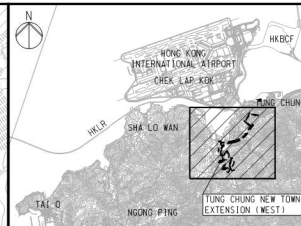
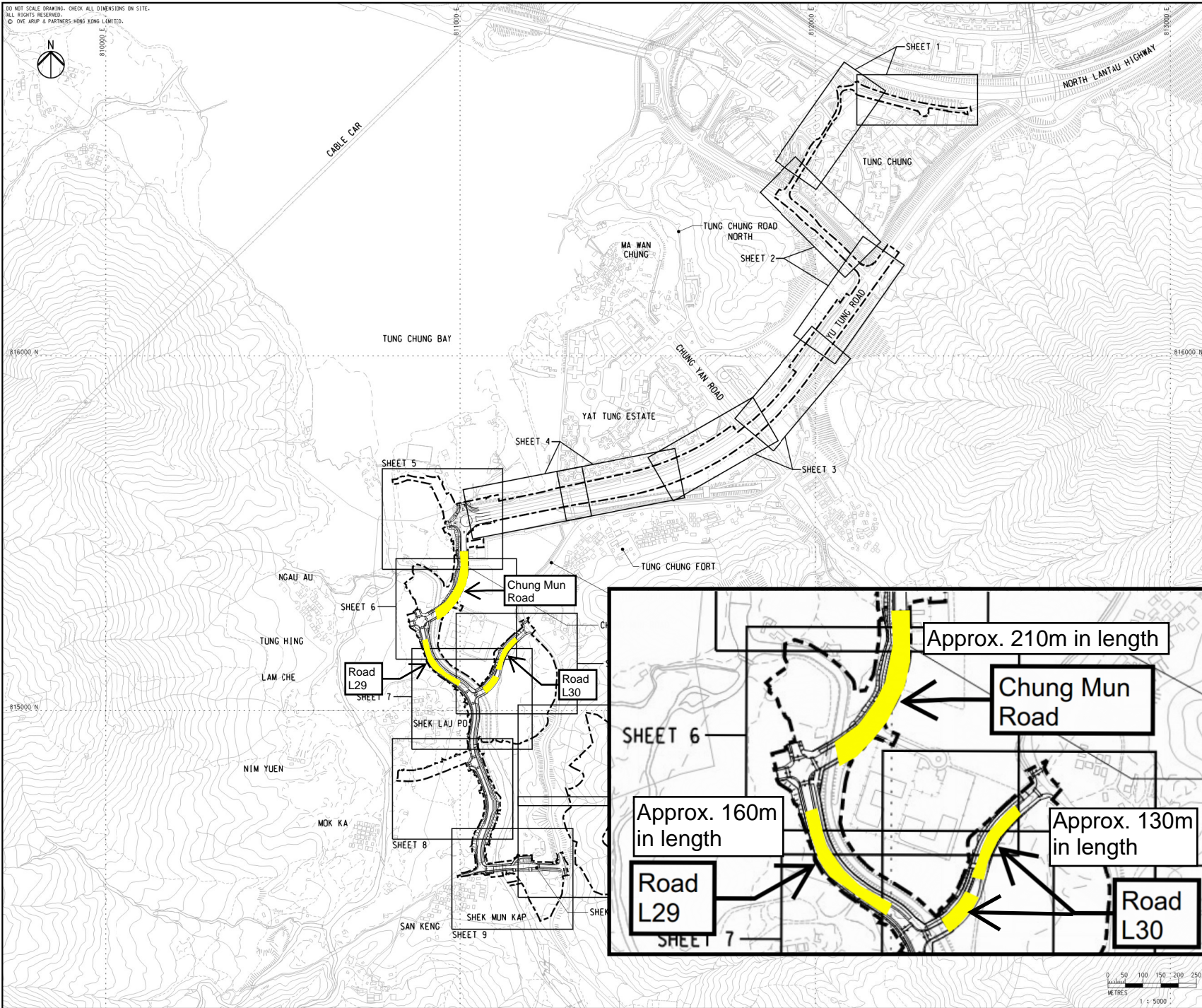
2.1.6 Apart from the LNRS materials along the road sections stated in Section 2.1.5, a section of 5m high vertical barrier with 3m cantilevered arm at 45° at the junction between Chung Mun Road and Road L29 (approx. 120m long) would be constructed. While the 4m high school boundary wall (approx. 50m long) at Mun Tung Estate will be constructed by others. The locations of the school boundary wall and the vertical barrier are shown in **Appendix A**.

