
Annex | 1

Revised Environmental Assessment



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Section 16 Planning Application

**Renewal of Planning Application No. A/NE-FTA/192 –
Temporary Asphalt Plant on Man Kam To Road,
Sheung Shui
Environmental Assessment Report**

Prepared for:

K. Wah Asphalt Ltd

October 2024



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K. Wah Asphalt Ltd

For and on behalf of EnviroSolutions & Consulting					
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1 INTRODUCTION

1.1 Preface

1.1.1 EnviroSolutions & Consulting Ltd (“ESC”) has been appointed to prepare this Environmental Assessment (“EA”) Report in support of a renewal of planning application for Temporary Asphalt Plant (“the Temporary Asphalt Plant”) for a Period of Five Years at Lots 20 RP (Part), 21 and 23 RP (Part) in D.D. 88 and adjoining Government Land, East of Man Kam To Road, Sheung Shui, New Territories (“the Application Site”). The application aims to renew the latest planning permission under Planning Application No. A/NE-FTA/192 from the Town Planning Board (“TPB”) which will expire on 12 December 2024 such that the Applicant can be given opportunity to continue using the Application Site for the Temporary Asphalt Plant with **no change in operation. The Temporary Asphalt Plant under the current application is proposed to maintain existing operation, site configuration and major development parameters.**

1.2 Project Background

1.2.1 Since early 2010s, demand for asphalt increased because of several mega infrastructure projects such as Hong Kong-Zhuhai-Macao Bridge, Guangzhou-Shenzhen-Hong Kong Express Rail, etc. At that time, there were several temporary asphalt plants in Hong Kong. None of them were located within the Northeast District.

1.2.2 In order to ensure stable supply of asphalt, the Temporary Asphalt Plant was proposed to be provided at the Application Site. The history of planning applications and Specified Process (“SP”) Licence application is summarised below:

- In 2014, a planning application (no. A/NE-FTA/148) for the Proposed Development was made under Section 16 of the *Town Planning Ordinance* (“TPO”). The planning application was approved with conditions by the TPB on 12 December 2014.
- In accordance with Schedule 1 of the *Air Pollution Control Ordinance* (“APCO”), the Temporary Asphalt Plant is a “Tar and Bitumen Works” and classified as a SP. A SP Licence application was then made supported by providing an Air Pollution Control Plan (“APCP”) to the authority, Environmental Protection Department (“EPD”). A SP Licence No. L-15-035(1) was duly granted on 23 February 2017. After receiving no adverse comment on the submitted commissioning trial report from EPD on 7 April 2017, the Temporary Asphalt Plant came into operation.
- In 2019, S16 Application (No. A/NE-FTA/192) was made to the TPB to renew planning approval for the Temporary Asphalt Plant for another five years. On 18 October 2019, the renewal application was approved with conditions for a period from 13 December 2019 to 12 December 2024.
- Amongst the approval conditions, only one condition, Approval Condition (g), was related to environmental impact, “*the implementation of noise mitigation*”

measures, as proposed by you, as required under approval condition (g) to the satisfaction of the Director of Environmental Protection or of the TPB by 13.9.2021”.

- Thereafter, submissions were made to the TPB for compliance with Approval Condition (g). On 26 July 2021, a letter was issued by the PlanD stating that the Approval Condition (g) regarding implementation of noise mitigation measures was complied with. The copies of the final submission and PlanD letter are provided in **Appendix A**.
- Shortly after approval of the S16 Application, the application for renewal of the SP Licence was made and the renewed SP Licence No. L-15-035(2) with an effective period of three years was obtained on 18 May 2020.
- An application for renewing SP Licence No. L-15-035(2) was made on 15 March 2023. On 17 October 2024, EPD provided a letter informing the assessment for the SP Licence Renewal Application was completed. The Schematic Diagram has been updated with minor improvement for presentation enclosed in **Appendix B** and a copy of the aforementioned letter is enclosed in **Appendix C**. The renewal is further described in **paragraphs 2.2.11** and Error! Reference source not found..

1.2.3 The Applicant has been engaged in various major infrastructure projects, road construction and maintenance works carried out by Highways Department (“HyD”), Drainage Services Department (“DSD”), Civil Engineering and Development Department (“CEDD”), Airport Authority (“AA”) and MTR Corporation (“MTRC”). Those projects included Tseung Kwan O – Lam Tin Tunnel (“TKO-LTT”), The Hong Kong – Zhuhai – Macao Bridge (“HZMB”), Liantang/Heung Yuen Wai Boundary Control Point (“LTHYW BCP”), Central – Wan Chai Bypass, Tuen Mun – Chek Lap Kok Link (“TMCLKL”), Queen’s Hill Development and the North and South Runway Asphalt Resurfacing projects, as well as ongoing road maintenance works for Kowloon West and New Territories West.

1.2.4 The Hong Kong government has been in the forefront in developing the Northern Metropolis and others New Development Areas (“NDAs”). The latest release of the Hong Kong Major Transport Infrastructure Development Blueprint also highlights the government's commitment in building a liveable, competitive and sustainable Hong Kong through “**driving development by transport infrastructure**” by adopting the planning principles of “infrastructure-led” and “capacity-creating”. The road network of Hong Kong would be expanded and with increased capacity, and it is foreseeable that there is a **growing demand for high quality asphalt to materialise the vision**.

1.2.5 As indicated in **Table 1-1**, a number of projects such as the Northern Link – Kwu Tung Station, Hung Shui Kiu Station, Tuen Mun South Extension, Tung Chung Line Extension, etc., will be carried out in Hong Kong. It is essential to ensure stable asphalt supply to support the aforementioned works in Hong Kong. The Temporary Asphalt Plant is the only asphalt plant located in the North New Territories. To avoid disruption for the supply of asphalt, which would impact infrastructure projects and road works, the Temporary Asphalt Plant operation is essential to be continued.

Table 1-1 Major Planned Projects in Hong Kong

PROJECTS	ANTICIPATED COMPLETION
MTR Northern Link - Kwu Tung Station	2027
MTR Tung Chung Line Extension	2029
MTR Tuen Mun South Extension	2030
MTR Hung Shui Kiu Station	2030
Kwu Tung North and Fanling North New Development Area - Remaining Phase of Site Formation and Engineering Infrastructure Works	2031
Yuen Long South Development - Second Phase Development	2031

1.2.6 In addition, a number of infrastructure projects currently utilising the Temporary Asphalt Plant are ongoing as shown in **Table 1-2** below. Those projects will not be completed within the current approval period expiring on 12 December 2024. Should the Temporary Asphalt Plant have to be ceased operation, it would cause serious disruption in the progress of the involved projects. In order to continue to utilise the application site and to ensure the supply of asphalt to support infrastructure projects in the locality and territory, the Applicant seeks to renew the previous approved application No. A/NE-FTA/192 with an expiry date on 12 December 2024.

Table 1-2 Major Contracts Supported by the Temporary Asphalt Plant

EMPLOYER	CONTRACT NO.	CONTRACT TITLE	ANTICIPATED COMPLETION
AA	Contract No. 3310	North Runway Modification Works	2025
HyD	12/HY/2019	Highways Department Term Contract (Management and Maintenance of Roads in Kowloon West excluding Expressways and High Speed Roads 2020 – 2026)	2026
HyD	04/HY/2020	Highways Department Term Contract (Management and Maintenance of Roads in Tuen Mun and Yuen Long Districts excluding Expressways and High Speed Roads 2021 – 2026)	2026
HyD	HY/2014/08	Construction of tunnel at Yau Ma Tei, reconstruction of a section of the Gascoigne Road Flyover and reprovisioning of affected public facilities at Yau Ma Tei	2026
HyD	HY/2019/13	Construction of administration building and ventilation buildings, and installation of route-wide electrical and mechanical works	2028
HyD	HY/2020/07	Widening of Castle Peak Road between Kwun Tsing Road and Hoi Wing Road	2025
HyD	HY/2020/08	Flyover from Kwai Tsing Interchange Upramp to Kwai Chung Road	2026

EMPLOYER	CONTRACT NO.	CONTRACT TITLE	ANTICIPATED COMPLETION
HyD	HY/2021/16	Provision of Universal Accessibility Facilities at Footbridges, Elevated Walkways and Subways Package 5 - Contract 2	2025
DSD	DC/2019/12	Upgrading of West Kowloon and Tsuen Wan Sewerage – Phase 2B	2027
DSD	DC/2020/03	Drainage Maintenance and Construction in Hong Kong Island and Islands Districts (2021-2025) And Building and Civil Maintenance and Minor Works to DSD Plants and Facilities (2020-2025)	2025
CEDD	CV/2020/01	Site formation and infrastructure works for public housing developments at Pok Fu Lam South	2027
CEDD	CV/2022/07	Site Formation and Infrastructure Works for Public Housing Developments at Long Bin, Yuen Long	2026
CEDD	ED/2018/04	Trunk Road T2 and Infrastructure Works for Developments at the Former South Apron	2026
CEDD	ND/2019/01	Kwu Tung North New Development Area, Phase 1: Site Formation and Infrastructure Works	2026
CEDD	ND/2019/04	Fanling North New Development Area, Phase 1: Fanling Bypass Eastern Section (Shek Wu San Tsuen North to Lung Yeuk Tau)	2026
CEDD	NE/2017/03	Development of Anderson Road Quarry Site - Road Improvement Works and Pedestrian Connectivity Facilities Works Phase 2A	2026
CEDD	NE/2017/05	Widening of Tai Po Road (Sha Tin Section)	2025
CEDD	NL/2020/03	Tung Chung New Town Extension - Major Infrastructure Works in Tung Chung East	2028
CEDD	NL/2020/06	Tung Chung New Town Extension - Site Formation and. Infrastructure Works at Tung Chung Valley, Phase 1	2027
CEDD	YL/2020/06	Site Formation and Infrastructure Works for Public Housing Developments at Kam Tin South, Yuen Long – Phase 1	2026
HK & China Gas Co. Ltd.	N/A	Reinstatement Service (Term Contract 2023 – 2025)	2025
Hongkong International Terminals	N/A	Bituminous Re-surfacing Works at Terminal 4, 6, 7, 8, 9 & Depot S (1+1 Term Contract)	2025

1.2.7 The planning approval under A/NE-FTA/192 for the Temporary Asphalt Plant is set to expire on 12 December 2024. To avoid disruption to ongoing projects, the Applicant is submitting a renewal application seeking planning permission to continue utilising the Application Site while maintaining the same operation. This application aims to maintain existing operations at the Application Site while ensuring no changes to the nature, operation, or site configuration of the Temporary Asphalt Plant, with no adverse impact induced.

1.3 Site Description

1.3.1 The Application Site is located to east of Man Kam To road and to the north of Hung Kiu San Tsuen as shown in **Figure 1-1**.

1.3.2 To the north and east of the Application Site is land zoned “Green Belt” in which no new development is expected. A metal workshop is located on the hillside to the northeast of the Application Site. There are public roads access to the metal workshop which also surround and lie within the Application Site.

1.3.3 Based on the Application Site observation on 11 July 2024, the environs of the Application Site remain the same as those observed in 2019/20, including:

- Some public roads providing access to the metal workshop adjacent to the north of the Application Site surrounding and partially lying within the Application Site.
- A metal workshop locating on the hillside to the northeast of the Application Site.
- A piece of land reserved for developing Poultry Slaughtering Centre but shelved in 2010 located to the southeast of the Application Site.
- Several car repair workshops located to the south and southwest of the Application Site.
- Some other workshops and open storage sites located to the further southwest, across Man Kam To Road.
- Some open storage sites located to the west and northwest.

1.4 Project Description

1.4.1 Under the current application, it is proposed to continue utilising the Application Site for the Temporary Asphalt Plant. **As compared with the last approved scheme, there is no change in the nature, and no change to the Application Site configuration, building bulk, site area, form, and major development parameters of the approved Plant, and the Application Site remains unchanged when compared to the previous application.** The Application Site configuration and layout are identical to the approved scheme.

1.4.2 There is **no change** in the asphalt production process and operation. The main product of the Temporary Asphalt Plant is Hot Mix Asphalt (“HMA”) consisting of aggregates blended with bitumen. The usage of HMA is mainly for road paving and airport runway. The maximum HMA production rate of the Temporary Asphalt Plant

is 160 tonnes/hour using a batch mix production mode with a small quantity of asphalt emulsion is also produced. Since road and airport runway maintenance works are mainly carried out between midnight and early morning, the Temporary Asphalt Plant must be operated for 24 hours/day. In response to EPD's control of "Land Filling and Fly-tipping" policy, up to 85,000 tonnes of Reclaimed Asphalt Pavement ("RAP") per year are consumed in the asphalt production

1.4.3 The Master Layout Plan shown in **Figure 1-2** is identical to that of the last approved Planning Application No. A/NE-FTA/192. The major components of the Temporary Asphalt Plant include:

- Asphalt Plant Complex including the Mixing Tower
- Bitumen Tanks
- RAP Stock Pile No. 1
- RAP Equipment Store
- Aggregate Stock Pile No. 2
- Workshop Building

1.4.4 There will be **no change** to the building bulk, site area, form, and major development parameters of the Temporary Asphalt Plant after obtaining the approval with conditions from TPB on 12 December 2019 as mentioned in **paragraph 1.2.2**. The Schematic Diagram of the Temporary Asphalt Plant showing the manufacture of HMA was amended to be Version E dated 11 September 2024 to improve the presentation of the HMA process. Version E of Schematic Diagram attached to the renewed SP Licence is enclosed in **Appendix B** for reference.

1.5 Objectives of the Report

1.5.1 The objectives of this EA Report are to:

- Review potential environmental impacts arising from the operation of the Temporary Asphalt Plant, in terms of air quality, noise, water quality, waste management and land contamination.
- Review the situation of air and noise sensitive receivers

Figure 1-1 Site Boundary and Locations

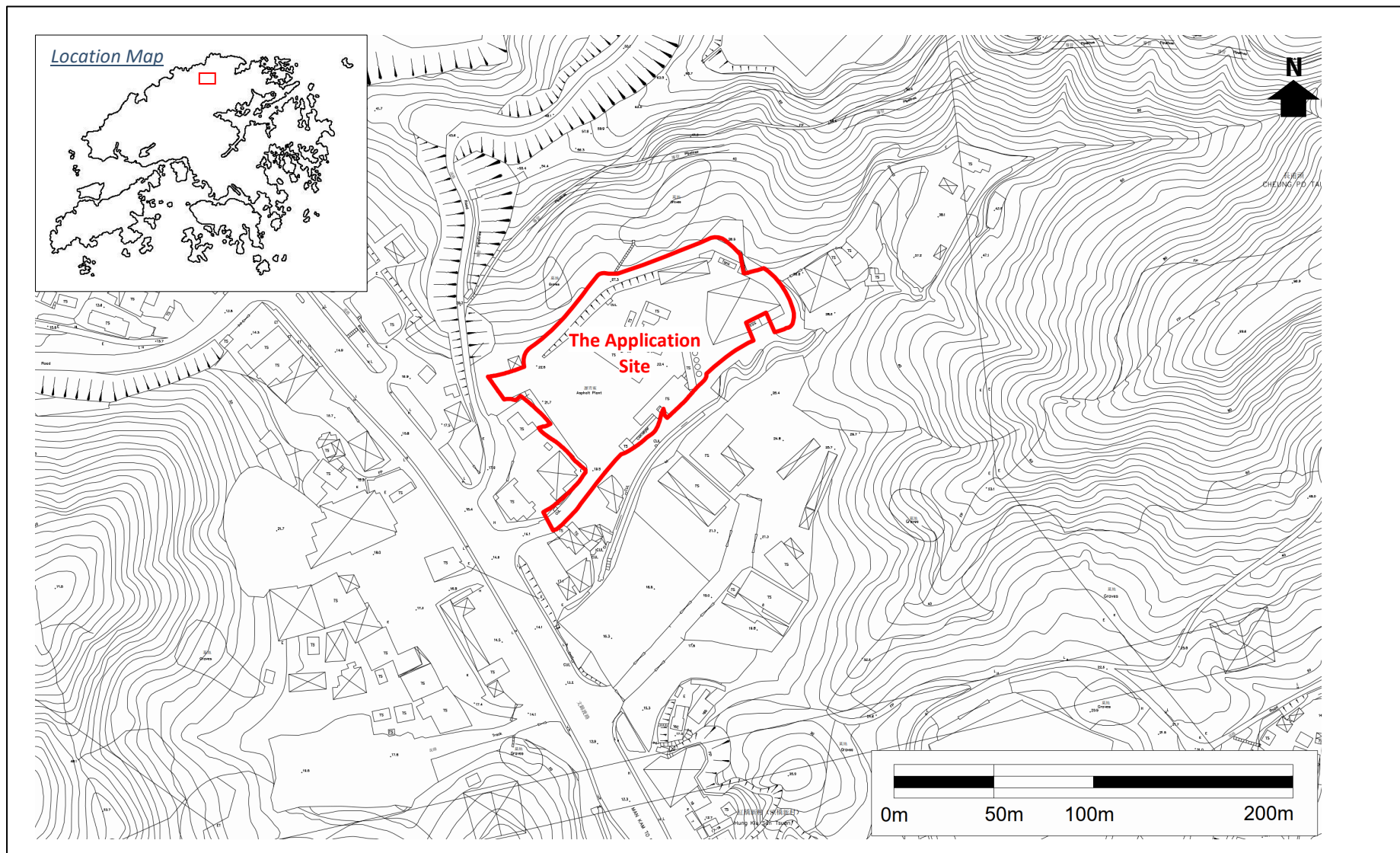
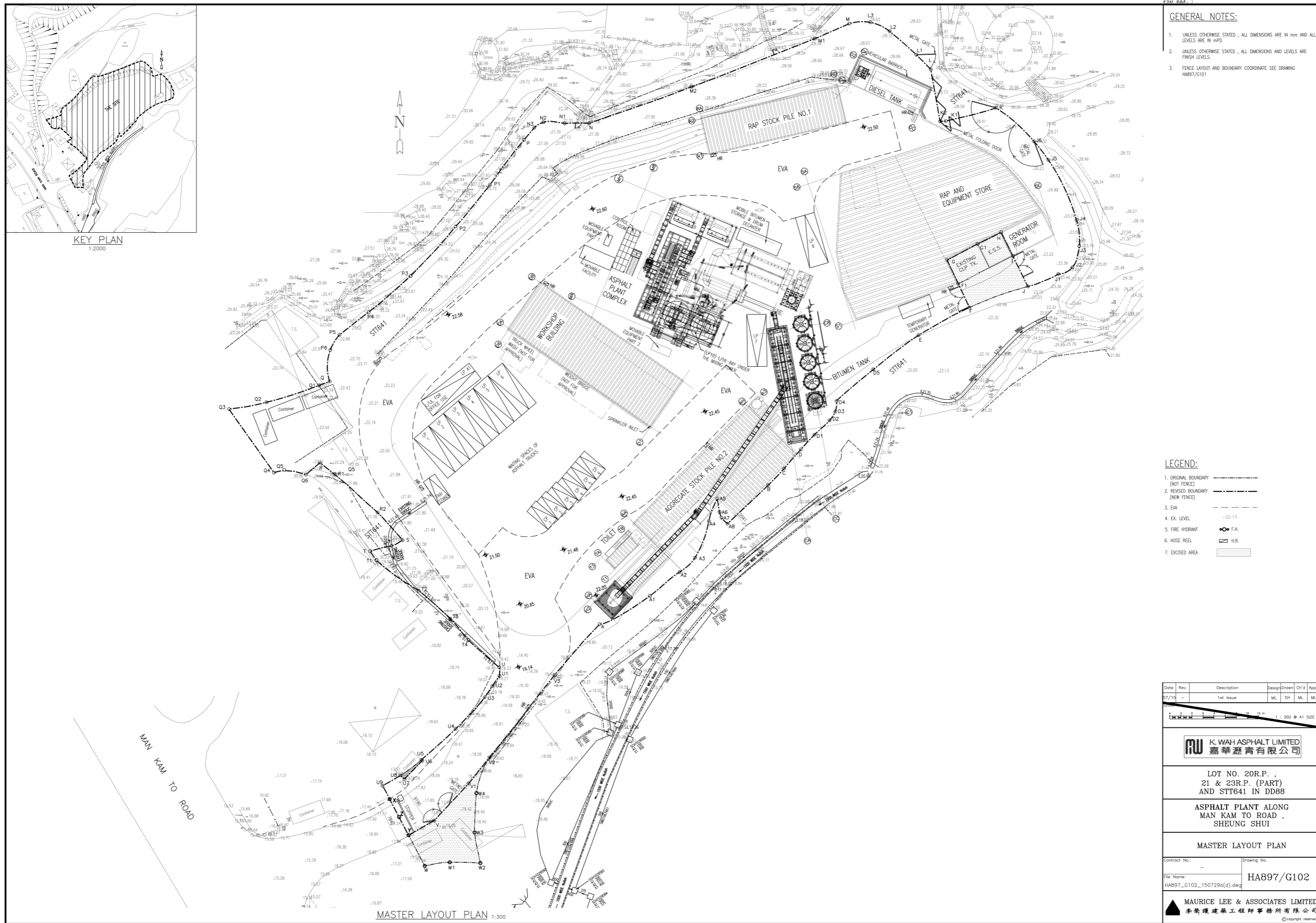


Figure 1-2 Master Layout Plan



2 REVIEW OF ENVIRONMENTAL IMPACTS

2.1 Introduction

2.1.1 Assessments of environmental impact to air quality, noise, water quality, waste and land contamination, were carried out in previously submitted EA Reports to support previous Planning Applications and received “no comment” from the Authority. Apart from the aforementioned planning applications supported by the EA Reports, applications were made under the *Air Pollution Control Ordinance* (“APCO”). The documents are listed in **Table 2-1** below:

Table 2-1 Summary of Submissions

REF	REVISION	REPORT	APPLICATION	DATE	REMARK
7076143 D01/01	1	Environmental Assessment (2014 EA Report)	Planning Application No. A/NE-FTA/148	August 2014	No comment
7076382 D01/01	9.3	Air Pollution Control Plan (“APCP”) (“2017 APCP”)	SP Licence No. L-15-035(1)	March 2017	No comment
7076703 D01/01	1	Environmental Assessment (2019 EA Report)	Planning Application No. A/NE-FTA/192	August 2019	No comment
N/A	N/A	Review on Air Sensitive Receivers (“ASRs”)	SP Licence Renewal Application obtaining the renewed SP Licence No. L-15-035(2)	2019	No comment
AQN23.1014-J.01 for Renewal of SP Licence	3	APCP (“2024 APCP”)	SP Licence Renewal Application	17 October 2024	No comment on the APCP was received The assessment for applying SP Licence renewal was completed (Appendix C refers).

2.1.2 As the Temporary Asphalt Plant has been in operation since 2017, the existing operation would be maintained without any changes in site configuration, building bulk, site area, form, and major development parameters. **No construction work** is needed for the continuation of Plant operation, therefore there will be no environmental impacts arising from construction. Due to **no change in operation** of the Temporary Asphalt Plant, environmental impacts related to Plant operation are the same as those previously assessed in the 2014 EA Report and 2019 EA Report.

2.2 Air Quality

Planning Application No. A/NE-FTA/148 (2014)

2.2.1 With reference to the Rural and New Town Planning Committee (“RNTPC”) Paper dated 12 December 2014, paragraph 9.1. stated the conclusion of 2014 EA Report supporting Planning Application No. A/NE-FTA/148 was agreed by the Director of Environmental Protection (“DEP”).

2.2.2 The air quality assessment for Plant operation in the 2014 EA Report included the following:

- Quantitative impact assessment was conducted to compare against the historical Air Quality Objectives (“AQOs”) in force between 2014 and 2021 (“2014 AQOs”) and adopted international standards for non-criteria pollutants Volatile Organic Compounds (“VOCs”), formaldehyde, benzo(a)pyrene (“B[a]P”) and bitumen fumes
- No exceedance of the AQOs and adopted standards for non-criteria pollutants were predicted at all representative Air Sensitive Receivers (“ASRs”)
- The Temporary Asphalt Plant would not pose any unacceptable air quality impacts on the ASRs in the vicinity
- Plant operation would fully comply with 2014 AQOs, other adopted criteria and the Best Practicable Means (“BPM”)

The First version of SP Licence No. L-15-035(1)

2.2.3 The 2017 APCP supporting the application for SP Licence No. L-15-035(1) was received with “no comment”. The SP Licence was obtained on 23 February 2017.

2.2.4 The 2017 APCP included:

- Identification of Representative ASRs within 500m from the Application Site boundary
- Adopting the 2014 AQOs
- Adopting international standards for non-criteria pollutants including B[a]P, bitumen fume (“Polycyclic Organic Matter”), formaldehyde and VOCs. Recommended standards for benzene (“C₆H₆”), as well as metals and odour.

- Reporting the estimated cumulative air quality levels at the ASRs including the contour plots complying with the 2014 AQOs as well as the adopted standards for non-criteria pollutants, metals and odour
- Recommending the BMPs for HMA manufacturing
- Concluding:
 - The BMPs would be provided, implemented and maintained
 - All the relevant AQOs (historical AQOs) would be met with the Temporary Asphalt Plant in operation
 - No unacceptable noxious and offensive emissions would arise from Plant operation

2.2.5 The Applicant has properly implemented the recommendations and air quality control measures provided in the 2017 APCP and the SP Licence. Soon after the commissioning trials held in March 2017, a letter of no objection to the commencement of operation of the Temporary Asphalt Plant was issued by EPD in April 2017.

2.2.6 Since commencement of operation in 2017, several improvements have been made to the Temporary Asphalt Plant by the Applicant, as follows:

- An additional deodorisation system for further reduction of particulates and odour
- The use of low-odour bitumen to reduce the volatility and formation of bitumen fumes
- Covers attaching to asphalt trucks to reduce fugitive dust and odour during transportation

2.2.7 In accordance with SP Licence requirements, during operation of the Temporary Asphalt Plant, 24-hour average ambient Respirable Suspended Particulates (“RSP”) sampling was conducted by the Applicant at a frequency not less than once every six calendar days. Source sampling at chimney for the concerned air pollutants is carried out at a frequency not less than once per every 12 months.

The First Renewal for SP Licence No. L-15-035(2)

2.2.8 A renewal application of SP licence was submitted to EPD in November 2018. A review of ASRs was completed in March 2019 and **no change** of ASRs was identified. The findings and conclusion were still valid for the renewal application. SP Licence No. L-15-035(2) was granted by EPD in May 2020.

The First Renewal for Planning Application No. A/NE-FTA/192 (2019)

2.2.9 An EA report was prepared in August 2019 to support the renewal of planning approval (Planning Application No. A/NE-FTA/192) for the Temporary Asphalt Plant for another five years to 2024. Review of the 2017-APCP and ASRs for the renewal of SP licence in 2019 concluded that no adverse air quality and health impact from

operation of the Temporary Asphalt Plant was anticipated with implementation of the control measures recommended in APCP and stipulated in the SP licence.

- 2.2.10 The renewal application was approved for a period from 13 December 2019 to 12 December 2024 with several approval conditions.

The Second (Current) Renewal for SP Licence

- 2.2.11 An application for renewing SP Licence No. L-15-035(2) was made, supported by a new APCP. The new APCP (“2024 APCP”) version 3 was submitted to EPD on 9 October 2024 to support the renewal application of SP Licence. The results and conclusion of APCP are summarised below:

- The cumulative concentrations of pollutants including RSP, FSP, NO₂, SO₂, etc., have been quantitatively assessed based on the latest modelling guidelines.
- The predicted cumulative concentrations would comply with both the prevailing AQOs and future 2025 AQOs.
- Representative ASRs in the 2017 APCP were reviewed and there is no change.
- The conclusion of the 2024 APCP includes:
 - The Plant is operated by the Licence Holder capable of providing and maintaining the best practicable means for the prevention of the emission from the premises of any air pollutant.
 - The Plant operation would not affect the attainment and maintenance of the prevailing AQOs.
 - No emission noxious or offensive emission would be, or be likely to be, prejudicial to health due to the Plant operation.

- 2.2.12 No comment was received from EPD and EPD provided a letter informing the completion of the SP Licence renewal assessment on 17 October 2024 enclosed in **Appendix C**.

The Second (Current) Renewal for Planning Application (2024)

- 2.2.13 This EA report has been prepared to support the renewal of planning approval for the Temporary Asphalt Plant for another five years to 2029. The previously submitted 2014 EA Report, 2017 APCP, ASRs for the renewal of SP Licence in 2019, 2019 EA Report and 2024 APCP concluded that no adverse air quality and health impact from operation of the Temporary Asphalt Plant was anticipated with implementation of the control measures recommended in APCP and stipulated in the SP Licence. Since there will be no change in the Temporary Asphalt Plant operation, no adverse air quality impact will be arising from the continued operation of the Temporary Asphalt Plant.

Summary of Air Pollution Control Measures

2.2.14 Based on the Application Site observations on 11 July 2024, the air pollution control measures are summarised in **Table 2-2** below.

Table 2-2 Mitigation Measures for the Temporary Asphalt Plant

ID	DESCRIPTION	MITIGATION MEASURES
EP1	Exhaust from Dust Collectors of Stack	<ul style="list-style-type: none"> • Pre-skimmer and filter baghouse are provided for dust removal prior to exhaust emission to ambient air • Ventilation duct for the chimney is 34m above ground to assist air pollutants dispersion • ULSD with a maximum sulphur content of 0.005% w/w is used • Air-to-fuel ratio is properly controlled to achieve complete fuel combustion as far as possible • Dust is filtered with high capacity Fabric Filter (Bag-house / DC1) before discharge to ambient air • The exhaust fume from the mixer is passed to the aggregate Rotary Dryer Drum for re-burning by incineration, potential PAHs emission arising from the mixer is minimised
EP2	Fugitive dust emission from underground hopper	<ul style="list-style-type: none"> • Sufficient automatic water sprinklers and manual water hoses are installed and operated during loading of aggregate to suppress possible dust emissions • Underground hoppers are enclosed at the top and three sides • Enclosed conveyor belts are used to minimise dust emissions
EP3	Fugitive dust emission from spare Aggregates Storage Bay	<ul style="list-style-type: none"> • Sufficient automatic water sprinklers and manual water hoses are installed and operated during loading of aggregate to suppress possible dust emissions • Storage bay is covered on top with three sides enclosure, and front curtain will be provided at the fine aggregate piles with sizes less than 5mm
EP4	Fugitive dust emission from RAP Storage Bay	<ul style="list-style-type: none"> • Sufficient automatic water sprinklers and manual water hoses are installed and operated during loading of aggregate to suppress possible dust emissions • Covered on top with three sides enclosure, and equipped with front curtain
EP5	Fugitive dust emission from Coarse RAP Storage Bay	<ul style="list-style-type: none"> • Sufficient automatic water sprinklers and manual water hoses are installed and operated during loading of aggregate to suppress possible dust emissions • Covered on top with three sides enclosure, and equipped with front curtain
EP6	Fugitive dust emission from Crushed RAP Storage Bay	<ul style="list-style-type: none"> • Sufficient automatic water sprinklers and manual water hoses are installed and operated during loading of aggregate to suppress possible dust emissions • Covered on top with three sides enclosure, and equipped with front curtain

ID	DESCRIPTION	MITIGATION MEASURES
EP7	Fugitive dust emission from RAP Feed Hopper at RAP Processing Depot	<ul style="list-style-type: none"> • Sufficient automatic water sprinklers and manual water hoses are installed and operated during loading of aggregate to suppress possible dust emissions • Covered on top with three sides enclosure, and equipped with front curtain • RAP processing housed in fully enclosed building with enclosed conveyor belts
EP8 & EP9	Fugitive dust emission from (Coarse & Fine) RAP Feed Hopper	<ul style="list-style-type: none"> • Sufficient automatic water sprinklers and manual water hoses are installed and operated during loading of aggregate to suppress possible dust emissions • Covered on top with three sides enclosure, and equipped with front curtain. • Enclosed conveyer and bucket elevator are used to minimise dust emissions.
EP10	Exhaust from Dust Collectors of Silos	<ul style="list-style-type: none"> • Fully enclosed debagging machine and enclosed bucket elevator are used to load imported lime into the silo. • Dust is filtered with Fabric Filter (DC2) before discharge to ambient air. • Water sprinklers are operated during filler feeding processes. • Feed by fully enclosed screw conveyor.
EP11	Negligible dust emission from conditioner	<ul style="list-style-type: none"> • Water sprinklers are operated during handling of conditioned dust.
EP12 – EP16	Bitumen fume emission from heated bitumen tanks	<ul style="list-style-type: none"> • The heating temperature of the particular bitumen type and grade shall not exceed the corresponding temperature limit Tamper-free high temperature cut-off device is provided to cut off the heater in case the upper limit for bitumen temperature is reached. The cut off temperature is set at 163°C for Bitumen Tanks 1 and 2, and at 180°C for Bitumen Tanks 3 and 4, and Elevated Bitumen Tank. • These EPs are connected to the Mixing Tower thereby being emitted from the stack EP1 to further reduce bitumen fume emission.
EP17	Bitumen fume emission from heated bitumen tanks (to be provided)	<ul style="list-style-type: none"> • The heating temperature of the particular bitumen type and grade shall not exceed the corresponding temperature limit Tamper-free high temperature cut-off device is provided to cut off the heater in case the upper limit for bitumen temperature is reached. The cut off temperature will be set at 191°C. • Exhaust fume is discharged through tank vents of at least 10m above ground. • Activated carbon filter will be installed to eliminate bitumen fume emission.

ID	DESCRIPTION	MITIGATION MEASURES
EP18	Asphalt rubber fume emission from the removable heated asphalt rubber tank	<ul style="list-style-type: none"> The heating temperature of the asphalt rubber shall not exceed the corresponding temperature limit Tamper-free high temperature cut-off device shall be provided to cut off the heater in case the upper limit for bitumen temperature is reached. The cut off temperature is set at 191°C. Activated carbon filter is installed to eliminate bitumen fume emission.
EP19	Exhaust from the diesel burner of the Bitumen Storage and Drum Decanter (to be provided)	<ul style="list-style-type: none"> Air-to-fuel ratio shall be properly controlled to achieve complete fuel combustion. Maximum sulphur content of liquid fuel used shall be 0.005% by weight.
EP20	Fugitive dust emissions from oversized aggregate reject bin	<ul style="list-style-type: none"> Water sprinklers are operated during loading of rejected aggregate.
EP21	Fugitive dust emissions from rejected aggregate storage	<ul style="list-style-type: none"> Sufficient automatic water sprinklers and manual water hoses are installed and operated during loading of aggregate to suppress possible dust emissions. Three sides enclosure with the top cover and front-side curtain.
EP22	Fugitive dust emissions from Paved Road	<ul style="list-style-type: none"> All access roads within the Application Site are hard-paved and adequately wetted during operational hours. Vehicle and wheel washing facilities are provided to remove dust or mud deposits on vehicle body and wheels prior to exiting the Application Site. Traffic on site is restricted to 5km/hour. Loaded tankers/trucks shall be fully covering with tarpaulin sheet before leaving the Application Site.
EP23	Temporary Diesel Generator already removed	<ul style="list-style-type: none"> Not applicable
EP24	Combustion products from diesel fuel for Emergency Generator	<ul style="list-style-type: none"> Air-to-fuel ratio is properly controlled to achieve complete fuel combustion. Ventilation duct for the heater is 8m above ground to assist air pollutants dispersion. Maximum sulphur content of liquid fuel used is 0.005% by weight.
EP25	Bitumen fume emission from heated Bitumen Storage and Drum Decanter (to be provided)	<ul style="list-style-type: none"> The heating temperature of the bitumen storage shall not exceed the corresponding temperature limit Tamper-free high temperature cut-off device shall be provided to cut off the heater in case the upper limit for bitumen temperature is reached. The cut off temperature shall be set at 191°C. Activated carbon filter will be installed to eliminate bitumen fume emission.

2.3 Noise

2.3.1 As mentioned in **paragraph 1.2.2**, two planning applications were made under the TPO:

1. Planning Application No. A/NE-FTA/148

- a. It was made under Section 16 of the TPO supported by an Environmental Assessment (“EA 2014”) Report for the Temporary Asphalt Plant.
- b. The noise impact arising from the Plant during on-site operation was assessed based on the Sound Power Levels (“SWLs”) for most of the equipment recommended in the *Technical Memorandum on Noise from Construction Work Other Than Percussive Piling (“GW-TM”)* and *Sound Power Levels of other commonly used PME (“Other PME List”)*.
- c. The SWL of Rotary Dryer Drum was calculated based on the sound data provided by the manufacturer.
- d. The SWLs of Main Exhaust Fan, Feed Unit (or Mixer) and Reclaimed Asphalt Pavement (“RAP”) Processing Plant were calculated based on the sound data measured at the asphalt plant at Anderson Road Quarry.
- e. No adverse operation noise impact was concluded based on the noise assessment results in the EA 2014.
- f. The planning application was approved with conditions by the TPB on 12 December 2014.

2. Planning Application No. A/NE-FTA/192

- a. This application supported by the EA Report dated 12 August 2019 (“EA 2019”) was made to the TPB to renew planning approval for the Temporary Asphalt Plant for another five years.
- b. Similar to EA 2014, in EA 2019 the noise impact arising from the Plant during on-site operation was assessed based on the SWLs for most of the equipment including Mixing Unit (or Mixer) recommended in the GW-TM and Other PME List.
- c. The SWLs of Rotary Dryer Drum, RAP Processing Machine and Main Exhaust Fan which are not available in GW-TM and Other PME List were calculated based on the actual noise measurements at the Temporary Asphalt Plant during operation.
- d. The SWL of Loader was referred to the catalogue of the supplier.
- e. No adverse operation noise impact was concluded based on the noise assessment results in the EA 2019.
- f. Off-site traffic noise impact was qualitatively reviewed and no adverse off-site traffic noise impact was concluded.
- g. Comment regarding provision of noise mitigation measures on the EA 2019 was received and the Applicant responded to be committed to provide a number of noise mitigation measures.
- h. On 18 October 2019, the renewal application was approved with conditions for a period from 13 December 2019 to 12 December 2024.

- i. Only one approval condition, Approval Condition (g), was related to noise.
- j. Approval Condition (g) states “*the implementation of noise mitigation measures, as proposed by you, as required under approval condition (g) to the satisfaction of the Director of Environmental Protection or of the TPB by 13.9.2021*”.
- k. As shown in **Appendix A**, the details of the noise mitigation measures implementation were submitted to the TPB on 18 June 2021. The submission of the implemented noise mitigation measures was found to comply with the requirements and Approval Conditions (g) was confirmed to be complied with on 26 July 2021.

2.3.2 As mentioned in **Section 1.4**, **there is no change in the nature, and no change to the Application Site configuration, building bulk, site area, form, and major development parameters of the approved Plant, and the Application Site remains unchanged when compared to the previous application.** The Application Site configuration and layout are identical to the approved scheme.

2.3.3 In order to determine the potential adverse noise impact on the Noise Sensitive Receivers (“NSRs”) due to the continued operation of the Temporary Asphalt Plant for this Planning Application for renewal, a review has been conducted to review:

- Noise Criteria
- NSRs
- Noise Impact from Off-Site Traffic noise
- Noise Impact from On-Site Operation Noise

Review of Noise Criteria

2.3.4 The operation of the Temporary Asphalt Plant shall comply with the noise criteria stipulated in the *Noise Control Ordinance* (Cap. 400) and *Chapter 9 Environment of the Hong Kong Planning Standard and Guidelines* (“HKPSG”).

2.3.5 Noise criteria for on-site operation noise (or fixed plant noise) during operation phase given in the *Technical Memorandum for the Assessment of Noise from Places other than Domestic premises, Public places or Construction Sites* (“IND-TM”) issued under NCO.





2.3.6 The noise criteria for planned fixed noise source is (a) 5 dB(A) below the appropriate ANLs as shown in Table 2 of IND-TM, or (b) the prevailing background noise level if the background noise level is 5 dB(A) lower than the ANLs.


2.3.7 There is no update or amendment of both IND-TM and HKPSG from Year 2019 (last submission of EA 2019) to Year 2024. Therefore, the noise criteria adopted in EA 2019 are considered to be valid for this Planning Application.

Review of NSRs

2.3.8 Five NSRs were identified in the first layer within 300m from the Site Boundary in EA 2019 which was the same as EA 2014. Site visit was conducted on 15 July and 17 October 2024 respectively to review the status of identified NSRs. Desktop study has also been carried out to review any new or planned NSRs within 300m study area. The review summary of all the identified NSRs is shown in **Table 2-3**. There is no change of the usage of the NSRs identified in EA 2019. Furthermore, there is no new or planned NSRs.

Table 2-3 Review of NSRs

NSR ID	Description	No. of Storeys	Area Sensitivity Rating	Land use in EA 2019	Review of Land Use	Photographic Record
IN1	Village House at Hung Kiu San Tsuen	2	A	Residential	Residential	
IN2	Village House at Lee Ka Yuen	2	A	Residential	Residential	
IN3	Village House 1	1	A	Residential	Residential	
IN4	Village House 2	1	A	Residential	Residential	

NSR ID	Description	No. of Storeys	Area Sensitivity Rating	Land use in EA 2019	Review of Land Use	Photographic Record
IN5	Village House 3	1	A	Residential	Residential	

2.3.9 All the identified NSRs are located in a rural area and there is no change in land use since Year 2019. No major roads with annual average daily traffic flow in excess of 30,000 or industrial areas are found in the vicinity of the identified NSRs since 2019 according to the Annual Traffic Census 2022. Therefore, the Area Sensitivity Rating (“ASR”) of the identified NSRs is Type A, as per IND-TM. The identification is the same as EA 2019.

Review of Noise Impact from Off-Site Traffic Noise

2.3.10 The maximum HMA production capacity will remain unchanged, i.e., 160 tonnes/hour. Therefore, the traffic arising from the Plant operation will also be unchanged. The maximum vehicle arising from the site is 24 trips/ hours at day and evening time; while 10 trips/ hour at night time.

2.3.11 A Review on Traffic Flow and the contribution of the application Plant has been conducted to assess potential noise due to the Plant operation. The HKPSG assessment criteria for domestic premises is 70 dB(A). Besides, contribution of less than 1.0 dB(A) is considered to be not significant in accordance with the *Road Traffic Noise Impact Assessment under the Environmental Impact Assessment Ordinance* (“GN 12/2023”). The summary of the Traffic Noise contribution in 2024 and 2029 are provided in **Table 2-4** to **Table 2-5**.

