FORM
5

Application No. :
Reference No. :
(For official use)

FORM 5
ENVIRONMENTAL IMPACT ASSESSMENT ORDINANCE
(CHAPTER 499)
SECTION 13(1)

Application for Variation of an Environmental Permit

PART A PREVIOUS APPLICATIONS

☑ No previous application for variation of an environmental permit.

☐ The environmental permit was previously amended.

Application No. : .....

PART B DETAILS OF APPLICANT

B1. Name : (person or company)

Civil Engineering and Development Department

[Note : In accordance with section 13(1) of the Ordinance, the person holding an environmental permit or a person who assumes responsibility for the designated project may apply for variation of the environmental permit.]

B2. Business Registration No. : (if applicable) [redacted]

B3. Correspondence Address : [redacted]

B4. Name of Contact Person : [redacted]

B5. Position of Contact Person : [redacted]

B6. Telephone No. : [redacted]

B7. Fax No. : [redacted]

B8. E-mail Address : (if any) [redacted]

PART C DETAILS OF CURRENT ENVIRONMENTAL PERMIT

C1. Name of the Current Environmental Permit Holder :

Civil Engineering and Development Department

C2. Application No. of the Current Environmental Permit : EP-466/2013

C3. The Current Environmental Permit was Issued in : month / year

1 1 / 2 0 1 3

Important Notes : Please submit the application together with

(a) 3 copies of this completed form; and

(b) appropriate fee as stipulated in the Environmental Impact Assessment (Fees) Regulation

to the Environmental Protection Department at the following address :

The EIA Ordinance Register Office,
27th floor, Southorn Centre,130 Hennessy Road,
Wan Chai, Hong Kong.

RECEIVED
29 JUL 2022
EIAO Register Office, E.P.D.

☐ Tick (✓) the appropriate box

PART D PROPOSED VARIATIONS TO THE CONDITIONS IN CURRENT ENVIRONMENTAL PERMIT

D1. Condition(s) in the Current Environmental Permit :	D2. Proposed Variation(s) :	D3. Reason for Variation(s) :	D4. Describe the environmental changes arising from the proposed variation(s) :	D5. Describe how the environment and the community might be affected by the proposed variation(s) :	D6. Describe how and to what extent the environmental performance requirements set out in the EIA report previously approved or project profile previously submitted for this project may be affected :	D7. Describe any additional measures proposed to eliminate, reduce or control any adverse environmental impact arising from the proposed variation(s) and to meet the requirements in the Technical Memorandum on Environmental Impact Assessment Process :
- Figure 4; and - EP Condition 2.10: "To mitigate traffic noise impact arising from the Project, the Permit Holder shall implement all noise mitigation measures as shown in Figure 4 of this Permit before commencement of operation of the Project. All noise mitigation measures implemented shall be properly maintained during operation of the Project."	Minor changes in the traffic noise mitigation measures on "Castle Peak Road Diversion" defined as Designated Project 2 (DP2) in the EIA Report, is proposed. In view of the above, it is proposed to - Remove Figure 4; and - Vary EP Condition 2.10. EP Condition 2.10 is proposed to be varied to "To mitigate traffic noise impact arising from the Project, the Permit Holder shall submit a detailed Traffic Noise Mitigation Measures Plan to demonstrate the noise compliance due to the operation for approval by the Director before commencement of construction of the Project. All noise mitigation measures implemented shall be properly maintained during operation of the Project."	Please refer to Section 2.1 of "Environmental Review Report for Caste Peak Road Diversion".	Please refer to Section 2.2 of "Environmental Review Report for Caste Peak Road Diversion".	Please refer to Section 2.2 of "Environmental Review Report for Caste Peak Road Diversion".	Please refer to Section 3.5 and 4.5 of "Environmental Review Report for Caste Peak Road Diversion".	Please refer to Section 6 of "Environmental Review Report for Caste Peak Road Diversion".