(END)

**PLAN FOR REVIEW OF USE OF NEW LOW NOISE ROAD SURFACING
MATERIAL(S) REV. I**

Figure 1.1 – Adopted Extent of LNRS Materials

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LOCATION PLAN

NOTES
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH DRAWING NO. 251854/C6/G/1011 TO 1022.

LEGEND
--- WORKS LIMIT

LOW NOISE ROAD SURFACING (LNRS) MATERIALS

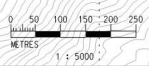
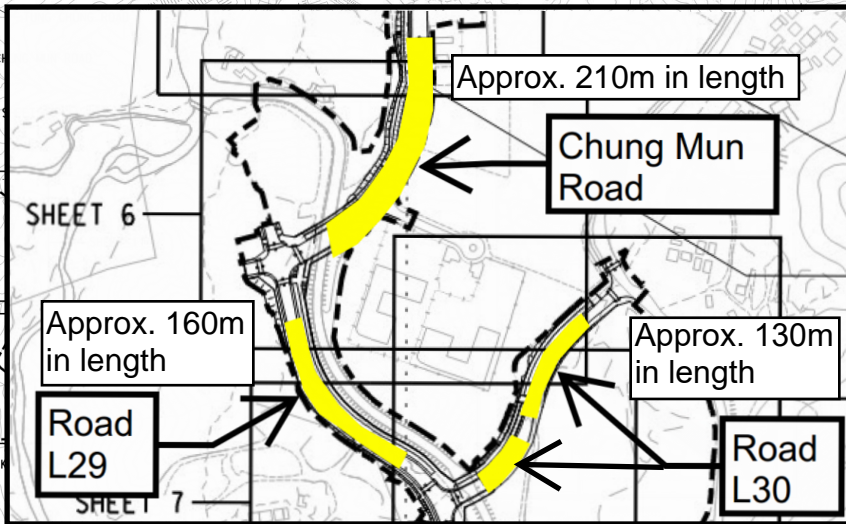
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Consultant
ARUP

Project Title
Contract No. NL/2020/06
Tung Chung New Town Extension - Site Formation and Infrastructure Works at Tung Chung Valley, Phase 1

Drawing Title
ADOPTED EXTENT OF LNRS MATERIALS

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**PLAN FOR REVIEW OF USE OF NEW LOW NOISE ROAD SURFACING
MATERIAL(S) REV. I**

**Appendix A – Figures on Mitigation Measures for Road Traffic Noise in
Approved EIA
(Extracted from the EIA Report (AEIAR-196/2016) – Figure 4.14d and 4.14d-3)**

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LEGEND

- POSSIBLE DEVELOPMENT AREA
- WORKS AREA FOR ROAD P1 (TUNG CHUNG - TAI HO SECTION)
- WORKS AREA FOR SERVICE RESERVOIR

PROPOSED EXPANSION OF HONG KONG INTERNATIONAL AIRPORT (BY OTHERS)

HK BOUNDARY CROSSING FACILITIES OF HZMB (BY OTHERS)

TMCLK LINK (BY OTHERS)

HONG KONG INTERNATIONAL AIRPORT

HK LINK ROAD OF HZMB (BY OTHERS)

Figure 4.14d-2

Figure 4.14d-1

TAI HO WAN

PROPOSED LANTAU LOGISTICS PARK (BY OTHERS)
 (REF. REVISED CONCEPT PLAN FOR LANTAU)

NORTH LANTAU HIGHWAY

TUNG CHUNG EAST STATION (BY OTHERS)

SAN PATRICK

Figure 4.14d-3

TUNG CHUNG WEST STATION (BY OTHERS)

POK KAI SHUN

POK TO YAN

LANTAU NORTH COUNTRY PARK

D	FOURTH ISSUE	GL	09/15
C	THIRD ISSUE	GL	08/15
B	SECOND ISSUE	GL	07/15
A	FIRST ISSUE	GL	04/15
Rev	Description	By	Date

Consultant
ARUP

Project title
Tung Chung New Town Extension

Drawing title
Mitigation Measures for Road Traffic Noise at 2045 (Sheet 1 of 4)