Table 2-4 Summary of Traffic Noise Contribution of the Plant in 2024 (AM Peak)

ROAD ID	ROAD DESCRIPTION		BASIC NOISE LEVEL, dB(A)		CONTRIBUTION, dB(A)
			WITH THE PLANT	WITHOUT THE PLANT	
L001	Man Kam To Road	NB	72.7	72.7	0.0
L002	Man Kam To Road	SB	73.3	73.3	0.0
L003	Kong Nga Po Road	EB	68.1	68.1	0.0
L004	Kong Nga Po Road	WB	66.6	66.6	0.0
L005	Man Kam To Road	SB	74.0	74.0	0.0
L006	Man Kam To Road	NB	74.1	74.1	0.0
L007	Access Road to Open Storage Site No.7	EB	61.1	61.1	0.0
L008	Access Road to Open Storage Site No.7	WB	63.2	63.2	0.0
L009	Man Kam To Road	NB	74.3	74.3	0.0
L010	Man Kam To Road	SB	74.3	74.3	0.0

ROAD ID	ROAD DESCRIPTION		BASIC NOISE LEVEL, dB(A)		CONTRIBUTION, dB(A)
			WITH THE PLANT	WITHOUT THE PLANT	
L011	Man Kam To Road	NB	74.4	74.2	0.2
L012	Man Kam To Road	SB	74.4	74.2	0.2
L013	Fu Tei Au Road	EB	60.7	60.7	0.0
L014	Fu Tei Au Road	WB	59.0	59.0	0.0
L015	Unnamed Access Road	WB	53.2	53.2	0.0
L016	Unnamed Access Road	EB	45.4	45.4	0.0
L017	Man Kam To Road	NB	74.5	74.3	0.2
L018	Man Kam To Road	SB	74.6	74.4	0.2

Table 2-5 Summary of Traffic Noise Contribution of the Plant in 2024 (PM Peak)

ROAD ID	ROAD DESCRIPTION		BASIC NOISE LEVEL, dB(A)		CONTRIBUTION, dB(A)
			WITH THE PLANT	WITHOUT THE PLANT	
L001	Man Kam To Road	NB	72.6	72.6	0.0
L002	Man Kam To Road	SB	71.8	71.8	0.0
L003	Kong Nga Po Road	EB	65.6	65.6	0.0
L004	Kong Nga Po Road	WB	65.4	65.4	0.0
L005	Man Kam To Road	SB	73.3	73.3	0.0
L006	Man Kam To Road	NB	72.6	72.6	0.0
L007	Access Road to Open Storage Site No.7	EB	63.4	63.4	0.0
L008	Access Road to Open Storage Site No.7	WB	61.9	61.9	0.0
L009	Man Kam To Road	NB	73.5	73.5	0.0
L010	Man Kam To Road	SB	73.1	73.1	0.0
L011	Man Kam To Road	NB	73.8	73.5	0.2
L012	Man Kam To Road	SB	73.3	73.1	0.2
L013	Fu Tei Au Road	EB	60.1	60.1	0.0
L014	Fu Tei Au Road	WB	61.6	61.6	0.0
L015	Unnamed Access Road	WB	55.6	55.6	0.0
L016	Unnamed Access Road	EB	57.9	57.9	0.0
L017	Man Kam To Road	NB	74.0	73.8	0.2
L018	Man Kam To Road	SB	73.5	73.2	0.2

Table 2-6 Summary of Traffic Noise Contribution of the Plant in 2029 (AM Peak)

ROAD ID	ROAD DESCRIPTION		BASIC NOISE LEVEL, dB(A)		CONTRIBUTION, dB(A)
			WITH THE PLANT	WITHOUT THE PLANT	
L001	Man Kam To Road	NB	72.9	72.9	0.0
L002	Man Kam To Road	SB	73.6	73.6	0.0
L003	Kong Nga Po Road	EB	70.7	70.7	0.0
L004	Kong Nga Po Road	WB	69.9	69.9	0.0
L005	Man Kam To Road	SB	74.9	74.9	0.0
L006	Man Kam To Road	NB	75.1	75.1	0.0
L007	Access Road to Open Storage Site No.7	EB	61.2	61.2	0.0

ROAD ID	ROAD DESCRIPTION		BASIC NOISE LEVEL, dB(A)		CONTRIBUTION, dB(A)
			WITH THE PLANT	WITHOUT THE PLANT	
L008	Access Road to Open Storage Site No.7	WB	63.2	63.2	0.0
L009	Man Kam To Road	NB	75.2	75.2	0.0
L010	Man Kam To Road	SB	75.2	75.2	0.0
L011	Man Kam To Road	NB	75.3	75.1	0.1
L012	Man Kam To Road	SB	75.3	75.1	0.1
L013	Fu Tei Au Road	EB	60.6	60.6	0.0
L014	Fu Tei Au Road	WB	58.9	58.9	0.0
L015	Unnamed Access Road	WB	53.2	53.2	0.0
L016	Unnamed Access Road	EB	45.4	45.4	0.0
L017	Man Kam To Road	NB	75.3	75.2	0.1
L018	Man Kam To Road	SB	75.4	75.3	0.1

Table 2-7 Summary of Traffic Noise Contribution of the Plant in 2029 (PM Peak)

ROAD ID	ROAD DESCRIPTION		BASIC NOISE LEVEL, dB(A)		CONTRIBUTION, dB(A)
			WITH THE PLANT	WITHOUT THE PLANT	
L001	Man Kam To Road	NB	72.8	72.8	0.0
L002	Man Kam To Road	SB	72.0	72.0	0.0
L003	Kong Nga Po Road	EB	68.2	68.2	0.0
L004	Kong Nga Po Road	WB	68.3	68.3	0.0
L005	Man Kam To Road	SB	74.1	74.1	0.0
L006	Man Kam To Road	NB	73.5	73.5	0.0
L007	Access Road to Open Storage Site No.7	EB	63.3	63.3	0.0
L008	Access Road to Open Storage Site No.7	WB	61.9	61.9	0.0
L009	Man Kam To Road	NB	74.3	74.3	0.0
L010	Man Kam To Road	SB	73.8	73.8	0.0
L011	Man Kam To Road	NB	74.5	74.3	0.2
L012	Man Kam To Road	SB	74.1	73.9	0.2
L013	Fu Tei Au Road	EB	60.0	60.0	0.0
L014	Fu Tei Au Road	WB	61.5	61.5	0.0
L015	Unnamed Access Road	WB	55.6	55.6	0.0
L016	Unnamed Access Road	EB	57.9	57.9	0.0
L017	Man Kam To Road	NB	74.7	74.6	0.2
L018	Man Kam To Road	SB	74.2	74.0	0.2

2.3.12 The contribution of the Plant on Traffic Noise at AM peak and PM peak in 2024 ranges from 0.0 to 0.2, while the contribution in 2029 ranges from 0.0 to 0.1. The contribution in 2024 and 2029 are less than 1.0 dB(A) and are acceptable in environmental view. Therefore, the no additional mitigation measure is required.

Review of Noise Impact from On-Site Operation Noise

2.3.13 The operation hours, activities and operation schedule of on-site PME during Plant operation remains unchanged since 2019. Therefore, the major noise sources listed below are the same as EA 2019:

- Mechanical and Electrical (“M&E”) equipment
- Loading/unloading activities
- On-site movements of transportation trucks and wheel loaders

M&E Equipment

2.3.14 There is no change in quantity, type and location of M&E equipment such as water pumps, fire services pumps and transformers which are installed inside plant rooms. Small split-type and windows-type air-conditioners are installed at the site office. The noise impact arising from enclosed M&E and outdoor units of small air-conditioners are insignificant.

2.3.15 The Powered Mechanical Equipment (“PME”) used on-site remains the same as EA 2019. The SWLs of PMEs adopted in EA 2019 was obtained from manufacturers’ catalogues provided by the Applicant, GW-TM, Other PME List and on-site noise measurement.

2.3.16 The utilisation of each PME as list in EA 2019 will remains unchanged and has been confirmed by the Plant operator, it is summarised in **Table 2-8**.

Table 2-8 Operation Schedule of On-site Fixed PME

PME	QUANTITY, UTILISATION (% PER 30MINS)	
	DAY AND EVENING	NIGHT
Exhaust Fan	1, 100%	1, 100%
Air Compressor (Air Flow $\leq 10\text{m}^3/\text{min}$)	1, 50%	1, 30%
Rotary Dryer Drum (Aggregate)	1, 50%	1, 20%
Rotary Dryer Drum (RAP)	1, 50%	1, 20%
RAP Processing Machine	1, 100%	0, 0%
Screw Conveyor/Slant Belt Conveyor/Belt Conveyor	11, 100%	11, 30%
Bucket Elevator/Filler Elevator	6, 100%	5, 30%
Mixing Unit	1, 100%	1, 100%
Bitumen Pump	2, 100%	1, 50%

2.3.17 The SWLs of exhaust fan, rotary dryer drum and RAP Processing Depot adopted in the noise assessment in EA 2019 were determined based on site measured SPLs on 9 July 2019. In order to review the validity of the SWL of exhaust fan, rotary dryer drum and RAP Processing Depot, a noise measurement has been conducted on 17 October 2024. The measurement settings adopted in EA 2019 will be followed in this noise re-measurement. The SWL of above mentioned PMEs was based on standard acoustic principle which was employed in EA 2019, the formula is showed as follows:

$$SPL = SWL - DC$$

where:

SPL = Sound Pressure Levels at receiver, in dB(A)

SWL = Sound Power Levels of PME, in dB(A)

DC = Distance Correction, in dB(A) by $DC = 20\log(D) + 8$

D = Horizontal distance between the NSR and source, in metres

- 2.3.18 The SWL of the exhaust fan is 2.6dB(A) lower, rotary dryer drum is 3.4dB(A) and RAP Processing Depot is 2.5dB(A) lower than the SWL of EA 2019. The details of noise measurement are provided in **Appendix D**.

Loading/unloading Activities

- 2.3.19 The main loading/ unloading activities, including operation schedule are the same as described in EA 2019. The SWL of loading/unloading activities from the truck refers to GW-TM, and the SWL of loading/unloading activities from the wheel loaders refers to manufacturers' catalogues provided by the Applicant. The wheeled loader has been replaced in February 2024 of which the SWL is the same as adopted in the assessment of EA 2019, the catalogue is provided in **Appendix E**, as such both references are valid. No idling is expected of trucks with operating engine before/after loading and unloading activities. The mitigation measures are implemented as stated in EA 2019.

- The aggregate unloading bay/storage area are three sides enclosed with top by cladding.
- The RAP unloading area is enclosed by cladding.
- The asphalt loading area is enclosed by two sides with top by cladding and curtains at the entrance and exit sides.

- 2.3.20 The utilisation of each PME as list in EA 2019 will remains unchanged and has been confirmed by the Plant operator, it is summarised in **Table 2-9**.

Table 2-9 Operation Schedule of Loading/ Unloading Activities

PME	QUANTITY, UTILISATION (% PER 30MINS)	
	DAY & EVENING	NIGHT
Wheel Loader (Loading/Unloading Aggregate/RAP)	26, 0.28%	6, 0.28%
Truck (Unloading Aggregate)	4, 1.67%	1, 1.67%
Truck (Loading Asphalt)	8, 1.67%	5, 1.67%
Truck (Unloading RAP)	1, 1.67%	1, 1.67%

On-site Operation Noise – Movement of Vehicles

- 2.3.21 Vehicles such as trucks and wheeled loaders will be used for raw material delivery and collection of asphalt. The route of vehicles travelling on-site and the operation is identical as that described in EA 2019. The SWLs of the vehicles was referenced from GW-TM and *Sound Power Levels of Other Commonly Used PME*, issued by EPD.

SWL of 105dB(A) for truck with gross vehicle weight lower than or equal to 38 tonne has been adopted in the assessment. Both references are valid.

- 2.3.22 The environment and terrain of the Site and surrounding environment is similar to that in 2019, no significant changes were identified during the site visit. Therefore, the application of screening correction for some of the road segment/ PMEs is still valid.

Review on Prevailing Background Noise

- 2.3.23 A prevailing background noise was measured near NSR IN1 for preparation of 2014 EA Report (EA 2014) and was adopted in the noise assessment of EA 2019 after confirmation of no additional noise generation activities nearby compare with Year 2014. The prevailing background noise adopted in EA 2014 and EA 2019 is considered to be valid for this application, since there is no new noise generating activities in the vicinity of the Site was observed during the site visits, as such the measures background noise level in 2014 is representative as prevailing background noise level for this renewal application. Also, dominate noise source of all identified NSRs is Man Kam To Road, therefore, the prevailing background noise level should be similar at all NSRs.
- 2.3.24 The location of prevailing background noise measurement was conducted at NSR IN1 as shown **Figure 2-1**, the prevailing background noise is summarised in **Table 2-10**.

Table 2-10 Summary of Background Noise

ID	Measurement Location	Background Noise Level, dB(A)		
		Day	Evening	Night
BG1	Near NSR IN1	63	65	61

Review on Noise Criteria at NSRs

- 2.3.25 As mentioned in paragraph 2.3.6, the noise criteria should be determined the lower level of prevailing background noise or 5 dB(A) lower the ANL. In view of there is no change in prevailing background noise level and the ASR of all NSRs, the noise criteria adopted in EA 2019 is valid, the summary is provided in **Table 2-11**.

Table 2-11 Summary of Noise Criteria

ID	Measurement Location	Period	Background Noise Level, dB(A)	ANL-5, dB(A)	Assessment Criteria, dB(A)
BG1	Near NSR IN1	Day	63	55	55
		Evening	65	55	55
		Night	61	45	45

- 2.3.26 All the NSRs in EA 2019 complied with the noise criteria, as mentioned in **paragraphs 2.3.15** and **2.3.17**, the noise sources remain unchanged, while the highest SWL of exhaust fan, rotary dryer drum and RAP Processing Depot is lower than that in EA 2019. Also, with the implementation of the mitigation measures. The predicated

noise level is expected to be lower or equal to previous assessment results, and hence, no exceedance is expected. The assessment result in EA 2019 is valid.

Review on Mitigation Measures

2.3.27 Based on the Application Site observations on 11 July 2024 and 17 October 2024, the noise mitigation measures listed in the Compliance of Approval Condition (g) of Approved Planning Application No. A/NE-FTA/192-1 has been implemented and maintained, and no complaint was received in the past five (5) years:

- The exhaust fan is already fully enclosed with four sides and the top.
- The air compressor has been enclosed in the steel case with surface density about 15kg/m^2 (i.e. 2mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with approx. 25mm thick sound absorptive material facing the air compressor.
- The door of the steel case keeps locked during operation of the air compressor.
- The air-intake of the steel case is facing northeast towards a hill, which is always from the nearby noise sensitive receivers.
- Additional noise barrier made of steel plate with surface density about 22.5kg/m^2 (i.e. 3mm thick steel plate with density of about $7,500\text{kg/m}^3$) and 27mm sound absorptive material facing the ground, on the top of the compressor, has been also installed.
- A barrier to the west of the rotary dryer drum with surface density of approx. 18kg/m^2 has been installed (i.e. 6.2mm thick cement pressure plate with density of about $2,300\text{kg/m}^3$ plus 0.5mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with approx. 27mm thick sound absorptive material facing the drum
- The crusher of RAP Processing Machine has been enclosed with four sides and the top made of steel plate with surface density about 22.5kg/m^2 (i.e. 3mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with 27mm thick sound absorptive material facing the machine.
- The motors for screw conveyor, slant belt conveyor and belt conveyor have been enclosed on both sides, the top, the bottom and the front which the enclosures is made of steel plates with surface density about 22.5kg/m^2 (i.e. 3mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with 27mm thick sound absorptive material facing the motors.
- The elevators have been enclosed by steel plate with surface density about 22.5kg/m^2 (i.e. 3mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with 27mm thick sound absorptive material facing the bucket elevator.
- The mixing unit is already fully enclosed by cladding.
- The pump has been enclosed on both sides, the top, the bottom and in front of the opening which the enclosures will be made of steel plates with surface density about 22.5kg/m^2 (i.e. 3mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with 27mm thick sound absorptive material facing the pump.
- 2.5m high hoarding erected along the Application Site Boundary

2.3.28 Furthermore, the noise mitigation measures submitted on 18 June 2021 were received with no comment from EPD (**Appendix A** refers).

2.3.29 Since no changes to Plant components or operations have been made and no change on NSRs and no new NSRs have been identified, PMEs used on-site remains the same, the measure SWL is comparable with that in EA 2019 and no significant change of traffic noise impact compared with EA 2019, EA Report is considered to remain valid. Also, all the noise mitigation measures listed in the Compliance of Approval Condition (g) of Approved Planning Application No. A/NE-FTA/192-1 has been implemented and maintained, and no complaint was received in the past 5 years. Therefore, no adverse noise impact arising from the continued Plant operation is anticipated.

2.4 Water Quality

2.4.1 As mentioned in the 2014 and 2019 EA Reports, water is not required for the production of HMA. No industrial wastewater is generated from the Temporary Asphalt Plant during operation. The only sources of wastewater during Plant operation include the following:

- Sewage generated from site staff
- Surface runoff

2.4.2 Since all water for vehicle wheel washing is treated and reused, there is no generation of wastewater from this source.

2.4.3 For the sewage generated from site staff, portable toilets equipped with storage tanks are already installed at the Temporary Asphalt Plant to collect sewage/wastewater generated by staff. The collected sewage/wastewater is tankered away by a licensed contractor for off-site disposal on a regular basis. No adverse water quality impact arises from the Temporary Asphalt Plant since the operation started. Hence, no adverse impact on water quality due to sewage/wastewater generated by staff is anticipated.

2.4.4 For the Application Site surface runoff, water sprinklers are installed for dust suppression and the entire site is paved. Operational procedures are applied to prevent over-wetting of the ground and roads so as to minimise surface runoff. All surface runoff is collected by the existing peripheral surface U-channels and diverted to sand traps for silt removal prior to being discharged into public drains.

2.4.5 Therefore, no adverse water quality impact due to surface runoff is anticipated.

2.5 Waste Management

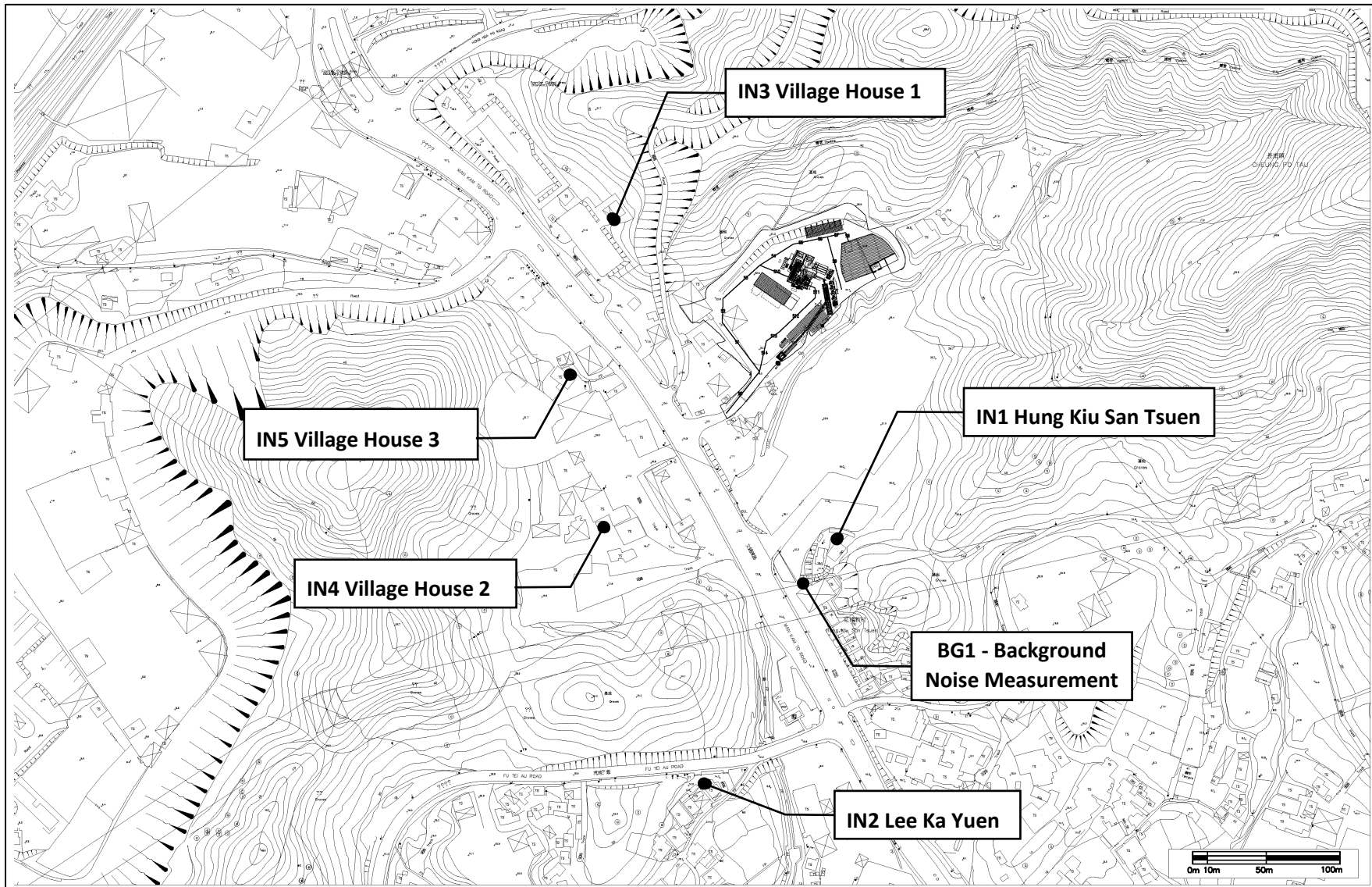
2.5.1 There is no change to the operation of the Temporary Asphalt Plant or disposal methods of waste. The waste generated from the Temporary Asphalt Plant operation mainly comprises general refuse, commercial waste, rejected aggregates, treated aggregate fines from the dust conditioner and chemical waste.

- 2.5.2 General refuse and commercial waste are collected and taken away regularly by a registered waste collector for disposal off-site at a landfill managed by EPD. Hence, no adverse waste implication due to handling, transportation and/or disposal of general refuse and commercial waste is anticipated.
- 2.5.3 Rejected aggregates and treated aggregate fines are Inert Construction and Demolition (“C&D”) Material and disposed of off-site at an appropriate government-managed facility. Temporary stockpiling area, enclosed at three sides and with a front curtain, is set up for storage of aggregate prior to disposal. No adverse impact from Inert C&D Material is anticipated.
- 2.5.4 No more than 85,000 tonnes of RAP is reused in producing HMA. Reuse of RAP in the production process as aggregate as mentioned in **paragraph 1.4.1** for green asphalt product instead of treating as C&D waste for disposal at being dumped at landfill, thereby helping to reduce the pressure on landfill capacity.
- 2.5.5 There is only a small quantity of chemical wastes including used oil filters, scrap battery and waste lubrication oil generated from daily operation of the Temporary Asphalt Plant. A licensed collector is employed to handle and disposed of the chemical wastes. Hence, no adverse impact from chemical waste is anticipated.

2.6 Land Contamination

- 2.6.1 In the 2014 EA Report, the Application Site was reported to be used as rice paddy prior to the 1970s. In the mid- to late-1970s, the Application Site was filled and converted to open land. Then Site was used for open storage, manufacture of construction materials, warehouses and concrete batching plant. The 2014 EA report concluded no sources of historical land contamination issues were identified and was considered valid in the 2019 EA Report.
- 2.6.2 There is **no change** to Plant operation after being used since 2017. Hence, the conclusion of no historical land contamination made in the 2014 Report is considered to remain valid for this Application.

Figure 2-1 Location of Noise Sensitive Receivers and Background Noise Measurement



3 CONCLUSION

3.1 General

- 3.1.1 The Plant has been in operation since 2017 after obtaining the approval with conditions from TPB for Planning Application No. A/NE-FTA/148 in 2014, SP Licence No. L-15-035(1) from EPD in 2017, approval with conditions from TPB for Planning Renewal Application No. A/NE-FTA/192 in 2019 and renewed SP Licence No. L-15-035(2) in 2020. The SP Licence No. L-15-035(2) is being renewed and no adverse comment on the APCP is received. The Planning Application aims to renew the latest planning permission under Planning Application No. A/NE-FTA/192 from TPB which will expire on 12 December 2024 such that the Applicant can be given opportunity to continue using the Application Site for the Temporary Asphalt Plant. Considering the Temporary Asphalt Plant supplies asphalt for major infrastructure projects, airport runway and road maintenance works, it is necessary to keep the Temporary Asphalt Plant operation to avoid any disruption in the progress of the involved projects. In the light of this reason, the Applicant would like to apply for the Temporary Asphalt Plant operation for the other five years by submitting a planning application under Section 16 of TPO. This EA Report has been prepared to support the Planning Application.
- 3.1.2 The Temporary Asphalt Plant under the current application is proposed to maintain existing operation approved under previous application. There is **no change** to the Application Site configuration, building bulk, site area, form, and major development parameters of the approved Temporary Asphalt Plant. The application site remains unchanged when compared to the previous application. The existing operation is proven to induce no adverse environmental impact by maintaining good operation and on-site practices.
- 3.1.3 The main product of the Temporary Asphalt Plant is HMA and the maximum HMA production rate remains the same, i.e., 160 tonnes/hour using a batch mix production mode. Since road maintenance works are mainly processed between midnight and early morning, the Temporary Asphalt Plant must operate 24 hours per day supplying HMA in order to meet the demand.
- 3.1.4 The Temporary Asphalt Plant has already been built and in operation since 2017. No construction works will be required for the extension of operation. Therefore, there will be no construction-related impact on air quality, noise, water quality and waste management. The environmental impacts arising from the operation of the Temporary Asphalt Plant has not been changed since the 2019 EA report.
- 3.1.5 The conclusions for air quality, noise water quality, waste management and land contamination are as follows:

3.2 Air Quality

3.2.1 The letter confirming the application of SP Licence renewal supported by the 2024 APCP received with no comment was obtained on 17 October 2024 (**Appendix C** refers). It is concluded in the APCP that:

3. The Plant is operated by the Licence Holder capable of providing and maintaining the best practicable means for the prevention of the emission from the premises of any air pollutant.
4. The Plant operation would not affect the attainment and maintenance of the prevailing AQOs.
5. No emission noxious or offensive emission would be, or be likely to be, prejudicial to health due to the Plant operation.

3.2.2 In the light of receiving with no comments on the 2024 APCP and obtaining the confirmation of completing the SP Licence renewal application, it can be concluded that no adverse air quality impact or health impact will arise from the continued operation of the Temporary Asphalt Plant.

3.3 Noise

3.3.1 A review on identified NSRs, SWL adopted in the assessment and the traffic impact have been conducted. Since no changes on the Temporary Asphalt Plant component and operation and the NSR, the noise impact assessment provided by 2019 EA Report is referred to in this EA Report. Based on 2019 EA Report, no adverse noise impact in terms of off-site traffic noise or on-site operation noise is anticipated. Also, all the noise mitigation measures listed in the Compliance of Approval Condition (g) of Approved Planning Application No. A/NE-FTA/192-1 has been implemented and maintained, and no complaint was received in the past 5 years. Therefore, with the implementation and maintenance of noise mitigation measures, no adverse noise impact is expected.

3.4 Water Quality

3.4.1 HMA production process does not require the use of water and so there is no industrial wastewater arising from the Temporary Asphalt Plant operation. The sources of water pollution from the Temporary Asphalt Plant includes sewage from site staff and surface runoff from the Application Site. All water for vehicle wheel washing is treated and reused.

3.4.2 Portable toilets equipped with storage tanks are installed to collect sewage generated by site staff. The sewage collected is disposed by licenced contractors. All site runoff is collected by existing peripheral surface U-channels and diverted to sedimentation tanks for silt removal prior to discharge into public drains. Therefore, no adverse water quality impact arises from the Temporary Asphalt Plant operation is anticipated.

3.5 Waste Management

3.5.1 General refuse and commercial waste generated are collected by registered waste collectors and disposed at a landfill managed by EPD regularly. Rejected aggregates and treated aggregate fines are disposed of off-site at an appropriate government-managed facility. Chemical waste is collected by licensed collectors. Hence, no adverse impact of waste from the Temporary Asphalt Plant operation was caused previously or is anticipated hereafter.

3.6 Land Contamination

3.6.1 With reference to 2014 EA Report, no suspected land contaminated were found based on aerial photographs. The 2014 EA Report draws a conclusion that no sources of historical land contamination issues were identified. The conclusion is still considered valid under this Application as there is no change on the land use. Therefore, no land contamination is anticipated within the Application Site.

Appendix A Letter of Compliance from Planning Department for A/NE-FTA/192



Member of the Surbana Jurong Group

local people
global experience

Our ref: 7076703/L27544/AW/MCC/rw

18 June 2021

District Planning Officer/Shu Tin, Tai Po & North
Sha Tin, Tai Po & North District Planning Office
13/F Sha Tin Government Offices
1 Sheung Wo Che Road, Sha Tin
New Territories, Hong Kong

By Post

Attention: Ms Wendy LEE

Dear Madam

**Renewal of Planning Approval for Temporary Asphalt Plant for a Period of 5 Years at
Lots 20 RP (Part), 21 and 23 RP (Part) in D.D. 88 and adjoining
Government Land, East of Man Kam To Road, Sheung Shui
Compliance of Approval Condition (g) of Approved Planning Application No. A/NE-FTA/192-1)**

Further to the letter of the Town Planning Board dated 1 June 2021 regarding the non-compliance with approval condition (g), we are pleased to enclose herewith the Response to Comment ("RtoC") table and the revised submission of the implementation of the noise mitigation measures for discharging approval condition (g).

The Applicant confirms that noise mitigation measures will be properly and fully implemented to assure that noise standards under Chapter 9 of the *Hong Kong Planning Standards and Guidelines* ("HKPSG") would be complied with.

I, as a corporate member of Hong Kong Institute of Acoustics (membership no: M155), hereby certify that the noise mitigation measures proposed by the Applicant are in line with the mitigation measures recommended and committed in the Further Information ("FI") of the captioned planning application. A figure with photographs for illustration purpose on the implemented noise mitigation measures has been enclosed for reference.

Should you have any queries regarding the above, please do not hesitate to contact the undersigned on 3995 8120.

Yours faithfully


Antony WONG
Technical Director – Water & Environment

Encl.

SMEC ASIA LIMITED
27/F Ford Glory Plaza, 37-39 Wing Hong Street
Cheung Sha Wan, Kowloon, Hong Kong
T +852 3995 8100
F +852 3995 8101
E hongkong@smec.com
W www.smec.com



Ref.	Information Request	Responses
Comments from EPD (Contact Person: Ms Candice CHUNG, Tel: 2835 1114)		
	<ul style="list-style-type: none"> Response-to-Comment Item C – the applicant should state in the submission the surface mass density of the steel case enclosing the air compressor (e.g. whether it is $\geq 10\text{kg/m}^2$). The door of the steel case should also kept locked. The applicant should also clarify if the air-intake is facing away from nearby noise sensitive receivers. 	<p>The density of steel varies between approx. $7,500\text{kg/m}^3$ and $8,000\text{kg/m}^3$. Furthermore, according to BD's Code of Practice ("CoP") for the Structural Use of Steel 2011 which can be downloaded from https://www.bd.gov.hk/doc/en/resources/codes-and-references/code-and-design-manuals/SUOS2011.pdf, steel density is $7,850\text{kg/m}^3$. For a conservative approach, the steel density of $7,500\text{kg/m}^3$ is therefore adopted.</p> <p>As advised by the Applicant, the thicknesses of steel case is approx. 2mm. Therefore, the surface density of the steel case is approx. 15kg/m^2. The exact surface density (i.e. 15kg/m^2) and thickness of the steel case (i.e. 2mm) and sound absorptive material (i.e. 25mm) have been provided in the revised submission.</p> <p>The Applicant also confirmed that the door of the steel case are kept locked during operation of the air compressor. Besides, the air-intake of the steel case is facing northeast towards a hill, which is away from the nearby noise sensitive receivers. The relevant information have been also provided in the revised submission.</p>

Item	Machine	Noise Mitigation Measures
1	Exhaust Fan	The exhaust fan is already fully enclosed with four sides and the top.
2	Air Compressor	<p>The air compressor has been enclosed in the steel case with surface density about 15kg/m^2 (i.e. 2mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with approx. 25mm thick sound absorptive material facing the air compressor. The Applicant confirmed the door of the steel case shall be kept locked during operation of the air compressor. Besides, the air-intake of the steel case is facing northeast towards a hill, which is always from the nearby noise sensitive receivers.</p> <p>Additional noise barrier made of steel plate with surface density about 22.5kg/m^2 (i.e. 3mm thick steel plate with density of about $7,500\text{kg/m}^3$) and 27mm sound absorptive material facing the ground, on the top of the compressor, has been also installed.</p>
3	Rotary Dryer Drum	Screened by a barrier to the west of the drum with surface density of approx. 18kg/m^2 (i.e. 6.2mm thick cement pressure plate with density of about $2,300\text{kg/m}^3$ plus 0.5mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with approx. 27mm thick sound absorptive material facing the drum.
4	RAP Processing Machine	The crusher of RAP Processing Machine has been enclosed with four sides and the top made of steel plate with surface density about 22.5kg/m^2 (i.e. 3mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with 27mm thick sound absorptive material facing the machine.
5	Screw Conveyor/Slant Belt Conveyor/Belt Conveyor	<p>Due to the operation need for heat dissipation of motors, the proposed noise mitigation measures have been slightly modified as follows:</p> <p>(a) The motors have been enclosed on both sides, the top, the bottom and the front which the enclosures is made of steel plates with surface density about 22.5kg/m^2 (i.e. 3mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with 27mm thick sound absorptive material facing the motors.</p>
6	Bucket Elevator/Filler Elevator	The elevators have been enclosed by steel plate with surface density about 22.5kg/m^2 (i.e. 3mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with 27mm thick sound absorptive material facing the bucket elevator.
7	Mixing Unit	The mixing unit is already fully enclosed by cladding.
8	Bitumen Pump	<p>Due to the operation need for heat dissipation of pump, the proposed noise mitigation measures have been slightly modified as follows:</p> <p>(a) The pump has been enclosed on both sides, the top, the bottom and in front of the opening which the enclosures will be made of steel plates with surface density about 22.5kg/m^2 (i.e. 3mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with 27mm thick sound absorptive material facing the pump.</p>

Figure 1 – Noise Mitigation Measures (Sheet 1 of 5)

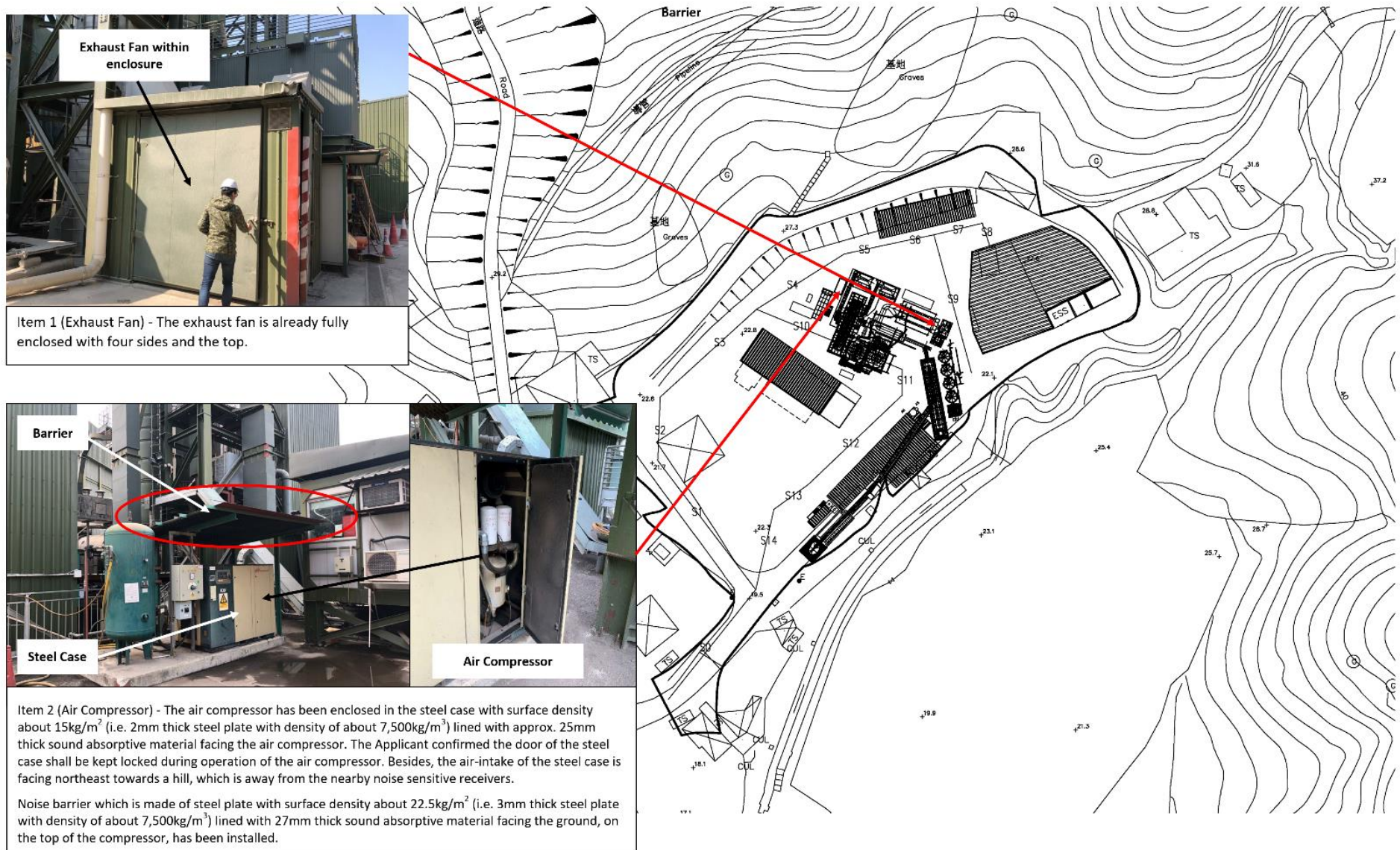


Figure 2 – Noise Mitigation Measures (Sheet 2 of 5)

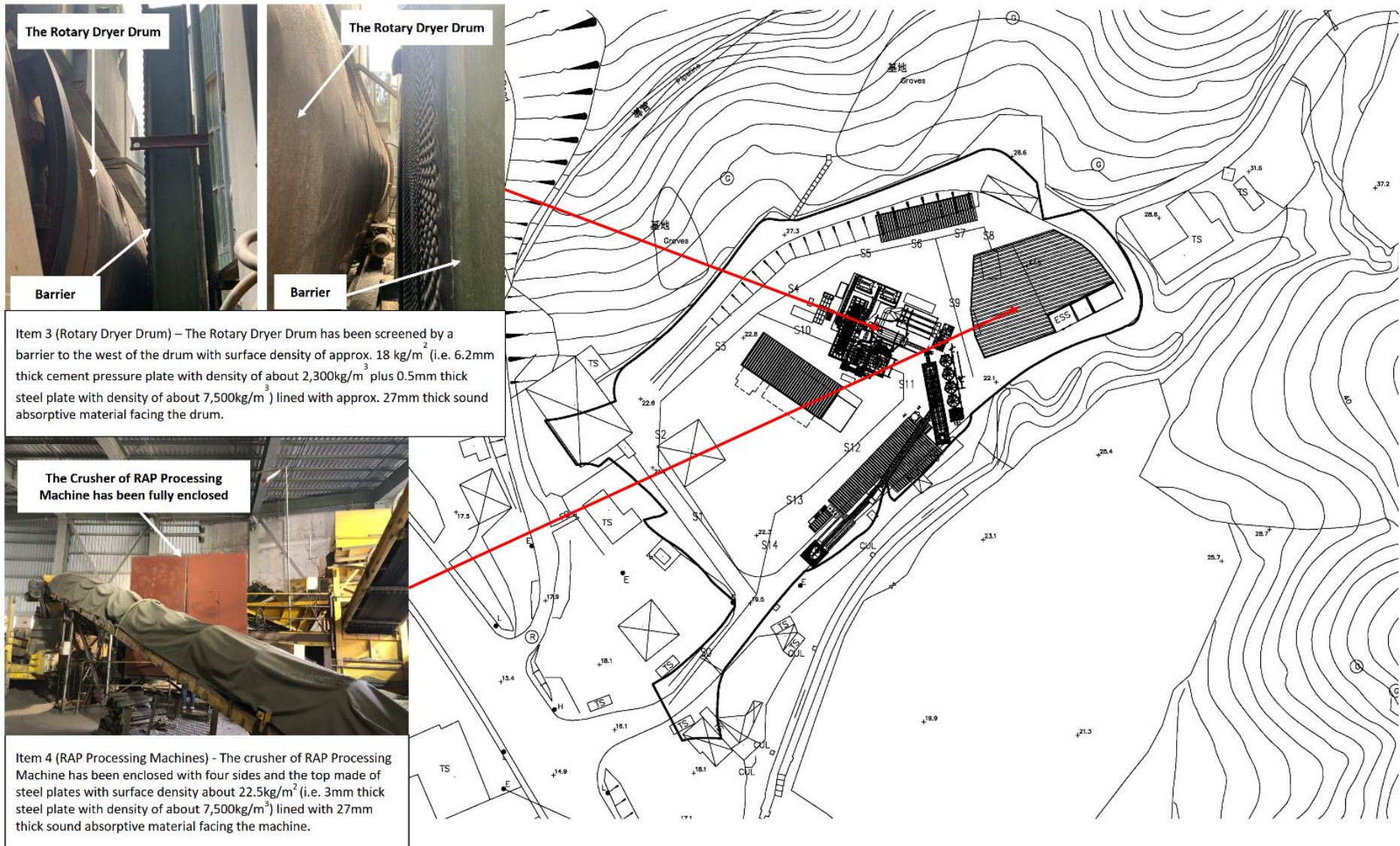


Figure 3 – Noise Mitigation Measures (Sheet 3 of 5)

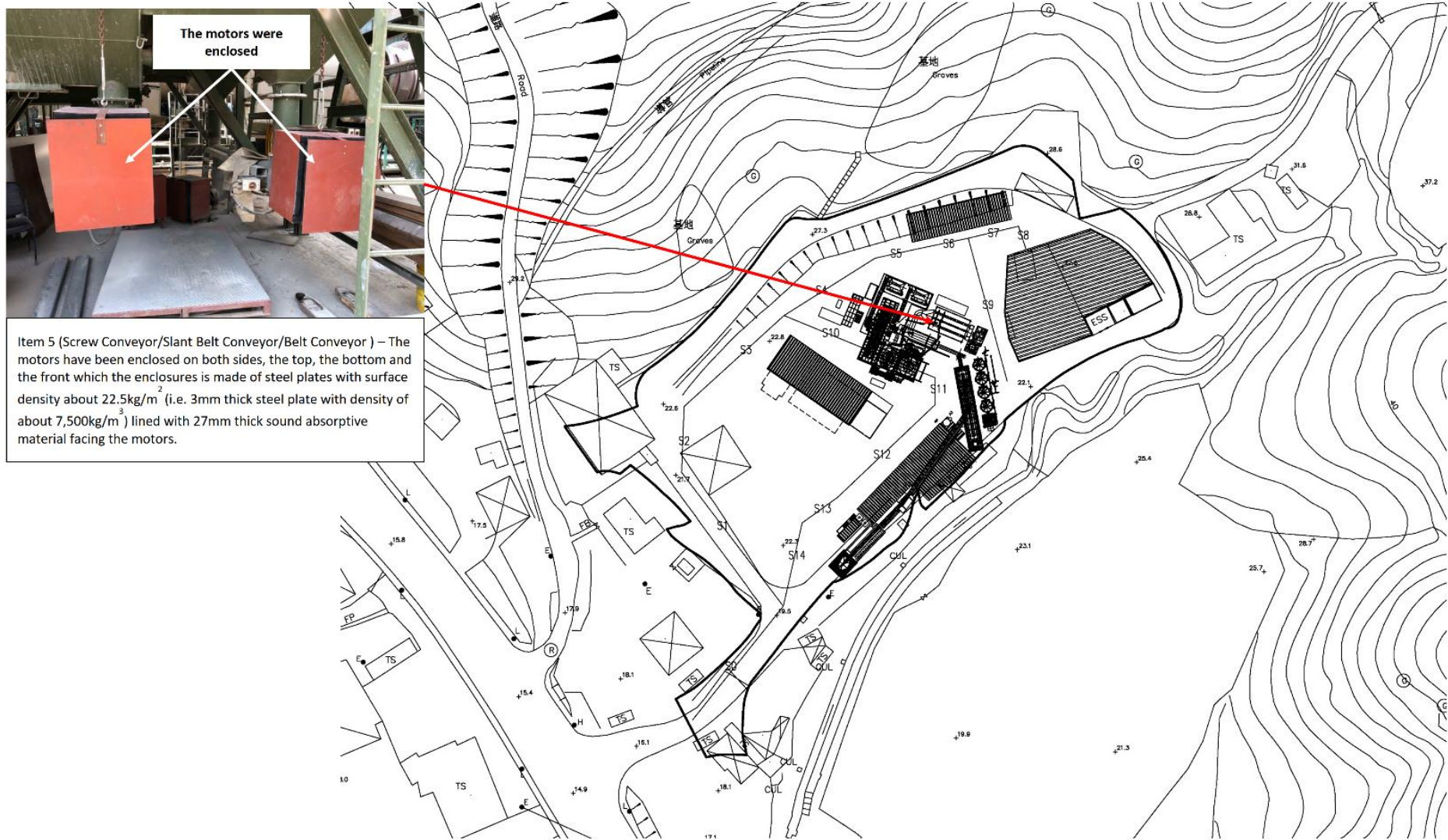
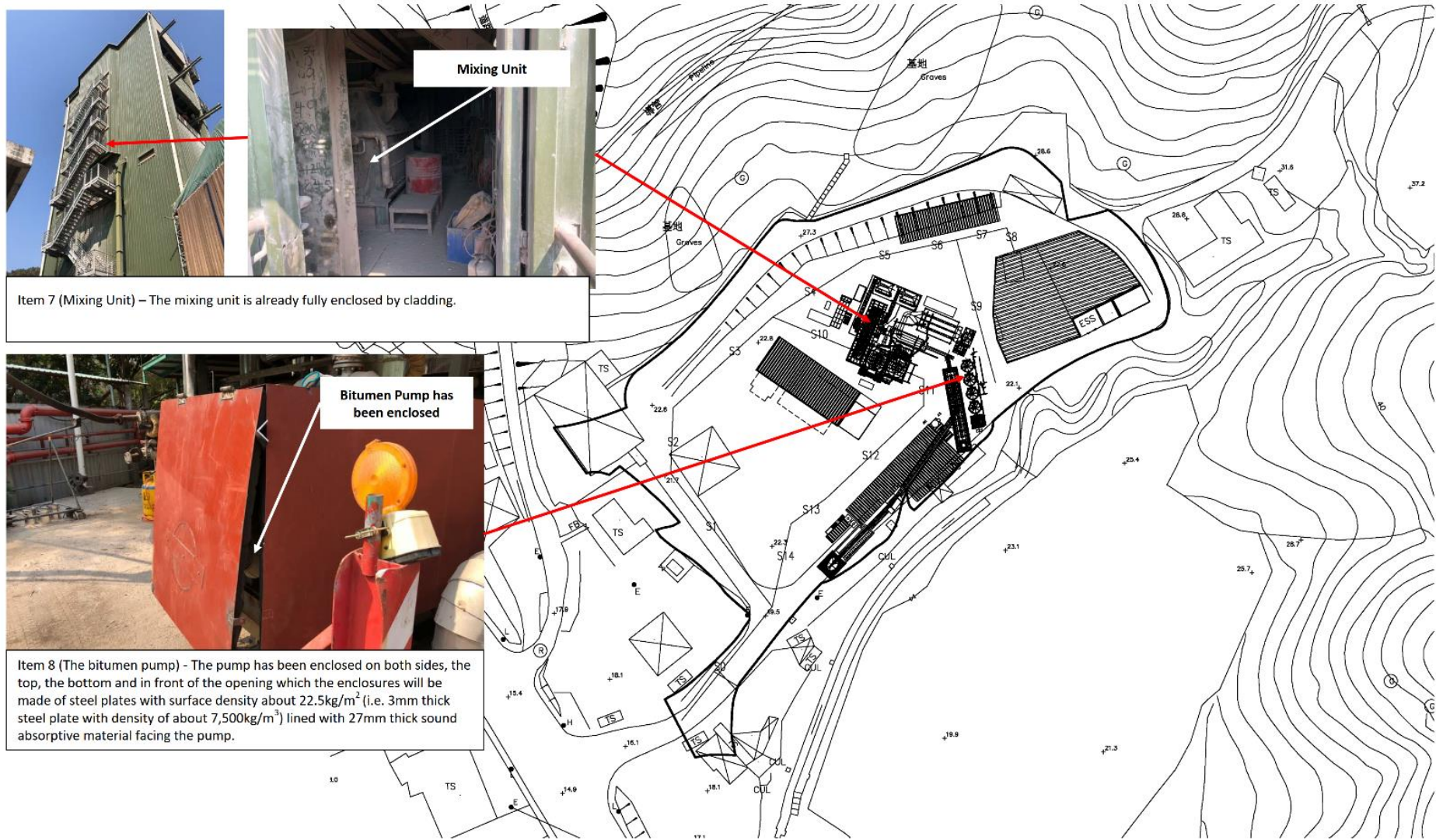


Figure 4 – Noise Mitigation Measures (Sheet 4 of 5)

Item 6 (Bucket Elevator/Filler Elevator) - The elevators have been enclosed by steel plate with surface density about 22.5kg/m^2 (i.e. 3mm thick steel plate with density of about $7,500\text{kg/m}^3$) lined with 27mm thick sound absorptive material facing the bucket elevator.