PART E DECLARATION BY APPLICANT

E1. I hereby certify that the particulars given above are correct and true to the best of my knowledge and belief. I understand the environmental permit may be suspended, varied or cancelled if any information given above is false, misleading, wrong or incomplete.

[redacted] [redacted] [redacted]

Full Name in Block Letters | Position

on behalf of Civil Engineering and Development Department | 27 July 2022

Company Name and Chop (as appropriate) | Date

NOTES :

1. A person who constructs or operates a designated project in Part I of Schedule 2 of the Ordinance or decommissions a designated project listed in Part II of Schedule 2 of the Ordinance without an environmental permit or contrary to the permit conditions commits an offence under the Ordinance and is liable to a maximum fine of $5,000,000 and to a maximum imprisonment for 2 years.

2. A person for whom a designated project is constructed, operated or decommissioned and who permits the carrying out of the designated project in contravention of the Ordinance commits an offence and is liable to a maximum fine of $5,000,000 and to a maximum imprisonment for 2 years.

土木工程拓展署
Civil Engineering and Development Department
North Development Office

Agreement No. CE 20/2019 (HY)

Improvement of Tai Tau Leng Roundabout And Fanling Highway (Kwu Tung Section) – Design and Construction

Environmental Review Report for Castle Peak Road Diversion

July 2022

Reviewed: _____ 25 July 2022
Raymond Pau

Approved for Issue: _____ 25 July 2022
David Ho

AECOM ASIA COMPANY LIMITED

[BLANK]

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENICES

1 INTRODUCTION

1.1 Background

1.1.1 The North East New Territories (NENT) New Development Areas (NDAs) Planning and Engineering (P&E) Study, after consideration and incorporation of comments from the three-stage public engagement programme, planned to proceed with development in the Kwu Tung North (KTN) and Fanling North (FLN). The NENT NDAs P&E Study is a designated project under Item 1 Schedule 3 of the Environmental Impact Assessment Ordinance (EIAO), and covers a total of thirteen individual designated projects which require environmental permits under Schedule 2 of EIAO.

1.1.2 An EIA Report was prepared to assess the environmental impacts associated with the proposed construction and operational works of the NENT NDAs. The EIA Report (Register No. AEIAR-175/2013) was approved by the Director of Environmental Protection (DEP) on 18 October 2013 with approval conditions stipulated in the Director's letter (Reference: (45) in EP2/N7/S3/57 Pt.3). There are twelve Environmental Permits (EPs) and two Further Environmental Permits (FEPs) issued by DEP on 21 November 2013, 1 February 2018 and 16 March 2021 respectively to cover all the identified designated projects in NENT NDAs.

1.1.3 The construction and operation of Castle Peak Road Diversion (hereinafter known as "the Project"), which is defined as Designated Project 2 (DP2) in EIA Report, is governed by EP-466/2013. The location of the Project is provided in **Appendix 1.1**.

1.1.4 As stipulated in Condition 2.10 of EP-466/2013, all noise mitigation measures as shown in Figure 4 of the Permit (**Appendix 1.2** refers) shall be implemented before commencement of operation of the Project. Minor change in the traffic noise mitigation measures on the Project has been identified based on the latest design review.

1.1.5 An environmental review has been conducted to confirm the acceptability of environmental performance of the Project due to the proposed minor change of traffic noise mitigation measures for supporting the VEP application.

1.2 Objective of this Report

1.2.1 This Environmental Review Report (ERR) has been prepared to assess the likely environmental issues associated with the proposed minor change. It will form part of the submission to the Environmental Protection Department (EPD) for the application of a variation to the Condition 2.10 of the EP.