Drawing no. **Figure 4.14d** Rev. **D**

Drawn GL	Date 09/15	Checked LK	Approved FC
Scale 1:30000 @A3	Status PRELIMINARY		

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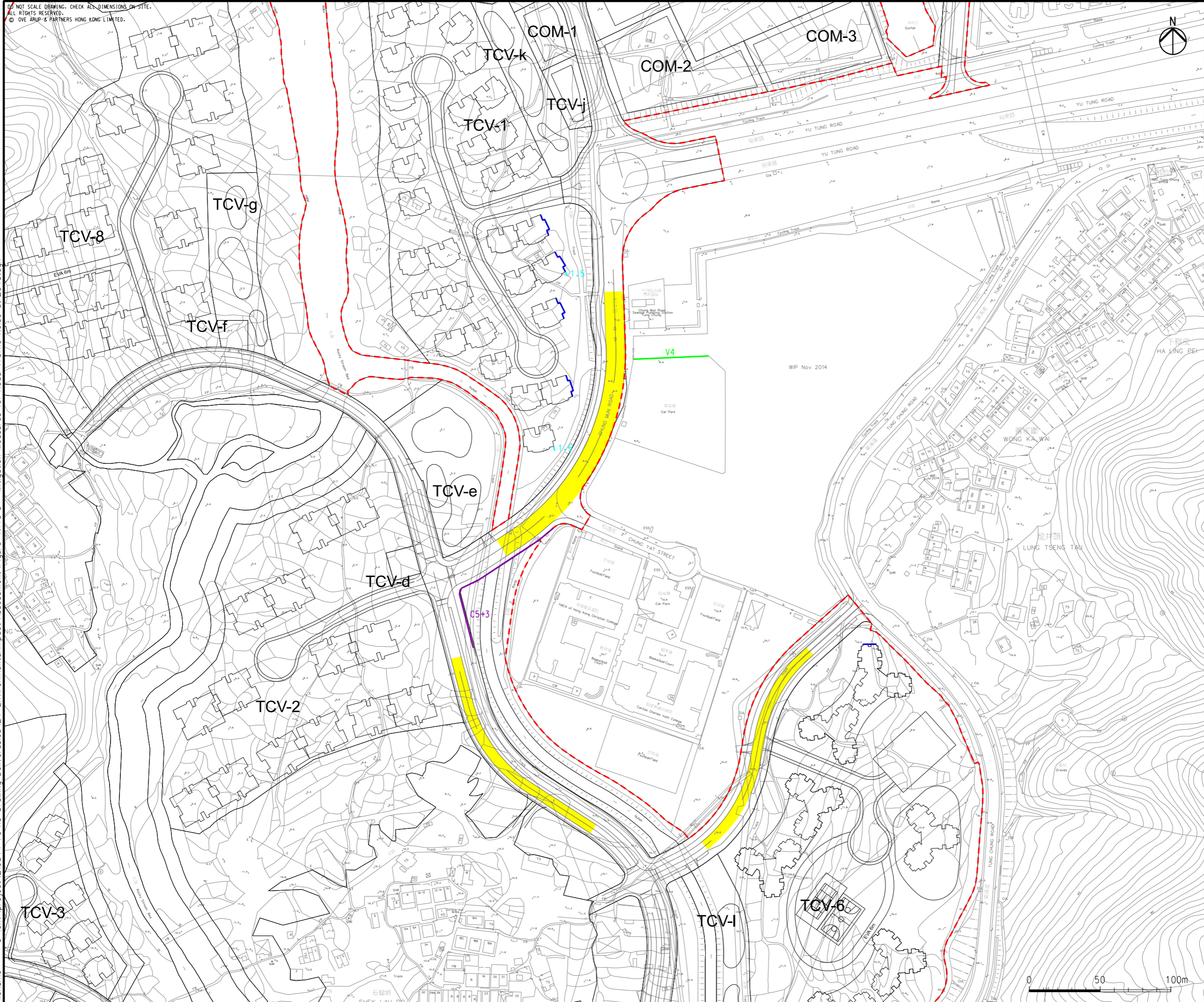


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- LEGEND**
- POSSIBLE DEVELOPMENT AREA
 - FACADE WITH NO OPENABLE WINDOWS
 - V₀ SCHOOL BOUNDARY WALL (0M HIGH)
 - C₀+h CANTILEVER NOISE BARRIER (0M HIGH + hM CANTILEVER)
 - 1.5 ARCHITECTURAL FIN (1.5M LONG)
 - LOW NOISE SURFACING

Printed by : 11/8/2015
 Filename : G:\env\project\219844-70\13 Drawing Deliverables\24 Environmental Impact Assessment\Figure 4.14d-3 - Mitigation Measures for Road Traffic Noise at 2045.dgn



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ARUP

Project title
**Tung Chung
 New Town Extension**

Drawing title
**Mitigation Measures for
 Road Traffic Noise at 2045
 (Sheet 4 of 4)**