Figure 5 – Noise Mitigation Measures (Sheet 5 of 5)



規 劃 署

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十三樓 1301-1314 室



Planning Department

Sha Tin, Tai Po & North District
Planning Office
Rooms 1301-1314, 13/F,
Shatin Government Offices,
1 Sheung Wo Che Road, Sha Tin,
N.T., Hong Kong.

本函檔號 Your Reference ADCL/PLG-10189/L015
本署檔號 Our Reference () in TPB/A/NE-FTA/192
電話號碼 Tel. No.: 2158 6220
傳真機號碼 Fax No.: 2691 2806 / 2696 2377

Aikon Development Consultancy Limited
Unit 1310, 13/F, Tower 2 Metroplaza,
223 Hing Fong Road, Kwai Chung
New Territories, Hong Kong
(Attn.: Mr. Thomas LUK)

By Post and Fax (3180 7611)

26 July 2021

Dear Mr. LUK,

**Renewal of Planning Approval for Temporary Asphalt Plant for a Period of 5 Years
in “Open Storage” Zone, Lots 20 RP (Part), 21 and 23 RP (Part) in D.D. 88,
and adjoining Government Land, East of Man Kam To Road, Sheung Shui**

(Compliance with Approval Condition (g) for Application No. A/NE-FTA/192)

I refer to your submission received on 18.6.2021 for compliance with approval condition (g) in relation to the implementation of noise mitigation measures.

Director of Environmental Protection (Contact Person: Ms. Candice CHUNG Tel.: 2835 1114) has been consulted and has no comment on your submission. As such, approval condition (g) is considered complied with.

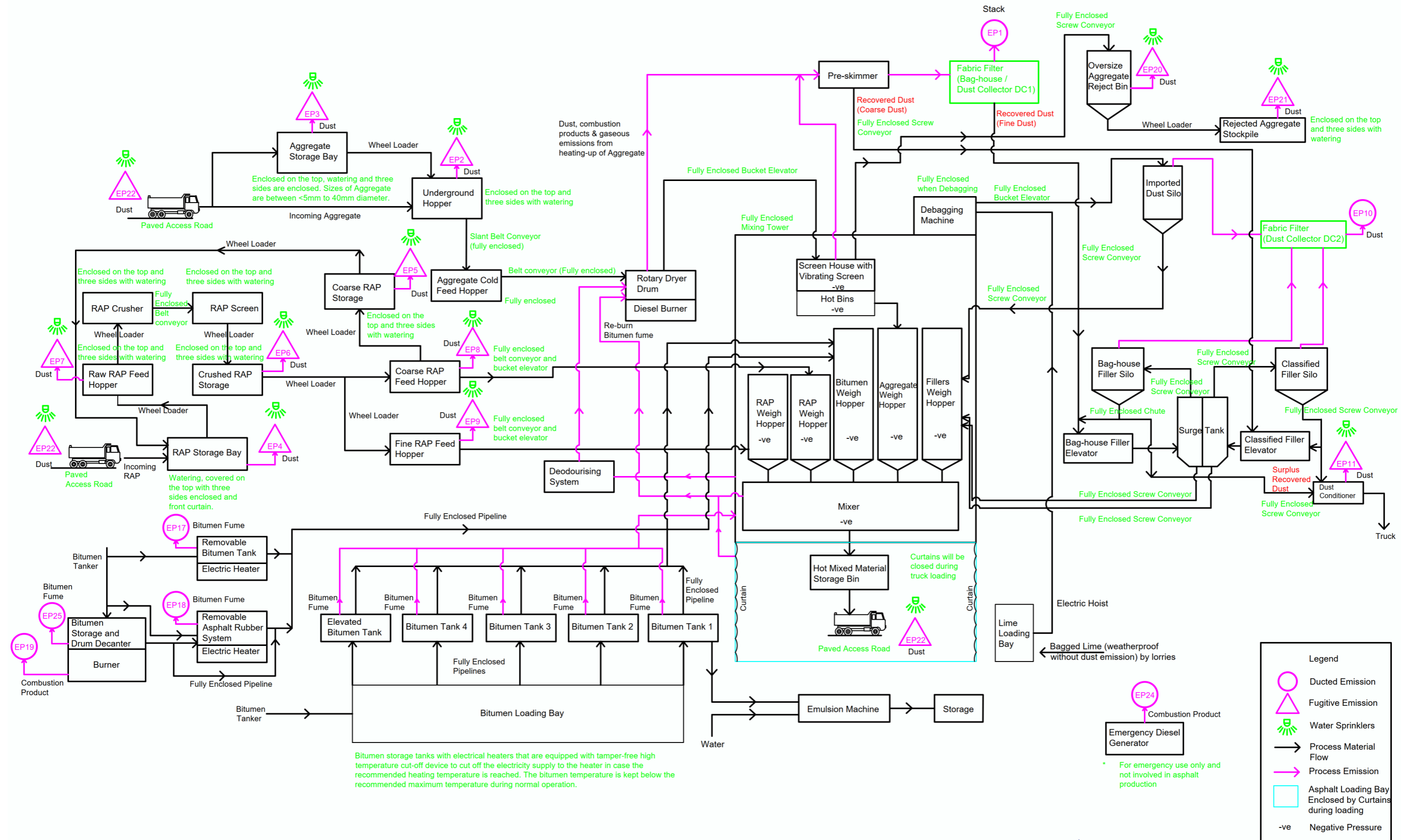
Should you have any queries, please feel free to contact Ms. Wendy W. L. LEE of this department at 2158 6241.

Yours faithfully,

(Ms. Jessica CHU)

for and on behalf of Director of Planning

Appendix B Schematic Diagram of the Temporary Asphalt Plant



Bitumen storage tanks with electrical heaters that are equipped with tamper-free high temperature cut-off device to cut off the electricity supply to the heater in case the recommended heating temperature is reached. The bitumen temperature is kept below the recommended maximum temperature during normal operation.

* For emergency use only and not involved in asphalt production

M. Bhanja

Alexi BHANJA – Qualified Engineer
BS(Eng) HSE, CEW, CIWEM, CRWM, RPE(Env), RMP, EngEIA Pro FHKIE, FCWIM, FCWEM, MHK(Env), MHK(IEP), RPE No. 0678580

Project: Asphalt Plant Along Man Kam To Road, Sheung Shui
Title: Schematic Diagram
DWG No.: KWA_SS/02
Revision: E Scale: NTS Date: 11 September 2024

Appendix C Letter of SP Licence Renewal

本署檔案
OUR REF: () in EP/RN/378916/SP
來函檔案
YOUR REF:
電話 2158 5842
TEL NO:
圖文傳真 2685 1133
FAX NO:
網址
HOMEPAGE: <http://www.epd.gov.hk/>

Environmental Protection Department
Environmental Compliance Division
Regional Office (North)
10/F., Sha Tin Government Offices,
No. 1, Sheung Wo Che Road,
Sha Tin, N.T. Hong Kong.



環境保護署
環保法規管理科
區域辦事處(北)
香港新界沙田
上禾輦路1號
沙田政府合署10樓

BY REGISTERED POST

17 October 2024

K. Wah Asphalt Limited
Suite No. 912, 9/F., Skyline Tower,
39 Wang Kwong Road,
Kowloon Bay, Hong Kong
(Attn: Mr. Stephen Leung)

Dear Mr. Leung,

**Application for Renewal of a Licence Pursuant to
Section 16 of the Air Pollution Control Ordinance**

I refer to your application for the renewal of the licence numbered L-15-035(2) for the conduct of a specified process, namely Tar and Bitumen Works in your premises at Lots No. 20 RP, 21, and 23 RP (Part) in D.D. 88 and Adjoining Government Land to the East of Man Kam To Road, Sheung Shui, New Territories.

Please be informed that the assessment of your application has been completed. Please find attached the revised Terms and Conditions (in both English and Chinese) for conducting the above-mentioned Tar and Bitumen Works for your study and comment. I should be grateful if you could indicate your agreement to and provide us with your comments on the draft Terms and Conditions, if any, on or before 31 October 2024.

Should you have any queries, please contact me at 2158 5842.

Yours faithfully,



(Alice WY TANG)

for Director of Environmental Protection

Encl.

Appendix D Detail Noise Measurement

Noise Measurement Detail and Results for Existing PME of Asphalt Plant at Sheung Shui

General Information

Date of Measurement: 17 Oct 2024

Time of Measurement: 14:00 -17:30

Weather Condition: Sunny

Measurement Equipment: RION NL-52 Sound Level Meter

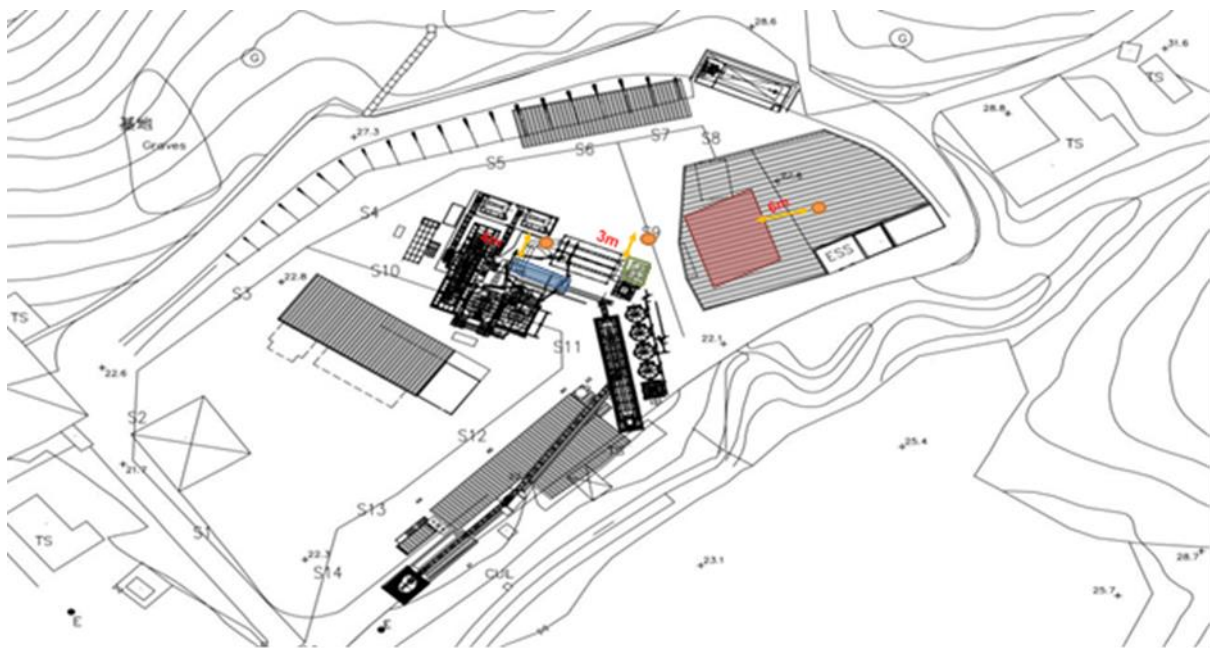
Measurement Method

- Conduct calibration for noise meter before and after the noise measurement
- Weighted emission sound pressure level in dB(A) was measured
- Measurement duration of 1 minute
- Measurement height:1.2m above ground
- 2 measurement point for each PME (see below location plan)



SWL Calculation

The SWL for the operation of PME was calculated based on the on-site measured noise level using the standard acoustic principles.

Measurement location:



Measurement Result

PME	Operation Condition	Figure Shape	Measure SPL, dB(A)	Measurement Distance (m)	Distance Correction, dB(A)	SWL, dB(A)	Highest SWL, dB(A)	Highest SWL in EA 2019, dB(A)	Remark
Rotary Dryer Drum	Full operation with no mitigation measure		74.8	4	20.0	94.8	94.8	98.2	Replaced dryer drum in Feb 2024
			74.8	4	20.0	94.8			
Main Exhaust Fan	Full operation with mitigation measure listed in S.2.3.5 of the EA Report		68.8	3	17.5	86.3	86.3	88.9	N/A
			68.6	3	17.5	86.1			
RAP Processing Machine	Full operation and measured inside the enclosure (mitigation measure), a steel plate barrier with a thickness of 1.5mm and a surface density of not less than 10kg/m ²		77.0	6	23.6	100.6	100.6	103.1	Replaced wheeled loader in Feb 2024.
			75.9	6	23.6	99.5			

Note:

1. The model of replaced dryer drum is the same as adopted in the assessment of EA 2019
2. The wheeled loader has been replaced into new model, but the SWL of the plant is the same as adopted in the assessment of EA 2019.

Appendix E Catalogue of Wheel Loader

Product Specifications For 950 GC



Engine

Net Power - ISO 9249	225 hp
Emissions	Tier 4/Stage V
Displacement	428 in ³
Maximum Net Power - 1,700 rpm - ISO 9249 - Metric	228 hp
Maximum Power - 1,700 rpm - ISO 14396	240 hp
Maximum Power - 1,700 rpm - ISO 14396 - Metric	243 hp
Peak Gross Torque - 1,400 rpm - SAE J1995	811 ft·lbf
Peak Gross Torque - 1,400 rpm - ISO 14396	805 ft·lbf
Engine Model	Cat C7.1
Maximum Net Power - 1,700 rpm - ISO 9249	225 hp
Maximum Net Power - 1,700 rpm - SAE J1349	225 hp
Maximum Power - 1,700 rpm - SAE J1995	241 hp
Note	The air conditioning system on this machine contains the fluorinated greenhouse gas refrigerant R134a (Global Warming Potential = 1430). The system contains 1.9 kg (4.2 lb) of refrigerant which has a CO2 equivalent of 2.717 metric tonnes (2.995 tons).

Bore	4.13 in
-------------	---------

Stroke	5.31 in
---------------	---------

Weights

Operating Weight	41554 lb
-------------------------	----------

Buckets

Bucket Capacities	2.9-4.4 m ³ (3.75-5.75 yd ³)
--------------------------	---

Transmission

Reverse - 3	14.2 mile/h
--------------------	-------------

Forward - 3	14.2 mile/h
--------------------	-------------

Forward - 1	4.5 mile/h
--------------------	------------

Forward - 2	8 mile/h
--------------------	----------

Forward - 4	22.4 mile/h
--------------------	-------------

Reverse - 2	8 mile/h
--------------------	----------

Reverse - 1	4.5 mile/h
--------------------	------------

Note Maximum travel speed in standard vehicle with empty bucket and standard L3 tires with 760 mm (30 in) roll radius.

Hydraulic System

Hydraulic Cycle Time - Total Cycle Time	9.4 s
--	-------

Steering System - Pump Type	Piston
------------------------------------	--------

Implement System - Maximum Operating Pressure @ 50 ± 1.5 L/min (13.2 ± 0.4 gal/min)	4047 psi
--	----------

Implement System - Maximum Pump Output at 2,390 rpm

68 gal/min

Service Refill Capacities

DEF Tank

4.2 gal (US)

Transmission

11.9 gal (US)

Fuel Tank Size

76.6 gal (US)

Cooling System

13.2 gal (US)

Differential - Final Drives - Rear

10 gal (US)

Differential - Final Drives - Front

10.6 gal (US)

Crankcase

4.8 gal (US)

Hydraulic Tank

29.6 gal (US)

Sound

**With Cooling Fan Speed at Maximum Value -
 Operator Sound Pressure Level (ISO 6396:2008)**

73 dB(A)

**With Cooling Fan Speed at Maximum Value -
 Exterior Sound Power Level (ISO 6395:2008)**

109 dB(A)

**With Cooling Fan Speed at Maximum Value -
 Exterior Sound Pressure Level (SAE J88:2013)**

76 dB(A)*

Note (1)

*Distance of 15 m (49.2 ft), moving forward in second gear ratio.

**With Cooling Fan Speed at 70% of Maximum Value:
 Note (2)**

European Union Directive "2000/14/EC" as amended by "2005/88/EC."

**With Cooling Fan Speed at 70% of Maximum Value
 - Operator Sound Pressure Level (ISO 6396:2008)****

73 dB(A)

With Cooling Fan Speed at 70% of Maximum Value: Note (1) For machines in European Union countries and in countries that adopt the EU Directives

With Cooling Fan Speed at Maximum Value - Note Distance of 15 m (49.2 ft), moving forward in second gear ratio.

With Cooling Fan Speed at 70% of Maximum Value - Exterior Sound Power Level (ISO 6395:2008)** 107 LWA***

Note (3) ***European Union Directive "2000/14/EC" as amended by "2005/88/EC."

Note (2) **For machines in European Union countries and in countries that adopt the "EU Directives."

Dimensions

Rack Back - Ground 40 degrees

Height - Top of Exhaust Pipe 11.17 ft

Centerline of Rear Axle to Hitch 5.42 ft

Lift Arm Clearance 12 ft

B-Pin Height 13.75 ft

Centerline of Rear Axle to Edge of Counterweight 6.75 ft

Ground Clearance 1.5 ft

Rack Back - Maximum Lift 60 degrees

Height - Top of Hood 8.75 ft

Wheel Base 10.83 ft

Height - Top of ROPS 11.33 ft

Rack Back - Carry	45 degrees
Note	All dimensions are approximate and based on MAXAM MS302 23.5R25 L3 radial tires.

Weights And Operating Specifications

Note (2)	*Full compliance to ISO (2007) 14397-1 Sections 1 thru 6, which requires 2% verification between calculations and testing.
Tipping Load - Full Turn - Rigid Tires**	25875 lb
Breakout Force	34638 lbf
Tipping Load - Full Turn - ISO 14397-1*	24264 lb
Note (3)	**Compliance to ISO (2007) 14397-1 Sections 1 thru 5.
Operating Weight	41554 lb
Note (1)	For 3.1 m3 (4 yd3) general purpose buckets with BOCE. Weight based on a machine configuration with MAXAM MS302 23.5R25 L3 radial tires, full fluids, operator, standard counterweight, cold start, roading fenders, Product Link™, secondary steering, sound suppression.

Engine - Tier 4 Final/Stage IV

Emissions	Tier 4/Stage IV
------------------	-----------------

950 GC Standard Equipment

NOTE

Standard and optional equipment may vary. Consult your Cat dealer for details.

POWER TRAIN

Engine - Cat C7.1 meets Tier 4 Final/Stage IV emissions standards
 Torque converter
 Transmission, automatic, power shift (4F/3R), kick-down function, overspeed protection
 Brakes, full hydraulic enclosed wet-disc
 EIMS (Engine Idle Management System)

EIS (Auto Idle Shutdown)
Fan, radiator, electronically controlled, hydraulically driven, temperature sensing, on demand
Filter, fuel primary-water separator/secondary
Radiator, unit core (9.5 fpi) with ATAAC
Starting aid, glow plugs
Switch, transmission neutralizer lockout

HYDRAULICS

Load sensing implement system pilot operated
Dedicated load sensing steering pump
Dedicated brake and fan gear pump

ELECTRICAL

Alarm, back-up/main disconnect switch
Alternator (145-amp, brush type)
Batteries (2), maintenance free
Ignition key; start/stop switch
Lighting system, halogen (6 total) - Four (4) halogen work lights; Two (2) halogen road lights
Starting and charging system (24-volt)
Starter, electric (heavy duty)

OPERATOR ENVIRONMENT

Air conditioning (HVAC) with 10 vents and filter unit located outside of cab
Bucket/work tool function lockout
Cab, pressurized and sound suppressed
Hydroformed (ROPS/FOPS) structure
12V power port (10A)
Coat hook
Radio ready
Rear vision camera and display
Pilot hydraulic controls, lift and tilt function
Computerized monitoring system
Gauges - Engine coolant temperatures/fluid level; Hydraulic/transmission oil temperature;
Tachometer/DEF level
Digital indicators - Gear indicator; Speedometer; Service meter units; Fault codes
Warning indicators - Air inlet heater; Electrical malfunction; Engine inlet manifold temperature; Engine oil pressure, fuel level; Fuel pressure high/low; Hydraulic oil level, parking brake; Primary steering oil pressure; Service brake oil pressure; Action light, engine malfunction; Transmission filter bypass
Heater and defroster
Horn
Cup holders and personal tray on right console
Storage tray behind seat
Mirrors, rearview external
Seat, Cat Comfort (clutch) suspension
Seat belt
Steering column, adjustable angle
Wipers/washers (front and rear)

Window, sliding (left and right side)

TIRES, RIMS, AND WHEELS

Tires are available from Triangle, Maxam and Bridgestone
Offerings vary by region. Consult your local Cat dealer for further details

FLUIDS

Premixed 50% concentration of extended life coolant with freeze protection to -34° C (-29° F)

OTHER STANDARD EQUIPMENT

Lift and bucket return-to-dig kick outs (Electro-Magnetic), mechanical adjustment
Couplings, Cat O-ring face seal
Doors, service access (locking)
Front fender, steel
Grill, airborne debris
Hitch, drawbar with pin
Hood, wing doors
Hoses, Cat XT
Counterweight
Linkage, Z-bar, fabricated crosstube/tilt lever
S•O•S oil sampling valves
Sight gauges - Engine coolant, hydraulic oil; Transmission oil level
Diagnostic pressure taps
Product Link Ready

950 GC Optional Equipment

NOTE

Standard and optional equipment may vary. Consult your Cat dealer for details.

OPTIONAL EQUIPMENT

Cold weather starting (jacket water heater, electric and ether starting aid)
Third hydraulic function, additional dedicated single axis level
Quick coupler control
Limited slip differentials
Ride control
Air suspended seat
Secondary steering, electrical
Reversing cooling fan (auto/manual controlled)
Toolbox
Sun visor, rear
High capacity converted 12V/15A
Warning beacon
Extra working lights (4), Halogen or LED
Radio

Fender extensions/roading

Appendix F Noise Chapter of EA 2019



Environmental Assessment

Section 16 Planning Application for Temporary Asphalt Plant, Man Kam To Road, Sheung Shui

Prepared for Build Way International Inc.
12 August 2019

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1 INTRODUCTION

1.1 Background

- 1.1.1 In 2014, a Planning Application under Section 16 of the Town Planning Ordinance (TPO) was made for a temporary asphalt plant (“the Plant”) to be operated for a period of five years at a site to the east of Man Kam To Road near Hung Kiu San Tsuen in Sheung Shui (“the Site”). The Site is zoned “Open Storage” (OS) under the Approved Fu Tei Au and Sha Ling Outline Zoning Plan (OZP) No. S/NE-FTA/16. According to paragraph 10(c) of the Explanatory Note of the OZP, temporary use or development of any land or building exceeding a period of three years requires planning permission from the Town Planning Board (TPB).
- 1.1.2 Permission to operate the Plant for a period of five years was approved by TPB on 12 December 2014.
- 1.1.3 Under the *Air Pollution Control Ordinance* (APCO) the Plant is considered to be a “Tar and Bitumen Works” and so is classified as a Specified Process (SP). An application for a SP Licence, supported by an Air Pollution Control Plan (APCP), was therefore made to the APCO Authority, the Environmental Protection Department (EPD), and SP Licence No. L-15-035(1) was duly granted in early 2017. Shortly thereafter, the Plant commenced operation.
- 1.1.4 This Plant supplies asphalt for various major infrastructure projects, airport runway and road maintenance works carried out in Hong Kong. To avoid disruption in the supply of asphalt that would adversely affect completion of infrastructure projects, airport runway and road maintenance works, it is essential to maintain stable asphalt supply to the planned infrastructure works in the Territory and therefore it is essential to renew the planning approval for this Plant for a further five years.
- 1.1.5 SMEC Asia Limited (SMEC) has been commissioned by the Applicant to prepare this Environmental Assessment (EA) Report to support the aforementioned Planning Application.

1.2 Site Description

- 1.2.1 The Site occupies an area of about 9,056m² and is located to the east of Man Kam To Road and to the north of Hung Kiu San Tsuen, as shown on **Figure 1.1**.
- 1.2.2 Several car repair workshops are located to the south and southwest of the Site. Some other workshops and open storage sites are located to the further southwest, across Man Kam To Road. A metal workshop is located on the hillside to the northeast of the Site. There are public access roads for the metal workshop surrounding and partially lying within the Site.
- 1.2.3 To the southeast, there is a piece of land zoned “Other Specified Uses” (OU) that was intended for development of a Poultry Slaughtering Centre (PSC). However, the PSC was shelved by government in June 2010. Currently, the PSC site is used for open storage of construction materials and equipment. Land to the north and east of the Site are zoned “Green Belt” (GB), so no new development is anticipated in these areas.

1.3 Project Description

- 1.3.1 The Plant produces Hot Mix Asphalt (HMA), which comprises aggregates (in various sizes, including fillers) blended with bitumen and is mainly used for road paving and airport runway. The maximum HMA production rate is 160 tonnes/hour using a batch mix production mode, and a small quantity of asphalt emulsion is also produced. As road and airport runway maintenance works are mainly carried out between midnight and early morning, the Plant must operate 24 hours per day in order to supply HMA as and when needed. In order to support EPD’s control of “Land Filling and Fly-tipping” problem, an annual consumption of up to 85,000 tonnes per year of Reclaimed Asphalt Pavement (RAP) are used in the asphalt production.

1.3.2 As shown in the layout plans in the Planning Statement, the major components of the Plant include:

- Asphalt production plant including a mixing tower, rotary dryer drums, filler silos, mixed material storage bin, etc.
- Aggregate hopper, conveyor belts, stockpile and storage bins.
- Bitumen storage tanks.
- Bitumen melter and decanter.
- Asphalt emulsion plant.
- RAP processing plant and stockpiles.
- Emergency generator.
- Auxiliary offices and laboratory.

1.3.3 A Schematic Diagram of the Plant showing the manufacture of HMA is enclosed in **Appendix A**.

1.4 Objectives of the Report

1.4.1 The objectives of this EA Report are to:

- Review potential environmental impacts arising from the operation of the Plant, in terms of air quality, noise, water quality and waste management.
- Recommend appropriate measures to mitigate any impacts if necessary.

1.5 Review of Environmental Impacts

1.5.1 A number of environmental impacts, including those to air quality, noise, water quality, waste management and land contamination, were assessed in the EA Report (SMEC ref.7076143 | D01/01 – Revision 1 dated August 2014) (the “2014 EA Report”) supporting the original Section 16 Planning Application for the Plant (Application No.: A/NE-FTA/148).

1.5.2 As the Plant has already been built and in operation since 2017, no major construction works will be required for the extension of operation. Therefore construction-related air quality, noise, water quality and waste management impacts are not anticipated. The environmental impacts associated with the operation of the Plant have not changed since those assessed in the 2014 EA Report and are summarised below.

Air Quality

1.5.3 In addition to the assessment of air quality impacts provided in the 2014 EA Report, an APCP including air quality impact assessment was prepared by SMEC to support the SP Licence application – no comment on the APCP was received from EPD. In that APCP:

- All Air Sensitive Receivers (ASRs) within 500m from the Site boundary were identified.
- Apart from adopting the current Air Quality Objectives (AQOs) enforced since 1 January 2014, the standards for non-criteria pollutants including benzo(a)pyrene (B[a]P), bitumen fume (Polycyclic Organic Matter), benzene (C6H6), formaldehyde and Volatile Organic Compounds (VOCs) as well as metals and odour were proposed.
- The estimated cumulative air quality levels at the ASRs including the contour plots would comply with AQOs as well as the standards for non-criteria pollutants, metals and odour.
- The Best Practicable Means (BPMs) for HMA manufacturing were recommended.

In summary, the APCP concluded that:

- The BMPs would be provided, implemented and maintained by the Applicant for the Plant.
- All relevant AQOs would be met with the Plant in operation.
- No unacceptable noxious and offensive emissions would be due to the Plant operation.

- 1.5.4 The recommendations and air quality control measures stipulated in the APCP and the SP Licence have been properly implemented by the Applicant. Following the commissioning trials in March 2017, a letter of no objection to the commencement of operation of the Plant was issued by EPD in April 2017.
- 1.5.5 In accordance with SP Licence requirements, 24-hour average ambient Respirable Suspended Particulates (RSP) sampling at a frequency not less than once every six calendar days and source sampling at chimney for the concerned air pollutants at a frequency not less than once per every 12 months was carried out.
- 1.5.6 An application for the renewal of the SP Licence was submitted to EPD in November 2018. ASRs were reviewed by SMEC on 29 March 2019 and no additional ASR was identified. Therefore, the findings and conclusion of the APCP remain valid.
- 1.5.7 Since commencement of operation in 2017, several improvements have been made to the Plant by the Applicant. These included an additional deodorisation system for further reduction of particulates and odour; the use of low-odour bitumen to reduce the volatility and formation of bitumen fumes; and equipping asphalt trucks with covers to reduce fugitive dust and odour during transportation.
- 1.5.8 In conclusion, no adverse air quality impact and health impact from the operation of the Plant is anticipated with the implementation of the control measures recommended in the APCP and stipulated in the SP Licence.

Noise

- 1.5.9 The noise impact arising from the Plant was assessed in the 2014 EA Report based on the noise measurement taken at the Applicant's asphalt plant at the Anderson Road Quarry. However, since the Plant has now been operating for some time, it is possible to utilise actual noise measurements from the Plant, rather than having to rely on a proxy. The noise impact due to operation of this Plant has therefore been assessed based on actual Plant operation and is detailed in **Chapter 2** of this EA report.

Water Quality

- 1.5.10 As mentioned the 2014 EA Report, HMA production process does not require the use of water and so there is no industrial wastewater arising from the Plant operation. The potential sources of water pollution from the Plant includes sewage from staff site surface runoff from the Site. All water for vehicle wheel washing is treated and reused.
- 1.5.11 There is no public sewerage connection at the Site and there are no plans by the government to extend the nearby sewerage system to the Site in the near future. Portable toilets equipped with storage tanks are already installed within the Plant to collect sewage/wastewater generated by staff. The collected sewage/wastewater is regularly tankered away by a licensed contractor for off-site disposal. Hence, no adverse water quality impact due to sewage/wastewater generated by staff is anticipated.
- 1.5.12 Water sprinklers are installed for dust suppression and the entire site is paved. Operational procedures prevent over-wetting of the ground and roads and so surface runoff is minimised. All site runoff is collected by existing peripheral surface U-channels and diverted to sedimentation tanks for silt removal prior to discharge into public drains. Hence, no adverse water quality impact due to site surface runoff is anticipated.

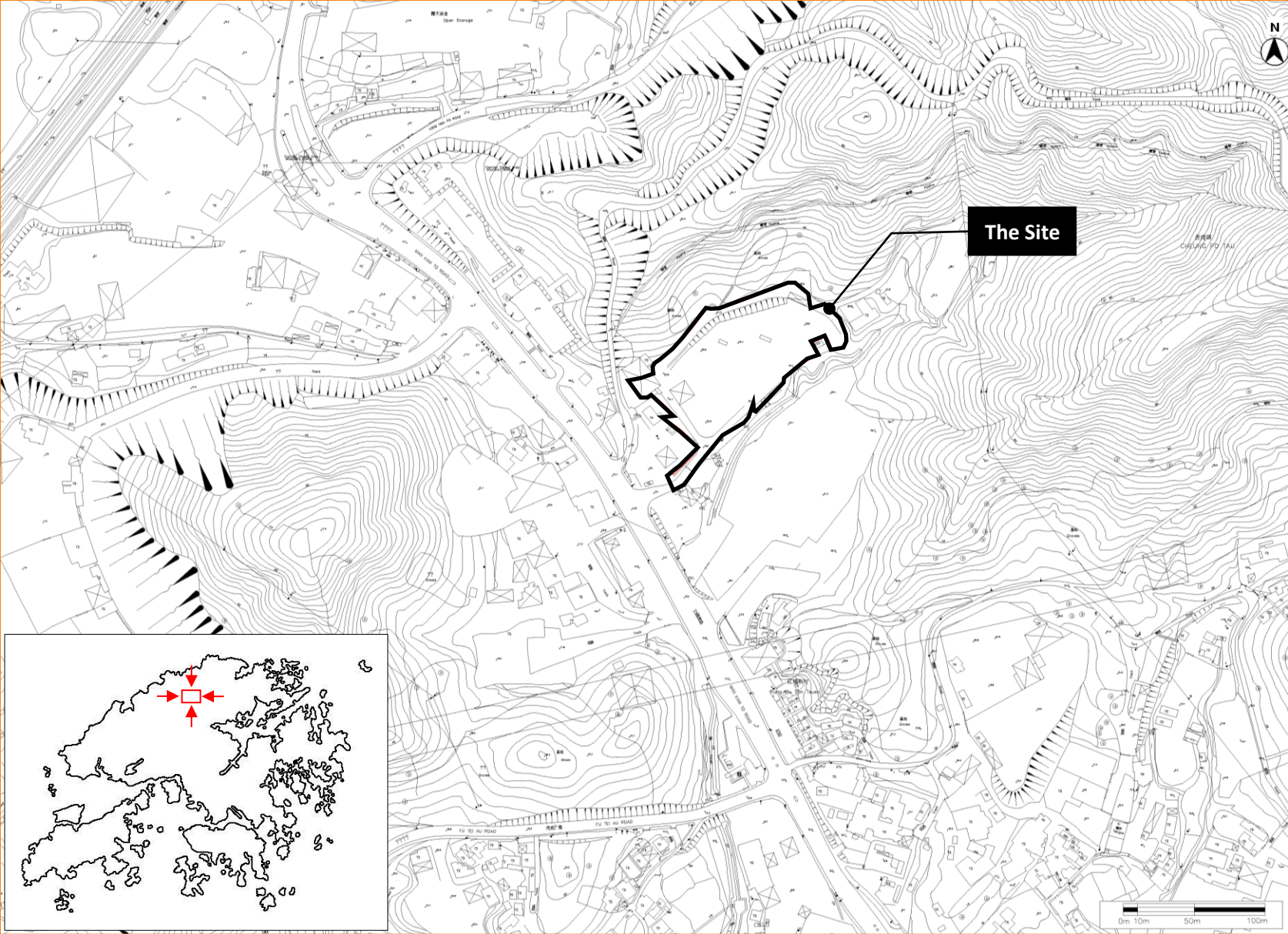
Waste Management

- 1.5.13 General refuse, rejected aggregates, treated aggregate fines from the dust conditioner and chemical waste are the key wastes generated from Plant operation. These are discussed below.
- 1.5.14 General refuse and commercial waste were collected on a regular basis by registered waste collectors and disposed off-site at a landfill managed by EPD. Hence, no adverse waste impacts from handling, transportation or disposal are anticipated.
- 1.5.15 Rejected aggregates and treated aggregate fines are classified as Inert Construction and Demolition (C&D) Material and disposed of off-site at an appropriate government-managed facility. Temporary stockpiling area, enclosed at three sides and with a front curtain, was provided for storage aggregate prior to disposal. With the implementation of these waste management measures, no adverse impact from Inert C&D Material is anticipated.
- 1.5.16 Up to 85,000 tonnes per year of RAP generated from road resurfacing projects; which instead of dumped at landfill as C&D waste, can be reused in the production process as aggregate as mentioned in **Paragraph 1.3.1**. This green asphalt product would help to release the pressure of C&D waste dumping at Hong Kong's landfill sites.
- 1.5.17 Only a small quantity of chemical wastes is generated from daily operation of the Plant. This included spent oil filters, scrap battery and waste lubrication oil, none of which is considered to be hazardous. A licensed collector is employed to handle and disposed of the chemical wastes. Hence, no adverse impact from chemical waste is anticipated.

Land Contamination

- 1.5.18 As mentioned in the 2014 EA Report, prior to the 1970s the Site was used as rice paddy. In the mid- to late-1970s, the Site was filled and transformed into open land. The Site was then used for open storage, the manufacture of construction materials, warehousing and, since the 1990s, as a concrete batching plant. The 2014 EA report concluded that no sources of historical land contamination issues were identified and this is still considered valid under this Application.

Figure 1.1: Site Location and its Environs



2 OPERATION NOISE IMPACT

2.1 Environmental Legislation and Standards

Noise Control Ordinance (Cap. 400)

- 2.1.1 The main piece of legislation controlling environmental noise impact is the *Noise Control Ordinance* (NCO). The NCO enables regulations and Technical Memoranda (TMs) to be enacted, which introduces detailed control criteria, measurement procedures and other technical matters.
- 2.1.2 Fixed plant noise during operation phase is governed under the *Technical Memorandum for the Assessment of Noise from Places other than Domestic premises, Public places or Construction Sites* (IND-TM). Table 2 of IND-TM stipulates the day, evening and night time Acceptable Noise Levels (ANLs) for Noise Sensitive Receivers (NSRs) according to the corresponding Area Sensitive Rating (ASR), which is determined by Influencing Factors (IFs) in accordance with the IND-TM. These are summarised in **Table 2.1**.

Table 2.1: Acceptable Noise Levels for Fixed Noise Source

TIME PERIOD	ANL, dB(A)		
	ASR "A"	ASR "B"	ASR "C"
Day (0700 to 1900 hours)	60	65	70
Evening (1900 to 2300 hours)			
Night (2300 to 0700 hours)	50	55	60

Hong Kong Planning Standards & Guidelines (HKPSG)

- 2.1.3 The noise criteria for planned fixed noise source shall follow the requirements of Table 4.1 of Chapter 9 of HKPSG:
- 5 dB(A) below the appropriate ANLs shown in Table 2 of IND-TM
 - The prevailing background noise levels

2.2 Identification of Noise Sensitive Receivers

On-site Operation Noise

- 2.2.1 In order to evaluate the on-site operation noise impact (i.e. noise from fixed sources and truck movements within the Site), representative NSRs within 300m from the boundary of the Site are identified for the assessment.
- 2.2.2 The first layer of NSRs has been identified for the assessment of on-site operation noise as shown on **Figure 2.1** and summarised in **Table 2.2**. Second layer NSRs will be less affected than first layer NSRs due to being further away, therefore the first layer NSRs are the most affected.
- 2.2.3 The identified NSRs are the same as those reported in the 2014 EA report. No new NSRs were identified during the site visit on 27 June 2019.
- 2.2.4 The NSR identified nearest to the Plant is, namely, Village House 1, which is about 77m to the west of the Site. Other identified NSRs (i.e. surrounding village houses) are located from 87m to 251m from the Site boundary.
- 2.2.5 All identified NSRs are located in a rural area. No major roads with annual average daily traffic flow in excess of 30,000 or industrial areas are found in the vicinity of the identified NSRs. Therefore, the Area Sensitivity Rating (ASR) of the identified NSRs is Type A, as per IND-TM.

Table 2.2: Identified Representative NSRs of Noise from On-site Operation

NSR ID	DESCRIPTION	USE	DISTANCE TO SITE BOUNDARY, m	DISTANCE TO CENTRE OF THE SITE, m	NO. STOREYS	ASR
IN1	Village House at Hung Kiu San Tsuen	Residential	111	175	2	A
IN2	Village House at Lee Ka Yuen	Residential	251	350	2	A
IN3	Village House 1	Residential	77	126	1	A
IN4	Village House 2	Residential	111	217	1	A
IN5	Village House 3	Residential	87	167	1	A

2.3 Potential Noise Impacts during Operation Phase

Off-Site Traffic Noise

- 2.3.1 The current maximum HMA production capacity of 160 tonnes/hour will remain unchanged. Therefore, the traffic arising from Plant operation will also be unchanged.
- 2.3.2 According to the data provided by the Project Traffic Consultant, shown in **Appendix B**, traffic on Man Kam To Road is expected to increase over the next five years. However, since the maximum number of vehicles using the Plant remains unchanged, the noise contribution of off-site traffic will not increase. Hence, no adverse impact in terms of off-site traffic noise is anticipated.