2 PROPOSED CHANGES

2.1 Proposed Changes and Reason of Changes

2.1.1 During the design stage of the Project, the practicability of the proposed traffic noise mitigation measures was reviewed. It was identified that the proposed KTN-NB63, an approximately 380m long 5+3m cantilever (**Appendix 2.1** refers), would block the junction at Yin Kong Road from the proposed Castle Peak Road as well as the pedestrian walkway at Area C1-3. In addition, the provision of KTN-NB63 would induce safety issue to driver as a result sightline constraint. Therefore, KTN-NB63 should be modified to maintain both the traffic flow at Yin Kong Road and pedestrian walkway for Site C1-3. All proposed mitigation measures under the Project are confirmed to be practicable and can fulfil relevant engineering and design requirements as confirmed by design engineer.

2.1.2 The KTN-NB63 is proposed to be split into 3 sections as shown in **Figure 2.1** with details provided in **Table 2.1**.

Table 2.1 Summary of Proposed Changes of KTN-NB63

ID of Noise Barrier	Original Type and Approx. Extent		Proposed ID of Noise Barrier	Proposed Type and Approx. Extent	
	Type	Approx. Length, m		Type	Approx. Length, m
KTN-NB63	5m vertical noise barrier with 3m cantilevered arm at 45°	380	KTN-NB63A	5m vertical noise barrier with 3m cantilevered arm at 45°	74
			KTN-NB63B	7m vertical noise barrier with 3m cantilevered arm at 45°	105
			KTN-NB63C	5m vertical noise barrier with 3m cantilevered arm at 45°	201
				Total Length:	380

2.2 Environmental Aspects of Concern Due to Proposed Changes

2.2.1 As mentioned in **Section 2.1**, only localised and minor changes are proposed at KTN-NB63. There is no change in the road alignment of the Project. The proposed changes are related to the traffic noise mitigation measures as presented in **Appendix 1.2**. It is expected that the proposed changes of noise barrier would not induce additional environmental impacts during the construction phase of the Project as the construction methods, PME inventory and the construction noise mitigation measures proposed in the EIA Report remain valid.

2.2.2 The purpose of the installation of noise barrier is to mitigate the traffic noise impact to acceptable levels. As such, the proposed changes on KTN-NB63 may have implication to the road traffic noise impact during the operational phase and further review on the traffic noise impact should be conducted.

2.2.3 In respect to the nature and scope of the proposed minor changes as discussed in **Section 2.1**, the potential impacts due to the proposed changes have been reviewed and are summarised in **Table 2.2**.

Table 2.2 Potential Impacts associated with the Proposed Changes

Potential Impact	Construction Phase	Operational Phase
Air Quality	x	x(1)
Noise	x	√(2)
Water Quality	x	x
Sewerage	x	x
Waste Management Implications	x	x
Land Contamination	x	x
Hazard to Life	x	x
Landfill Gas Hazard	x	x
Cultural Heritage	x	x
Landscape and Visual	x	x
Ecology	x	x
Fisheries	x	x

Notes:
√ – Possible impact; X – Impact not expected.
(1) The proposed changes in KTN-NB63 would only involve minor shifting of its original location and the extent of noise barrier is also of similar magnitude. The air quality impact due to changes in these noise mitigation measures should only be minor, as the changes will only lead to slight effect on the dispersion of vehicular emissions. Further review on potential air quality impact assessment has been conducted and is discussed in **Section 3**.
(2) Further review on the traffic noise impact has been conducted and discussed in **Section 4**.

3 AIR QUALITY IMPACT ASSESSMENT

3.1 Introduction

3.1.1 This section presents the evaluation findings of potential air quality impacts associated with the proposed change of noise barrier design during the operation phase (**Figure 2.1** refers).

3.2 Environmental Legislation, Standards and Criteria

3.2.1 The new Air Quality Objectives (AQOs) was implemented on 1 January 2022. However, with reference to the general notice issued by EPD on 2 Jul 2021, "The New Air Quality Objectives and assessment of air quality impact of a project under the Environmental Impact Assessment Ordinance ('EIAO') (Cap. 499)", in relation to the EIAO, provide for a time-limited transitional period to the effect that, for a project in respect of which an environmental permit ('EP') has been issued under the EIAO before 1 January 2022, the new AQOs shall not apply to an application for variation of the EP submitted within 36 months from 1 January 2022.