Drawing no. **Figure 4.14d-3** Rev. **D**

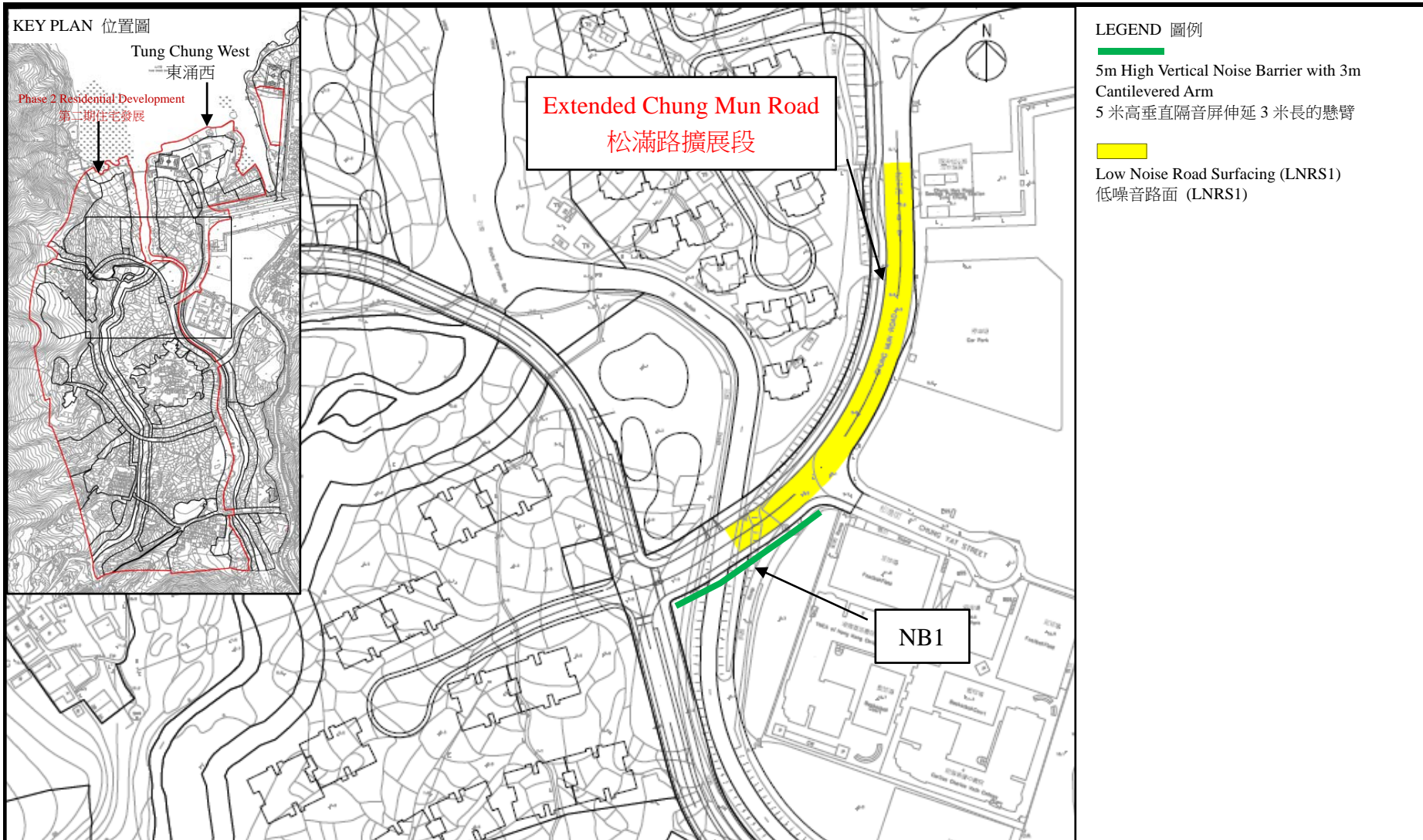
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MATERIAL(S) REV. I**

Appendix B – Figure 2 of Environment Permit No.: EP-519/2016



<p>Project Title: 工程項目名稱：</p>	<p>Tung Chung New Town Extension 東涌新市鎮擴展</p>	<p>Environmental Permit No.: EP-519/2016 環境許可證編號：EP-519/2016</p>	
<p>Figure 2: 圖 2：</p>	<p>Locations of Noise Barrier and Low Noise Surfacing for Extended Chung Mun Road 松滿路擴展段隔音屏及低噪音路面位置 [This figure was prepared based on Figure 4.14a-2 of the approved EIA Report No. AEIAR-196/2016] [本圖是根據環境影響評估報告編號 AEIAR-196/2016，圖 4.14a-2 編制]</p>		