On-site Operation Noise

- 2.3.3 As the Plant operates 24 hours per day, potential noise impacts due to operation in day/evening and night periods should be assessed.
- 2.3.4 The potential noise sources during the Plant operation are identified as follows:
- Mechanical and Electrical (M&E) equipment.
 - Loading/unloading activities.
 - On-site movements of transportation trucks and wheel loaders.
- 2.3.5 During a site visit on 9 July 2019, the following noise mitigation measures, shown on **Figure 2.2**, were observed:
- 2.5m high hoarding is erected along the Site Boundary.
 - The mixing unit is installed inside the mixing tower which is fully enclosed by cladding.
 - The exhaust fan is located inside a plant room which is fully enclosed by steel plates.
 - The screw conveyor, slant belt conveyor, belt conveyor, bucket elevator and filler elevator are all fully enclosed with cladding.
 - The rotary dryer drum is set up in the centre of the plant, which can be screened by the storage facilities, mixing tower and other building structure of the Plant.
 - A barrier which is a steel plate with a thickness of not less than 1.5mm and a surface density of not less than 10kg/m² is provided to reduce noise impact of the air compressor.
 - A barrier which is a steel plate with a thickness of not less than 1.5mm and a surface density of not less than 10kg/m² is provided to reduce noise impact of the bitumen pump.
 - The aggregate unloading bay/storage area are three sides enclosed with top by cladding.
 - The RAP unloading area is enclosed by cladding.
 - The asphalt loading area is enclosed by two sides with top by cladding and curtains at the entrance and exit sides.

- 2.3.6 The Sound Power Level (SWL) adopted in the noise assessment in the 2014 EA report was based on the measurement data from another Asphalt Plant at Anderson Road, since at that time the Plant under this Application was not yet constructed. Now that the Plant has been operational for some time, on-site noise measurements for M&E equipment can be made. Noise measurements were carried out on 7 July 2019 and are detailed in **Appendix C**.

2.4 Assessment Methodology

Mechanical and Electrical (M&E) Equipment

- 2.4.1 Most of the M&E equipment, such as water pumps, fire services pumps and transformers, are installed inside plant rooms. No significant noise impact arising from enclosed M&E equipment is anticipated. The impact from these sources is therefore not included in this noise assessment.
- 2.4.2 Small, low-power split-type air-conditioners are installed at the site office. The noise from the Outdoor Units (ODUs) of these small air-conditioners is minimal. Therefore, these ODUs have also not been included in the noise assessment.
- 2.4.3 According to the information provided by the Applicant, the locations of fixed Powered Mechanical Equipment (PME) are shown on **Figure 2.2** and summarised in **Table 2.3**.

Table 2.3: Operation Schedule of On-site Fixed PME

PME	QUANTITY (PME/30MIN)		
	DAY	EVENING	NIGHT
Exhaust Fan	1		1
Air Compressor (Air Flow $\leq 10\text{m}^3/\text{min}$)	1		1
Rotary Dryer Drum (Aggregate)	1		1
Rotary Dryer Drum (RAP) *	1		1
RAP Processing Machine	1		0
Screw Conveyor/Slant Belt Conveyor/Belt Conveyor	11		11
Bucket Elevator/Filler Elevator	6		5
Mixing Unit	1		1
Bitumen Pump	2		1

Note (*) – The Rotary Dryer Drum (RAP) has not been installed yet

- 2.4.4 All PME, except the Rotary Dryer Drum (RAP), are installed and in use. In order to minimise the noise impact of the Rotary Dryer Drum (RAP), a barrier which will be a steel plate with a thickness of not less than 1.5mm and a surface density of not less than $10\text{kg}/\text{m}^2$ will be provided once installed.
- 2.4.5 The SWLs of the exhaust fan, rotary dryer drum and RAP Processing Depot are determined based on the measured Sound Pressure Levels (SPLs) on site. Detailed measurement information is shown in **Appendix C**.

2.4.6 The SWLs of the PME other than those listed in **Table 2.3** were obtained from manufacturers' catalogues provided by the Applicant, the *Technical Memorandum on Noise from Construction Work Other Than Percussive Piling (GW-TM)* and *Sound Power Levels of Other Commonly Used PME*, issued by EPD. The noise levels were assessed based on standard acoustics formula:

$$SPL = SWL - DC + FC$$

where:

- SPL = Sound Pressure Levels at receiver, in dB(A)
- SWL = Sound Power Levels of PME, in dB(A)
- DC = Distance Correction, in dB(A) by $DC = 20\log_{10}(D) + 8$
- D = Horizontal distance between the NSR and source, in metres
- FC = Façade Correction of +3 dB(A)

2.4.7 To minimise noise impact, the RAP Processing Machine will only be operated during daytime and evening, i.e. 0700 to 2300. Moreover, mitigation measures for the RAP Processing Machine have been already implemented, with the machine being semi-enclosed by cladding such that there is no line-of-sight to the NSRs.

2.4.8 For the mitigation measures listed in **Paragraph 2.3.5** and shown on **Figure 2.2**, that have already been implemented at source, a reduction of 15dB(A) was adopted for PME with full enclosure and a reduction of 10dB(A) for PME with a barrier.

2.4.9 Noise can be mitigated at source and also can be attenuated during propagation. According to **Figure 2.4**, the noise generated from the Plant will be screened by natural terrain or existing building structures. Therefore, a 10dB(A) screening effect is adopted for the NSRs.

Loading/Unloading Activities

2.4.10 The main loading/unloading activities include:

- Unloading raw material (e.g. bitumen, aggregate and RAP) to the Plant.
- Collecting asphalt from the Plant.
- Transporting the aggregate or RAP from storage area to feed bins (i.e. loading the aggregate/RAP from storage area and unloading the aggregate/RAP to feed bins).

2.4.11 The operation schedule of the loading and unloading activities are summarised in **Table 2.4**.

Table 2.4: Operation Schedule of Loading/Unloading Activities

SCHEDULE OF LOADING/ UNLOADING ACTIVITIES	QUANTITY (VEH/30MIN)		
	DAY	EVENING	NIGHT
Wheel Loader (Loading/Unloading Aggregate/RAP)	26		6
Truck (Unloading Aggregate)	4		1
Truck (Loading Asphalt)	8		5
Truck (Unloading RAP)	1		1

2.4.12 In order to minimise the noise impact during loading/unloading activities, the following measures, shown on **Figure 2.2**, have been implemented:

- The aggregate unloading bay/storage area are three sides enclosed with top by cladding.
- The RAP unloading area is enclosed by cladding.
- The asphalt loading area is enclosed by two sides with top by cladding and curtains at the entrance and exit sides.

- 2.4.13 The SWL of loading/unloading activities from the truck refers to GW-TM, while the SWL of loading/unloading activities from the wheel loaders refers to manufacturers' catalogues provided by the Applicant. The time for different loading activities was measured on site: The maximum loading and unloading time of the trucks is approximately 30 seconds each, while the maximum loading and unloading time of the wheel loader is approximately 5 seconds each.
- 2.4.14 The bitumen pump will be used to unload bitumen and the noise of this has been considered in the calculation, as listed in **Table 2.3**.
- 2.4.15 With regard to the screening effect by existing structures or natural terrain, a 10dB(A) reduction is adopted for NSRs without direct line-of-sight to the loading/unloading activities.

On-site Operation Noise – Movement of Vehicles

- 2.4.16 Vehicles used for the delivery of raw materials or collection of asphalt, such as trucks and wheeled loaders, are considered to be the major on-site vehicular noise sources. The road segments within the Site are shown on **Figure 2.3**.
- 2.4.17 For the noise generated from on-site movement of vehicles, *Method for Mobile Plant Using a Regular Well-Defined Route* stipulated in Annex F of BS 5228-1:2009+A1:2014 is adopted for assessment. Calculation is based on the following standard formula:
- $$\text{SPL} = \text{SWL} - 33 + 10\log Q - 10\log V - 10\log d + \text{AC} + \text{FC}$$
- where:
- SPL = Sound Pressure Levels at receiver, in dB(A)
- SWL = Sound Power Levels of Powered Mechanical Equipment (PME), in dB(A)
- Q = Number of vehicles per hour
- V = Average vehicle speed, in km/h
- d = Distance of receiving position from the centre of haul road, in meters
- AC = Angle of view Correction = $10\log(\Theta/180)$ where Θ is the angle of view (in degree) of a particular haul road segment
- FC = Façade Correction of +3 dB(A)
- 2.4.18 SWLs of the vehicles were obtained from GW-TM and *Sound Power Levels of Other Commonly Used PME*, issued by EPD.
- 2.4.19 Some road segments are fully screened by existing building structures or natural terrain, as shown on **Figure 2.4**, and for these, a noise reduction of 10 dB(A) was adopted.

2.5 Prevailing Background Noise

- 2.5.1 In general practice, the prevailing background noise should be captured from the noise measurement before commencement of operation of a facility. However, since the Plant operates. Therefore, the prevailing noise levels measured in the 2014 EA Report have been adopted in this EA report – no new noise generating activities in the vicinity of the Site were observed during recent site visits and so there is no reason that noise levels measured in 2014 are no longer representative of prevailing noise levels.
- 2.5.2 In 2014, prevailing background noise measurement was conducted near NSR IN1, as shown on **Figure 2.1**, and the noise levels recorded are shown in **Table 2.5**. Since all identified NSRs are dominantly affected by Man Kam To Road, the background noise levels shall be similar. Therefore, the measured background noise level was also applied to other identified NSRs.

Table 2.5: Summary of Background Noise

ID	MEASUREMENT LOCATION	BACKGROUND NOISE LEVEL, dB(A)		
		DAY	EVENING	NIGHT
BG1	Near NSR IN1	63	65	61

2.6 Noise Criteria

- 2.6.1 As shown in **Table 2.2**, the ASR of the identified NSRs has been determined as Type (i) rural area in accordance with Table 1 of IND-TM. The ANLs of the NSRs are 60 dB(A) and 50 dB(A) in day-and-evening time and night time, respectively.
- 2.6.2 As mentioned in **Section 2.1**, the noise criteria for planned fixed noise source shall follow the requirements of Table 4.1 of Chapter 9 of HKPSG, either 5 dB(A) below the appropriate ANLs shown in Table 2 of IND-TM or the prevailing background noise levels, whichever is lower.
- 2.6.3 As the prevailing background noise levels are higher, as shown in **Table 2.6**, below, the assessment criteria is 55 dB(A) in day-and-evening time and 45 dB(A) in the night time.

Table 2.6: Assessment Criteria of On-site Operation Noise

ID	MEASUREMENT LOCATION	PERIOD	BACKGROUND NOISE LEVEL, dB(A)	ANL-5, dB(A)	ASSESSMENT CRITERIA, dB(A)
BG1	Near NSR IN1	Day	63	55	55
		Evening	65	55	55
		Night	61	45	45

2.7 Assessment Result

- 2.7.1 The operation noise impact assessment was carried out for the five NSRs listed in **Table 2.2** and shown on **Figure 2.1** (IN1 to IN5). The noise results are summarised in **Table 2.7** and detailed in **Appendix D**. The predicted operation noise impact at NSRs ranges from 43dB(A) to 50dB(A) during day and evening time period, and from 38dB(A) to 45dB(A) during night time period which comply with relevant noise criteria.

Table 2.7: Predicted On-site Operation Noise Impact

NSR ID	TIME PERIOD	CRITERIA, dB(A)	PREDICTED NOISE LEVEL, dB(A)	EXCEEDANCE
IN1	Day	55	50	No
	Evening	55		No
	Night	45		No
IN2	Day	55	43	No
	Evening	55		No
	Night	45		No
IN3	Day	55	50	No
	Evening	55		No
	Night	45		No
IN4	Day	55	47	No
	Evening	55		No
	Night	45		No
IN5	Day	55	49	No
	Evening	55		No
	Night	45		No

2.8 Conclusion

Off-Site Traffic Noise

- 2.8.1 There will be no change in the maximum production capacity of 160 tonnes/hour, therefore, no additional vehicles will be added to existing traffic volume. Hence, no adverse impact in terms of off-site traffic noise is anticipated.

On-Site Operation Noise

- 2.8.2 A site visit was conducted on 9 July 2019 and on-site measurement was also conducted to verify the previous measured noise data in the 2014 EA report. The assessment for on-site operation noise was conducted based on the block plan, schematic diagram and above-mentioned observations and measurements. The predicted operation noise impact at NSRs ranges from 43dB(A) to 50dB(A) during day and evening time period, and from 38dB(A) to 45dB(A) during night time period. These results show that fixed source noise from the Plant is expected to comply with relevant noise criteria. Hence, no adverse operation noise impact is anticipated.

Figure 2.1: Locations of NSRs of Noise from On-site Operation

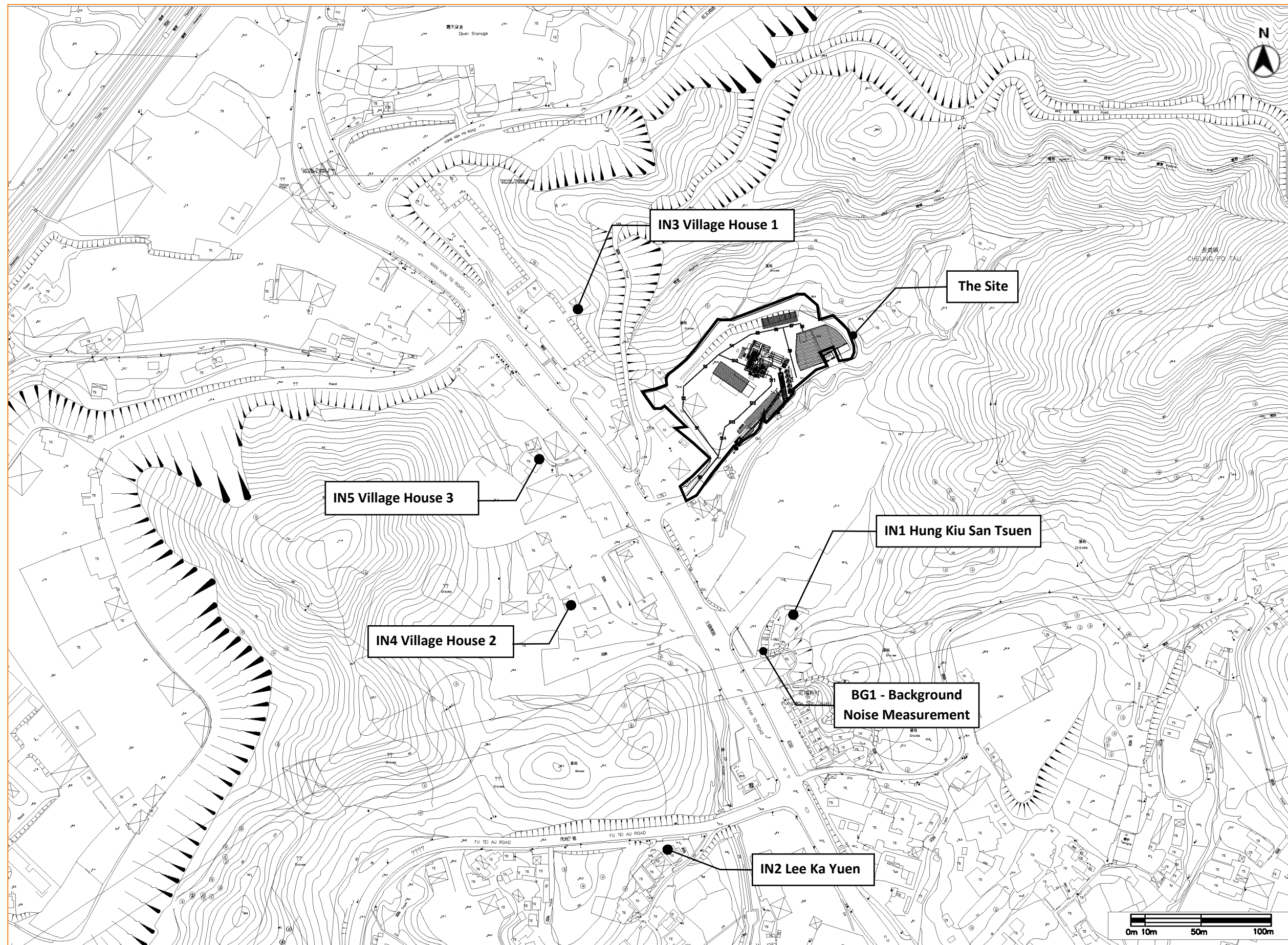


Figure 2.2: Locations of Noise Sources and Mitigation Measures during Project Operation

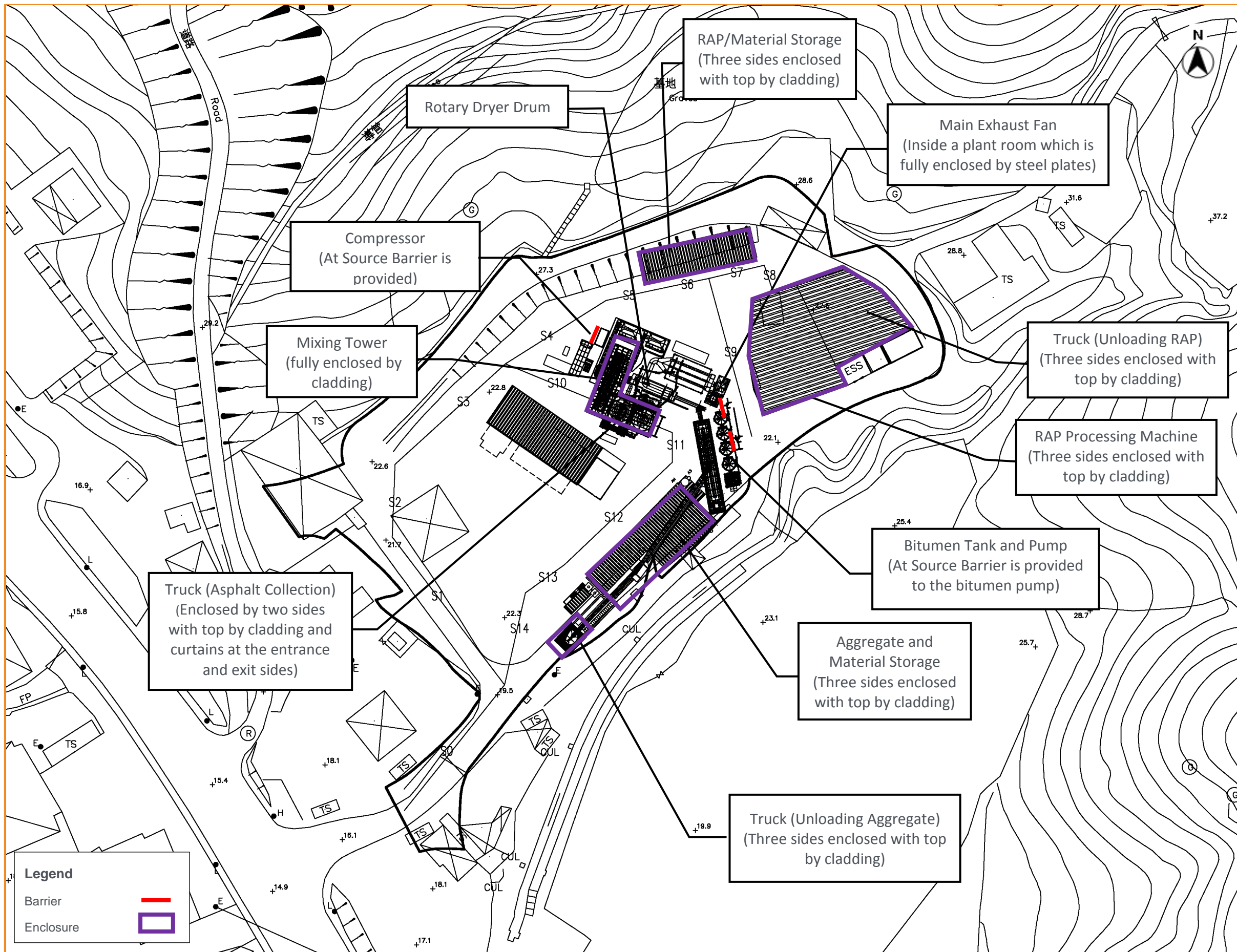
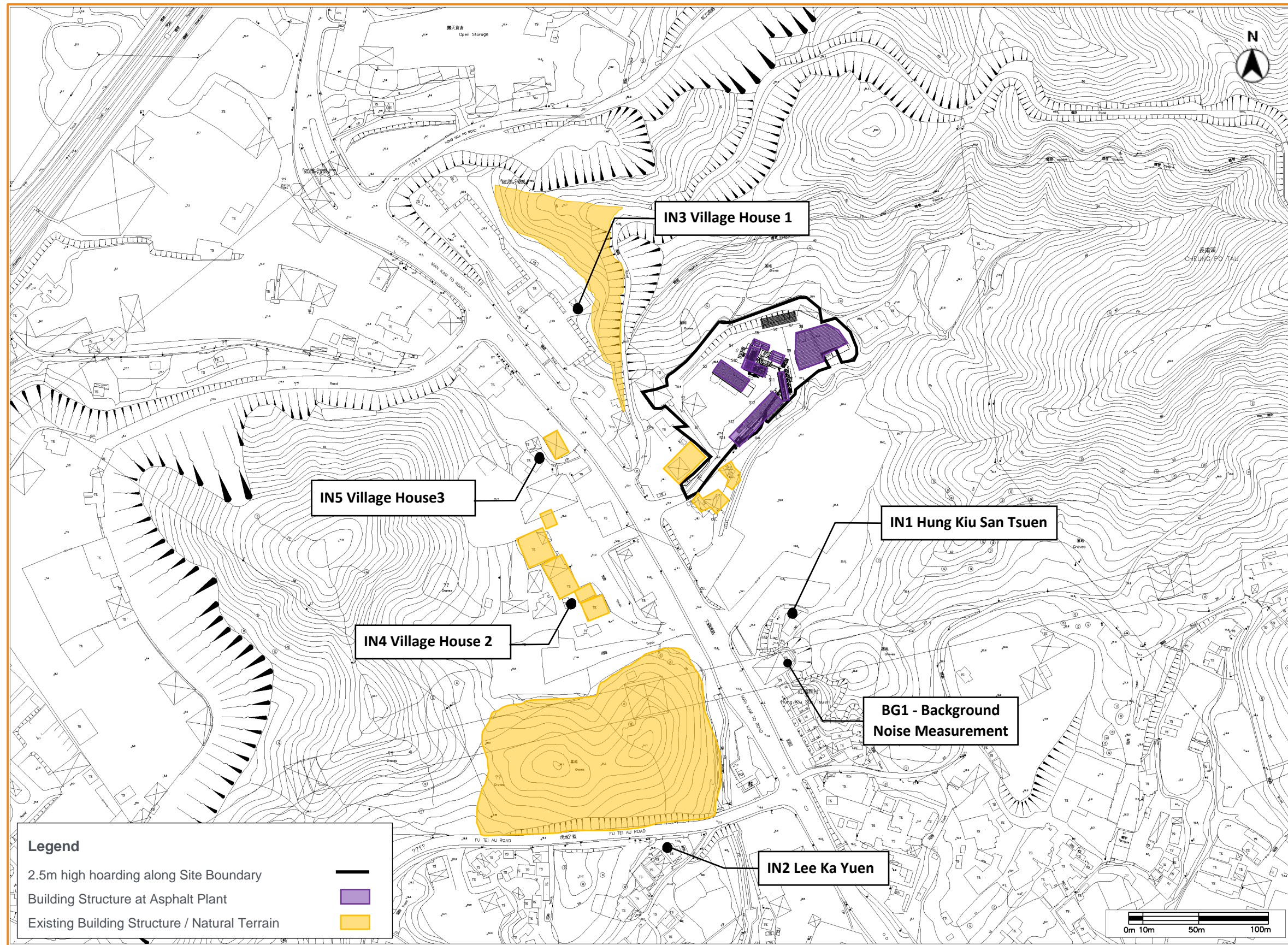


Figure 2.3: Locations of Haul Roads during Project Operation



Figure 2.4: Overall Mitigation Measures



3 CONCLUSION

3.1.1 Construction and operation of a temporary Asphalt Plant at Man Kam To Road was approved by TPB on 12 December 2014. This Plant supplies asphalt for various major infrastructure projects, airport runway and road maintenance projects, it is essential that this stable supply is maintained to meet the market demand. Therefore, the Applicant wishes to extend the operation of the Plant for a further five years. This EA Report has been prepared to support the Section 16 Planning Application for the extension of operation of the Plant.

3.1.2 The Plant produces HMA that is mainly used for road and airport runway paving. The maximum HMA production rate is 160 tonnes/hour using a batch mix production mode. As road maintenance works are mainly carried out between midnight and early morning, the Plant must operate 24 hours per day in order to supply HMA as and when needed.

3.1.3 As the Plant has already been built and in operation since 2017, no major construction works will be required for the extension of operation. Therefore construction-related air quality, noise, water quality and waste management impacts are not anticipated. The environmental impacts associated with the operation of the Plant have not changed since those assessed in the 2014 EA Report.

3.1.4 The conclusions of this EA Report are summarised below:

Air Quality

3.1.5 An application for a SP Licence, supported by an ACP, was made to EPD and SP Licence No. L-15-035(1) was duly granted in early 2017. Shortly thereafter, the Plant commenced operation.

3.1.6 The recommendations and air quality control measures stipulated in the ACP and the SP Licence have been properly implemented by the Applicant. Following the commissioning trials in March 2017, a letter of no objection to the commencement of operation of the Plant was issued by EPD in April 2017.

3.1.7 In accordance with SP Licence requirements, 24-hour average ambient RSP sampling at a frequency not less than once every six calendar days and source sampling at chimney for the concerned air pollutants at a frequency not less than once per every 12 months was carried out.

3.1.8 Since commencement of operation in 2017, several improvements have been made to the Plant by the Applicant. These included an additional deodorisation system for further reduction of particulates and odour; the use of low-odour bitumen to reduce the volatility and formation of bitumen fumes; and equipping asphalt trucks with covers to reduce fugitive dust and odour during transportation.

3.1.9 In conclusion, no adverse air quality impact and health impact from the operation of the Plant is anticipated with the implementation of the control measures recommended in the ACP and stipulated in the SP Licence.

Noise

3.1.10 The noise impact arising from the Plant was assessed in the 2014 EA Report based on the noise measurements taken at the Applicant's asphalt plant at the Anderson Road Quarry. However, since the Plant has now been operating from some time, it is possible to utilise actual noise measurements from the Plant, rather than having to rely on a proxy. The noise impact due to operation of this Plant has therefore been assessed based on actual Plant operation.

Off-Site Traffic Noise

- 3.1.11 There will be no change in the maximum production capacity of 160 tonnes/hour, therefore, no additional vehicles will be added to existing traffic volume. Hence, no adverse impact in terms of off-site traffic noise is anticipated.

On-Site Operation Noise

- 3.1.12 During a site visit on 9 July 2019, the following noise mitigation measures were observed:
- 2.5m high hoarding is erected along the Site Boundary.
 - The mixing unit is inside the mixing tower which is fully enclosed by cladding.
 - The exhaust fan is located inside a plant room which is fully enclosed by steel plates.
 - The screw conveyor, slant belt conveyor, belt conveyor, bucket elevator and filler elevator are all fully enclosed with cladding.
 - The rotary dryer drum is set up in the centre of the plant, which can be screened by the storage facilities, mixing tower and other building structure of the Plant.
 - A barrier which is a steel plate with a thickness of not less than 1.5mm and a surface density of not less than 10kg/m² is provided to reduce the noise impact of the air compressor.
 - A barrier which is a steel plate with a thickness of not less than 1.5mm and a surface density of not less than 10kg/m² is provided to reduce the noise impact of the bitumen pump.
 - The aggregate unloading bay/storage area are three sides enclosed with top by cladding.
 - The RAP unloading area is enclosed by cladding.
 - The asphalt loading area is enclosed by two sides with top by cladding and curtains at the entrance and exit sides.
- 3.1.13 As the Rotary Dryer Drum (RAP) has yet been installed, a barrier which will be a steel plate with a thickness of not less than 1.5mm and a surface density of not less than 10kg/m² will be provided once installed to minimise the noise impact.
- 3.1.14 The assessment for on-site operation noise was conducted based on the block plan, schematic diagram and above-mentioned observations. The predicted operation noise impact at NSRs ranges from 43dB(A) to 50dB(A) during day and evening time period, and from 38dB(A) to 45dB(A) during night time period. These results show that fixed-source noise from the Plant is expected to comply with the relevant noise criterion. Hence, no adverse operation noise impact is anticipated.

Water Quality

- 3.1.15 HMA production process does not require the use of water and so there is no industrial wastewater arising from the Plant operation. The potential sources of water pollution from the Plant includes sewage from staff site surface runoff from the Site. All water for vehicle wheel washing is treated and reused.
- 3.1.16 There is no public sewerage connection at the Site and there are no plans by the government to extend the nearby sewerage system to the Site in the near future. Portable toilets equipped with storage tanks are already installed within the Plant to collect sewage/wastewater generated by staff. The collected sewage/wastewater is regularly tankered away by a licensed contractor for off-site disposal. Hence, no adverse water quality impact due to sewage/wastewater generated by staff is anticipated.

- 3.1.17 Water sprinklers are installed for dust suppression and the entire site is paved. Operational procedures prevent over-wetting of the ground and roads and so surface runoff is minimised. All site runoff is collected by existing peripheral surface U-channels and diverted to sedimentation tanks for silt removal prior to discharge into public drains. Hence, no adverse water quality impact due to site surface runoff is anticipated.

Waste Management

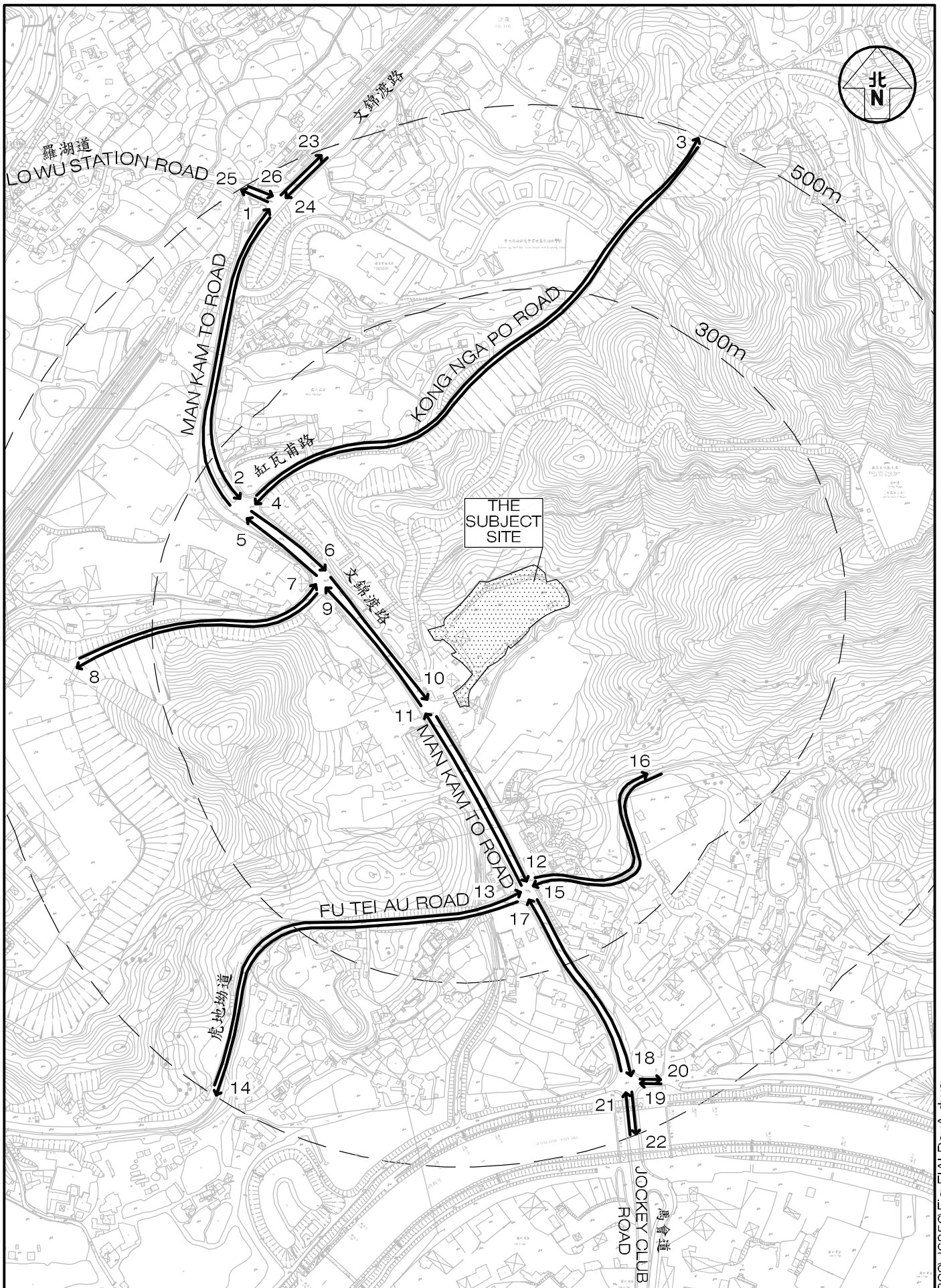
- 3.1.18 General refuse and commercial waste generated were collected on a regular basis by registered waste collectors and disposed off-site at a landfill managed by EPD. Hence, no adverse waste impacts from handling, transportation or disposal are anticipated.
- 3.1.19 Rejected aggregates and treated aggregate fines are classified as Inert C&D Material and disposed of off-site at an appropriate government-managed facility. Temporary stockpiling area, enclosed at three sides and with a front curtain, was provided for storage aggregate prior to disposal. With the implementation of these waste management measures, no adverse impact from Inert C&D Material is anticipated.
- 3.1.20 Only a small quantity of chemical wastes is generated from daily operation of the Plant. This included spent oil filters, scrap battery and waste lubrication oil, none of which is considered to be hazardous. A licensed collector is employed to handle and disposed of the chemical wastes. Hence, no adverse impact from chemical waste is anticipated.

Land Contamination

- 3.1.21 Prior to the 1970s the Site was used as rice paddy. In the mid- to late-1970s, the Site was filled and transformed into open land. The Site was then used for open storage, the manufacture of construction materials, warehousing and, since the 1990s, as a concrete batching plant. The 2014 EA report concluded that no sources of historical land contamination issues were identified and this is still considered valid under this Application.

Appendix A **SCHEMATIC DIAGRAM OF THE PLANT**

Appendix B **TRAFFIC FORECAST OF YEAR 2019 AND YEAR 2024**



Project Title RENEWAL OF SECTION 16 PLANNING APPLICATION FOR TEMPORARY ASPHALT PLANT FOR A PERIOD OF 5 YEARS AT LOTS 20RP, 21 AND 23RP (PART) IN D.D. 88 AND ADJOINING GOVERNMENT LAND TO THE EAST OF MAN KAM TO ROAD, SHEUNG SHUI, NEW TERRITORIES

Figure Title 300M AND 500M RADIUS OF THE PROPOSED TEMPORARY ASPHALT PLANT

Job No. J6856	Figure No. EIA1	Scale in A4 1 : 5,500	
Designed by H C F	Drawn by S C Y	Checked by K C	Revision A
		Date 12 JUL 2019	

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**Table D3 – Year 2019
Peak Hour Traffic Data for Noise Assessment
Without the Proposed Temporary Asphalt Plant**

TABLE D3 – PEAK HOUR TRAFFIC FLOW AND VEHICLE COMPOSITION

YEAR 2019 TRAFFIC FORECAST

Date: 06 August 2019

Job No.: J6856

Link ID	Road Section	From Road	To Road	AM Peak Hour		
				Traffic Flows (veh/hr)	Vehicle Composition	
					LV	HV
L001	Man Kam To Road (NB)	Kong Nga Po Road	Lo Wu Station Road	750	56.0%	44.0%
L002	Man Kam To Road (SB)	Lo Wu Station Road	Kong Nga Po Road	600	37.0%	63.0%
L003	Kong Nga Po Road (EB)	Man Kam To Road	Police Dog Unit and Force Search Unit Training School	200	85.3%	14.7%
L004	Kong Nga Po Road (WB)	Police Dog Unit and Force Search Unit Training School	Man Kam To Road	100	69.7%	30.3%
L005	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Kong Nga Po Road	800	69.7%	30.3%
L006	Man Kam To Road (NB)	Kong Nga Po Road	Access Road to Open Storage Site No.7	500	49.6%	50.4%
L007	Access Road to Open Storage Site No.7 (EB)	Open Storage Site No.7	Man Kam To Road	50	37.0%	63.0%
L008	Access Road to Open Storage Site No.7 (WB)	Man Kam To Road	Open Storage Site No.7	50	45.4%	54.6%
L009	Man Kam To Road (NB)	Access Road to Application Site	Access Road to Open Storage Site No.7	800	70.1%	29.9%
L010	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Access Road to Application Site	550	49.8%	50.2%
L011	Man Kam To Road (NB)	Fu Tei Au Road	Access Road to Application Site	800	70.1%	29.9%
L012	Man Kam To Road (SB)	Access Road to Application Site	Fu Tei Au Road	550	49.8%	50.2%
L013	Fu Tei Au Road (EB)	Sheung Shui Treatment Works and Fresh Water Pumping Station	Man Kam To Road	50	73.0%	27.0%
L014	Fu Tei Au Road (WB)	Man Kam To Road	Sheung Shui Treatment Works and Fresh Water Pumping Station	50	77.0%	23.0%
L015	Unnamed Access Road (WB)	Sheung Shui Wa Shan South Section	Man Kam To Road	50	25.0%	75.0%
L016	Unnamed Access Road (EB)	Man Kam To Road	Sheung Shui Wa Shan South Section	50	0.0%	100.0%
L017	Man Kam To Road (NB)	Access Road to Hung Kiu San Tsuen	Fu Tei Au Road	850	70.5%	29.5%
L018	Man Kam To Road (SB)	Fu Tei Au Road	Access Road to Hung Kiu San Tsuen	550	51.3%	48.7%
L019	Access Road to Hung Kiu San Tsuen (WB)	Hung Kiu San Tsuen	Man Kam To Road	50	39.2%	60.8%
L020	Access Road to Hung Kiu San Tsuen (EB)	Man Kam To Road	Hung Kiu San Tsuen	50	72.5%	27.5%
L021	Man Kam To Road (NB)	Jockey Club Road	Access Road to Hung Kiu San Tsuen	900	70.4%	29.6%
L022	Man Kam To Road (SB)	Access Road to Hung Kiu San Tsuen	Jockey Club Road	600	51.1%	48.9%
L023	Man Kam To Road (NB)	Lo Wu Station Road	Sa Ling Road	600	70.2%	29.8%
L024	Man Kam To Road (SB)	Sa Ling Road	Lo Wu Station Road	400	51.3%	48.7%
L025	Lo Wu Station Road (WB)	Man Kam To Road	Lo Wu MTR Station	150	21.9%	78.1%
L026	Lo Wu Station Road (EB)	Lo Wu MTR Station	Man Kam To Road	150	25.8%	74.2%

Note: "LV" includes motorcycle, private car and taxi

"HV" includes light / medium / heavy goods vehicle, public / private light bus, non-franchised bus and franchised bus

TABLE D3 – PEAK HOUR TRAFFIC FLOW AND VEHICLE COMPOSITION

YEAR 2019 TRAFFIC FORECAST

Date: 01 August 2019

Job No.: J6856

Link ID	Road Section	From Road	To Road	PM Peak Hour		
				Traffic Flows (veh/hr)	Vehicle Composition	
					LV	HV
L001	Man Kam To Road (NB)	Kong Nga Po Road	Lo Wu Station Road	350	44.1%	55.9%
L002	Man Kam To Road (SB)	Lo Wu Station Road	Kong Nga Po Road	500	54.3%	45.7%
L003	Kong Nga Po Road (EB)	Man Kam To Road	Police Dog Unit and Force Search Unit Training School	100	55.2%	44.8%
L004	Kong Nga Po Road (WB)	Police Dog Unit and Force Search Unit Training School	Man Kam To Road	150	67.0%	33.0%
L005	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Kong Nga Po Road	400	46.6%	53.4%
L006	Man Kam To Road (NB)	Kong Nga Po Road	Access Road to Open Storage Site No.7	650	57.5%	42.5%
L007	Access Road to Open Storage Site No.7 (EB)	Open Storage Site No.7	Man Kam To Road	100	64.0%	36.0%
L008	Access Road to Open Storage Site No.7 (WB)	Man Kam To Road	Open Storage Site No.7	50	35.5%	64.5%
L009	Man Kam To Road (NB)	Access Road to Application Site	Access Road to Open Storage Site No.7	450	45.7%	54.3%
L010	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Access Road to Application Site	650	58.5%	41.5%
L011	Man Kam To Road (NB)	Fu Tei Au Road	Access Road to Application Site	450	45.7%	54.3%
L012	Man Kam To Road (SB)	Access Road to Application Site	Fu Tei Au Road	650	58.5%	41.5%
L013	Fu Tei Au Road (EB)	Sheung Shui Treatment Works and Fresh Water Pumping Station	Man Kam To Road	50	60.5%	39.5%
L014	Fu Tei Au Road (WB)	Man Kam To Road	Sheung Shui Treatment Works and Fresh Water Pumping Station	50	42.2%	57.8%
L015	Unnamed Access Road (WB)	Sheung Shui Wa Shan South Section	Man Kam To Road	50	71.5%	28.5%
L016	Unnamed Access Road (EB)	Man Kam To Road	Sheung Shui Wa Shan South Section	50	50.0%	50.0%
L017	Man Kam To Road (NB)	Access Road to Hung Kiu San Tsuen	Fu Tei Au Road	500	45.4%	54.6%
L018	Man Kam To Road (SB)	Fu Tei Au Road	Access Road to Hung Kiu San Tsuen	700	59.2%	40.8%
L019	Access Road to Hung Kiu San Tsuen (WB)	Hung Kiu San Tsuen	Man Kam To Road	50	49.9%	50.1%
L020	Access Road to Hung Kiu San Tsuen (EB)	Man Kam To Road	Hung Kiu San Tsuen	50	23.5%	76.5%
L021	Man Kam To Road (NB)	Jockey Club Road	Access Road to Hung Kiu San Tsuen	500	44.3%	55.7%
L022	Man Kam To Road (SB)	Access Road to Hung Kiu San Tsuen	Jockey Club Road	750	58.9%	41.1%
L023	Man Kam To Road (NB)	Lo Wu Station Road	Sa Ling Road	300	44.9%	55.1%
L024	Man Kam To Road (SB)	Sa Ling Road	Lo Wu Station Road	500	55.2%	44.8%
L025	Lo Wu Station Road (WB)	Man Kam To Road	Lo Wu MTR Station	50	61.8%	38.2%
L026	Lo Wu Station Road (EB)	Lo Wu MTR Station	Man Kam To Road	50	56.3%	43.7%

Note: "LV" includes motorcycle, private car and taxi

"HV" includes light / medium / heavy goods vehicle, public / private light bus, non-franchised bus and franchised bus