3.2.2 Since the EP of the Project was granted on 21 November 2013 (i.e. before 1 January 2022), and the application for variation of the EP will be submitted within 36 months from 1 January 2022 the new AQOs shall not apply to this assessment and hence the variation of the EP. The relevant applicable AQOs are listed in **Table 3.1**.

Table 3.1 Hong Kong Air Quality Objectives (AQOs) (2014 – 2021)

Pollutants	Averaging Time	Concentration Limit (µg/m3) (1)	No. of Exceedances to be Allowed per Calendar Year
Respirable Suspended Particulates (PM_{10} / RSP) (2)	24-hour	100	9
	1-year	50	Not applicable
Fine Suspended Particulates ($PM_{2.5}$ / FSP) (3)	24-hour	75	9
	1-year	35	Not applicable
Nitrogen Dioxide (NO_2)	1-hour	200	18
	1-year	40	Not applicable

Notes:
(1) All measurements of the concentration of gaseous air pollutants, i.e., sulphur dioxide, nitrogen dioxide, ozone, and carbon monoxide, are to be adjusted to a reference temperature of 293 Kelvin and a reference pressure of 101.325 kilopascal.
(2) Respirable suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 10 µm or less.
(3) Fine suspended particulates means suspended particles in air with a nominal aerodynamic diameter of 2.5 µm or less.

3.3 Study Area and Air Sensitive Receivers

3.3.1 Further to the approval of EIA Report, an ERR report (July 2017) was prepared and submitted under Planning and Engineering Review for Accommodating Additional Population in KTN and FLN NDAs and for Remaining Packages of NDAs ("P&E ERR"). Under the air quality impact assessment of the P&E ERR (see **Appendix 3.1**), there are two representative ASRs (KTN-E88 and KTN-E89) located near the proposed openings of noise barriers (i.e., KTN-NB63A, KTN-NB63B, and KTN-NB63C) along Castle Peak Road – Kwu Tung. In addition, three new ASRs (KTN-R2021, KTN-R2022 and KTN-R2023) are added to the residential buildings closest to the proposed openings. The assessment height for KTN-E88 and KTN-E89 is adopted from the P&E ERR, while the newly added ASRs are residential buildings with a maximum building height of 17.2 mPD. Referring to the P&E ERR, the worst-hit level appears at 1.5 meters above the ground. Therefore, the cumulative impact is assessed at 1.5 mAG as a conservative approach. Details of the representative ASRs are presented in **Table 3.2** and shown in **Figure 3.1**.

Table 3.2 Details of Representative Air Sensitive Receivers

ASR ID	Description	Land Use	Assessment Height Above Ground (mAG)	The shortest distance from the ASRs to the closest opening of the noise barrier, m
KTN-E88	Sports Ground near Enchi Lodge	Recreational	1.5	50
KTN-E89	Temporary Structure near Castle Peak Road	Other Specific Uses	1.5	70
KTN-R2021	Planned Residential Building	Residential	1.5	15
KTN-R2022	Planned Residential Building	Residential	1.5	35
KTN-R2023	Residential Building, 5 Yin Kong Road	Residential	1.5	50

3.4 Air Quality Impact Assessment Methodology

Assessment Scenarios

3.4.1 To assess the air quality impacts associated with the design changes of noise barrier (KTN-NB63) as described in **Section 2.1**, two scenarios, namely Base Case Scenario and Proposed Change Scenario, have been assessed at the representative ASRs in the worst assessment year. The Proposed Change Scenario assumes that no noise barrier is erected along Castle Peak Road - Kwu Tung as a conservative approach. With reference to the P&E ERR, Year 2029 was selected as the assessment year as the highest vehicular emission burden for NO_2 and RSP would occur in Year 2029. The Base Case Scenario and Proposed Change Scenario are summarised as below:

- Base Case Scenario – Scenario for the original design of noise barrier (KTN-NB63) (i.e. same as the model in P&E ERR) presented in EP-466/2013 (see **Appendix 1.2**); and
- Proposed Change Scenario – Scenario for no noise barrier (KTN-NB63) erected along Castle Peak Road – Kwu Tung as a conservative approach**.**

3.4.2 To consider the cumulative air quality impact associated with the openings of the noise barrier at the representative ASRs, the changes in air pollutant concentrations (ΔD) due to the openings of the noise barrier were added to the predicted cumulative air pollutant concentration (C_P) listed in the P&E ERR. The detailed approaches for estimating cumulative air quality impact at the selected representative ASRs are outlined in the following formula. For the new ASRs (i.e. KTN-R2021, KTN-R2022 and KTN-R2023), the cumulative prediction C_P is referred to the nearest contour point from the results in P&E ERR. While for the remaining ASRs (i.e. KTN-E88 and KTN-E89), the cumulative prediction C_P is referred to the result of the actual assessment point in P&E ERR.

$$C_P' = \Delta D + C_P$$

Where

C_P' - the cumulative prediction of the 19th highest hourly/annual NO_2 or the 10th highest daily/annual RSP or the 10th highest daily/annual FSP associated with the noise barrier design changes at the representative ASRs.

CP - the cumulative prediction of the 19th highest hourly/annual NO2 or the 10th highest daily/annual RSP or the 10th highest daily/annual FSP from the P&E ERR.

ΔD - the **maximum** difference of the daily/annual RSP or daily/annual FSP or hourly/annual NOx (Nitrogen Oxide) (i.e. NO2+NO) between "Proposed Changes Scenario" and "Base Case Scenario".

Vehicular Emission from Open Roads (ΔD)

3.4.3 The air quality assessment methodology in the operational phase is as same as that adopted in the P&E ERR. The key air pollutants emitted by vehicles considered in the assessment are Nitrogen Dioxide (NO_2), Fine Suspended Particulate (FSP), and Respirable Suspended Particulates (RSP), which would be calculated by EMFAC-HK Model and CALINE4 Model.

3.4.4 CALINE4, the EPD approved line source air dispersion model developed by the California Department of Transport was used to assess the contribution due to vehicular emission from the nearby road (i.e., Castle Peak Road – Kwu Tung). The surface roughness coefficient in each assessment scenario is 100 cm, which is the typical value for new development areas advised in "Guidelines on Choice of Models and Model Parameters" by EPD.

3.4.5 The hourly grid-specific WRF (Weather Research and Forecasting) meteorological data (the same basis for the latest PATH v2.1 model) including wind speed, wind direction, and air temperature were employed for the model run. PCRAMMET was applied to generate the Pasquil-Gifford stability class for the meteorological input to CALINE4 model based on the WRF meteorological data.

3.4.6 The NO, NO_2, RSP and FSP running exhaust and start emission factors of 18 vehicle classes were predicted by the latest version of EMFAC-HK model (i.e. EMFAC-HK v4.3). The lowest temperature and relative humidity (i.e. 2 degree Celsius and 16%) in Year 2021 from Sheung Shui automatic weather station which provided by Hong Kong Observatory was adopted. The 24-hour traffic flows and composite emission factors in Year 2029 for Castle Peak Road – Kwu Tung were further adopted in the air dispersion modelling (i.e. CALINE4 Model). The start emissions were distributed on the concerned open roads. The traffic data is presented in **Appendix 3.2**. The EMFAC-HK model assumptions and emission factors are presented in **Appendix 3.3** and **Appendix 3.4**. For vertical noise barriers with canopies, it was assumed that dispersion of traffic pollutants is in effect similar to physically shifting the mitigated road section towards the central divider. The traffic pollutants were assumed to emit from the top of the canopies. In the CALINE 4 model, the alignment of the road section was shifted by a distance equal to the covered extent, elevation of the road section was set to the elevation of the barrier top.