**Table D4 – Year 2024
Peak Hour Traffic Data for Noise Assessment
Without the Proposed Temporary Asphalt Plant**

TABLE D4 – PEAK HOUR TRAFFIC FLOW AND VEHICLE COMPOSITION

YEAR 2024 TRAFFIC FORECAST

Date: 06 August 2019

Job No.: J6856

Link ID	Road Section	From Road	To Road	AM Peak Hour		
				Traffic Flows (veh/hr)	Vehicle Composition	
					LV	HV
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L003	Kong Nga Po Road (EB)	Man Kam To Road	Police Dog Unit and Force Search Unit Training School	200	85.6%	14.4%
L004	Kong Nga Po Road (WB)	Police Dog Unit and Force Search Unit Training School	Man Kam To Road	100	70.0%	30.0%
L005	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Kong Nga Po Road	850	69.9%	30.1%
L006	Man Kam To Road (NB)	Kong Nga Po Road	Access Road to Open Storage Site No.7	550	49.5%	50.5%
L007	Access Road to Open Storage Site No.7 (EB)	Open Storage Site No.7	Man Kam To Road	50	35.7%	64.3%
L008	Access Road to Open Storage Site No.7 (WB)	Man Kam To Road	Open Storage Site No.7	50	43.4%	56.6%
L009	Man Kam To Road (NB)	Access Road to Application Site	Access Road to Open Storage Site No.7	850	70.0%	30.0%
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L013	Fu Tei Au Road (EB)	Sheung Shui Treatment Works and Fresh Water Pumping Station	Man Kam To Road	50	71.7%	28.3%
L014	Fu Tei Au Road (WB)	Man Kam To Road	Sheung Shui Treatment Works and Fresh Water Pumping Station	50	78.0%	22.0%
L015	Unnamed Access Road (WB)	Sheung Shui Wa Shan South Section	Man Kam To Road	50	25.0%	75.0%
L016	Unnamed Access Road (EB)	Man Kam To Road	Sheung Shui Wa Shan South Section	50	0.0%	100.0%
L017	Man Kam To Road (NB)	Access Road to Hung Kiu San Tsuen	Fu Tei Au Road	900	70.6%	29.4%
L018	Man Kam To Road (SB)	Fu Tei Au Road	Access Road to Hung Kiu San Tsuen	600	51.5%	48.5%
L019	Access Road to Hung Kiu San Tsuen (WB)	Hung Kiu San Tsuen	Man Kam To Road	50	39.2%	60.8%
L020	Access Road to Hung Kiu San Tsuen (EB)	Man Kam To Road	Hung Kiu San Tsuen	50	73.4%	26.6%
L021	Man Kam To Road (NB)	Jockey Club Road	Access Road to Hung Kiu San Tsuen	950	70.7%	29.3%
L022	Man Kam To Road (SB)	Access Road to Hung Kiu San Tsuen	Jockey Club Road	600	51.2%	48.8%
L023	Man Kam To Road (NB)	Lo Wu Station Road	Sa Ling Road	650	70.3%	29.7%
L024	Man Kam To Road (SB)	Sa Ling Road	Lo Wu Station Road	450	51.6%	48.4%
L025	Lo Wu Station Road (WB)	Man Kam To Road	Lo Wu MTR Station	150	22.2%	77.8%
L026	Lo Wu Station Road (EB)	Lo Wu MTR Station	Man Kam To Road	150	25.2%	74.8%

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YEAR 2024 TRAFFIC FORECAST

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L003	Kong Nga Po Road (EB)	Man Kam To Road	Police Dog Unit and Force Search Unit Training School	100	54.4%	45.6%
L004	Kong Nga Po Road (WB)	Police Dog Unit and Force Search Unit Training School	Man Kam To Road	200	66.7%	33.3%
L005	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Kong Nga Po Road	450	47.0%	53.0%
L006	Man Kam To Road (NB)	Kong Nga Po Road	Access Road to Open Storage Site No.7	700	57.4%	42.6%
L007	Access Road to Open Storage Site No.7 (EB)	Open Storage Site No.7	Man Kam To Road	100	64.8%	35.2%
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L010	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Access Road to Application Site	700	58.4%	41.6%
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L014	Fu Tei Au Road (WB)	Man Kam To Road	Sheung Shui Treatment Works and Fresh Water Pumping Station	50	42.5%	57.5%
L015	Unnamed Access Road (WB)	Sheung Shui Wa Shan South Section	Man Kam To Road	50	73.3%	26.7%
L016	Unnamed Access Road (EB)	Man Kam To Road	Sheung Shui Wa Shan South Section	50	50.0%	50.0%
L017	Man Kam To Road (NB)	Access Road to Hung Kiu San Tsuen	Fu Tei Au Road	500	45.5%	54.5%
L018	Man Kam To Road (SB)	Fu Tei Au Road	Access Road to Hung Kiu San Tsuen	750	59.0%	41.0%
L019	Access Road to Hung Kiu San Tsuen (WB)	Hung Kiu San Tsuen	Man Kam To Road	50	51.5%	48.5%
L020	Access Road to Hung Kiu San Tsuen (EB)	Man Kam To Road	Hung Kiu San Tsuen	50	22.2%	77.8%
L021	Man Kam To Road (NB)	Jockey Club Road	Access Road to Hung Kiu San Tsuen	550	44.2%	55.8%
L022	Man Kam To Road (SB)	Access Road to Hung Kiu San Tsuen	Jockey Club Road	800	58.9%	41.1%
L023	Man Kam To Road (NB)	Lo Wu Station Road	Sa Ling Road	350	44.9%	55.1%
L024	Man Kam To Road (SB)	Sa Ling Road	Lo Wu Station Road	550	55.3%	44.7%
L025	Lo Wu Station Road (WB)	Man Kam To Road	Lo Wu MTR Station	50	61.8%	38.2%
L026	Lo Wu Station Road (EB)	Lo Wu MTR Station	Man Kam To Road	50	60.0%	40.0%

Note: "LV" includes motorcycle, private car and taxi

"HV" includes light / medium / heavy goods vehicle, public / private light bus, non-franchised bus and franchised bus

Appendix C **LOCATIONS AND RESULT OF ON-SITE NOISE
MEASUREMENT**




Noise Measurement Details and Results at the Existing Asphalt Plant at Sheung Shui

General Information

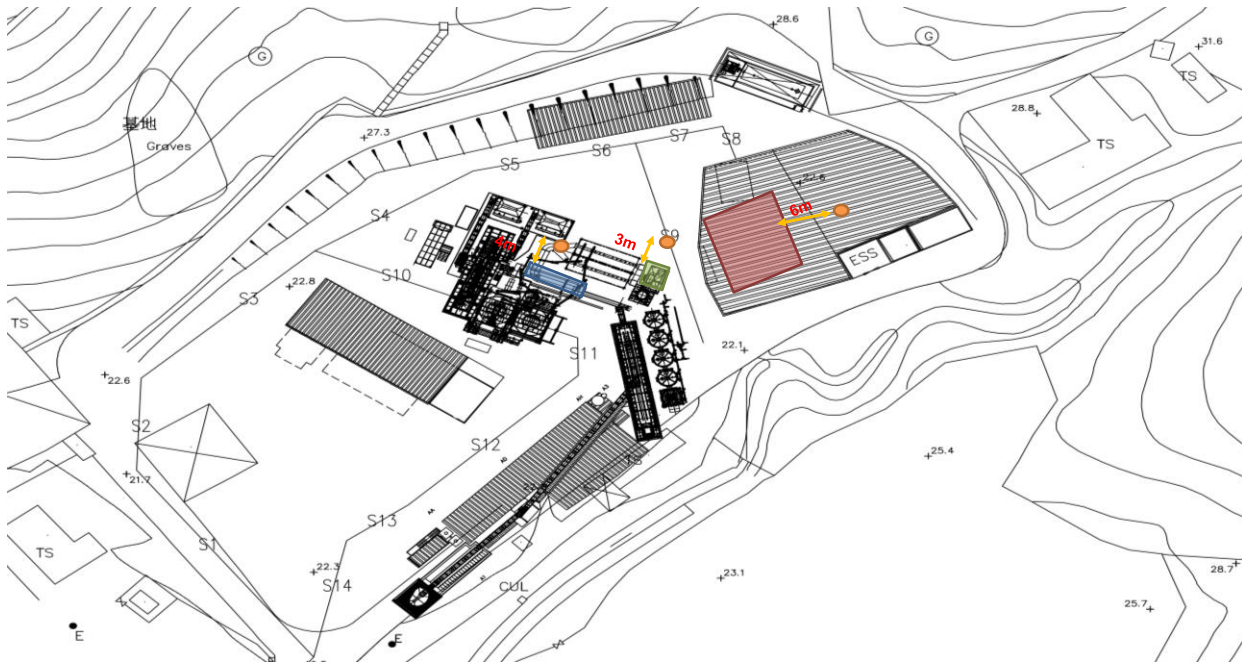
Date of Measurement: 9 July 2019
 Time of Measurement: 15:30 – 17:30
 Weather Condition: Cloudy
 Measurement Equipment: Larson Davis 831 Sound Level Meter

Measurement Method:

A-weighted emission sound pressure level in dB(A) was measured for the equipment for a duration of 1 minutes, calibration of equipment was carried out before and after measurement. The SWL for the operation of PME was backward calculated based on the on-site measured noise level using the standard acoustical principles

PME	Operation Condition	Figure Shape	Measured SPL, dB(A)	Measurement Distance (m)	Distance Correction, dB(A)	SWL, dB(A)	Highest SWL, dB(A)
Rotary Dryer Drum	Full operation with no mitigation measure		77.9	4	20.0	97.9	98.2
			78.2	4	20.0	98.2	
Main Exhaust Fan	Full operation with mitigation measure listed in S.2.3.5 of the EA Report		71.4	3	17.5	88.9	88.9
			68.9	3	17.5	86.4	
RAP Processing Machine	Full operation and measured inside the enclosure (mitigation measure)		79.5	6	23.6	103.1	103.1
			78.5	6	23.6	102.1	

Measurement Locations



Appendix D **PREDICTED NOISE LEVEL OF ON-SITE OPERATION**

IN1 - Day and Evening

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	181	N/A	N/A	0	-53	N/A	-10	3	28.9	
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	50	194	N/A	N/A	-3	-54	N/A	-10	3	36.3	
Rotary dryer drum (Aggregate)	98	1		0	98	50	181	N/A	N/A	-3	-53	N/A	-10	3	34.9	
Rotary dryer drum (RAP)	98	1		0	98	50	181	N/A	N/A	-3	-53	N/A	-10	3	34.9	
RAP Processing Machine	103	1		0	103	100	188	N/A	N/A	0	-53	N/A	-10	3	42.5	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	100	157	N/A	N/A	0	-52	N/A	-10	3	26.5	
Bucket elevator / Filler elevator	90	6	Enclosure	-15	83	100	157	N/A	N/A	0	-52	N/A	-10	3	23.9	
Mixing Unit	96	1	Enclosure	-15	81	100	176	N/A	N/A	0	-53	N/A	-10	3	21.1	
Bitumen Pump	95	2		0	98	100	167	N/A	N/A	0	-52	N/A	-10	3	38.6	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	26		0	123	0.28	129	N/A	N/A	-25.6	-50	N/A	-10	3	40.3	
Truck (Unloading Aggregate)	105	4		0	111	1.67	129	N/A	N/A		-50	N/A	-10	3	36.0	
Truck (Asphalt Collection)	105	8	Enclosure	-15	99	1.67	176	N/A	N/A	-17.8	-53	N/A	-10	3	21.3	
Truck (Unloading RAP)	105	1		0	105	1.67	199	N/A	N/A	-17.8	-54	N/A	-10	3	26.2	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	27.0	
Segment - S1	105	2	N/A	N/A	N/A	N/A	145.1	3.2	10	N/A	-21.6	-17.6	-10	3	18.8	
Segment - S2	105	2	N/A	N/A	N/A	N/A	172.9	2.6	10	N/A	-22.4	-18.4	-10	3	17.2	
Segment - S3	105	2	N/A	N/A	N/A	N/A	185.8	9.6	10	N/A	-22.7	-12.7	-10	3	22.6	
Segment - S4	105	2	N/A	N/A	N/A	N/A	197.0	7.3	10	N/A	-22.9	-13.9	-10	3	21.1	
Segment - S5	105	2	N/A	N/A	N/A	N/A	202.4	2.8	10	N/A	-23.1	-18.1	-10	3	16.9	
Segment - S6	105	2	N/A	N/A	N/A	N/A	203.9	3.8	10	N/A	-23.1	-16.7	-10	3	18.2	
Segment - S7	105	2	N/A	N/A	N/A	N/A	206.4	3.5	10	N/A	-23.1	-17.2	-10	3	17.7	
Segment - S8	105	2	N/A	N/A	N/A	N/A	205.1	0.6	10	N/A	-23.1	-24.9	-10	3	10.0	
Truck (Bitumen Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	27.0	
Segment - S1	105	2	N/A	N/A	N/A	N/A	145.1	3.2	10	N/A	-21.6	-17.6	-10	3	18.8	
Segment - S2	105	2	N/A	N/A	N/A	N/A	172.9	2.6	10	N/A	-22.4	-18.4	-10	3	17.2	
Segment - S3	105	2	N/A	N/A	N/A	N/A	185.8	9.6	10	N/A	-22.7	-12.7	-10	3	22.6	
Segment - S4	105	2	N/A	N/A	N/A	N/A	197.0	7.3	10	N/A	-22.9	-13.9	-10	3	21.1	
Segment - S5	105	2	N/A	N/A	N/A	N/A	202.4	2.8	10	N/A	-23.1	-18.1	-10	3	16.9	
Segment - S6	105	2	N/A	N/A	N/A	N/A	203.9	3.8	10	N/A	-23.1	-16.7	-10	3	18.2	
Segment - S9	105	2	N/A	N/A	N/A	N/A	187.1	2.9	10	N/A	-22.7	-17.9	-10	3	17.4	
Truck (Asphalt Collection)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	36.0	
Segment - S1	105	16	N/A	N/A	N/A	N/A	145.1	3.2	10	N/A	-21.6	-17.6	-10	3	27.9	
Segment - S2	105	16	N/A	N/A	N/A	N/A	172.9	2.6	10	N/A	-22.4	-18.4	-10	3	26.3	
Segment - S3	105	16	N/A	N/A	N/A	N/A	185.8	9.6	10	N/A	-22.7	-12.7	-10	3	31.6	
Segment - S10	105	16	N/A	N/A	N/A	N/A	180.9	10.8	10	N/A	-22.6	-12.2	-10	3	32.3	
Segment - S11	105	16	N/A	N/A	N/A	N/A	167.4	0.2	10	N/A	-22.2	-30.1	-10	3	14.7	
Segment - S12	105	16	N/A	N/A	N/A	N/A	154.2	10.4	10	N/A	-21.9	-12.4	-10	3	32.8	
Segment - S13	105	16	N/A	N/A	N/A	N/A	143.7	4.1	10	N/A	-21.6	-16.4	-10	3	29.0	
Segment - S14	105	16	N/A	N/A	N/A	N/A	133.2	5.2	10	N/A	-21.2	-15.4	-10	3	30.4	
Truck (Aggregate Delivery)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	36.0	
Segment - S13	105	16	N/A	N/A	N/A	N/A	143.7	4.1	10	N/A	-21.6	-16.4	-10	3	29.0	
Segment - S14	105	16	N/A	N/A	N/A	N/A	133.2	5.2	10	N/A	-21.2	-15.4	-10	3	30.4	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	52	N/A	N/A	N/A	N/A	203.9	3.8	10	N/A	-23.1	-16.7	-10	3	36.4	
Segment - S7	109	52	N/A	N/A	N/A	N/A	206.4	3.5	10	N/A	-23.1	-17.2	-10	3	35.9	
Segment - S8	109	52	N/A	N/A	N/A	N/A	205.1	0.6	10	N/A	-23.1	-24.9	-10	3	28.1	
Segment - S12	109	52	N/A	N/A	N/A	N/A	154.2	10.4	10	N/A	-21.9	-12.4	-10	3	41.9	
Segment - S13	109	52	N/A	N/A	N/A	N/A	143.7	4.1	10	N/A	-21.6	-16.4	-10	3	38.2	
															Sub-Total SPL, dB(A)	50

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN1 - Night

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	181	N/A	N/A	0	-53	N/A	-10	3	28.9	
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	30	194	N/A	N/A	-5.2	-54	N/A	-10	3	34.1	
Rotary dryer drum (Aggregate)	98	1		0	98	20	181	N/A	N/A	-7	-53	N/A	-10	3	30.9	
Rotary dryer drum (RAP)	98	1		0	98	20	181	N/A	N/A	-7	-53	N/A	-10	3	30.9	
RAP Processing Machine	103	0		0	0	100	188	N/A	N/A	0	-53	N/A	-10	3	0.0	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	30	157	N/A	N/A	-5.2	-52	N/A	-10	3	21.3	
Bucket elevator / Filler elevator	90	5	Enclosure	-15	82	30	157	N/A	N/A	-5.2	-52	N/A	-10	3	17.9	
Mixing Unit	96	1	Enclosure	-15	81	100	176	N/A	N/A	0	-53	N/A	-10	3	21.1	
Bitumen Pump	95	1		0	95	50	167	N/A	N/A	-3	-52	N/A	-10	3	32.6	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	6		0	117	0.28	129	N/A	N/A	-25.6	-50	N/A	-10	3	34.0	
Truck (Unloading Aggregate)	105	1		0	105	1.67	129	N/A	N/A		-50	N/A	-10	3	30.0	
Truck (Asphalt Collection)	105	5	Enclosure	-15	97	1.67	176	N/A	N/A	-17.8	-53	N/A	-10	3	19.3	
Truck (Unloading RAP)	105	1		0	105	1.67	199	N/A	N/A	-17.8	-54	N/A	-10	3	26.2	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	27.0	
Segment - S1	105	2	N/A	N/A	N/A	N/A	145.1	3.2	10	N/A	-21.6	-17.6	-10	3	18.8	
Segment - S2	105	2	N/A	N/A	N/A	N/A	172.9	2.6	10	N/A	-22.4	-18.4	-10	3	17.2	
Segment - S3	105	2	N/A	N/A	N/A	N/A	185.8	9.6	10	N/A	-22.7	-12.7	-10	3	22.6	
Segment - S4	105	2	N/A	N/A	N/A	N/A	197.0	7.3	10	N/A	-22.9	-13.9	-10	3	21.1	
Segment - S5	105	2	N/A	N/A	N/A	N/A	202.4	2.8	10	N/A	-23.1	-18.1	-10	3	16.9	
Segment - S6	105	2	N/A	N/A	N/A	N/A	203.9	3.8	10	N/A	-23.1	-16.7	-10	3	18.2	
Segment - S7	105	2	N/A	N/A	N/A	N/A	206.4	3.5	10	N/A	-23.1	-17.2	-10	3	17.7	
Segment - S8	105	2	N/A	N/A	N/A	N/A	205.1	0.6	10	N/A	-23.1	-24.9	-10	3	10.0	
Truck (Bitumen Delivery)																
Segment - S0	105	0	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	0	
Segment - S1	105	0	N/A	N/A	N/A	N/A	145.1	3.2	10	N/A	-21.6	-17.6	-10	3	0	
Segment - S2	105	0	N/A	N/A	N/A	N/A	172.9	2.6	10	N/A	-22.4	-18.4	-10	3	0	
Segment - S3	105	0	N/A	N/A	N/A	N/A	185.8	9.6	10	N/A	-22.7	-12.7	-10	3	0	
Segment - S4	105	0	N/A	N/A	N/A	N/A	197.0	7.3	10	N/A	-22.9	-13.9	-10	3	0	
Segment - S5	105	0	N/A	N/A	N/A	N/A	202.4	2.8	10	N/A	-23.1	-18.1	-10	3	0	
Segment - S6	105	0	N/A	N/A	N/A	N/A	203.9	3.8	10	N/A	-23.1	-16.7	-10	3	0	
Segment - S9	105	0	N/A	N/A	N/A	N/A	187.1	2.9	10	N/A	-22.7	-17.9	-10	3	0	
Truck (Asphalt Collection)																
Segment - S0	105	10	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	34.0	
Segment - S1	105	10	N/A	N/A	N/A	N/A	145.1	3.2	10	N/A	-21.6	-17.6	-10	3	25.8	
Segment - S2	105	10	N/A	N/A	N/A	N/A	172.9	2.6	10	N/A	-22.4	-18.4	-10	3	24.2	
Segment - S3	105	10	N/A	N/A	N/A	N/A	185.8	9.6	10	N/A	-22.7	-12.7	-10	3	29.6	
Segment - S10	105	10	N/A	N/A	N/A	N/A	180.9	10.8	10	N/A	-22.6	-12.2	-10	3	30.2	
Segment - S11	105	10	N/A	N/A	N/A	N/A	167.4	0.2	10	N/A	-22.2	-30.1	-10	3	12.7	
Segment - S12	105	10	N/A	N/A	N/A	N/A	154.2	10.4	10	N/A	-21.9	-12.4	-10	3	30.7	
Segment - S13	105	10	N/A	N/A	N/A	N/A	143.7	4.1	10	N/A	-21.6	-16.4	-10	3	27.0	
Segment - S14	105	10	N/A	N/A	N/A	N/A	133.2	5.2	10	N/A	-21.2	-15.4	-10	3	28.4	
Truck (Aggregate Delivery)																
Segment - S0	105	4	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	30.0	
Segment - S13	105	4	N/A	N/A	N/A	N/A	143.7	4.1	10	N/A	-21.6	-16.4	-10	3	23.0	
Segment - S14	105	4	N/A	N/A	N/A	N/A	133.2	5.2	10	N/A	-21.2	-15.4	-10	3	24.4	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	12	N/A	N/A	N/A	N/A	203.9	3.8	10	N/A	-23.1	-16.7	-10	3	30.0	
Segment - S7	109	12	N/A	N/A	N/A	N/A	206.4	3.5	10	N/A	-23.1	-17.2	-10	3	29.5	
Segment - S8	109	12	N/A	N/A	N/A	N/A	205.1	0.6	10	N/A	-23.1	-24.9	-10	3	21.7	
Segment - S12	109	12	N/A	N/A	N/A	N/A	154.2	10.4	10	N/A	-21.9	-12.4	-10	3	35.5	
Segment - S13	109	12	N/A	N/A	N/A	N/A	143.7	4.1	10	N/A	-21.6	-16.4	-10	3	31.8	
															Sub-Total SPL, dB(A)	45

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN2 - Day and Evening

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	357	N/A	N/A	0	-59	N/A	-10	3	23.0	
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	50	362	N/A	N/A	-3	-59	N/A	-10	3	30.8	
Rotary dryer drum (Aggregate)	98	1		0	98	50	353	N/A	N/A	-3	-59	N/A	-10	3	29.1	
Rotary dryer drum (RAP)	98	1		0	98	50	353	N/A	N/A	-3	-59	N/A	-10	3	29.1	
RAP Processing Machine	103	1		0	103	100	368	N/A	N/A	0	-59	N/A	-10	3	36.7	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	100	321	N/A	N/A	0	-58	N/A	-10	3	20.3	
Bucket elevator / Filler elevator	90	6	Enclosure	-15	83	100	321	N/A	N/A	0	-58	N/A	-10	3	17.7	
Mixing Unit	96	1	Enclosure	-15	81	100	347	N/A	N/A	0	-59	N/A	-10	3	15.2	
Bitumen Pump	95	2		0	98	100	344	N/A	N/A	0	-59	N/A	-10	3	32.3	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	26		0	123	0.28	295	N/A	N/A	-25.6	-57	N/A	-10	3	33.1	
Truck (Unloading Aggregate)	105	4		0	111	1.67	295	N/A	N/A		-57	N/A	-10	3	28.8	
Truck (Asphalt Collection)	105	8	Enclosure	-15	99	1.67	347	N/A	N/A	-17.8	-59	N/A	-10	3	15.4	
Truck (Unloading RAP)	105	1		0	105	1.67	381	N/A	N/A	-17.8	-60	N/A	-10	3	20.6	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	17.6	
Segment - S1	105	2	N/A	N/A	N/A	N/A	297.5	5.3	10	N/A	-24.7	-15.3	-10	3	18.0	
Segment - S2	105	2	N/A	N/A	N/A	N/A	321.7	0.0	10	N/A	-25.1	-37.5	-10	3	-4.6	
Segment - S3	105	2	N/A	N/A	N/A	N/A	341.8	3.9	10	N/A	-25.3	-16.6	-10	3	16.1	
Segment - S4	105	2	N/A	N/A	N/A	N/A	362.4	3.3	10	N/A	-25.6	-17.4	-10	3	15.0	
Segment - S5	105	2	N/A	N/A	N/A	N/A	372.9	1.4	10	N/A	-25.7	-21.1	-10	3	11.2	
Segment - S6	105	2	N/A	N/A	N/A	N/A	377.4	1.9	10	N/A	-25.8	-19.7	-10	3	12.5	
Segment - S7	105	2	N/A	N/A	N/A	N/A	383.0	1.7	10	N/A	-25.8	-20.2	-10	3	12.0	
Segment - S8	105	2	N/A	N/A	N/A	N/A	383.3	0.5	10	N/A	-25.8	-25.7	-10	3	6.5	
Truck (Bitumen Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	17.6	
Segment - S1	105	2	N/A	N/A	N/A	N/A	297.5	5.3	10	N/A	-24.7	-15.3	-10	3	18.0	
Segment - S2	105	2	N/A	N/A	N/A	N/A	321.7	0.0	10	N/A	-25.1	-37.5	-10	3	-4.6	
Segment - S3	105	2	N/A	N/A	N/A	N/A	341.8	3.9	10	N/A	-25.3	-16.6	-10	3	16.1	
Segment - S4	105	2	N/A	N/A	N/A	N/A	362.4	3.3	10	N/A	-25.6	-17.4	-10	3	15.0	
Segment - S5	105	2	N/A	N/A	N/A	N/A	372.9	1.4	10	N/A	-25.7	-21.1	-10	3	11.2	
Segment - S6	105	2	N/A	N/A	N/A	N/A	377.4	1.9	10	N/A	-25.8	-19.7	-10	3	12.5	
Segment - S9	105	2	N/A	N/A	N/A	N/A	363.9	2.8	10	N/A	-25.6	-18.1	-10	3	14.3	
Truck (Asphalt Collection)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	26.6	
Segment - S1	105	16	N/A	N/A	N/A	N/A	297.5	5.3	10	N/A	-24.7	-15.3	-10	3	27.0	
Segment - S2	105	16	N/A	N/A	N/A	N/A	321.7	0.0	10	N/A	-25.1	-37.5	-10	3	4.5	
Segment - S3	105	16	N/A	N/A	N/A	N/A	341.8	3.9	10	N/A	-25.3	-16.6	-10	3	25.1	
Segment - S10	105	16	N/A	N/A	N/A	N/A	348.7	6.5	10	N/A	-25.4	-14.4	-10	3	27.2	
Segment - S11	105	16	N/A	N/A	N/A	N/A	341.2	0.2	10	N/A	-25.3	-28.7	-10	3	13.0	
Segment - S12	105	16	N/A	N/A	N/A	N/A	324.2	3.5	10	N/A	-25.1	-17.1	-10	3	24.8	
Segment - S13	105	16	N/A	N/A	N/A	N/A	307.0	1.5	10	N/A	-24.9	-20.9	-10	3	21.3	
Segment - S14	105	16	N/A	N/A	N/A	N/A	292.7	0.4	10	N/A	-24.7	-26.4	-10	3	15.9	
Truck (Aggregate Delivery)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	26.6	
Segment - S13	105	16	N/A	N/A	N/A	N/A	307.0	1.5	10	N/A	-24.9	-20.9	-10	3	21.3	
Segment - S14	105	16	N/A	N/A	N/A	N/A	292.7	0.4	10	N/A	-24.7	-26.4	-10	3	15.9	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	52	N/A	N/A	N/A	N/A	377.4	1.9	10	N/A	-25.8	-19.7	-10	3	30.7	
Segment - S7	109	52	N/A	N/A	N/A	N/A	383.0	1.7	10	N/A	-25.8	-20.2	-10	3	30.1	
Segment - S8	109	52	N/A	N/A	N/A	N/A	383.3	0.5	10	N/A	-25.8	-25.7	-10	3	24.6	
Segment - S12	109	52	N/A	N/A	N/A	N/A	324.2	3.5	10	N/A	-25.1	-17.1	-10	3	33.9	
Segment - S13	109	52	N/A	N/A	N/A	N/A	307.0	1.5	10	N/A	-24.9	-20.9	-10	3	30.4	
Sub-Total SPL, dB(A)															43	

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN2 - Night

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	357	N/A	N/A	0	-59	N/A	-10	3	23.0	
Air compressor, air flow ≤ 10 m³/min	100	1			100	30	362	N/A	N/A	-5.2	-59	N/A	-10	3	28.6	
Rotary dryer drum (Aggregate)	98	1		0	98	20	353	N/A	N/A	-7	-59	N/A	-10	3	25.1	
Rotary dryer drum (RAP)	98	1			98	20	353	N/A	N/A	-7	-59	N/A	-10	3	25.1	
RAP Processing Machine	103	0		0	0	100	368	N/A	N/A	0	-59	N/A	-10	3	0.0	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	30	321	N/A	N/A	-5.2	-58	N/A	-10	3	15.1	
Bucket elevator / Filler elevator	90	5	Enclosure	-15	82	30	321	N/A	N/A	-5.2	-58	N/A	-10	3	11.7	
Mixing Unit	96	1	Enclosure	-15	81	100	347	N/A	N/A	0	-59	N/A	-10	3	15.2	
Bitumen Pump	95	1		0	95	50	344	N/A	N/A	-3	-59	N/A	-10	3	26.3	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	6		0	117	0.28	295	N/A	N/A	-25.6	-57	N/A	-10	3	26.8	
Truck (Unloading Aggregate)	105	1		0	105	1.67	295	N/A	N/A		-57	N/A	-10	3	22.8	
Truck (Asphalt Collection)	105	5	Enclosure	-15	97	1.67	347	N/A	N/A	-17.8	-59	N/A	-10	3	13.4	
Truck (Unloading RAP)	105	1		0	105	1.67	381	N/A	N/A	-17.8	-60	N/A	-10	3	20.6	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	17.6	
Segment - S1	105	2	N/A	N/A	N/A	N/A	297.5	5.3	10	N/A	-24.7	-15.3	-10	3	18.0	
Segment - S2	105	2	N/A	N/A	N/A	N/A	321.7	0.0	10	N/A	-25.1	-37.5	-10	3	-4.6	
Segment - S3	105	2	N/A	N/A	N/A	N/A	341.8	3.9	10	N/A	-25.3	-16.6	-10	3	16.1	
Segment - S4	105	2	N/A	N/A	N/A	N/A	362.4	3.3	10	N/A	-25.6	-17.4	-10	3	15.0	
Segment - S5	105	2	N/A	N/A	N/A	N/A	372.9	1.4	10	N/A	-25.7	-21.1	-10	3	11.2	
Segment - S6	105	2	N/A	N/A	N/A	N/A	377.4	1.9	10	N/A	-25.8	-19.7	-10	3	12.5	
Segment - S7	105	2	N/A	N/A	N/A	N/A	383.0	1.7	10	N/A	-25.8	-20.2	-10	3	12.0	
Segment - S8	105	2	N/A	N/A	N/A	N/A	383.3	0.5	10	N/A	-25.8	-25.7	-10	3	6.5	
Truck (Bitumen Delivery)																
Segment - S0	105	0	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	0	
Segment - S1	105	0	N/A	N/A	N/A	N/A	297.5	5.3	10	N/A	-24.7	-15.3	-10	3	0	
Segment - S2	105	0	N/A	N/A	N/A	N/A	321.7	0.0	10	N/A	-25.1	-37.5	-10	3	0	
Segment - S3	105	0	N/A	N/A	N/A	N/A	341.8	3.9	10	N/A	-25.3	-16.6	-10	3	0	
Segment - S4	105	0	N/A	N/A	N/A	N/A	362.4	3.3	10	N/A	-25.6	-17.4	-10	3	0	
Segment - S5	105	0	N/A	N/A	N/A	N/A	372.9	1.4	10	N/A	-25.7	-21.1	-10	3	0	
Segment - S6	105	0	N/A	N/A	N/A	N/A	377.4	1.9	10	N/A	-25.8	-19.7	-10	3	0	
Segment - S9	105	0	N/A	N/A	N/A	N/A	363.9	2.8	10	N/A	-25.6	-18.1	-10	3	0	
Truck (Asphalt Collection)																
Segment - S0	105	10	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	24.6	
Segment - S1	105	10	N/A	N/A	N/A	N/A	297.5	5.3	10	N/A	-24.7	-15.3	-10	3	25.0	
Segment - S2	105	10	N/A	N/A	N/A	N/A	321.7	0.0	10	N/A	-25.1	-37.5	-10	3	2.4	
Segment - S3	105	10	N/A	N/A	N/A	N/A	341.8	3.9	10	N/A	-25.3	-16.6	-10	3	23.0	
Segment - S10	105	10	N/A	N/A	N/A	N/A	348.7	6.5	10	N/A	-25.4	-14.4	-10	3	25.1	
Segment - S11	105	10	N/A	N/A	N/A	N/A	341.2	0.2	10	N/A	-25.3	-28.7	-10	3	11.0	
Segment - S12	105	10	N/A	N/A	N/A	N/A	324.2	3.5	10	N/A	-25.1	-17.1	-10	3	22.8	
Segment - S13	105	10	N/A	N/A	N/A	N/A	307.0	1.5	10	N/A	-24.9	-20.9	-10	3	19.2	
Segment - S14	105	10	N/A	N/A	N/A	N/A	292.7	0.4	10	N/A	-24.7	-26.4	-10	3	13.9	
Truck (Aggregate Delivery)																
Segment - S0	105	4	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	20.6	
Segment - S13	105	4	N/A	N/A	N/A	N/A	307.0	1.5	10	N/A	-24.9	-20.9	-10	3	15.2	
Segment - S14	105	4	N/A	N/A	N/A	N/A	292.7	0.4	10	N/A	-24.7	-26.4	-10	3	9.9	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	12	N/A	N/A	N/A	N/A	377.4	1.9	10	N/A	-25.8	-19.7	-10	3	24.3	
Segment - S7	109	12	N/A	N/A	N/A	N/A	383.0	1.7	10	N/A	-25.8	-20.2	-10	3	23.8	
Segment - S8	109	12	N/A	N/A	N/A	N/A	383.3	0.5	10	N/A	-25.8	-25.7	-10	3	18.3	
Segment - S12	109	12	N/A	N/A	N/A	N/A	324.2	3.5	10	N/A	-25.1	-17.1	-10	3	27.6	
Segment - S13	109	12	N/A	N/A	N/A	N/A	307.0	1.5	10	N/A	-24.9	-20.9	-10	3	24.0	
															Sub-Total SPL, dB(A)	38

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN3 - Day and Evening

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	152	N/A	N/A	0	-52	N/A	-10	3	30.4	
Air compressor, air flow ≤ 10 m³/min	100	1	Barrier	-10	90	50	124	N/A	N/A	-3	-50	N/A	-10	3	30.2	
Rotary dryer drum (Aggregate)	98	1		0	98	50	138	N/A	N/A	-3	-51	N/A	-10	3	37.2	
Rotary dryer drum (RAP)	98	1	Barrier	-10	88	50	138	N/A	N/A	-3	-51	N/A	-10	3	27.2	
RAP Processing Machine	103	1		0	103	100	166	N/A	N/A	0	-52	N/A	-10	3	43.6	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	100	117	N/A	N/A	0	-49	N/A	-10	3	29.1	
Bucket elevator / Filler elevator	90	6	Enclosure	-15	83	100	117	N/A	N/A	0	-49	N/A	-10	3	26.5	
Mixing Unit	96	1	Enclosure	-15	81	100	133	N/A	N/A	0	-50	N/A	-10	3	23.5	
Bitumen Pump	95	2	Barrier	-10	88	100	159	N/A	N/A	0	-52	N/A	-10	3	29.0	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	26		0	123	0.28	148	N/A	N/A	-25.6	-51	N/A	-10	3	39.1	
Truck (Unloading Aggregate)	105	4		0	111	1.67	148	N/A	N/A		-51	N/A	-10	3	34.8	
Truck (Asphalt Collection)	105	8	Enclosure	-15	99	1.67	133	N/A	N/A	-17.8	-50	N/A	-10	3	23.7	
Truck (Unloading RAP)	105	1		0	105	1.67	178	N/A	N/A	-17.8	-53	N/A	-10	3	27.2	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	25.1	
Segment - S1	105	2	N/A	N/A	N/A	N/A	123.6	2.4	10	N/A	-20.9	-18.7	-10	3	18.4	
Segment - S2	105	2	N/A	N/A	N/A	N/A	97.5	7.5	10	N/A	-19.9	-13.8	-10	3	24.3	
Segment - S3	105	2	N/A	N/A	N/A	N/A	97.2	18.5	10	N/A	-19.9	-9.9	-10	3	28.2	
Segment - S4	105	2	N/A	N/A	N/A	N/A	113.3	9.7	10	N/A	-20.5	-12.7	-10	3	24.8	
Segment - S5	105	2	N/A	N/A	N/A	N/A	127.8	1.5	10	N/A	-21.1	-20.7	-10	3	16.3	
Segment - S6	105	2	N/A	N/A	N/A	N/A	139.0	1.8	10	N/A	-21.4	-20.1	-10	3	16.5	
Segment - S7	105	2	N/A	N/A	N/A	N/A	151.7	1.5	10	N/A	-21.8	-20.8	-10	3	15.4	
Segment - S8	105	2	N/A	N/A	N/A	N/A	158.9	2.1	10	N/A	-22.0	-19.4	-10	3	16.6	
Truck (Bitumen Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	25.1	
Segment - S1	105	2	N/A	N/A	N/A	N/A	123.6	2.4	10	N/A	-20.9	-18.7	-10	3	18.4	
Segment - S2	105	2	N/A	N/A	N/A	N/A	97.5	7.5	10	N/A	-19.9	-13.8	-10	3	24.3	
Segment - S3	105	2	N/A	N/A	N/A	N/A	97.2	18.5	10	N/A	-19.9	-9.9	-10	3	28.2	
Segment - S4	105	2	N/A	N/A	N/A	N/A	113.3	9.7	10	N/A	-20.5	-12.7	-10	3	24.8	
Segment - S5	105	2	N/A	N/A	N/A	N/A	127.8	1.5	10	N/A	-21.1	-20.7	-10	3	16.3	
Segment - S6	105	2	N/A	N/A	N/A	N/A	139.0	1.8	10	N/A	-21.4	-20.1	-10	3	16.5	
Segment - S9	105	2	N/A	N/A	N/A	N/A	153.0	12.3	10	N/A	-21.8	-11.7	-10	3	24.5	
Truck (Asphalt Collection)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	34.1	
Segment - S1	105	16	N/A	N/A	N/A	N/A	123.6	2.4	10	N/A	-20.9	-18.7	-10	3	27.4	
Segment - S2	105	16	N/A	N/A	N/A	N/A	97.5	7.5	10	N/A	-19.9	-13.8	-10	3	33.4	
Segment - S3	105	16	N/A	N/A	N/A	N/A	97.2	18.5	10	N/A	-19.9	-9.9	-10	3	37.3	
Segment - S10	105	16	N/A	N/A	N/A	N/A	124.7	1.1	10	N/A	-21.0	-22.0	-10	3	24.1	
Segment - S11	105	16	N/A	N/A	N/A	N/A	146.1	2.4	10	N/A	-21.6	-18.7	-10	3	26.7	
Segment - S12	105	16	N/A	N/A	N/A	N/A	141.2	12.9	10	N/A	-21.5	-11.5	-10	3	34.1	
Segment - S13	105	16	N/A	N/A	N/A	N/A	135.1	4.4	10	N/A	-21.3	-16.1	-10	3	29.6	
Segment - S14	105	16	N/A	N/A	N/A	N/A	138.7	7.6	10	N/A	-21.4	-13.8	-10	3	31.9	
Truck (Aggregate Delivery)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	34.1	
Segment - S13	105	16	N/A	N/A	N/A	N/A	135.1	4.4	10	N/A	-21.3	-16.1	-10	3	29.6	
Segment - S14	105	16	N/A	N/A	N/A	N/A	138.7	7.6	10	N/A	-21.4	-13.8	-10	3	31.9	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	52	N/A	N/A	N/A	N/A	139.0	1.8	10	N/A	-21.4	-20.1	-10	3	34.7	
Segment - S7	109	52	N/A	N/A	N/A	N/A	151.7	1.5	10	N/A	-21.8	-20.8	-10	3	33.6	
Segment - S8	109	52	N/A	N/A	N/A	N/A	158.9	2.1	10	N/A	-22.0	-19.4	-10	3	34.7	
Segment - S12	109	52	N/A	N/A	N/A	N/A	141.2	12.9	10	N/A	-21.5	-11.5	-10	3	43.2	
Segment - S13	109	52	N/A	N/A	N/A	N/A	135.1	4.4	10	N/A	-21.3	-16.1	-10	3	38.7	
															Sub-Total SPL, dB(A)	50

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN3 - Night

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ✓	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)	
Mechanical and Electrical (M&E) Equipment															
Exhaust fan	89	1		0	89	100	152	N/A	N/A	0	-52	N/A	-10	3	30.4
Air compressor, air flow ≤ 10 m³/min	100	1	Barrier	-10	90	30	124	N/A	N/A	-5.2	-50	N/A	-10	3	28.0
Rotary dryer drum (Aggregate)	98	1		0	98	20	138	N/A	N/A	-7	-51	N/A	-10	3	33.2
Rotary dryer drum (RAP)	98	1	Barrier	-10	88	20	138	N/A	N/A	-7	-51	N/A	-10	3	23.2
RAP Processing Machine	103	0		0	0	100	166	N/A	N/A	0	-52	N/A	-10	3	0.0
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	30	117	N/A	N/A	-5.2	-49	N/A	-10	3	23.9
Bucket elevator / Filler elevator	90	5	Enclosure	-15	82	30	117	N/A	N/A	-5.2	-49	N/A	-10	3	20.5
Mixing Unit	96	1	Enclosure	-15	81	100	133	N/A	N/A	0	-50	N/A	-10	3	23.5
Bitumen Pump	95	1	Barrier	-10	85	50	159	N/A	N/A	-3	-52	N/A	-10	3	23.0
Loading/Unloading Activities															
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	6		0	117	0.28	148	N/A	N/A	-25.6	-51	N/A	-10	3	32.8
Truck (Unloading Aggregate)	105	1		0	105	1.67	148	N/A	N/A	-17.8	-51	N/A	-10	3	28.8
Truck (Asphalt Collection)	105	5	Enclosure	-15	97	1.67	133	N/A	N/A	-17.8	-50	N/A	-10	3	21.7
Truck (Unloading RAP)	105	1		0	105	1.67	178	N/A	N/A	-17.8	-53	N/A	-10	3	27.2
On-site Movement of Truck															
Truck (RAP Delivery)															
Segment - S0	105	2	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	25.1
Segment - S1	105	2	N/A	N/A	N/A	N/A	123.6	2.4	10	N/A	-20.9	-18.7	-10	3	18.4
Segment - S2	105	2	N/A	N/A	N/A	N/A	97.5	7.5	10	N/A	-19.9	-13.8	-10	3	24.3
Segment - S3	105	2	N/A	N/A	N/A	N/A	97.2	18.5	10	N/A	-19.9	-9.9	-10	3	28.2
Segment - S4	105	2	N/A	N/A	N/A	N/A	113.3	9.7	10	N/A	-20.5	-12.7	-10	3	24.8
Segment - S5	105	2	N/A	N/A	N/A	N/A	127.8	1.5	10	N/A	-21.1	-20.7	-10	3	16.3
Segment - S6	105	2	N/A	N/A	N/A	N/A	139.0	1.8	10	N/A	-21.4	-20.1	-10	3	16.5
Segment - S7	105	2	N/A	N/A	N/A	N/A	151.7	1.5	10	N/A	-21.8	-20.8	-10	3	15.4
Segment - S8	105	2	N/A	N/A	N/A	N/A	158.9	2.1	10	N/A	-22.0	-19.4	-10	3	16.6
Truck (Bitumen Delivery)															
Segment - S0	105	0	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	0
Segment - S1	105	0	N/A	N/A	N/A	N/A	123.6	2.4	10	N/A	-20.9	-18.7	-10	3	0
Segment - S2	105	0	N/A	N/A	N/A	N/A	97.5	7.5	10	N/A	-19.9	-13.8	-10	3	0
Segment - S3	105	0	N/A	N/A	N/A	N/A	97.2	18.5	10	N/A	-19.9	-9.9	-10	3	0
Segment - S4	105	0	N/A	N/A	N/A	N/A	113.3	9.7	10	N/A	-20.5	-12.7	-10	3	0
Segment - S5	105	0	N/A	N/A	N/A	N/A	127.8	1.5	10	N/A	-21.1	-20.7	-10	3	0
Segment - S6	105	0	N/A	N/A	N/A	N/A	139.0	1.8	10	N/A	-21.4	-20.1	-10	3	0
Segment - S9	105	0	N/A	N/A	N/A	N/A	153.0	12.3	10	N/A	-21.8	-11.7	-10	3	0
Truck (Asphalt Collection)															
Segment - S0	105	10	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	32.0
Segment - S1	105	10	N/A	N/A	N/A	N/A	123.6	2.4	10	N/A	-20.9	-18.7	-10	3	25.4
Segment - S2	105	10	N/A	N/A	N/A	N/A	97.5	7.5	10	N/A	-19.9	-13.8	-10	3	31.3
Segment - S3	105	10	N/A	N/A	N/A	N/A	97.2	18.5	10	N/A	-19.9	-9.9	-10	3	35.2
Segment - S10	105	10	N/A	N/A	N/A	N/A	124.7	1.1	10	N/A	-21.0	-22.0	-10	3	22.1
Segment - S11	105	10	N/A	N/A	N/A	N/A	146.1	2.4	10	N/A	-21.6	-18.7	-10	3	24.7
Segment - S12	105	10	N/A	N/A	N/A	N/A	141.2	12.9	10	N/A	-21.5	-11.5	-10	3	32.0
Segment - S13	105	10	N/A	N/A	N/A	N/A	135.1	4.4	10	N/A	-21.3	-16.1	-10	3	27.6
Segment - S14	105	10	N/A	N/A	N/A	N/A	138.7	7.6	10	N/A	-21.4	-13.8	-10	3	29.8
Truck (Aggregate Delivery)															
Segment - S0	105	4	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	28.1
Segment - S13	105	4	N/A	N/A	N/A	N/A	135.1	4.4	10	N/A	-21.3	-16.1	-10	3	23.6
Segment - S14	105	4	N/A	N/A	N/A	N/A	138.7	7.6	10	N/A	-21.4	-13.8	-10	3	25.8
Wheel Loader (Loading/Unloading Aggregate/RAP)															
Segment - S6	109	12	N/A	N/A	N/A	N/A	139.0	1.8	10	N/A	-21.4	-20.1	-10	3	28.3
Segment - S7	109	12	N/A	N/A	N/A	N/A	151.7	1.5	10	N/A	-21.8	-20.8	-10	3	27.2
Segment - S8	109	12	N/A	N/A	N/A	N/A	158.9	2.1	10	N/A	-22.0	-19.4	-10	3	28.4
Segment - S12	109	12	N/A	N/A	N/A	N/A	141.2	12.9	10	N/A	-21.5	-11.5	-10	3	36.8
Segment - S13	109	12	N/A	N/A	N/A	N/A	135.1	4.4	10	N/A	-21.3	-16.1	-10	3	32.4
														Sub-Total SPL, dB(A)	45

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (✓) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (^) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN4 - Day and Evening

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	230	N/A	N/A	0	-55	N/A	-10	3	26.8	
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	50	221	N/A	N/A	-3	-55	N/A	-10	3	35.1	
Rotary dryer drum (Aggregate)	98	1		0	98	50	219	N/A	N/A	-3	-55	N/A	-10	3	33.2	
Rotary dryer drum (RAP)	98	1		0	98	50	219	N/A	N/A	-3	-55	N/A	-10	3	33.2	
RAP Processing Machine	103	1		0	103	100	246	N/A	N/A	0	-56	N/A	-10	3	40.2	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	100	176	N/A	N/A	0	-53	N/A	-10	3	25.5	
Bucket elevator / Filler elevator	90	6	Enclosure	-15	83	100	176	N/A	N/A	0	-53	N/A	-10	3	22.9	
Mixing Unit	96	1	Enclosure	-15	81	100	211	N/A	N/A	0	-54	N/A	-10	3	19.5	
Bitumen Pump	95	2		0	98	100	222	N/A	N/A	0	-55	N/A	-10	3	36.1	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	26		0	123	0.28	165	N/A	N/A	-25.6	-52	N/A	-10	3	38.2	
Truck (Unloading Aggregate)	105	4		0	111	1.67	165	N/A	N/A	-17.8	-52	N/A	-10	3	33.9	
Truck (Asphalt Collection)	105	8	Enclosure	-15	99	1.67	211	N/A	N/A	-17.8	-54	N/A	-10	3	19.7	
Truck (Unloading RAP)	105	1		0	105	1.67	262	N/A	N/A	-17.8	-56	N/A	-10	3	23.9	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	17.8	
Segment - S1	105	2	N/A	N/A	N/A	N/A	151.4	15.2	10	N/A	-21.8	-10.7	-10	3	25.5	
Segment - S2	105	2	N/A	N/A	N/A	N/A	165.5	2.5	10	N/A	-22.2	-18.5	-10	3	17.3	
Segment - S3	105	2	N/A	N/A	N/A	N/A	188.8	3.2	10	N/A	-22.8	-17.5	-10	3	17.8	
Segment - S4	105	2	N/A	N/A	N/A	N/A	216.8	3.0	10	N/A	-23.4	-17.7	-10	3	16.9	
Segment - S5	105	2	N/A	N/A	N/A	N/A	232.6	1.7	10	N/A	-23.7	-20.3	-10	3	14.0	
Segment - S6	105	2	N/A	N/A	N/A	N/A	241.4	2.2	10	N/A	-23.8	-19.2	-10	3	15.0	
Segment - S7	105	2	N/A	N/A	N/A	N/A	251.7	1.8	10	N/A	-24.0	-20.0	-10	3	14.0	
Segment - S8	105	2	N/A	N/A	N/A	N/A	255.1	1.2	10	N/A	-24.1	-21.9	-10	3	12.1	
Truck (Bitumen Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	17.8	
Segment - S1	105	2	N/A	N/A	N/A	N/A	151.4	15.2	10	N/A	-21.8	-10.7	-10	3	25.5	
Segment - S2	105	2	N/A	N/A	N/A	N/A	165.5	2.5	10	N/A	-22.2	-18.5	-10	3	17.3	
Segment - S3	105	2	N/A	N/A	N/A	N/A	188.8	3.2	10	N/A	-22.8	-17.5	-10	3	17.8	
Segment - S4	105	2	N/A	N/A	N/A	N/A	216.8	3.0	10	N/A	-23.4	-17.7	-10	3	16.9	
Segment - S5	105	2	N/A	N/A	N/A	N/A	232.6	1.7	10	N/A	-23.7	-20.3	-10	3	14.0	
Segment - S6	105	2	N/A	N/A	N/A	N/A	241.4	2.2	10	N/A	-23.8	-19.2	-10	3	15.0	
Segment - S9	105	2	N/A	N/A	N/A	N/A	236.0	7.5	10	N/A	-23.7	-13.8	-10	3	20.5	
Truck (Asphalt Collection)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	26.8	
Segment - S1	105	16	N/A	N/A	N/A	N/A	151.4	15.2	10	N/A	-21.8	-10.7	-10	3	34.5	
Segment - S2	105	16	N/A	N/A	N/A	N/A	165.5	2.5	10	N/A	-22.2	-18.5	-10	3	26.4	
Segment - S3	105	16	N/A	N/A	N/A	N/A	188.8	3.2	10	N/A	-22.8	-17.5	-10	3	26.8	
Segment - S10	105	16	N/A	N/A	N/A	N/A	208.8	10.8	10	N/A	-23.2	-12.2	-10	3	31.6	
Segment - S11	105	16	N/A	N/A	N/A	N/A	212.2	1.2	10	N/A	-23.3	-21.7	-10	3	22.1	
Segment - S12	105	16	N/A	N/A	N/A	N/A	193.0	0.7	10	N/A	-22.9	-24.2	-10	3	20.0	
Segment - S13	105	16	N/A	N/A	N/A	N/A	170.9	0.8	10	N/A	-22.3	-23.6	-10	3	21.1	
Segment - S14	105	16	N/A	N/A	N/A	N/A	156.4	4.0	10	N/A	-21.9	-16.6	-10	3	28.5	
Truck (Aggregate Delivery)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	26.8	
Segment - S13	105	16	N/A	N/A	N/A	N/A	170.9	0.8	10	N/A	-22.3	-23.6	-10	3	21.1	
Segment - S14	105	16	N/A	N/A	N/A	N/A	156.4	4.0	10	N/A	-21.9	-16.6	-10	3	28.5	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	52	N/A	N/A	N/A	N/A	241.4	2.2	10	N/A	-23.8	-19.2	-10	3	33.1	
Segment - S7	109	52	N/A	N/A	N/A	N/A	251.7	1.8	10	N/A	-24.0	-20.0	-10	3	32.1	
Segment - S8	109	52	N/A	N/A	N/A	N/A	255.1	1.2	10	N/A	-24.1	-21.9	-10	3	30.2	
Segment - S12	109	52	N/A	N/A	N/A	N/A	193.0	0.7	10	N/A	-22.9	-24.2	-10	3	29.1	
Segment - S13	109	52	N/A	N/A	N/A	N/A	170.9	0.8	10	N/A	-22.3	-23.6	-10	3	30.2	
															Sub-Total SPL, dB(A)	47

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN4 - Night

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)	
Mechanical and Electrical (M&E) Equipment															
Exhaust fan	89	1		0	89	100	230	N/A	N/A	0	-55	N/A	-10	3	26.8
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	30	221	N/A	N/A	-5.2	-55	N/A	-10	3	32.9
Rotary dryer drum (Aggregate)	98	1		0	98	20	219	N/A	N/A	-7	-55	N/A	-10	3	29.2
Rotary dryer drum (RAP)	98	1		0	98	20	219	N/A	N/A	-7	-55	N/A	-10	3	29.2
RAP Processing Machine	103	0		0	0	100	246	N/A	N/A	0	-56	N/A	-10	3	0.0
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	30	176	N/A	N/A	-5.2	-53	N/A	-10	3	20.3
Bucket elevator / Filler elevator	90	5	Enclosure	-15	82	30	176	N/A	N/A	-5.2	-53	N/A	-10	3	16.9
Mixing Unit	96	1	Enclosure	-15	81	100	211	N/A	N/A	0	-54	N/A	-10	3	19.5
Bitumen Pump	95	1			95	50	222	N/A	N/A	-3	-55	N/A	-10	3	30.1
Loading/Unloading Activities															
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	6		0	117	0.28	165	N/A	N/A	-25.6	-52	N/A	-10	3	31.9
Truck (Unloading Aggregate)	105	1		0	105	1.67	165	N/A	N/A		-52	N/A	-10	3	27.9
Truck (Asphalt Collection)	105	5	Enclosure	-15	97	1.67	211	N/A	N/A	-17.8	-54	N/A	-10	3	17.7
Truck (Unloading RAP)	105	1		0	105	1.67	262	N/A	N/A	-17.8	-56	N/A	-10	3	23.9
On-site Movement of Truck															
Truck (RAP Delivery)															
Segment - S0	105	2	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	17.8
Segment - S1	105	2	N/A	N/A	N/A	N/A	151.4	15.2	10	N/A	-21.8	-10.7	-10	3	25.5
Segment - S2	105	2	N/A	N/A	N/A	N/A	165.5	2.5	10	N/A	-22.2	-18.5	-10	3	17.3
Segment - S3	105	2	N/A	N/A	N/A	N/A	188.8	3.2	10	N/A	-22.8	-17.5	-10	3	17.8
Segment - S4	105	2	N/A	N/A	N/A	N/A	216.8	3.0	10	N/A	-23.4	-17.7	-10	3	16.9
Segment - S5	105	2	N/A	N/A	N/A	N/A	232.6	1.7	10	N/A	-23.7	-20.3	-10	3	14.0
Segment - S6	105	2	N/A	N/A	N/A	N/A	241.4	2.2	10	N/A	-23.8	-19.2	-10	3	15.0
Segment - S7	105	2	N/A	N/A	N/A	N/A	251.7	1.8	10	N/A	-24.0	-20.0	-10	3	14.0
Segment - S8	105	2	N/A	N/A	N/A	N/A	255.1	1.2	10	N/A	-24.1	-21.9	-10	3	12.1
Truck (Bitumen Delivery)															
Segment - S0	105	0	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	0
Segment - S1	105	0	N/A	N/A	N/A	N/A	151.4	15.2	10	N/A	-21.8	-10.7	-10	3	0
Segment - S2	105	0	N/A	N/A	N/A	N/A	165.5	2.5	10	N/A	-22.2	-18.5	-10	3	0
Segment - S3	105	0	N/A	N/A	N/A	N/A	188.8	3.2	10	N/A	-22.8	-17.5	-10	3	0
Segment - S4	105	0	N/A	N/A	N/A	N/A	216.8	3.0	10	N/A	-23.4	-17.7	-10	3	0
Segment - S5	105	0	N/A	N/A	N/A	N/A	232.6	1.7	10	N/A	-23.7	-20.3	-10	3	0
Segment - S6	105	0	N/A	N/A	N/A	N/A	241.4	2.2	10	N/A	-23.8	-19.2	-10	3	0
Segment - S9	105	0	N/A	N/A	N/A	N/A	236.0	7.5	10	N/A	-23.7	-13.8	-10	3	0
Truck (Asphalt Collection)															
Segment - S0	105	10	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	24.8
Segment - S1	105	10	N/A	N/A	N/A	N/A	151.4	15.2	10	N/A	-21.8	-10.7	-10	3	32.5
Segment - S2	105	10	N/A	N/A	N/A	N/A	165.5	2.5	10	N/A	-22.2	-18.5	-10	3	24.3
Segment - S3	105	10	N/A	N/A	N/A	N/A	188.8	3.2	10	N/A	-22.8	-17.5	-10	3	24.8
Segment - S10	105	10	N/A	N/A	N/A	N/A	208.8	10.8	10	N/A	-23.2	-12.2	-10	3	29.6
Segment - S11	105	10	N/A	N/A	N/A	N/A	212.2	1.2	10	N/A	-23.3	-21.7	-10	3	20.1
Segment - S12	105	10	N/A	N/A	N/A	N/A	193.0	0.7	10	N/A	-22.9	-24.2	-10	3	18.0
Segment - S13	105	10	N/A	N/A	N/A	N/A	170.9	0.8	10	N/A	-22.3	-23.6	-10	3	19.0
Segment - S14	105	10	N/A	N/A	N/A	N/A	156.4	4.0	10	N/A	-21.9	-16.6	-10	3	26.5
Truck (Aggregate Delivery)															
Segment - S0	105	4	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	20.8
Segment - S13	105	4	N/A	N/A	N/A	N/A	170.9	0.8	10	N/A	-22.3	-23.6	-10	3	15.1
Segment - S14	105	4	N/A	N/A	N/A	N/A	156.4	4.0	10	N/A	-21.9	-16.6	-10	3	22.5
Wheel Loader (Loading/Unloading Aggregate/RAP)															
Segment - S6	109	12	N/A	N/A	N/A	N/A	241.4	2.2	10	N/A	-23.8	-19.2	-10	3	26.8
Segment - S7	109	12	N/A	N/A	N/A	N/A	251.7	1.8	10	N/A	-24.0	-20.0	-10	3	25.8
Segment - S8	109	12	N/A	N/A	N/A	N/A	255.1	1.2	10	N/A	-24.1	-21.9	-10	3	23.9
Segment - S12	109	12	N/A	N/A	N/A	N/A	193.0	0.7	10	N/A	-22.9	-24.2	-10	3	22.7
Segment - S13	109	12	N/A	N/A	N/A	N/A	170.9	0.8	10	N/A	-22.3	-23.6	-10	3	23.8
Sub-Total SPL, dB(A)															42

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN5 - Day and Evening

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	191	N/A	N/A	0	-54	N/A	-10	3	28.4	
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	50	171	N/A	N/A	-3	-53	N/A	-10	3	37.4	
Rotary dryer drum (Aggregate)	98	1		0	98	50	177	N/A	N/A	-3	-53	N/A	-10	3	35.1	
Rotary dryer drum (RAP)	98	1		0	98	50	177	N/A	N/A	-3	-53	N/A	-10	3	35.1	
RAP Processing Machine	103	1		0	103	100	208	N/A	N/A	0	-54	N/A	-10	3	41.7	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	100	136	N/A	N/A	0	-51	N/A	-10	3	27.7	
Bucket elevator / Filler elevator	90	6	Enclosure	-15	83	100	136	N/A	N/A	0	-51	N/A	-10	3	25.1	
Mixing Unit	96	1	Enclosure	-15	81	100	169	N/A	N/A	0	-53	N/A	-10	3	21.5	
Bitumen Pump	95	2		0	98	100	189	N/A	N/A	0	-54	N/A	-10	3	37.5	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	26		0	123	0.28	144	N/A	N/A	-25.6	-51	N/A	-10	3	39.3	
Truck (Unloading Aggregate)	105	4		0	111	1.67	144	N/A	N/A	-17.8	-51	N/A	-10	3	35.0	
Truck (Asphalt Collection)	105	8	Enclosure	-15	99	1.67	169	N/A	N/A	-17.8	-53	N/A	-10	3	21.7	
Truck (Unloading RAP)	105	1		0	105	1.67	224	N/A	N/A	-17.8	-55	N/A	-10	3	25.2	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	26.4	
Segment - S1	105	2	N/A	N/A	N/A	N/A	118.1	17.9	10	N/A	-20.7	-10.0	-10	3	27.3	
Segment - S2	105	2	N/A	N/A	N/A	N/A	112.9	7.5	10	N/A	-20.5	-13.8	-10	3	23.7	
Segment - S3	105	2	N/A	N/A	N/A	N/A	132.8	3.6	10	N/A	-21.2	-17.0	-10	3	19.8	
Segment - S4	105	2	N/A	N/A	N/A	N/A	162.5	0.4	10	N/A	-22.1	-26.9	-10	3	9.0	
Segment - S5	105	2	N/A	N/A	N/A	N/A	180.6	0.9	10	N/A	-22.6	-22.8	-10	3	12.6	
Segment - S6	105	2	N/A	N/A	N/A	N/A	192.0	1.2	10	N/A	-22.8	-21.8	-10	3	13.4	
Segment - S7	105	2	N/A	N/A	N/A	N/A	204.8	0.9	10	N/A	-23.1	-23.1	-10	3	11.8	
Segment - S8	105	2	N/A	N/A	N/A	N/A	210.6	1.7	10	N/A	-23.2	-20.4	-10	3	14.4	
Truck (Bitumen Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	26.4	
Segment - S1	105	2	N/A	N/A	N/A	N/A	118.1	17.9	10	N/A	-20.7	-10.0	-10	3	27.3	
Segment - S2	105	2	N/A	N/A	N/A	N/A	112.9	7.5	10	N/A	-20.5	-13.8	-10	3	23.7	
Segment - S3	105	2	N/A	N/A	N/A	N/A	132.8	3.6	10	N/A	-21.2	-17.0	-10	3	19.8	
Segment - S4	105	2	N/A	N/A	N/A	N/A	162.5	0.4	10	N/A	-22.1	-26.9	-10	3	9.0	
Segment - S5	105	2	N/A	N/A	N/A	N/A	180.6	0.9	10	N/A	-22.6	-22.8	-10	3	12.6	
Segment - S6	105	2	N/A	N/A	N/A	N/A	192.0	1.2	10	N/A	-22.8	-21.8	-10	3	13.4	
Segment - S9	105	2	N/A	N/A	N/A	N/A	195.3	10.7	10	N/A	-22.9	-12.3	-10	3	22.8	
Truck (Asphalt Collection)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	35.4	
Segment - S1	105	16	N/A	N/A	N/A	N/A	118.1	17.9	10	N/A	-20.7	-10.0	-10	3	36.3	
Segment - S2	105	16	N/A	N/A	N/A	N/A	112.9	7.5	10	N/A	-20.5	-13.8	-10	3	32.7	
Segment - S3	105	16	N/A	N/A	N/A	N/A	132.8	3.6	10	N/A	-21.2	-17.0	-10	3	28.8	
Segment - S10	105	16	N/A	N/A	N/A	N/A	162.4	10.5	10	N/A	-22.1	-12.4	-10	3	32.6	
Segment - S11	105	16	N/A	N/A	N/A	N/A	176.0	2.1	10	N/A	-22.5	-19.4	-10	3	25.2	
Segment - S12	105	16	N/A	N/A	N/A	N/A	160.1	5.8	10	N/A	-22.0	-14.9	-10	3	30.1	
Segment - S13	105	16	N/A	N/A	N/A	N/A	140.7	1.9	10	N/A	-21.5	-19.8	-10	3	25.8	
Segment - S14	105	16	N/A	N/A	N/A	N/A	132.2	8.8	10	N/A	-21.2	-13.1	-10	3	32.7	
Truck (Aggregate Delivery)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	35.4	
Segment - S13	105	16	N/A	N/A	N/A	N/A	140.7	1.9	10	N/A	-21.5	-19.8	-10	3	25.8	
Segment - S14	105	16	N/A	N/A	N/A	N/A	132.2	8.8	10	N/A	-21.2	-13.1	-10	3	32.7	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	52	N/A	N/A	N/A	N/A	192.0	1.2	10	N/A	-22.8	-21.8	-10	3	31.5	
Segment - S7	109	52	N/A	N/A	N/A	N/A	204.8	0.9	10	N/A	-23.1	-23.1	-10	3	29.9	
Segment - S8	109	52	N/A	N/A	N/A	N/A	210.6	1.7	10	N/A	-23.2	-20.4	-10	3	32.6	
Segment - S12	109	52	N/A	N/A	N/A	N/A	160.1	5.8	10	N/A	-22.0	-14.9	-10	3	39.2	
Segment - S13	109	52	N/A	N/A	N/A	N/A	140.7	1.9	10	N/A	-21.5	-19.8	-10	3	34.9	
															Sub-Total SPL, dB(A)	49

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN5 - Night

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	191	N/A	N/A	0	-54	N/A	-10	3	28.4	
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	30	171	N/A	N/A	-5.2	-53	N/A	-10	3	35.2	
Rotary dryer drum (Aggregate)	98	1		0	98	20	177	N/A	N/A	-7	-53	N/A	-10	3	31.1	
Rotary dryer drum (RAP)	98	1		0	98	20	177	N/A	N/A	-7	-53	N/A	-10	3	31.1	
RAP Processing Machine	103	0		0	0	100	208	N/A	N/A	0	-54	N/A	-10	3	0.0	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	30	136	N/A	N/A	-5.2	-51	N/A	-10	3	22.5	
Bucket elevator / Filler elevator	90	5	Enclosure	-15	82	30	136	N/A	N/A	-5.2	-51	N/A	-10	3	19.1	
Mixing Unit	96	1	Enclosure	-15	81	100	169	N/A	N/A	0	-53	N/A	-10	3	21.5	
Bitumen Pump	95	1			95	50	189	N/A	N/A	-3	-54	N/A	-10	3	31.5	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	6		0	117	0.28	144	N/A	N/A	-25.6	-51	N/A	-10	3	33.0	
Truck (Unloading Aggregate)	105	1		0	105	1.67	144	N/A	N/A	-17.8	-51	N/A	-10	3	29.0	
Truck (Asphalt Collection)	105	5	Enclosure	-15	97	1.67	169	N/A	N/A	-17.8	-53	N/A	-10	3	19.7	
Truck (Unloading RAP)	105	1		0	105	1.67	224	N/A	N/A	-17.8	-55	N/A	-10	3	25.2	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	26.4	
Segment - S1	105	2	N/A	N/A	N/A	N/A	118.1	17.9	10	N/A	-20.7	-10.0	-10	3	27.3	
Segment - S2	105	2	N/A	N/A	N/A	N/A	112.9	7.5	10	N/A	-20.5	-13.8	-10	3	23.7	
Segment - S3	105	2	N/A	N/A	N/A	N/A	132.8	3.6	10	N/A	-21.2	-17.0	-10	3	19.8	
Segment - S4	105	2	N/A	N/A	N/A	N/A	162.5	0.4	10	N/A	-22.1	-26.9	-10	3	9.0	
Segment - S5	105	2	N/A	N/A	N/A	N/A	180.6	0.9	10	N/A	-22.6	-22.8	-10	3	12.6	
Segment - S6	105	2	N/A	N/A	N/A	N/A	192.0	1.2	10	N/A	-22.8	-21.8	-10	3	13.4	
Segment - S7	105	2	N/A	N/A	N/A	N/A	204.8	0.9	10	N/A	-23.1	-23.1	-10	3	11.8	
Segment - S8	105	2	N/A	N/A	N/A	N/A	210.6	1.7	10	N/A	-23.2	-20.4	-10	3	14.4	
Truck (Bitumen Delivery)																
Segment - S0	105	0	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	0	
Segment - S1	105	0	N/A	N/A	N/A	N/A	118.1	17.9	10	N/A	-20.7	-10.0	-10	3	0	
Segment - S2	105	0	N/A	N/A	N/A	N/A	112.9	7.5	10	N/A	-20.5	-13.8	-10	3	0	
Segment - S3	105	0	N/A	N/A	N/A	N/A	132.8	3.6	10	N/A	-21.2	-17.0	-10	3	0	
Segment - S4	105	0	N/A	N/A	N/A	N/A	162.5	0.4	10	N/A	-22.1	-26.9	-10	3	0	
Segment - S5	105	0	N/A	N/A	N/A	N/A	180.6	0.9	10	N/A	-22.6	-22.8	-10	3	0	
Segment - S6	105	0	N/A	N/A	N/A	N/A	192.0	1.2	10	N/A	-22.8	-21.8	-10	3	0	
Segment - S9	105	0	N/A	N/A	N/A	N/A	195.3	10.7	10	N/A	-22.9	-12.3	-10	3	0	
Truck (Asphalt Collection)																
Segment - S0	105	10	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	33.4	
Segment - S1	105	10	N/A	N/A	N/A	N/A	118.1	17.9	10	N/A	-20.7	-10.0	-10	3	34.2	
Segment - S2	105	10	N/A	N/A	N/A	N/A	112.9	7.5	10	N/A	-20.5	-13.8	-10	3	30.7	
Segment - S3	105	10	N/A	N/A	N/A	N/A	132.8	3.6	10	N/A	-21.2	-17.0	-10	3	26.8	
Segment - S10	105	10	N/A	N/A	N/A	N/A	162.4	10.5	10	N/A	-22.1	-12.4	-10	3	30.5	
Segment - S11	105	10	N/A	N/A	N/A	N/A	176.0	2.1	10	N/A	-22.5	-19.4	-10	3	23.2	
Segment - S12	105	10	N/A	N/A	N/A	N/A	160.1	5.8	10	N/A	-22.0	-14.9	-10	3	28.1	
Segment - S13	105	10	N/A	N/A	N/A	N/A	140.7	1.9	10	N/A	-21.5	-19.8	-10	3	23.7	
Segment - S14	105	10	N/A	N/A	N/A	N/A	132.2	8.8	10	N/A	-21.2	-13.1	-10	3	30.7	
Truck (Aggregate Delivery)																
Segment - S0	105	4	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	29.4	
Segment - S13	105	4	N/A	N/A	N/A	N/A	140.7	1.9	10	N/A	-21.5	-19.8	-10	3	19.8	
Segment - S14	105	4	N/A	N/A	N/A	N/A	132.2	8.8	10	N/A	-21.2	-13.1	-10	3	26.7	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	12	N/A	N/A	N/A	N/A	192.0	1.2	10	N/A	-22.8	-21.8	-10	3	25.1	
Segment - S7	109	12	N/A	N/A	N/A	N/A	204.8	0.9	10	N/A	-23.1	-23.1	-10	3	23.5	
Segment - S8	109	12	N/A	N/A	N/A	N/A	210.6	1.7	10	N/A	-23.2	-20.4	-10	3	26.2	
Segment - S12	109	12	N/A	N/A	N/A	N/A	160.1	5.8	10	N/A	-22.0	-14.9	-10	3	32.9	
Segment - S13	109	12	N/A	N/A	N/A	N/A	140.7	1.9	10	N/A	-21.5	-19.8	-10	3	28.5	
															Sub-Total SPL, dB(A)	44

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

Appendix E **CATALOGUE OF WHEEL LOADER**

950 GC Wheel Loader Specifications

Hydraulic System

Implement System Pump Type	Piston	
Steering System Pump Type	Piston	
Implement System – Maximum Pump Output @ 2,390 rpm	256 L/min	68 gal/min
Implement System – Maximum Operating Pressure @ 50 ± 1.5 L/min	27 900 kPa	4,047 psi
Implement System – Optional 3rd Function Maximum Pressure @ 70 L/min (18.5 gal/min)	20 680 kPa	2,999 psi
Implement System – Optional 3rd Function Maximum Flow	240 L/min	63 gal/min
Hydraulic Cycle Time – Raise from Carry Position	5.4 Seconds	
Hydraulic Cycle Time – Dump at Maximum Raise	1.2 Seconds	
Hydraulic Cycle Time – Lower, Empty, Float Down	2.8 Seconds	
Hydraulic Cycle Time – Total Cycle Time	9.4 Seconds	

Tires*

- Choices include:
 - 23.5R25 L3 ** from Triangle and Maxam
 - 23.5R25 L3 * from Bridgestone
 - 23.5R25 L2 * from Bridgestone

*Tire offerings vary by region. Consult your local Cat dealer for further details.

Sound

The sound values indicated below are for specific operating conditions only. Machine and operator sound levels will vary at different engine and/or cooling fan speeds. Hearing protection may be needed when the machine is operated with a cabin that is not properly maintained, or when the doors and/or windows are open for extended periods or in a noisy environment.

With Cooling Fan Speed at Maximum Value:

Operator Sound Pressure Level (ISO 6396:2008)	75 dB(A)
Exterior Sound Power Level (ISO 6395:2008)	109 dB(A)
Exterior Sound Pressure Level (SAE J88:2013)	76 dB(A)*

With Cooling Fan Speed at 70% of Maximum Value:**

Operator Sound Pressure Level (ISO 6396:2008)	73 dB(A)
Exterior Sound Power Level (ISO 6395:2008)	107 L _{WA} ***

*Distance of 15 m (49.2 ft), moving forward in second gear ratio.

**For machines in countries that adopt the “EU Directives.”

***European Union Directives “2000/14/EC” as amended by “2005/88/EC.”

Cab

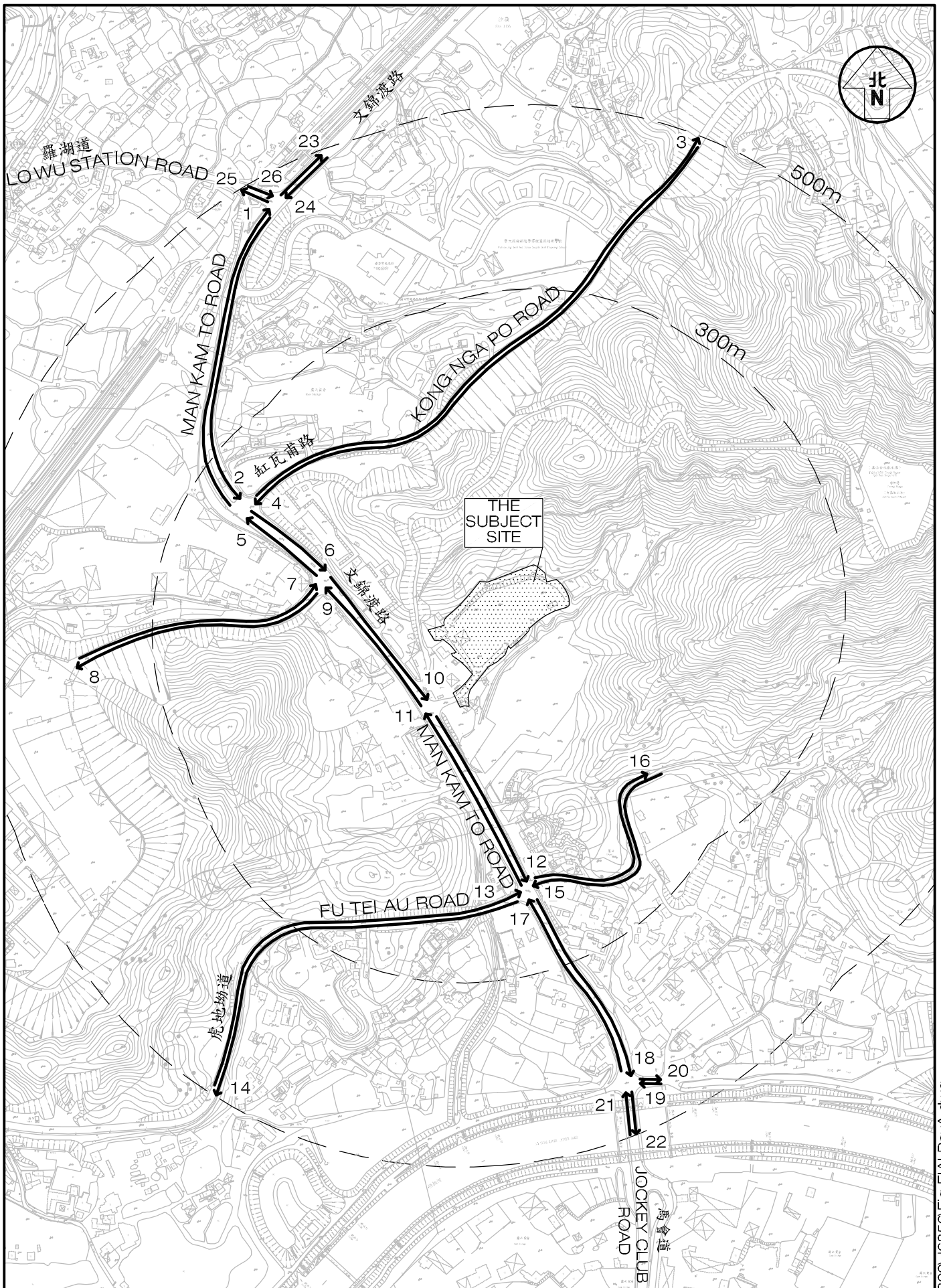
ROPS/FOPS	ROPS/FOPS meet ISO 3471:2008 and ISO 3449:2005 Level II standards
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Brakes

Brakes	Brakes meet ISO 3450:2011 standards
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Project Title RENEWAL OF SECTION 16 PLANNING APPLICATION FOR TEMPORARY ASPHALT PLANT FOR A PERIOD OF 5 YEARS AT LOTS 20RP, 21 AND 23RP (PART) IN D.D. 88 AND ADJOINING GOVERNMENT LAND TO THE EAST OF MAN KAM TO ROAD, SHEUNG SHUI, NEW TERRITORIES

Figure Title 300M AND 500M RADIUS OF THE PROPOSED TEMPORARY ASPHALT PLANT

Job No. J6856	Figure No. EIA1	Scale in A4 1 : 5,500	
Designed by H C F	Drawn by S C Y	Checked by K C	Revision A
		Date 12 JUL 2019	

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**Table D3 – Year 2019
Peak Hour Traffic Data for Noise Assessment
Without the Proposed Temporary Asphalt Plant**

TABLE D3 – PEAK HOUR TRAFFIC FLOW AND VEHICLE COMPOSITION

YEAR 2019 TRAFFIC FORECAST

Date: 06 August 2019

Job No.: J6856

Link ID	Road Section	From Road	To Road	AM Peak Hour		
				Traffic Flows (veh/hr)	Vehicle Composition	
					LV	HV
L001	Man Kam To Road (NB)	Kong Nga Po Road	Lo Wu Station Road	750	56.0%	44.0%
L002	Man Kam To Road (SB)	Lo Wu Station Road	Kong Nga Po Road	600	37.0%	63.0%
L003	Kong Nga Po Road (EB)	Man Kam To Road	Police Dog Unit and Force Search Unit Training School	200	85.3%	14.7%
L004	Kong Nga Po Road (WB)	Police Dog Unit and Force Search Unit Training School	Man Kam To Road	100	69.7%	30.3%
L005	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Kong Nga Po Road	800	69.7%	30.3%
L006	Man Kam To Road (NB)	Kong Nga Po Road	Access Road to Open Storage Site No.7	500	49.6%	50.4%
L007	Access Road to Open Storage Site No.7 (EB)	Open Storage Site No.7	Man Kam To Road	50	37.0%	63.0%
L008	Access Road to Open Storage Site No.7 (WB)	Man Kam To Road	Open Storage Site No.7	50	45.4%	54.6%
L009	Man Kam To Road (NB)	Access Road to Application Site	Access Road to Open Storage Site No.7	800	70.1%	29.9%
L010	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Access Road to Application Site	550	49.8%	50.2%
L011	Man Kam To Road (NB)	Fu Tei Au Road	Access Road to Application Site	800	70.1%	29.9%
L012	Man Kam To Road (SB)	Access Road to Application Site	Fu Tei Au Road	550	49.8%	50.2%
L013	Fu Tei Au Road (EB)	Sheung Shui Treatment Works and Fresh Water Pumping Station	Man Kam To Road	50	73.0%	27.0%
L014	Fu Tei Au Road (WB)	Man Kam To Road	Sheung Shui Treatment Works and Fresh Water Pumping Station	50	77.0%	23.0%
L015	Unnamed Access Road (WB)	Sheung Shui Wa Shan South Section	Man Kam To Road	50	25.0%	75.0%
L016	Unnamed Access Road (EB)	Man Kam To Road	Sheung Shui Wa Shan South Section	50	0.0%	100.0%
L017	Man Kam To Road (NB)	Access Road to Hung Kiu San Tsuen	Fu Tei Au Road	850	70.5%	29.5%
L018	Man Kam To Road (SB)	Fu Tei Au Road	Access Road to Hung Kiu San Tsuen	550	51.3%	48.7%
L019	Access Road to Hung Kiu San Tsuen (WB)	Hung Kiu San Tsuen	Man Kam To Road	50	39.2%	60.8%
L020	Access Road to Hung Kiu San Tsuen (EB)	Man Kam To Road	Hung Kiu San Tsuen	50	72.5%	27.5%
L021	Man Kam To Road (NB)	Jockey Club Road	Access Road to Hung Kiu San Tsuen	900	70.4%	29.6%
L022	Man Kam To Road (SB)	Access Road to Hung Kiu San Tsuen	Jockey Club Road	600	51.1%	48.9%
L023	Man Kam To Road (NB)	Lo Wu Station Road	Sa Ling Road	600	70.2%	29.8%
L024	Man Kam To Road (SB)	Sa Ling Road	Lo Wu Station Road	400	51.3%	48.7%
L025	Lo Wu Station Road (WB)	Man Kam To Road	Lo Wu MTR Station	150	21.9%	78.1%
L026	Lo Wu Station Road (EB)	Lo Wu MTR Station	Man Kam To Road	150	25.8%	74.2%

Note: "LV" includes motorcycle, private car and taxi

"HV" includes light / medium / heavy goods vehicle, public / private light bus, non-franchised bus and franchised bus

TABLE D3 – PEAK HOUR TRAFFIC FLOW AND VEHICLE COMPOSITION

YEAR 2019 TRAFFIC FORECAST

Date: 01 August 2019

Job No.: J6856

Link ID	Road Section	From Road	To Road	PM Peak Hour		
				Traffic Flows (veh/hr)	Vehicle Composition	
					LV	HV
L001	Man Kam To Road (NB)	Kong Nga Po Road	Lo Wu Station Road	350	44.1%	55.9%
L002	Man Kam To Road (SB)	Lo Wu Station Road	Kong Nga Po Road	500	54.3%	45.7%
L003	Kong Nga Po Road (EB)	Man Kam To Road	Police Dog Unit and Force Search Unit Training School	100	55.2%	44.8%
L004	Kong Nga Po Road (WB)	Police Dog Unit and Force Search Unit Training School	Man Kam To Road	150	67.0%	33.0%
L005	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Kong Nga Po Road	400	46.6%	53.4%
L006	Man Kam To Road (NB)	Kong Nga Po Road	Access Road to Open Storage Site No.7	650	57.5%	42.5%
L007	Access Road to Open Storage Site No.7 (EB)	Open Storage Site No.7	Man Kam To Road	100	64.0%	36.0%
L008	Access Road to Open Storage Site No.7 (WB)	Man Kam To Road	Open Storage Site No.7	50	35.5%	64.5%
L009	Man Kam To Road (NB)	Access Road to Application Site	Access Road to Open Storage Site No.7	450	45.7%	54.3%
L010	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Access Road to Application Site	650	58.5%	41.5%
L011	Man Kam To Road (NB)	Fu Tei Au Road	Access Road to Application Site	450	45.7%	54.3%
L012	Man Kam To Road (SB)	Access Road to Application Site	Fu Tei Au Road	650	58.5%	41.5%
L013	Fu Tei Au Road (EB)	Sheung Shui Treatment Works and Fresh Water Pumping Station	Man Kam To Road	50	60.5%	39.5%
L014	Fu Tei Au Road (WB)	Man Kam To Road	Sheung Shui Treatment Works and Fresh Water Pumping Station	50	42.2%	57.8%
L015	Unnamed Access Road (WB)	Sheung Shui Wa Shan South Section	Man Kam To Road	50	71.5%	28.5%
L016	Unnamed Access Road (EB)	Man Kam To Road	Sheung Shui Wa Shan South Section	50	50.0%	50.0%
L017	Man Kam To Road (NB)	Access Road to Hung Kiu San Tsuen	Fu Tei Au Road	500	45.4%	54.6%
L018	Man Kam To Road (SB)	Fu Tei Au Road	Access Road to Hung Kiu San Tsuen	700	59.2%	40.8%
L019	Access Road to Hung Kiu San Tsuen (WB)	Hung Kiu San Tsuen	Man Kam To Road	50	49.9%	50.1%
L020	Access Road to Hung Kiu San Tsuen (EB)	Man Kam To Road	Hung Kiu San Tsuen	50	23.5%	76.5%
L021	Man Kam To Road (NB)	Jockey Club Road	Access Road to Hung Kiu San Tsuen	500	44.3%	55.7%
L022	Man Kam To Road (SB)	Access Road to Hung Kiu San Tsuen	Jockey Club Road	750	58.9%	41.1%
L023	Man Kam To Road (NB)	Lo Wu Station Road	Sa Ling Road	300	44.9%	55.1%
L024	Man Kam To Road (SB)	Sa Ling Road	Lo Wu Station Road	500	55.2%	44.8%
L025	Lo Wu Station Road (WB)	Man Kam To Road	Lo Wu MTR Station	50	61.8%	38.2%
L026	Lo Wu Station Road (EB)	Lo Wu MTR Station	Man Kam To Road	50	56.3%	43.7%

Note: "LV" includes motorcycle, private car and taxi

"HV" includes light / medium / heavy goods vehicle, public / private light bus, non-franchised bus and franchised bus

**Table D4 – Year 2024
Peak Hour Traffic Data for Noise Assessment
Without the Proposed Temporary Asphalt Plant**

TABLE D4 – PEAK HOUR TRAFFIC FLOW AND VEHICLE COMPOSITION

YEAR 2024 TRAFFIC FORECAST

Date: 06 August 2019

Job No.: J6856

Link ID	Road Section	From Road	To Road	AM Peak Hour		
				Traffic Flows (veh/hr)	Vehicle Composition	
					LV	HV
L001	Man Kam To Road (NB)	Kong Nga Po Road	Lo Wu Station Road	800	56.2%	43.8%
L002	Man Kam To Road (SB)	Lo Wu Station Road	Kong Nga Po Road	600	36.9%	63.1%
L003	Kong Nga Po Road (EB)	Man Kam To Road	Police Dog Unit and Force Search Unit Training School	200	85.6%	14.4%
L004	Kong Nga Po Road (WB)	Police Dog Unit and Force Search Unit Training School	Man Kam To Road	100	70.0%	30.0%
L005	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Kong Nga Po Road	850	69.9%	30.1%
L006	Man Kam To Road (NB)	Kong Nga Po Road	Access Road to Open Storage Site No.7	550	49.5%	50.5%
L007	Access Road to Open Storage Site No.7 (EB)	Open Storage Site No.7	Man Kam To Road	50	35.7%	64.3%
L008	Access Road to Open Storage Site No.7 (WB)	Man Kam To Road	Open Storage Site No.7	50	43.4%	56.6%
L009	Man Kam To Road (NB)	Access Road to Application Site	Access Road to Open Storage Site No.7	850	70.0%	30.0%
L010	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Access Road to Application Site	550	49.7%	50.3%
L011	Man Kam To Road (NB)	Fu Tei Au Road	Access Road to Application Site	850	70.0%	30.0%
L012	Man Kam To Road (SB)	Access Road to Application Site	Fu Tei Au Road	550	49.7%	50.3%
L013	Fu Tei Au Road (EB)	Sheung Shui Treatment Works and Fresh Water Pumping Station	Man Kam To Road	50	71.7%	28.3%
L014	Fu Tei Au Road (WB)	Man Kam To Road	Sheung Shui Treatment Works and Fresh Water Pumping Station	50	78.0%	22.0%
L015	Unnamed Access Road (WB)	Sheung Shui Wa Shan South Section	Man Kam To Road	50	25.0%	75.0%
L016	Unnamed Access Road (EB)	Man Kam To Road	Sheung Shui Wa Shan South Section	50	0.0%	100.0%
L017	Man Kam To Road (NB)	Access Road to Hung Kiu San Tsuen	Fu Tei Au Road	900	70.6%	29.4%
L018	Man Kam To Road (SB)	Fu Tei Au Road	Access Road to Hung Kiu San Tsuen	600	51.5%	48.5%
L019	Access Road to Hung Kiu San Tsuen (WB)	Hung Kiu San Tsuen	Man Kam To Road	50	39.2%	60.8%
L020	Access Road to Hung Kiu San Tsuen (EB)	Man Kam To Road	Hung Kiu San Tsuen	50	73.4%	26.6%
L021	Man Kam To Road (NB)	Jockey Club Road	Access Road to Hung Kiu San Tsuen	950	70.7%	29.3%
L022	Man Kam To Road (SB)	Access Road to Hung Kiu San Tsuen	Jockey Club Road	600	51.2%	48.8%
L023	Man Kam To Road (NB)	Lo Wu Station Road	Sa Ling Road	650	70.3%	29.7%
L024	Man Kam To Road (SB)	Sa Ling Road	Lo Wu Station Road	450	51.6%	48.4%
L025	Lo Wu Station Road (WB)	Man Kam To Road	Lo Wu MTR Station	150	22.2%	77.8%
L026	Lo Wu Station Road (EB)	Lo Wu MTR Station	Man Kam To Road	150	25.2%	74.8%

Note: "LV" includes motorcycle, private car and taxi

"HV" includes light / medium / heavy goods vehicle, public / private light bus, non-franchised bus and franchised bus

TABLE D4 – PEAK HOUR TRAFFIC FLOW AND VEHICLE COMPOSITION

YEAR 2024 TRAFFIC FORECAST

Date: 06 August 2019

Job No.: J6856

Link ID	Road Section	From Road	To Road	PM Peak Hour		
				Traffic Flows (veh/hr)	Vehicle Composition	
					LV	HV
L001	Man Kam To Road (NB)	Kong Nga Po Road	Lo Wu Station Road	350	44.4%	55.6%
L002	Man Kam To Road (SB)	Lo Wu Station Road	Kong Nga Po Road	550	54.3%	45.7%
L003	Kong Nga Po Road (EB)	Man Kam To Road	Police Dog Unit and Force Search Unit Training School	100	54.4%	45.6%
L004	Kong Nga Po Road (WB)	Police Dog Unit and Force Search Unit Training School	Man Kam To Road	200	66.7%	33.3%
L005	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Kong Nga Po Road	450	47.0%	53.0%
L006	Man Kam To Road (NB)	Kong Nga Po Road	Access Road to Open Storage Site No.7	700	57.4%	42.6%
L007	Access Road to Open Storage Site No.7 (EB)	Open Storage Site No.7	Man Kam To Road	100	64.8%	35.2%
L008	Access Road to Open Storage Site No.7 (WB)	Man Kam To Road	Open Storage Site No.7	50	36.7%	63.3%
L009	Man Kam To Road (NB)	Access Road to Application Site	Access Road to Open Storage Site No.7	450	45.8%	54.2%
L010	Man Kam To Road (SB)	Access Road to Open Storage Site No.7	Access Road to Application Site	700	58.4%	41.6%
L011	Man Kam To Road (NB)	Fu Tei Au Road	Access Road to Application Site	450	45.7%	54.3%
L012	Man Kam To Road (SB)	Access Road to Application Site	Fu Tei Au Road	700	58.6%	41.4%
L013	Fu Tei Au Road (EB)	Sheung Shui Treatment Works and Fresh Water Pumping Station	Man Kam To Road	50	61.8%	38.2%
L014	Fu Tei Au Road (WB)	Man Kam To Road	Sheung Shui Treatment Works and Fresh Water Pumping Station	50	42.5%	57.5%
L015	Unnamed Access Road (WB)	Sheung Shui Wa Shan South Section	Man Kam To Road	50	73.3%	26.7%
L016	Unnamed Access Road (EB)	Man Kam To Road	Sheung Shui Wa Shan South Section	50	50.0%	50.0%
L017	Man Kam To Road (NB)	Access Road to Hung Kiu San Tsuen	Fu Tei Au Road	500	45.5%	54.5%
L018	Man Kam To Road (SB)	Fu Tei Au Road	Access Road to Hung Kiu San Tsuen	750	59.0%	41.0%
L019	Access Road to Hung Kiu San Tsuen (WB)	Hung Kiu San Tsuen	Man Kam To Road	50	51.5%	48.5%
L020	Access Road to Hung Kiu San Tsuen (EB)	Man Kam To Road	Hung Kiu San Tsuen	50	22.2%	77.8%
L021	Man Kam To Road (NB)	Jockey Club Road	Access Road to Hung Kiu San Tsuen	550	44.2%	55.8%
L022	Man Kam To Road (SB)	Access Road to Hung Kiu San Tsuen	Jockey Club Road	800	58.9%	41.1%
L023	Man Kam To Road (NB)	Lo Wu Station Road	Sa Ling Road	350	44.9%	55.1%
L024	Man Kam To Road (SB)	Sa Ling Road	Lo Wu Station Road	550	55.3%	44.7%
L025	Lo Wu Station Road (WB)	Man Kam To Road	Lo Wu MTR Station	50	61.8%	38.2%
L026	Lo Wu Station Road (EB)	Lo Wu MTR Station	Man Kam To Road	50	60.0%	40.0%

Note: "LV" includes motorcycle, private car and taxi

"HV" includes light / medium / heavy goods vehicle, public / private light bus, non-franchised bus and franchised bus




Noise Measurement Details and Results at the Existing Asphalt Plant at Sheung Shui

General Information

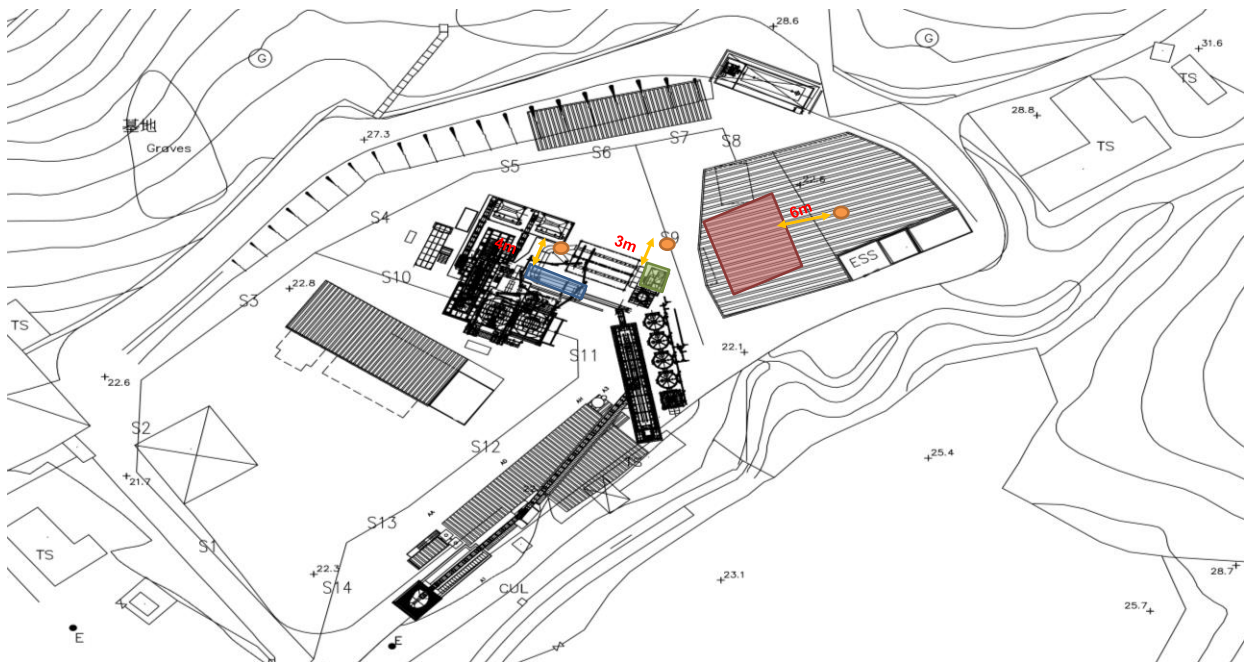
Date of Measurement: 9 July 2019
 Time of Measurement: 15:30 – 17:30
 Weather Condition: Cloudy
 Measurement Equipment: Larson Davis 831 Sound Level Meter

Measurement Method:

A-weighted emission sound pressure level in dB(A) was measured for the equipment for a duration of 1 minutes, calibration of equipment was carried out before and after measurement. The SWL for the operation of PME was backward calculated based on the on-site measured noise level using the standard acoustical principles

PME	Operation Condition	Figure Shape	Measured SPL, dB(A)	Measurement Distance (m)	Distance Correction, dB(A)	SWL, dB(A)	Highest SWL, dB(A)
Rotary Dryer Drum	Full operation with no mitigation measure		77.9	4	20.0	97.9	98.2
			78.2	4	20.0	98.2	
Main Exhaust Fan	Full operation with mitigation measure listed in S.2.3.5 of the EA Report		71.4	3	17.5	88.9	88.9
			68.9	3	17.5	86.4	
RAP Processing Machine	Full operation and measured inside the enclosure (mitigation measure)		79.5	6	23.6	103.1	103.1
			78.5	6	23.6	102.1	

Measurement Locations



IN1 - Day and Evening

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	181	N/A	N/A	0	-53	N/A	-10	3	28.9	
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	50	194	N/A	N/A	-3	-54	N/A	-10	3	36.3	
Rotary dryer drum (Aggregate)	98	1		0	98	50	181	N/A	N/A	-3	-53	N/A	-10	3	34.9	
Rotary dryer drum (RAP)	98	1		0	98	50	181	N/A	N/A	-3	-53	N/A	-10	3	34.9	
RAP Processing Machine	103	1		0	103	100	188	N/A	N/A	0	-53	N/A	-10	3	42.5	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	100	157	N/A	N/A	0	-52	N/A	-10	3	26.5	
Bucket elevator / Filler elevator	90	6	Enclosure	-15	83	100	157	N/A	N/A	0	-52	N/A	-10	3	23.9	
Mixing Unit	96	1	Enclosure	-15	81	100	176	N/A	N/A	0	-53	N/A	-10	3	21.1	
Bitumen Pump	95	2		0	98	100	167	N/A	N/A	0	-52	N/A	-10	3	38.6	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	26		0	123	0.28	129	N/A	N/A	-25.6	-50	N/A	-10	3	40.3	
Truck (Unloading Aggregate)	105	4		0	111	1.67	129	N/A	N/A		-50	N/A	-10	3	36.0	
Truck (Asphalt Collection)	105	8	Enclosure	-15	99	1.67	176	N/A	N/A	-17.8	-53	N/A	-10	3	21.3	
Truck (Unloading RAP)	105	1		0	105	1.67	199	N/A	N/A	-17.8	-54	N/A	-10	3	26.2	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	27.0	
Segment - S1	105	2	N/A	N/A	N/A	N/A	145.1	3.2	10	N/A	-21.6	-17.6	-10	3	18.8	
Segment - S2	105	2	N/A	N/A	N/A	N/A	172.9	2.6	10	N/A	-22.4	-18.4	-10	3	17.2	
Segment - S3	105	2	N/A	N/A	N/A	N/A	185.8	9.6	10	N/A	-22.7	-12.7	-10	3	22.6	
Segment - S4	105	2	N/A	N/A	N/A	N/A	197.0	7.3	10	N/A	-22.9	-13.9	-10	3	21.1	
Segment - S5	105	2	N/A	N/A	N/A	N/A	202.4	2.8	10	N/A	-23.1	-18.1	-10	3	16.9	
Segment - S6	105	2	N/A	N/A	N/A	N/A	203.9	3.8	10	N/A	-23.1	-16.7	-10	3	18.2	
Segment - S7	105	2	N/A	N/A	N/A	N/A	206.4	3.5	10	N/A	-23.1	-17.2	-10	3	17.7	
Segment - S8	105	2	N/A	N/A	N/A	N/A	205.1	0.6	10	N/A	-23.1	-24.9	-10	3	10.0	
Truck (Bitumen Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	27.0	
Segment - S1	105	2	N/A	N/A	N/A	N/A	145.1	3.2	10	N/A	-21.6	-17.6	-10	3	18.8	
Segment - S2	105	2	N/A	N/A	N/A	N/A	172.9	2.6	10	N/A	-22.4	-18.4	-10	3	17.2	
Segment - S3	105	2	N/A	N/A	N/A	N/A	185.8	9.6	10	N/A	-22.7	-12.7	-10	3	22.6	
Segment - S4	105	2	N/A	N/A	N/A	N/A	197.0	7.3	10	N/A	-22.9	-13.9	-10	3	21.1	
Segment - S5	105	2	N/A	N/A	N/A	N/A	202.4	2.8	10	N/A	-23.1	-18.1	-10	3	16.9	
Segment - S6	105	2	N/A	N/A	N/A	N/A	203.9	3.8	10	N/A	-23.1	-16.7	-10	3	18.2	
Segment - S9	105	2	N/A	N/A	N/A	N/A	187.1	2.9	10	N/A	-22.7	-17.9	-10	3	17.4	
Truck (Asphalt Collection)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	36.0	
Segment - S1	105	16	N/A	N/A	N/A	N/A	145.1	3.2	10	N/A	-21.6	-17.6	-10	3	27.9	
Segment - S2	105	16	N/A	N/A	N/A	N/A	172.9	2.6	10	N/A	-22.4	-18.4	-10	3	26.3	
Segment - S3	105	16	N/A	N/A	N/A	N/A	185.8	9.6	10	N/A	-22.7	-12.7	-10	3	31.6	
Segment - S10	105	16	N/A	N/A	N/A	N/A	180.9	10.8	10	N/A	-22.6	-12.2	-10	3	32.3	
Segment - S11	105	16	N/A	N/A	N/A	N/A	167.4	0.2	10	N/A	-22.2	-30.1	-10	3	14.7	
Segment - S12	105	16	N/A	N/A	N/A	N/A	154.2	10.4	10	N/A	-21.9	-12.4	-10	3	32.8	
Segment - S13	105	16	N/A	N/A	N/A	N/A	143.7	4.1	10	N/A	-21.6	-16.4	-10	3	29.0	
Segment - S14	105	16	N/A	N/A	N/A	N/A	133.2	5.2	10	N/A	-21.2	-15.4	-10	3	30.4	
Truck (Aggregate Delivery)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	36.0	
Segment - S13	105	16	N/A	N/A	N/A	N/A	143.7	4.1	10	N/A	-21.6	-16.4	-10	3	29.0	
Segment - S14	105	16	N/A	N/A	N/A	N/A	133.2	5.2	10	N/A	-21.2	-15.4	-10	3	30.4	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	52	N/A	N/A	N/A	N/A	203.9	3.8	10	N/A	-23.1	-16.7	-10	3	36.4	
Segment - S7	109	52	N/A	N/A	N/A	N/A	206.4	3.5	10	N/A	-23.1	-17.2	-10	3	35.9	
Segment - S8	109	52	N/A	N/A	N/A	N/A	205.1	0.6	10	N/A	-23.1	-24.9	-10	3	28.1	
Segment - S12	109	52	N/A	N/A	N/A	N/A	154.2	10.4	10	N/A	-21.9	-12.4	-10	3	41.9	
Segment - S13	109	52	N/A	N/A	N/A	N/A	143.7	4.1	10	N/A	-21.6	-16.4	-10	3	38.2	
															Sub-Total SPL, dB(A)	50

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN1 - Night

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	181	N/A	N/A	0	-53	N/A	-10	3	28.9	
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	30	194	N/A	N/A	-5.2	-54	N/A	-10	3	34.1	
Rotary dryer drum (Aggregate)	98	1		0	98	20	181	N/A	N/A	-7	-53	N/A	-10	3	30.9	
Rotary dryer drum (RAP)	98	1		0	98	20	181	N/A	N/A	-7	-53	N/A	-10	3	30.9	
RAP Processing Machine	103	0		0	0	100	188	N/A	N/A	0	-53	N/A	-10	3	0.0	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	30	157	N/A	N/A	-5.2	-52	N/A	-10	3	21.3	
Bucket elevator / Filler elevator	90	5	Enclosure	-15	82	30	157	N/A	N/A	-5.2	-52	N/A	-10	3	17.9	
Mixing Unit	96	1	Enclosure	-15	81	100	176	N/A	N/A	0	-53	N/A	-10	3	21.1	
Bitumen Pump	95	1		0	95	50	167	N/A	N/A	-3	-52	N/A	-10	3	32.6	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	6		0	117	0.28	129	N/A	N/A	-25.6	-50	N/A	-10	3	34.0	
Truck (Unloading Aggregate)	105	1		0	105	1.67	129	N/A	N/A		-50	N/A	-10	3	30.0	
Truck (Asphalt Collection)	105	5	Enclosure	-15	97	1.67	176	N/A	N/A	-17.8	-53	N/A	-10	3	19.3	
Truck (Unloading RAP)	105	1		0	105	1.67	199	N/A	N/A	-17.8	-54	N/A	-10	3	26.2	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	27.0	
Segment - S1	105	2	N/A	N/A	N/A	N/A	145.1	3.2	10	N/A	-21.6	-17.6	-10	3	18.8	
Segment - S2	105	2	N/A	N/A	N/A	N/A	172.9	2.6	10	N/A	-22.4	-18.4	-10	3	17.2	
Segment - S3	105	2	N/A	N/A	N/A	N/A	185.8	9.6	10	N/A	-22.7	-12.7	-10	3	22.6	
Segment - S4	105	2	N/A	N/A	N/A	N/A	197.0	7.3	10	N/A	-22.9	-13.9	-10	3	21.1	
Segment - S5	105	2	N/A	N/A	N/A	N/A	202.4	2.8	10	N/A	-23.1	-18.1	-10	3	16.9	
Segment - S6	105	2	N/A	N/A	N/A	N/A	203.9	3.8	10	N/A	-23.1	-16.7	-10	3	18.2	
Segment - S7	105	2	N/A	N/A	N/A	N/A	206.4	3.5	10	N/A	-23.1	-17.2	-10	3	17.7	
Segment - S8	105	2	N/A	N/A	N/A	N/A	205.1	0.6	10	N/A	-23.1	-24.9	-10	3	10.0	
Truck (Bitumen Delivery)																
Segment - S0	105	0	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	0	
Segment - S1	105	0	N/A	N/A	N/A	N/A	145.1	3.2	10	N/A	-21.6	-17.6	-10	3	0	
Segment - S2	105	0	N/A	N/A	N/A	N/A	172.9	2.6	10	N/A	-22.4	-18.4	-10	3	0	
Segment - S3	105	0	N/A	N/A	N/A	N/A	185.8	9.6	10	N/A	-22.7	-12.7	-10	3	0	
Segment - S4	105	0	N/A	N/A	N/A	N/A	197.0	7.3	10	N/A	-22.9	-13.9	-10	3	0	
Segment - S5	105	0	N/A	N/A	N/A	N/A	202.4	2.8	10	N/A	-23.1	-18.1	-10	3	0	
Segment - S6	105	0	N/A	N/A	N/A	N/A	203.9	3.8	10	N/A	-23.1	-16.7	-10	3	0	
Segment - S9	105	0	N/A	N/A	N/A	N/A	187.1	2.9	10	N/A	-22.7	-17.9	-10	3	0	
Truck (Asphalt Collection)																
Segment - S0	105	10	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	34.0	
Segment - S1	105	10	N/A	N/A	N/A	N/A	145.1	3.2	10	N/A	-21.6	-17.6	-10	3	25.8	
Segment - S2	105	10	N/A	N/A	N/A	N/A	172.9	2.6	10	N/A	-22.4	-18.4	-10	3	24.2	
Segment - S3	105	10	N/A	N/A	N/A	N/A	185.8	9.6	10	N/A	-22.7	-12.7	-10	3	29.6	
Segment - S10	105	10	N/A	N/A	N/A	N/A	180.9	10.8	10	N/A	-22.6	-12.2	-10	3	30.2	
Segment - S11	105	10	N/A	N/A	N/A	N/A	167.4	0.2	10	N/A	-22.2	-30.1	-10	3	12.7	
Segment - S12	105	10	N/A	N/A	N/A	N/A	154.2	10.4	10	N/A	-21.9	-12.4	-10	3	30.7	
Segment - S13	105	10	N/A	N/A	N/A	N/A	143.7	4.1	10	N/A	-21.6	-16.4	-10	3	27.0	
Segment - S14	105	10	N/A	N/A	N/A	N/A	133.2	5.2	10	N/A	-21.2	-15.4	-10	3	28.4	
Truck (Aggregate Delivery)																
Segment - S0	105	4	N/A	N/A	N/A	N/A	117.6	16.6	10	N/A	-20.7	-10.3	-10	3	30.0	
Segment - S13	105	4	N/A	N/A	N/A	N/A	143.7	4.1	10	N/A	-21.6	-16.4	-10	3	23.0	
Segment - S14	105	4	N/A	N/A	N/A	N/A	133.2	5.2	10	N/A	-21.2	-15.4	-10	3	24.4	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	12	N/A	N/A	N/A	N/A	203.9	3.8	10	N/A	-23.1	-16.7	-10	3	30.0	
Segment - S7	109	12	N/A	N/A	N/A	N/A	206.4	3.5	10	N/A	-23.1	-17.2	-10	3	29.5	
Segment - S8	109	12	N/A	N/A	N/A	N/A	205.1	0.6	10	N/A	-23.1	-24.9	-10	3	21.7	
Segment - S12	109	12	N/A	N/A	N/A	N/A	154.2	10.4	10	N/A	-21.9	-12.4	-10	3	35.5	
Segment - S13	109	12	N/A	N/A	N/A	N/A	143.7	4.1	10	N/A	-21.6	-16.4	-10	3	31.8	
															Sub-Total SPL, dB(A)	45

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN2 - Day and Evening

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)	
Mechanical and Electrical (M&E) Equipment															
Exhaust fan	89	1		0	89	100	357	N/A	N/A	0	-59	N/A	-10	3	23.0
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	50	362	N/A	N/A	-3	-59	N/A	-10	3	30.8
Rotary dryer drum (Aggregate)	98	1		0	98	50	353	N/A	N/A	-3	-59	N/A	-10	3	29.1
Rotary dryer drum (RAP)	98	1		0	98	50	353	N/A	N/A	-3	-59	N/A	-10	3	29.1
RAP Processing Machine	103	1		0	103	100	368	N/A	N/A	0	-59	N/A	-10	3	36.7
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	100	321	N/A	N/A	0	-58	N/A	-10	3	20.3
Bucket elevator / Filler elevator	90	6	Enclosure	-15	83	100	321	N/A	N/A	0	-58	N/A	-10	3	17.7
Mixing Unit	96	1	Enclosure	-15	81	100	347	N/A	N/A	0	-59	N/A	-10	3	15.2
Bitumen Pump	95	2		0	98	100	344	N/A	N/A	0	-59	N/A	-10	3	32.3
Loading/Unloading Activities															
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	26		0	123	0.28	295	N/A	N/A	-25.6	-57	N/A	-10	3	33.1
Truck (Unloading Aggregate)	105	4		0	111	1.67	295	N/A	N/A		-57	N/A	-10	3	28.8
Truck (Asphalt Collection)	105	8	Enclosure	-15	99	1.67	347	N/A	N/A	-17.8	-59	N/A	-10	3	15.4
Truck (Unloading RAP)	105	1		0	105	1.67	381	N/A	N/A	-17.8	-60	N/A	-10	3	20.6
On-site Movement of Truck															
Truck (RAP Delivery)															
Segment - S0	105	2	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	17.6
Segment - S1	105	2	N/A	N/A	N/A	N/A	297.5	5.3	10	N/A	-24.7	-15.3	-10	3	18.0
Segment - S2	105	2	N/A	N/A	N/A	N/A	321.7	0.0	10	N/A	-25.1	-37.5	-10	3	-4.6
Segment - S3	105	2	N/A	N/A	N/A	N/A	341.8	3.9	10	N/A	-25.3	-16.6	-10	3	16.1
Segment - S4	105	2	N/A	N/A	N/A	N/A	362.4	3.3	10	N/A	-25.6	-17.4	-10	3	15.0
Segment - S5	105	2	N/A	N/A	N/A	N/A	372.9	1.4	10	N/A	-25.7	-21.1	-10	3	11.2
Segment - S6	105	2	N/A	N/A	N/A	N/A	377.4	1.9	10	N/A	-25.8	-19.7	-10	3	12.5
Segment - S7	105	2	N/A	N/A	N/A	N/A	383.0	1.7	10	N/A	-25.8	-20.2	-10	3	12.0
Segment - S8	105	2	N/A	N/A	N/A	N/A	383.3	0.5	10	N/A	-25.8	-25.7	-10	3	6.5
Truck (Bitumen Delivery)															
Segment - S0	105	2	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	17.6
Segment - S1	105	2	N/A	N/A	N/A	N/A	297.5	5.3	10	N/A	-24.7	-15.3	-10	3	18.0
Segment - S2	105	2	N/A	N/A	N/A	N/A	321.7	0.0	10	N/A	-25.1	-37.5	-10	3	-4.6
Segment - S3	105	2	N/A	N/A	N/A	N/A	341.8	3.9	10	N/A	-25.3	-16.6	-10	3	16.1
Segment - S4	105	2	N/A	N/A	N/A	N/A	362.4	3.3	10	N/A	-25.6	-17.4	-10	3	15.0
Segment - S5	105	2	N/A	N/A	N/A	N/A	372.9	1.4	10	N/A	-25.7	-21.1	-10	3	11.2
Segment - S6	105	2	N/A	N/A	N/A	N/A	377.4	1.9	10	N/A	-25.8	-19.7	-10	3	12.5
Segment - S9	105	2	N/A	N/A	N/A	N/A	363.9	2.8	10	N/A	-25.6	-18.1	-10	3	14.3
Truck (Asphalt Collection)															
Segment - S0	105	16	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	26.6
Segment - S1	105	16	N/A	N/A	N/A	N/A	297.5	5.3	10	N/A	-24.7	-15.3	-10	3	27.0
Segment - S2	105	16	N/A	N/A	N/A	N/A	321.7	0.0	10	N/A	-25.1	-37.5	-10	3	4.5
Segment - S3	105	16	N/A	N/A	N/A	N/A	341.8	3.9	10	N/A	-25.3	-16.6	-10	3	25.1
Segment - S10	105	16	N/A	N/A	N/A	N/A	348.7	6.5	10	N/A	-25.4	-14.4	-10	3	27.2
Segment - S11	105	16	N/A	N/A	N/A	N/A	341.2	0.2	10	N/A	-25.3	-28.7	-10	3	13.0
Segment - S12	105	16	N/A	N/A	N/A	N/A	324.2	3.5	10	N/A	-25.1	-17.1	-10	3	24.8
Segment - S13	105	16	N/A	N/A	N/A	N/A	307.0	1.5	10	N/A	-24.9	-20.9	-10	3	21.3
Segment - S14	105	16	N/A	N/A	N/A	N/A	292.7	0.4	10	N/A	-24.7	-26.4	-10	3	15.9
Truck (Aggregate Delivery)															
Segment - S0	105	16	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	26.6
Segment - S13	105	16	N/A	N/A	N/A	N/A	307.0	1.5	10	N/A	-24.9	-20.9	-10	3	21.3
Segment - S14	105	16	N/A	N/A	N/A	N/A	292.7	0.4	10	N/A	-24.7	-26.4	-10	3	15.9
Wheel Loader (Loading/Unloading Aggregate/RAP)															
Segment - S6	109	52	N/A	N/A	N/A	N/A	377.4	1.9	10	N/A	-25.8	-19.7	-10	3	30.7
Segment - S7	109	52	N/A	N/A	N/A	N/A	383.0	1.7	10	N/A	-25.8	-20.2	-10	3	30.1
Segment - S8	109	52	N/A	N/A	N/A	N/A	383.3	0.5	10	N/A	-25.8	-25.7	-10	3	24.6
Segment - S12	109	52	N/A	N/A	N/A	N/A	324.2	3.5	10	N/A	-25.1	-17.1	-10	3	33.9
Segment - S13	109	52	N/A	N/A	N/A	N/A	307.0	1.5	10	N/A	-24.9	-20.9	-10	3	30.4
Sub-Total SPL, dB(A)															43

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN2 - Night

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	357	N/A	N/A	0	-59	N/A	-10	3	23.0	
Air compressor, air flow ≤ 10 m³/min	100	1			100	30	362	N/A	N/A	-5.2	-59	N/A	-10	3	28.6	
Rotary dryer drum (Aggregate)	98	1		0	98	20	353	N/A	N/A	-7	-59	N/A	-10	3	25.1	
Rotary dryer drum (RAP)	98	1			98	20	353	N/A	N/A	-7	-59	N/A	-10	3	25.1	
RAP Processing Machine	103	0		0	0	100	368	N/A	N/A	0	-59	N/A	-10	3	0.0	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	30	321	N/A	N/A	-5.2	-58	N/A	-10	3	15.1	
Bucket elevator / Filler elevator	90	5	Enclosure	-15	82	30	321	N/A	N/A	-5.2	-58	N/A	-10	3	11.7	
Mixing Unit	96	1	Enclosure	-15	81	100	347	N/A	N/A	0	-59	N/A	-10	3	15.2	
Bitumen Pump	95	1		0	95	50	344	N/A	N/A	-3	-59	N/A	-10	3	26.3	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	6		0	117	0.28	295	N/A	N/A	-25.6	-57	N/A	-10	3	26.8	
Truck (Unloading Aggregate)	105	1		0	105	1.67	295	N/A	N/A		-57	N/A	-10	3	22.8	
Truck (Asphalt Collection)	105	5	Enclosure	-15	97	1.67	347	N/A	N/A	-17.8	-59	N/A	-10	3	13.4	
Truck (Unloading RAP)	105	1		0	105	1.67	381	N/A	N/A	-17.8	-60	N/A	-10	3	20.6	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	17.6	
Segment - S1	105	2	N/A	N/A	N/A	N/A	297.5	5.3	10	N/A	-24.7	-15.3	-10	3	18.0	
Segment - S2	105	2	N/A	N/A	N/A	N/A	321.7	0.0	10	N/A	-25.1	-37.5	-10	3	-4.6	
Segment - S3	105	2	N/A	N/A	N/A	N/A	341.8	3.9	10	N/A	-25.3	-16.6	-10	3	16.1	
Segment - S4	105	2	N/A	N/A	N/A	N/A	362.4	3.3	10	N/A	-25.6	-17.4	-10	3	15.0	
Segment - S5	105	2	N/A	N/A	N/A	N/A	372.9	1.4	10	N/A	-25.7	-21.1	-10	3	11.2	
Segment - S6	105	2	N/A	N/A	N/A	N/A	377.4	1.9	10	N/A	-25.8	-19.7	-10	3	12.5	
Segment - S7	105	2	N/A	N/A	N/A	N/A	383.0	1.7	10	N/A	-25.8	-20.2	-10	3	12.0	
Segment - S8	105	2	N/A	N/A	N/A	N/A	383.3	0.5	10	N/A	-25.8	-25.7	-10	3	6.5	
Truck (Bitumen Delivery)																
Segment - S0	105	0	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	0	
Segment - S1	105	0	N/A	N/A	N/A	N/A	297.5	5.3	10	N/A	-24.7	-15.3	-10	3	0	
Segment - S2	105	0	N/A	N/A	N/A	N/A	321.7	0.0	10	N/A	-25.1	-37.5	-10	3	0	
Segment - S3	105	0	N/A	N/A	N/A	N/A	341.8	3.9	10	N/A	-25.3	-16.6	-10	3	0	
Segment - S4	105	0	N/A	N/A	N/A	N/A	362.4	3.3	10	N/A	-25.6	-17.4	-10	3	0	
Segment - S5	105	0	N/A	N/A	N/A	N/A	372.9	1.4	10	N/A	-25.7	-21.1	-10	3	0	
Segment - S6	105	0	N/A	N/A	N/A	N/A	377.4	1.9	10	N/A	-25.8	-19.7	-10	3	0	
Segment - S9	105	0	N/A	N/A	N/A	N/A	363.9	2.8	10	N/A	-25.6	-18.1	-10	3	0	
Truck (Asphalt Collection)																
Segment - S0	105	10	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	24.6	
Segment - S1	105	10	N/A	N/A	N/A	N/A	297.5	5.3	10	N/A	-24.7	-15.3	-10	3	25.0	
Segment - S2	105	10	N/A	N/A	N/A	N/A	321.7	0.0	10	N/A	-25.1	-37.5	-10	3	2.4	
Segment - S3	105	10	N/A	N/A	N/A	N/A	341.8	3.9	10	N/A	-25.3	-16.6	-10	3	23.0	
Segment - S10	105	10	N/A	N/A	N/A	N/A	348.7	6.5	10	N/A	-25.4	-14.4	-10	3	25.1	
Segment - S11	105	10	N/A	N/A	N/A	N/A	341.2	0.2	10	N/A	-25.3	-28.7	-10	3	11.0	
Segment - S12	105	10	N/A	N/A	N/A	N/A	324.2	3.5	10	N/A	-25.1	-17.1	-10	3	22.8	
Segment - S13	105	10	N/A	N/A	N/A	N/A	307.0	1.5	10	N/A	-24.9	-20.9	-10	3	19.2	
Segment - S14	105	10	N/A	N/A	N/A	N/A	292.7	0.4	10	N/A	-24.7	-26.4	-10	3	13.9	
Truck (Aggregate Delivery)																
Segment - S0	105	4	N/A	N/A	N/A	N/A	266.8	4.3	10	N/A	-24.3	-16.2	-10	3	20.6	
Segment - S13	105	4	N/A	N/A	N/A	N/A	307.0	1.5	10	N/A	-24.9	-20.9	-10	3	15.2	
Segment - S14	105	4	N/A	N/A	N/A	N/A	292.7	0.4	10	N/A	-24.7	-26.4	-10	3	9.9	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	12	N/A	N/A	N/A	N/A	377.4	1.9	10	N/A	-25.8	-19.7	-10	3	24.3	
Segment - S7	109	12	N/A	N/A	N/A	N/A	383.0	1.7	10	N/A	-25.8	-20.2	-10	3	23.8	
Segment - S8	109	12	N/A	N/A	N/A	N/A	383.3	0.5	10	N/A	-25.8	-25.7	-10	3	18.3	
Segment - S12	109	12	N/A	N/A	N/A	N/A	324.2	3.5	10	N/A	-25.1	-17.1	-10	3	27.6	
Segment - S13	109	12	N/A	N/A	N/A	N/A	307.0	1.5	10	N/A	-24.9	-20.9	-10	3	24.0	
															Sub-Total SPL, dB(A)	38

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN3 - Day and Evening

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	152	N/A	N/A	0	-52	N/A	-10	3	30.4	
Air compressor, air flow ≤ 10 m³/min	100	1	Barrier	-10	90	50	124	N/A	N/A	-3	-50	N/A	-10	3	30.2	
Rotary dryer drum (Aggregate)	98	1		0	98	50	138	N/A	N/A	-3	-51	N/A	-10	3	37.2	
Rotary dryer drum (RAP)	98	1	Barrier	-10	88	50	138	N/A	N/A	-3	-51	N/A	-10	3	27.2	
RAP Processing Machine	103	1		0	103	100	166	N/A	N/A	0	-52	N/A	-10	3	43.6	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	100	117	N/A	N/A	0	-49	N/A	-10	3	29.1	
Bucket elevator / Filler elevator	90	6	Enclosure	-15	83	100	117	N/A	N/A	0	-49	N/A	-10	3	26.5	
Mixing Unit	96	1	Enclosure	-15	81	100	133	N/A	N/A	0	-50	N/A	-10	3	23.5	
Bitumen Pump	95	2	Barrier	-10	88	100	159	N/A	N/A	0	-52	N/A	-10	3	29.0	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	26		0	123	0.28	148	N/A	N/A	-25.6	-51	N/A	-10	3	39.1	
Truck (Unloading Aggregate)	105	4		0	111	1.67	148	N/A	N/A		-51	N/A	-10	3	34.8	
Truck (Asphalt Collection)	105	8	Enclosure	-15	99	1.67	133	N/A	N/A	-17.8	-50	N/A	-10	3	23.7	
Truck (Unloading RAP)	105	1		0	105	1.67	178	N/A	N/A	-17.8	-53	N/A	-10	3	27.2	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	25.1	
Segment - S1	105	2	N/A	N/A	N/A	N/A	123.6	2.4	10	N/A	-20.9	-18.7	-10	3	18.4	
Segment - S2	105	2	N/A	N/A	N/A	N/A	97.5	7.5	10	N/A	-19.9	-13.8	-10	3	24.3	
Segment - S3	105	2	N/A	N/A	N/A	N/A	97.2	18.5	10	N/A	-19.9	-9.9	-10	3	28.2	
Segment - S4	105	2	N/A	N/A	N/A	N/A	113.3	9.7	10	N/A	-20.5	-12.7	-10	3	24.8	
Segment - S5	105	2	N/A	N/A	N/A	N/A	127.8	1.5	10	N/A	-21.1	-20.7	-10	3	16.3	
Segment - S6	105	2	N/A	N/A	N/A	N/A	139.0	1.8	10	N/A	-21.4	-20.1	-10	3	16.5	
Segment - S7	105	2	N/A	N/A	N/A	N/A	151.7	1.5	10	N/A	-21.8	-20.8	-10	3	15.4	
Segment - S8	105	2	N/A	N/A	N/A	N/A	158.9	2.1	10	N/A	-22.0	-19.4	-10	3	16.6	
Truck (Bitumen Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	25.1	
Segment - S1	105	2	N/A	N/A	N/A	N/A	123.6	2.4	10	N/A	-20.9	-18.7	-10	3	18.4	
Segment - S2	105	2	N/A	N/A	N/A	N/A	97.5	7.5	10	N/A	-19.9	-13.8	-10	3	24.3	
Segment - S3	105	2	N/A	N/A	N/A	N/A	97.2	18.5	10	N/A	-19.9	-9.9	-10	3	28.2	
Segment - S4	105	2	N/A	N/A	N/A	N/A	113.3	9.7	10	N/A	-20.5	-12.7	-10	3	24.8	
Segment - S5	105	2	N/A	N/A	N/A	N/A	127.8	1.5	10	N/A	-21.1	-20.7	-10	3	16.3	
Segment - S6	105	2	N/A	N/A	N/A	N/A	139.0	1.8	10	N/A	-21.4	-20.1	-10	3	16.5	
Segment - S9	105	2	N/A	N/A	N/A	N/A	153.0	12.3	10	N/A	-21.8	-11.7	-10	3	24.5	
Truck (Asphalt Collection)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	34.1	
Segment - S1	105	16	N/A	N/A	N/A	N/A	123.6	2.4	10	N/A	-20.9	-18.7	-10	3	27.4	
Segment - S2	105	16	N/A	N/A	N/A	N/A	97.5	7.5	10	N/A	-19.9	-13.8	-10	3	33.4	
Segment - S3	105	16	N/A	N/A	N/A	N/A	97.2	18.5	10	N/A	-19.9	-9.9	-10	3	37.3	
Segment - S10	105	16	N/A	N/A	N/A	N/A	124.7	1.1	10	N/A	-21.0	-22.0	-10	3	24.1	
Segment - S11	105	16	N/A	N/A	N/A	N/A	146.1	2.4	10	N/A	-21.6	-18.7	-10	3	26.7	
Segment - S12	105	16	N/A	N/A	N/A	N/A	141.2	12.9	10	N/A	-21.5	-11.5	-10	3	34.1	
Segment - S13	105	16	N/A	N/A	N/A	N/A	135.1	4.4	10	N/A	-21.3	-16.1	-10	3	29.6	
Segment - S14	105	16	N/A	N/A	N/A	N/A	138.7	7.6	10	N/A	-21.4	-13.8	-10	3	31.9	
Truck (Aggregate Delivery)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	34.1	
Segment - S13	105	16	N/A	N/A	N/A	N/A	135.1	4.4	10	N/A	-21.3	-16.1	-10	3	29.6	
Segment - S14	105	16	N/A	N/A	N/A	N/A	138.7	7.6	10	N/A	-21.4	-13.8	-10	3	31.9	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	52	N/A	N/A	N/A	N/A	139.0	1.8	10	N/A	-21.4	-20.1	-10	3	34.7	
Segment - S7	109	52	N/A	N/A	N/A	N/A	151.7	1.5	10	N/A	-21.8	-20.8	-10	3	33.6	
Segment - S8	109	52	N/A	N/A	N/A	N/A	158.9	2.1	10	N/A	-22.0	-19.4	-10	3	34.7	
Segment - S12	109	52	N/A	N/A	N/A	N/A	141.2	12.9	10	N/A	-21.5	-11.5	-10	3	43.2	
Segment - S13	109	52	N/A	N/A	N/A	N/A	135.1	4.4	10	N/A	-21.3	-16.1	-10	3	38.7	
Sub-Total SPL, dB(A)															50	

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN3 - Night

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ✓	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)	
Mechanical and Electrical (M&E) Equipment															
Exhaust fan	89	1		0	89	100	152	N/A	N/A	0	-52	N/A	-10	3	30.4
Air compressor, air flow ≤ 10 m³/min	100	1	Barrier	-10	90	30	124	N/A	N/A	-5.2	-50	N/A	-10	3	28.0
Rotary dryer drum (Aggregate)	98	1		0	98	20	138	N/A	N/A	-7	-51	N/A	-10	3	33.2
Rotary dryer drum (RAP)	98	1	Barrier	-10	88	20	138	N/A	N/A	-7	-51	N/A	-10	3	23.2
RAP Processing Machine	103	0		0	0	100	166	N/A	N/A	0	-52	N/A	-10	3	0.0
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	30	117	N/A	N/A	-5.2	-49	N/A	-10	3	23.9
Bucket elevator / Filler elevator	90	5	Enclosure	-15	82	30	117	N/A	N/A	-5.2	-49	N/A	-10	3	20.5
Mixing Unit	96	1	Enclosure	-15	81	100	133	N/A	N/A	0	-50	N/A	-10	3	23.5
Bitumen Pump	95	1	Barrier	-10	85	50	159	N/A	N/A	-3	-52	N/A	-10	3	23.0
Loading/Unloading Activities															
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	6		0	117	0.28	148	N/A	N/A	-25.6	-51	N/A	-10	3	32.8
Truck (Unloading Aggregate)	105	1		0	105	1.67	148	N/A	N/A	-17.8	-51	N/A	-10	3	28.8
Truck (Asphalt Collection)	105	5	Enclosure	-15	97	1.67	133	N/A	N/A	-17.8	-50	N/A	-10	3	21.7
Truck (Unloading RAP)	105	1		0	105	1.67	178	N/A	N/A	-17.8	-53	N/A	-10	3	27.2
On-site Movement of Truck															
Truck (RAP Delivery)															
Segment - S0	105	2	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	25.1
Segment - S1	105	2	N/A	N/A	N/A	N/A	123.6	2.4	10	N/A	-20.9	-18.7	-10	3	18.4
Segment - S2	105	2	N/A	N/A	N/A	N/A	97.5	7.5	10	N/A	-19.9	-13.8	-10	3	24.3
Segment - S3	105	2	N/A	N/A	N/A	N/A	97.2	18.5	10	N/A	-19.9	-9.9	-10	3	28.2
Segment - S4	105	2	N/A	N/A	N/A	N/A	113.3	9.7	10	N/A	-20.5	-12.7	-10	3	24.8
Segment - S5	105	2	N/A	N/A	N/A	N/A	127.8	1.5	10	N/A	-21.1	-20.7	-10	3	16.3
Segment - S6	105	2	N/A	N/A	N/A	N/A	139.0	1.8	10	N/A	-21.4	-20.1	-10	3	16.5
Segment - S7	105	2	N/A	N/A	N/A	N/A	151.7	1.5	10	N/A	-21.8	-20.8	-10	3	15.4
Segment - S8	105	2	N/A	N/A	N/A	N/A	158.9	2.1	10	N/A	-22.0	-19.4	-10	3	16.6
Truck (Bitumen Delivery)															
Segment - S0	105	0	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	0
Segment - S1	105	0	N/A	N/A	N/A	N/A	123.6	2.4	10	N/A	-20.9	-18.7	-10	3	0
Segment - S2	105	0	N/A	N/A	N/A	N/A	97.5	7.5	10	N/A	-19.9	-13.8	-10	3	0
Segment - S3	105	0	N/A	N/A	N/A	N/A	97.2	18.5	10	N/A	-19.9	-9.9	-10	3	0
Segment - S4	105	0	N/A	N/A	N/A	N/A	113.3	9.7	10	N/A	-20.5	-12.7	-10	3	0
Segment - S5	105	0	N/A	N/A	N/A	N/A	127.8	1.5	10	N/A	-21.1	-20.7	-10	3	0
Segment - S6	105	0	N/A	N/A	N/A	N/A	139.0	1.8	10	N/A	-21.4	-20.1	-10	3	0
Segment - S9	105	0	N/A	N/A	N/A	N/A	153.0	12.3	10	N/A	-21.8	-11.7	-10	3	0
Truck (Asphalt Collection)															
Segment - S0	105	10	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	32.0
Segment - S1	105	10	N/A	N/A	N/A	N/A	123.6	2.4	10	N/A	-20.9	-18.7	-10	3	25.4
Segment - S2	105	10	N/A	N/A	N/A	N/A	97.5	7.5	10	N/A	-19.9	-13.8	-10	3	31.3
Segment - S3	105	10	N/A	N/A	N/A	N/A	97.2	18.5	10	N/A	-19.9	-9.9	-10	3	35.2
Segment - S10	105	10	N/A	N/A	N/A	N/A	124.7	1.1	10	N/A	-21.0	-22.0	-10	3	22.1
Segment - S11	105	10	N/A	N/A	N/A	N/A	146.1	2.4	10	N/A	-21.6	-18.7	-10	3	24.7
Segment - S12	105	10	N/A	N/A	N/A	N/A	141.2	12.9	10	N/A	-21.5	-11.5	-10	3	32.0
Segment - S13	105	10	N/A	N/A	N/A	N/A	135.1	4.4	10	N/A	-21.3	-16.1	-10	3	27.6
Segment - S14	105	10	N/A	N/A	N/A	N/A	138.7	7.6	10	N/A	-21.4	-13.8	-10	3	29.8
Truck (Aggregate Delivery)															
Segment - S0	105	4	N/A	N/A	N/A	N/A	148.0	13.5	10	N/A	-21.7	-11.2	-10	3	28.1
Segment - S13	105	4	N/A	N/A	N/A	N/A	135.1	4.4	10	N/A	-21.3	-16.1	-10	3	23.6
Segment - S14	105	4	N/A	N/A	N/A	N/A	138.7	7.6	10	N/A	-21.4	-13.8	-10	3	25.8
Wheel Loader (Loading/Unloading Aggregate/RAP)															
Segment - S6	109	12	N/A	N/A	N/A	N/A	139.0	1.8	10	N/A	-21.4	-20.1	-10	3	28.3
Segment - S7	109	12	N/A	N/A	N/A	N/A	151.7	1.5	10	N/A	-21.8	-20.8	-10	3	27.2
Segment - S8	109	12	N/A	N/A	N/A	N/A	158.9	2.1	10	N/A	-22.0	-19.4	-10	3	28.4
Segment - S12	109	12	N/A	N/A	N/A	N/A	141.2	12.9	10	N/A	-21.5	-11.5	-10	3	36.8
Segment - S13	109	12	N/A	N/A	N/A	N/A	135.1	4.4	10	N/A	-21.3	-16.1	-10	3	32.4
														Sub-Total SPL, dB(A)	45

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (✓) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (^) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN4 - Day and Evening

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	230	N/A	N/A	0	-55	N/A	-10	3	26.8	
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	50	221	N/A	N/A	-3	-55	N/A	-10	3	35.1	
Rotary dryer drum (Aggregate)	98	1		0	98	50	219	N/A	N/A	-3	-55	N/A	-10	3	33.2	
Rotary dryer drum (RAP)	98	1		0	98	50	219	N/A	N/A	-3	-55	N/A	-10	3	33.2	
RAP Processing Machine	103	1		0	103	100	246	N/A	N/A	0	-56	N/A	-10	3	40.2	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	100	176	N/A	N/A	0	-53	N/A	-10	3	25.5	
Bucket elevator / Filler elevator	90	6	Enclosure	-15	83	100	176	N/A	N/A	0	-53	N/A	-10	3	22.9	
Mixing Unit	96	1	Enclosure	-15	81	100	211	N/A	N/A	0	-54	N/A	-10	3	19.5	
Bitumen Pump	95	2		0	98	100	222	N/A	N/A	0	-55	N/A	-10	3	36.1	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	26		0	123	0.28	165	N/A	N/A	-25.6	-52	N/A	-10	3	38.2	
Truck (Unloading Aggregate)	105	4		0	111	1.67	165	N/A	N/A	-17.8	-52	N/A	-10	3	33.9	
Truck (Asphalt Collection)	105	8	Enclosure	-15	99	1.67	211	N/A	N/A	-17.8	-54	N/A	-10	3	19.7	
Truck (Unloading RAP)	105	1		0	105	1.67	262	N/A	N/A	-17.8	-56	N/A	-10	3	23.9	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	17.8	
Segment - S1	105	2	N/A	N/A	N/A	N/A	151.4	15.2	10	N/A	-21.8	-10.7	-10	3	25.5	
Segment - S2	105	2	N/A	N/A	N/A	N/A	165.5	2.5	10	N/A	-22.2	-18.5	-10	3	17.3	
Segment - S3	105	2	N/A	N/A	N/A	N/A	188.8	3.2	10	N/A	-22.8	-17.5	-10	3	17.8	
Segment - S4	105	2	N/A	N/A	N/A	N/A	216.8	3.0	10	N/A	-23.4	-17.7	-10	3	16.9	
Segment - S5	105	2	N/A	N/A	N/A	N/A	232.6	1.7	10	N/A	-23.7	-20.3	-10	3	14.0	
Segment - S6	105	2	N/A	N/A	N/A	N/A	241.4	2.2	10	N/A	-23.8	-19.2	-10	3	15.0	
Segment - S7	105	2	N/A	N/A	N/A	N/A	251.7	1.8	10	N/A	-24.0	-20.0	-10	3	14.0	
Segment - S8	105	2	N/A	N/A	N/A	N/A	255.1	1.2	10	N/A	-24.1	-21.9	-10	3	12.1	
Truck (Bitumen Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	17.8	
Segment - S1	105	2	N/A	N/A	N/A	N/A	151.4	15.2	10	N/A	-21.8	-10.7	-10	3	25.5	
Segment - S2	105	2	N/A	N/A	N/A	N/A	165.5	2.5	10	N/A	-22.2	-18.5	-10	3	17.3	
Segment - S3	105	2	N/A	N/A	N/A	N/A	188.8	3.2	10	N/A	-22.8	-17.5	-10	3	17.8	
Segment - S4	105	2	N/A	N/A	N/A	N/A	216.8	3.0	10	N/A	-23.4	-17.7	-10	3	16.9	
Segment - S5	105	2	N/A	N/A	N/A	N/A	232.6	1.7	10	N/A	-23.7	-20.3	-10	3	14.0	
Segment - S6	105	2	N/A	N/A	N/A	N/A	241.4	2.2	10	N/A	-23.8	-19.2	-10	3	15.0	
Segment - S9	105	2	N/A	N/A	N/A	N/A	236.0	7.5	10	N/A	-23.7	-13.8	-10	3	20.5	
Truck (Asphalt Collection)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	26.8	
Segment - S1	105	16	N/A	N/A	N/A	N/A	151.4	15.2	10	N/A	-21.8	-10.7	-10	3	34.5	
Segment - S2	105	16	N/A	N/A	N/A	N/A	165.5	2.5	10	N/A	-22.2	-18.5	-10	3	26.4	
Segment - S3	105	16	N/A	N/A	N/A	N/A	188.8	3.2	10	N/A	-22.8	-17.5	-10	3	26.8	
Segment - S10	105	16	N/A	N/A	N/A	N/A	208.8	10.8	10	N/A	-23.2	-12.2	-10	3	31.6	
Segment - S11	105	16	N/A	N/A	N/A	N/A	212.2	1.2	10	N/A	-23.3	-21.7	-10	3	22.1	
Segment - S12	105	16	N/A	N/A	N/A	N/A	193.0	0.7	10	N/A	-22.9	-24.2	-10	3	20.0	
Segment - S13	105	16	N/A	N/A	N/A	N/A	170.9	0.8	10	N/A	-22.3	-23.6	-10	3	21.1	
Segment - S14	105	16	N/A	N/A	N/A	N/A	156.4	4.0	10	N/A	-21.9	-16.6	-10	3	28.5	
Truck (Aggregate Delivery)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	26.8	
Segment - S13	105	16	N/A	N/A	N/A	N/A	170.9	0.8	10	N/A	-22.3	-23.6	-10	3	21.1	
Segment - S14	105	16	N/A	N/A	N/A	N/A	156.4	4.0	10	N/A	-21.9	-16.6	-10	3	28.5	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	52	N/A	N/A	N/A	N/A	241.4	2.2	10	N/A	-23.8	-19.2	-10	3	33.1	
Segment - S7	109	52	N/A	N/A	N/A	N/A	251.7	1.8	10	N/A	-24.0	-20.0	-10	3	32.1	
Segment - S8	109	52	N/A	N/A	N/A	N/A	255.1	1.2	10	N/A	-24.1	-21.9	-10	3	30.2	
Segment - S12	109	52	N/A	N/A	N/A	N/A	193.0	0.7	10	N/A	-22.9	-24.2	-10	3	29.1	
Segment - S13	109	52	N/A	N/A	N/A	N/A	170.9	0.8	10	N/A	-22.3	-23.6	-10	3	30.2	
															Sub-Total SPL, dB(A)	47

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN4 - Night

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	230	N/A	N/A	0	-55	N/A	-10	3	26.8	
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	30	221	N/A	N/A	-5.2	-55	N/A	-10	3	32.9	
Rotary dryer drum (Aggregate)	98	1		0	98	20	219	N/A	N/A	-7	-55	N/A	-10	3	29.2	
Rotary dryer drum (RAP)	98	1		0	98	20	219	N/A	N/A	-7	-55	N/A	-10	3	29.2	
RAP Processing Machine	103	0		0	0	100	246	N/A	N/A	0	-56	N/A	-10	3	0.0	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	30	176	N/A	N/A	-5.2	-53	N/A	-10	3	20.3	
Bucket elevator / Filler elevator	90	5	Enclosure	-15	82	30	176	N/A	N/A	-5.2	-53	N/A	-10	3	16.9	
Mixing Unit	96	1	Enclosure	-15	81	100	211	N/A	N/A	0	-54	N/A	-10	3	19.5	
Bitumen Pump	95	1			95	50	222	N/A	N/A	-3	-55	N/A	-10	3	30.1	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	6		0	117	0.28	165	N/A	N/A	-25.6	-52	N/A	-10	3	31.9	
Truck (Unloading Aggregate)	105	1		0	105	1.67	165	N/A	N/A		-52	N/A	-10	3	27.9	
Truck (Asphalt Collection)	105	5	Enclosure	-15	97	1.67	211	N/A	N/A	-17.8	-54	N/A	-10	3	17.7	
Truck (Unloading RAP)	105	1		0	105	1.67	262	N/A	N/A	-17.8	-56	N/A	-10	3	23.9	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	17.8	
Segment - S1	105	2	N/A	N/A	N/A	N/A	151.4	15.2	10	N/A	-21.8	-10.7	-10	3	25.5	
Segment - S2	105	2	N/A	N/A	N/A	N/A	165.5	2.5	10	N/A	-22.2	-18.5	-10	3	17.3	
Segment - S3	105	2	N/A	N/A	N/A	N/A	188.8	3.2	10	N/A	-22.8	-17.5	-10	3	17.8	
Segment - S4	105	2	N/A	N/A	N/A	N/A	216.8	3.0	10	N/A	-23.4	-17.7	-10	3	16.9	
Segment - S5	105	2	N/A	N/A	N/A	N/A	232.6	1.7	10	N/A	-23.7	-20.3	-10	3	14.0	
Segment - S6	105	2	N/A	N/A	N/A	N/A	241.4	2.2	10	N/A	-23.8	-19.2	-10	3	15.0	
Segment - S7	105	2	N/A	N/A	N/A	N/A	251.7	1.8	10	N/A	-24.0	-20.0	-10	3	14.0	
Segment - S8	105	2	N/A	N/A	N/A	N/A	255.1	1.2	10	N/A	-24.1	-21.9	-10	3	12.1	
Truck (Bitumen Delivery)																
Segment - S0	105	0	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	0	
Segment - S1	105	0	N/A	N/A	N/A	N/A	151.4	15.2	10	N/A	-21.8	-10.7	-10	3	0	
Segment - S2	105	0	N/A	N/A	N/A	N/A	165.5	2.5	10	N/A	-22.2	-18.5	-10	3	0	
Segment - S3	105	0	N/A	N/A	N/A	N/A	188.8	3.2	10	N/A	-22.8	-17.5	-10	3	0	
Segment - S4	105	0	N/A	N/A	N/A	N/A	216.8	3.0	10	N/A	-23.4	-17.7	-10	3	0	
Segment - S5	105	0	N/A	N/A	N/A	N/A	232.6	1.7	10	N/A	-23.7	-20.3	-10	3	0	
Segment - S6	105	0	N/A	N/A	N/A	N/A	241.4	2.2	10	N/A	-23.8	-19.2	-10	3	0	
Segment - S9	105	0	N/A	N/A	N/A	N/A	236.0	7.5	10	N/A	-23.7	-13.8	-10	3	0	
Truck (Asphalt Collection)																
Segment - S0	105	10	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	24.8	
Segment - S1	105	10	N/A	N/A	N/A	N/A	151.4	15.2	10	N/A	-21.8	-10.7	-10	3	32.5	
Segment - S2	105	10	N/A	N/A	N/A	N/A	165.5	2.5	10	N/A	-22.2	-18.5	-10	3	24.3	
Segment - S3	105	10	N/A	N/A	N/A	N/A	188.8	3.2	10	N/A	-22.8	-17.5	-10	3	24.8	
Segment - S10	105	10	N/A	N/A	N/A	N/A	208.8	10.8	10	N/A	-23.2	-12.2	-10	3	29.6	
Segment - S11	105	10	N/A	N/A	N/A	N/A	212.2	1.2	10	N/A	-23.3	-21.7	-10	3	20.1	
Segment - S12	105	10	N/A	N/A	N/A	N/A	193.0	0.7	10	N/A	-22.9	-24.2	-10	3	18.0	
Segment - S13	105	10	N/A	N/A	N/A	N/A	170.9	0.8	10	N/A	-22.3	-23.6	-10	3	19.0	
Segment - S14	105	10	N/A	N/A	N/A	N/A	156.4	4.0	10	N/A	-21.9	-16.6	-10	3	26.5	
Truck (Aggregate Delivery)																
Segment - S0	105	4	N/A	N/A	N/A	N/A	129.4	2.2	10	N/A	-21.1	-19.1	-10	3	20.8	
Segment - S13	105	4	N/A	N/A	N/A	N/A	170.9	0.8	10	N/A	-22.3	-23.6	-10	3	15.1	
Segment - S14	105	4	N/A	N/A	N/A	N/A	156.4	4.0	10	N/A	-21.9	-16.6	-10	3	22.5	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	12	N/A	N/A	N/A	N/A	241.4	2.2	10	N/A	-23.8	-19.2	-10	3	26.8	
Segment - S7	109	12	N/A	N/A	N/A	N/A	251.7	1.8	10	N/A	-24.0	-20.0	-10	3	25.8	
Segment - S8	109	12	N/A	N/A	N/A	N/A	255.1	1.2	10	N/A	-24.1	-21.9	-10	3	23.9	
Segment - S12	109	12	N/A	N/A	N/A	N/A	193.0	0.7	10	N/A	-22.9	-24.2	-10	3	22.7	
Segment - S13	109	12	N/A	N/A	N/A	N/A	170.9	0.8	10	N/A	-22.3	-23.6	-10	3	23.8	
															Sub-Total SPL, dB(A)	42

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN5 - Day and Evening

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	191	N/A	N/A	0	-54	N/A	-10	3	28.4	
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	50	171	N/A	N/A	-3	-53	N/A	-10	3	37.4	
Rotary dryer drum (Aggregate)	98	1		0	98	50	177	N/A	N/A	-3	-53	N/A	-10	3	35.1	
Rotary dryer drum (RAP)	98	1		0	98	50	177	N/A	N/A	-3	-53	N/A	-10	3	35.1	
RAP Processing Machine	103	1		0	103	100	208	N/A	N/A	0	-54	N/A	-10	3	41.7	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	100	136	N/A	N/A	0	-51	N/A	-10	3	27.7	
Bucket elevator / Filler elevator	90	6	Enclosure	-15	83	100	136	N/A	N/A	0	-51	N/A	-10	3	25.1	
Mixing Unit	96	1	Enclosure	-15	81	100	169	N/A	N/A	0	-53	N/A	-10	3	21.5	
Bitumen Pump	95	2		0	98	100	189	N/A	N/A	0	-54	N/A	-10	3	37.5	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	26		0	123	0.28	144	N/A	N/A	-25.6	-51	N/A	-10	3	39.3	
Truck (Unloading Aggregate)	105	4		0	111	1.67	144	N/A	N/A	-17.8	-51	N/A	-10	3	35.0	
Truck (Asphalt Collection)	105	8	Enclosure	-15	99	1.67	169	N/A	N/A	-17.8	-53	N/A	-10	3	21.7	
Truck (Unloading RAP)	105	1		0	105	1.67	224	N/A	N/A	-17.8	-55	N/A	-10	3	25.2	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	26.4	
Segment - S1	105	2	N/A	N/A	N/A	N/A	118.1	17.9	10	N/A	-20.7	-10.0	-10	3	27.3	
Segment - S2	105	2	N/A	N/A	N/A	N/A	112.9	7.5	10	N/A	-20.5	-13.8	-10	3	23.7	
Segment - S3	105	2	N/A	N/A	N/A	N/A	132.8	3.6	10	N/A	-21.2	-17.0	-10	3	19.8	
Segment - S4	105	2	N/A	N/A	N/A	N/A	162.5	0.4	10	N/A	-22.1	-26.9	-10	3	9.0	
Segment - S5	105	2	N/A	N/A	N/A	N/A	180.6	0.9	10	N/A	-22.6	-22.8	-10	3	12.6	
Segment - S6	105	2	N/A	N/A	N/A	N/A	192.0	1.2	10	N/A	-22.8	-21.8	-10	3	13.4	
Segment - S7	105	2	N/A	N/A	N/A	N/A	204.8	0.9	10	N/A	-23.1	-23.1	-10	3	11.8	
Segment - S8	105	2	N/A	N/A	N/A	N/A	210.6	1.7	10	N/A	-23.2	-20.4	-10	3	14.4	
Truck (Bitumen Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	26.4	
Segment - S1	105	2	N/A	N/A	N/A	N/A	118.1	17.9	10	N/A	-20.7	-10.0	-10	3	27.3	
Segment - S2	105	2	N/A	N/A	N/A	N/A	112.9	7.5	10	N/A	-20.5	-13.8	-10	3	23.7	
Segment - S3	105	2	N/A	N/A	N/A	N/A	132.8	3.6	10	N/A	-21.2	-17.0	-10	3	19.8	
Segment - S4	105	2	N/A	N/A	N/A	N/A	162.5	0.4	10	N/A	-22.1	-26.9	-10	3	9.0	
Segment - S5	105	2	N/A	N/A	N/A	N/A	180.6	0.9	10	N/A	-22.6	-22.8	-10	3	12.6	
Segment - S6	105	2	N/A	N/A	N/A	N/A	192.0	1.2	10	N/A	-22.8	-21.8	-10	3	13.4	
Segment - S9	105	2	N/A	N/A	N/A	N/A	195.3	10.7	10	N/A	-22.9	-12.3	-10	3	22.8	
Truck (Asphalt Collection)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	35.4	
Segment - S1	105	16	N/A	N/A	N/A	N/A	118.1	17.9	10	N/A	-20.7	-10.0	-10	3	36.3	
Segment - S2	105	16	N/A	N/A	N/A	N/A	112.9	7.5	10	N/A	-20.5	-13.8	-10	3	32.7	
Segment - S3	105	16	N/A	N/A	N/A	N/A	132.8	3.6	10	N/A	-21.2	-17.0	-10	3	28.8	
Segment - S10	105	16	N/A	N/A	N/A	N/A	162.4	10.5	10	N/A	-22.1	-12.4	-10	3	32.6	
Segment - S11	105	16	N/A	N/A	N/A	N/A	176.0	2.1	10	N/A	-22.5	-19.4	-10	3	25.2	
Segment - S12	105	16	N/A	N/A	N/A	N/A	160.1	5.8	10	N/A	-22.0	-14.9	-10	3	30.1	
Segment - S13	105	16	N/A	N/A	N/A	N/A	140.7	1.9	10	N/A	-21.5	-19.8	-10	3	25.8	
Segment - S14	105	16	N/A	N/A	N/A	N/A	132.2	8.8	10	N/A	-21.2	-13.1	-10	3	32.7	
Truck (Aggregate Delivery)																
Segment - S0	105	16	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	35.4	
Segment - S13	105	16	N/A	N/A	N/A	N/A	140.7	1.9	10	N/A	-21.5	-19.8	-10	3	25.8	
Segment - S14	105	16	N/A	N/A	N/A	N/A	132.2	8.8	10	N/A	-21.2	-13.1	-10	3	32.7	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	52	N/A	N/A	N/A	N/A	192.0	1.2	10	N/A	-22.8	-21.8	-10	3	31.5	
Segment - S7	109	52	N/A	N/A	N/A	N/A	204.8	0.9	10	N/A	-23.1	-23.1	-10	3	29.9	
Segment - S8	109	52	N/A	N/A	N/A	N/A	210.6	1.7	10	N/A	-23.2	-20.4	-10	3	32.6	
Segment - S12	109	52	N/A	N/A	N/A	N/A	160.1	5.8	10	N/A	-22.0	-14.9	-10	3	39.2	
Segment - S13	109	52	N/A	N/A	N/A	N/A	140.7	1.9	10	N/A	-21.5	-19.8	-10	3	34.9	
															Sub-Total SPL, dB(A)	49

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

IN5 - Night

Plant/Activity	SWL, dB(A) *	No. of Equipment / Events / Trips	At-source Noise Mitigation Measures ^	Noise Reduction from Mitigation Measures, dB(A)	Total SWL, dB(A)	% Usage (30mins) ^	Distance #	View Angle, deg	Speed, km/h	Correction, dB(A)					Leq, dB(A)	
										Time Correction, dB(A)	Distance Correction, dB(A)	View Angle Correction, dB(A)	Screening Effect, dB(A) +	Façade Correction, dB(A)		
Mechanical and Electrical (M&E) Equipment																
Exhaust fan	89	1		0	89	100	191	N/A	N/A	0	-54	N/A	-10	3	28.4	
Air compressor, air flow ≤ 10 m³/min	100	1		0	100	30	171	N/A	N/A	-5.2	-53	N/A	-10	3	35.2	
Rotary dryer drum (Aggregate)	98	1		0	98	20	177	N/A	N/A	-7	-53	N/A	-10	3	31.1	
Rotary dryer drum (RAP)	98	1		0	98	20	177	N/A	N/A	-7	-53	N/A	-10	3	31.1	
RAP Processing Machine	103	0		0	0	100	208	N/A	N/A	0	-54	N/A	-10	3	0.0	
Screw conveyor / Slant belt conveyor / Belt conveyor	90	11	Enclosure	-15	85	30	136	N/A	N/A	-5.2	-51	N/A	-10	3	22.5	
Bucket elevator / Filler elevator	90	5	Enclosure	-15	82	30	136	N/A	N/A	-5.2	-51	N/A	-10	3	19.1	
Mixing Unit	96	1	Enclosure	-15	81	100	169	N/A	N/A	0	-53	N/A	-10	3	21.5	
Bitumen Pump	95	1			95	50	189	N/A	N/A	-3	-54	N/A	-10	3	31.5	
Loading/Unloading Activities																
Wheel Loader (Loading / Unloading Aggregate/RAP)	109	6		0	117	0.28	144	N/A	N/A	-25.6	-51	N/A	-10	3	33.0	
Truck (Unloading Aggregate)	105	1		0	105	1.67	144	N/A	N/A	-17.8	-51	N/A	-10	3	29.0	
Truck (Asphalt Collection)	105	5	Enclosure	-15	97	1.67	169	N/A	N/A	-17.8	-53	N/A	-10	3	19.7	
Truck (Unloading RAP)	105	1		0	105	1.67	224	N/A	N/A	-17.8	-55	N/A	-10	3	25.2	
On-site Movement of Truck																
Truck (RAP Delivery)																
Segment - S0	105	2	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	26.4	
Segment - S1	105	2	N/A	N/A	N/A	N/A	118.1	17.9	10	N/A	-20.7	-10.0	-10	3	27.3	
Segment - S2	105	2	N/A	N/A	N/A	N/A	112.9	7.5	10	N/A	-20.5	-13.8	-10	3	23.7	
Segment - S3	105	2	N/A	N/A	N/A	N/A	132.8	3.6	10	N/A	-21.2	-17.0	-10	3	19.8	
Segment - S4	105	2	N/A	N/A	N/A	N/A	162.5	0.4	10	N/A	-22.1	-26.9	-10	3	9.0	
Segment - S5	105	2	N/A	N/A	N/A	N/A	180.6	0.9	10	N/A	-22.6	-22.8	-10	3	12.6	
Segment - S6	105	2	N/A	N/A	N/A	N/A	192.0	1.2	10	N/A	-22.8	-21.8	-10	3	13.4	
Segment - S7	105	2	N/A	N/A	N/A	N/A	204.8	0.9	10	N/A	-23.1	-23.1	-10	3	11.8	
Segment - S8	105	2	N/A	N/A	N/A	N/A	210.6	1.7	10	N/A	-23.2	-20.4	-10	3	14.4	
Truck (Bitumen Delivery)																
Segment - S0	105	0	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	0	
Segment - S1	105	0	N/A	N/A	N/A	N/A	118.1	17.9	10	N/A	-20.7	-10.0	-10	3	0	
Segment - S2	105	0	N/A	N/A	N/A	N/A	112.9	7.5	10	N/A	-20.5	-13.8	-10	3	0	
Segment - S3	105	0	N/A	N/A	N/A	N/A	132.8	3.6	10	N/A	-21.2	-17.0	-10	3	0	
Segment - S4	105	0	N/A	N/A	N/A	N/A	162.5	0.4	10	N/A	-22.1	-26.9	-10	3	0	
Segment - S5	105	0	N/A	N/A	N/A	N/A	180.6	0.9	10	N/A	-22.6	-22.8	-10	3	0	
Segment - S6	105	0	N/A	N/A	N/A	N/A	192.0	1.2	10	N/A	-22.8	-21.8	-10	3	0	
Segment - S9	105	0	N/A	N/A	N/A	N/A	195.3	10.7	10	N/A	-22.9	-12.3	-10	3	0	
Truck (Asphalt Collection)																
Segment - S0	105	10	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	33.4	
Segment - S1	105	10	N/A	N/A	N/A	N/A	118.1	17.9	10	N/A	-20.7	-10.0	-10	3	34.2	
Segment - S2	105	10	N/A	N/A	N/A	N/A	112.9	7.5	10	N/A	-20.5	-13.8	-10	3	30.7	
Segment - S3	105	10	N/A	N/A	N/A	N/A	132.8	3.6	10	N/A	-21.2	-17.0	-10	3	26.8	
Segment - S10	105	10	N/A	N/A	N/A	N/A	162.4	10.5	10	N/A	-22.1	-12.4	-10	3	30.5	
Segment - S11	105	10	N/A	N/A	N/A	N/A	176.0	2.1	10	N/A	-22.5	-19.4	-10	3	23.2	
Segment - S12	105	10	N/A	N/A	N/A	N/A	160.1	5.8	10	N/A	-22.0	-14.9	-10	3	28.1	
Segment - S13	105	10	N/A	N/A	N/A	N/A	140.7	1.9	10	N/A	-21.5	-19.8	-10	3	23.7	
Segment - S14	105	10	N/A	N/A	N/A	N/A	132.2	8.8	10	N/A	-21.2	-13.1	-10	3	30.7	
Truck (Aggregate Delivery)																
Segment - S0	105	4	N/A	N/A	N/A	N/A	118.7	14.8	10	N/A	-20.7	-10.9	-10	3	29.4	
Segment - S13	105	4	N/A	N/A	N/A	N/A	140.7	1.9	10	N/A	-21.5	-19.8	-10	3	19.8	
Segment - S14	105	4	N/A	N/A	N/A	N/A	132.2	8.8	10	N/A	-21.2	-13.1	-10	3	26.7	
Wheel Loader (Loading/Unloading Aggregate/RAP)																
Segment - S6	109	12	N/A	N/A	N/A	N/A	192.0	1.2	10	N/A	-22.8	-21.8	-10	3	25.1	
Segment - S7	109	12	N/A	N/A	N/A	N/A	204.8	0.9	10	N/A	-23.1	-23.1	-10	3	23.5	
Segment - S8	109	12	N/A	N/A	N/A	N/A	210.6	1.7	10	N/A	-23.2	-20.4	-10	3	26.2	
Segment - S12	109	12	N/A	N/A	N/A	N/A	160.1	5.8	10	N/A	-22.0	-14.9	-10	3	32.9	
Segment - S13	109	12	N/A	N/A	N/A	N/A	140.7	1.9	10	N/A	-21.5	-19.8	-10	3	28.5	
															Sub-Total SPL, dB(A)	44

Note (*) - The SWL of Main Exhaust Fan, Rotary Dryer Drum, RAP Processing Machine is obtained by on-site measurement. Detailed information of the on-site measurement please refer to Appendix D.

The type of wheel loader using in the Plant is CAT-950. The SWL of the wheel loader is referenced to the Catalog as shown in Appendix F.

The SWL of other PME is referenced to GW-TM or "Sound power levels of other commonly used PME" issued by EPD.

The Bucket Elevator / Filler Elevator is similar to the Conveyor Belt. Therefore, the SWL of the Bucket Elevator / Filler Elevator is referenced to the SWL of Conveyor Belt.

The SWL of the mixer of the Asphalt Plant is referred to grout mixer.

The SWL of the bitumen pump is referred to grout pump.

Note (^) - Detailed description of the mitigation measures can be found in S2.3.5 and S2.4.4 of the EA report.

Note (*) - The % usage is provided by the Applicant based on daily practice.

Note (#) - The distances of Screw / Belt / Slant Belt Conveyor and Bucket / Filler Elevator are measured between NSR and the notional source position.

The shortest distance between the loading/unloading areas of loader and corresponding NSRs is adopted in the calculation. The location of the PME is shown on Figure 2.2.

The distances of other PME are measured between NSR and their corresponding location. The location of the PME is shown on Figure 2.2.

Note (+) - The noise generated from the PME/Activity is screened by existing building structure or natural terrain as shown on Figure 2.4.

950 GC Wheel Loader Specifications

Hydraulic System

Implement System Pump Type	Piston	
Steering System Pump Type	Piston	
Implement System – Maximum Pump Output @ 2,390 rpm	256 L/min	68 gal/min
Implement System – Maximum Operating Pressure @ 50 ± 1.5 L/min	27 900 kPa	4,047 psi
Implement System – Optional 3rd Function Maximum Pressure @ 70 L/min (18.5 gal/min)	20 680 kPa	2,999 psi
Implement System – Optional 3rd Function Maximum Flow	240 L/min	63 gal/min
Hydraulic Cycle Time – Raise from Carry Position	5.4 Seconds	
Hydraulic Cycle Time – Dump at Maximum Raise	1.2 Seconds	
Hydraulic Cycle Time – Lower, Empty, Float Down	2.8 Seconds	
Hydraulic Cycle Time – Total Cycle Time	9.4 Seconds	

Tires*

- Choices include:
 - 23.5R25 L3 ** from Triangle and Maxam
 - 23.5R25 L3 * from Bridgestone
 - 23.5R25 L2 * from Bridgestone

*Tire offerings vary by region. Consult your local Cat dealer for further details.

Sound

The sound values indicated below are for specific operating conditions only. Machine and operator sound levels will vary at different engine and/or cooling fan speeds. Hearing protection may be needed when the machine is operated with a cabin that is not properly maintained, or when the doors and/or windows are open for extended periods or in a noisy environment.

With Cooling Fan Speed at Maximum Value:

Operator Sound Pressure Level (ISO 6396:2008)	75 dB(A)
Exterior Sound Power Level (ISO 6395:2008)	109 dB(A)
Exterior Sound Pressure Level (SAE J88:2013)	76 dB(A)*

With Cooling Fan Speed at 70% of Maximum Value:**

Operator Sound Pressure Level (ISO 6396:2008)	73 dB(A)
Exterior Sound Power Level (ISO 6395:2008)	107 L _{WA} ***

*Distance of 15 m (49.2 ft), moving forward in second gear ratio.

**For machines in countries that adopt the “EU Directives.”

***European Union Directives “2000/14/EC” as amended by “2005/88/EC.”

Cab

ROPS/FOPS	ROPS/FOPS meet ISO 3471:2008 and ISO 3449:2005 Level II standards
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Brakes

Brakes	Brakes meet ISO 3450:2011 standards
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Appendix G Traffic Forecast

No comment on methodology from Traffic Department

RE: Traffic Forecast for Renewal of S16 for Temporary Asphalt Plant for a Period of 5 Years, Man Kam To Road, Sheung Shui (A/NE-FTA/254)



Kam Fai TAM <kamfaitam@td.gov.hk>
To: CKM Asia

Reply Reply All Forward

Mon 21/10/2024 17:31



Dear Eric Wong,

Please note that the Traffic Noise Impact Assessment (TNIA) and Air Quality Impact Assessment (AQIA) are not under our purview. We are not in a position to provide comments on the traffic figures tailor-made for the Environmental assessment study.

Notwithstanding the above, we have no comments on the methodology of the traffic forecast.

Kind regards,

TAM Kam-fai
E/SD2, TENTE
Transport Department
Tel: 2389 2405



CKM ASIA LIMITED 陳錦敏亞洲有限公司

Traffic and Transportation Planning Consultants 交通及運輸策劃顧問

Our Ref: J7343/2

19th June, 2024

Transport Department
NT Regional Office
Traffic Engineering (NTE) Division
North Section
9/F, Mongkok Government Offices
30 Luen Wan Street, Mongkok, Kowloon

Attn: Mr. CHU Ho Man, Hoffman (Engr/North 1)
(BY E-MAIL: homanchu@td.gov.hk & POST)

**Renewal of Section 16 Planning Application for Temporary Asphalt Plant
for a Period of 5 Years at Lots 20RP, 21 and 23RP (Part) in D.D. 88
and adjoining Government Land to the East of Man Kam To Road
Sheung Shui, New Territories**

**Traffic Forecast for Traffic Noise Impact Assessment ("TNIA"),
and Air Quality Impact Assessment ("AQIA")**

Dear Mr. Chu,

CKM Asia Limited is the Traffic Consultant engaged by the Applicant of the captioned Temporary Asphalt Plant to produce the design year traffic data for the Environmental Consultant to conduct Traffic Noise Impact Assessment ("TNIA"), and Air Quality Impact Assessment ("AQIA").

The design years (i.e. 2024, 2027 and 2029) traffic forecast data are produced in accordance with the latest requirement of the "EMFAC-HK" guideline from Environmental Protection Department. The detailed forecast methodology and the design years traffic data adopted are enclosed for your office review.

It is highly appreciated if you could comment on the traffic forecast methodology.

Should you have any queries, please do not hesitate to contact the undersigned.

Thank you very much for your attention.

Yours sincerely,



Eric WONG
Principal Traffic Engineer

Encl.

KIMWCH

21st Floor, Methodist House, 36 Hennessy Road, Wanchai, Hong Kong
香港灣仔軒尼詩道36號循道衛理大廈21樓

Tel 電話: (852) 2520 5990 Fax 傳真: (852) 2528 6343

Email 電郵: mail@ckmasia.com.hk Website 網址: http://www.ckmasia.com.hk

Traffic Forecast - 2024

Link ID	Road Section	With the Site						Without the Site					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
		Traffic Flows (veh/hr)	%LV	%HV	Traffic Flows (veh/hr)	%LV	%HV	Traffic Flows (veh/hr)	%LV	%HV	Traffic Flows (veh/hr)	%LV	%HV
RD_001	Man Kam To Road	455	50.70%	49.30%	395	43.70%	56.30%	455	50.70%	49.30%	395	43.70%	56.30%
RD_002	Man Kam To Road	445	40.00%	60.00%	415	57.20%	42.80%	445	40.00%	60.00%	415	57.20%	42.80%
RD_003	Kong Nga Po Road	210	65.50%	34.50%	80	44.80%	55.20%	210	65.50%	34.50%	80	44.80%	55.20%
RD_004	Kong Nga Po Road	105	46.40%	53.60%	165	79.30%	20.70%	105	46.40%	53.60%	165	79.30%	20.70%
RD_005	Man Kam To Road	660	55.40%	44.60%	470	44.20%	55.80%	660	55.40%	44.60%	470	44.20%	55.80%
RD_006	Man Kam To Road	545	41.60%	58.40%	575	64.00%	36.00%	545	41.60%	58.40%	575	64.00%	36.00%
RD_007	Access Road to Open Storage Site No.7	25	34.80%	65.20%	45	39.50%	60.50%	25	34.80%	65.20%	45	39.50%	60.50%
RD_008	Access Road to Open Storage Site No.7	40	34.10%	65.90%	30	34.70%	65.30%	40	34.10%	65.90%	30	34.70%	65.30%
RD_009	Man Kam To Road	700	54.50%	45.50%	490	43.40%	56.60%	700	54.50%	45.50%	490	43.40%	56.60%
RD_010	Man Kam To Road	565	41.20%	58.80%	610	62.10%	37.90%	565	41.20%	58.80%	610	62.10%	37.90%
RD_011	Man Kam To Road	715	54.40%	45.60%	505	42.10%	57.90%	700	55.7%	44.3%	490	43.9%	56.1%
RD_012	Man Kam To Road	575	40.80%	59.20%	630	60.90%	39.10%	560	41.8%	58.2%	615	62.3%	37.7%
RD_013	Fu Tei Au Road	35	61.90%	38.10%	40	73.00%	27.00%	35	61.90%	38.10%	40	73.00%	27.00%
RD_014	Fu Tei Au Road	25	63.70%	36.30%	35	49.90%	50.10%	25	63.70%	36.30%	35	49.90%	50.10%
RD_015	Unnamed Access Road	5	50.00%	50.00%	10	57.10%	42.90%	5	50.00%	50.00%	10	57.10%	42.90%
RD_016	Unnamed Access Road	5	100.00%	0.00%	15	50.00%	50.00%	5	100.00%	0.00%	15	50.00%	50.00%
RD_017	Man Kam To Road	725	54.30%	45.70%	530	41.70%	58.30%	710	55.45%	44.55%	515	42.91%	57.09%
RD_018	Man Kam To Road	600	41.20%	58.80%	655	61.10%	38.90%	585	42.26%	57.74%	640	62.53%	37.47%
RD_019	Access Road to Hung Kiu San Tsuen	30	41.50%	58.50%	40	40.60%	59.40%	30	41.50%	58.50%	40	40.60%	59.40%

Traffic Forecast - 2029

Link ID	Road Section	With the Site						Without the Site					
		AM Peak Hour			PM Peak Hour			AM Peak Hour			PM Peak Hour		
		Traffic Flows (veh/hr)	%LV	%HV	Traffic Flows (veh/hr)	%LV	%HV	Traffic Flows (veh/hr)	%LV	%HV	Traffic Flows (veh/hr)	%LV	%HV
RD_001	Man Kam To Road	475	50.70%	49.30%	415	44.00%	56.00%	475	50.70%	49.30%	415	44.00%	56.00%
RD_002	Man Kam To Road	470	39.90%	60.10%	435	57.20%	42.80%	470	39.90%	60.10%	435	57.20%	42.80%
RD_003	Kong Nga Po Road	375	64.50%	35.50%	175	54.90%	45.10%	375	64.50%	35.50%	175	54.90%	45.10%
RD_004	Kong Nga Po Road	265	56.40%	43.60%	270	73.70%	26.30%	265	56.40%	43.60%	270	73.70%	26.30%
RD_005	Man Kam To Road	850	57.00%	43.00%	590	47.30%	52.70%	850	57.00%	43.00%	590	47.30%	52.70%
RD_006	Man Kam To Road	725	46.10%	53.90%	695	63.80%	36.20%	725	46.10%	53.90%	695	63.80%	36.20%
RD_007	Access Road to Open Storage Site No.7	25	33.40%	66.60%	45	40.90%	59.10%	25	33.40%	66.60%	45	40.90%	59.10%
RD_008	Access Road to Open Storage Site No.7	40	35.00%	65.00%	30	34.70%	65.30%	40	35.00%	65.00%	30	34.70%	65.30%
RD_009	Man Kam To Road	885	56.00%	44.00%	610	46.30%	53.70%	885	56.00%	44.00%	610	46.30%	53.70%
RD_010	Man Kam To Road	750	45.70%	54.30%	735	62.30%	37.70%	750	45.70%	54.30%	735	62.30%	37.70%
RD_011	Man Kam To Road	905	55.90%	44.10%	625	45.40%	54.60%	890	56.84%	43.16%	610	46.52%	53.48%
RD_012	Man Kam To Road	760	45.60%	54.40%	755	61.10%	38.90%	745	46.52%	53.48%	740	62.34%	37.66%
RD_013	Fu Tei Au Road	35	62.80%	37.20%	40	73.60%	26.40%	35	62.80%	37.20%	40	73.60%	26.40%
RD_014	Fu Tei Au Road	25	65.30%	34.70%	35	51.40%	48.60%	25	65.30%	34.70%	35	51.40%	48.60%
RD_015	Unnamed Access Road	5	50.00%	50.00%	10	57.10%	42.90%	5	50.00%	50.00%	10	57.10%	42.90%
RD_016	Unnamed Access Road	5	100.00%	0.00%	15	50.00%	50.00%	5	100.00%	0.00%	15	50.00%	50.00%
RD_017	Man Kam To Road	915	55.90%	44.10%	655	44.50%	55.50%	900	56.83%	43.17%	640	45.54%	54.46%
RD_018	Man Kam To Road	785	45.50%	54.50%	780	61.30%	38.70%	770	46.39%	53.61%	765	62.50%	37.50%