3.4.7 A comparative approach was adopted to predict the change in air pollutant concentrations on the nearby ASRs due to changes in noise barrier design. Vehicular emissions from the concerned open road sections (i.e. Castle Peak Road) under both Base Case Scenario and Proposed Change Scenario are modelled by CALINE4. The maximum difference (ΔD) of the concerned air pollutants (i.e. 1-hour and annual average NO_2 and NO, daily and annual average RSP and FSP) under two scenarios were further calculated.

The Cumulative Prediction Concentration from P&E ERR (C_P)

3.4.8 Since FSP was not assessed in the approved P&E ERR, the cumulative concentration of FSP is adjusted from the RSP concentration of the previous P&E ERR. The cumulative concentration at each ASRs is composed of background concentration, Tier 1 (i.e. project contribution), and Tier 2 (i.e. secondary contribution) emission concentrations. With reference to the EPD's "Guidelines on the Estimation of FSP for Air Quality Assessment in Hong Kong", the background concentrations of FSP are estimated by adjusting the background concentration of RSP by multiplying 0.75 to the 10th highest daily RSP background concentration and multiplying 0.71 to the annual RSP background concentration. It is noted that the contribution from the background FSP concentration to the overall cumulative FSP concentration would be approximately 98%. As a conservative approach, FSP concentration from Tier 1 and Tier 2 emission contributions was assumed to be the same as RSP concentration from Tier 1 and Tier 2 emission contributions. The cumulative prediction of the 10th highest daily and annual average FSP concentrations was calculated as follows:

$$C_{FSP} = x(C_{RSP,bg}) + y(C_1 + C_2)$$

Where

C_{FSP} is the cumulative prediction of the 10th highest daily/annual FSP.

$C_{RSP,bg}$ is the background concentration of the 10th highest daily/annual RSP.

$C_1 + C_2$ is the sum of Tier 1 and Tier 2 contributions of the 10th highest daily/annual RSP from the P&E ERR, which is the difference between the cumulative 10th highest daily/annual RSP concentration and the 10th highest daily/annual RSP background concentration.

y is equal to 1. As a conservative approach, it is assumed that the concentration of FSP from Tier 1 and Tier 2 contributions is the same as RSP from Tier 1 and Tier 2 contributions.

x is the ratio adjusted for the background concentration of RSP, multiplied by **0.75** for the 10th highest daily average and **0.71** for the annual average.

3.4.9 The predicted cumulative NO_2, RSP and FSP concentrations (results extracted from the P&E ERR) are summarised in **Table 3.3**.

Table 3.3 Predicted Cumulative Concentration (Results Extracted from the P&E ERR)

ASR ID	Height (m)	Predicted Cumulative Air Pollutant Concentration (C_P) (μg/m³)					
		19th Highest Hourly NO_2	Annual NO_2	10th Highest Daily RSP	Annual RSP	10th Highest Daily FSP (3)	Annual FSP (3)
AQOs	**-**	**200**	**40**	**100**	**50**	**75**	**35**
KTN-E88(1)	1.5	149.0	34.6	82.8	35.9	62.2	25.8
KTN-E89(1)	1.5	150.0	34.8	82.8	35.9	62.2	25.8
KTN-R2021(2)	1.5	155.1	36.0	82.8	35.9	62.2	25.9
KTN-R2022(2)	1.5	138.4	31.1	82.8	35.7	62.2	25.7
KTN-R2023(2)	1.5	144.3	33.0	82.9	35.8	62.2	25.7

Notes:
(1) For the ASRs adopted in the P&E ERR (i.e. KTN-E88 and KTN-E89), the air pollutant concentrations are extracted from the result of the assessment point in the P&E ERR.
(2) For the newly added ASRs (i.e. KTN-R2021, KTN-R2022 and KTN-R2023), the air pollutant concentrations are extracted from the nearest point from the contour plot in the P&E ERR (see **Appendix 3.5**).
(3) As mentioned in **Section 3.4.8**, the predicted cumulative FSP concentrations are adjusted based on the predicted cumulative RSP concentration from the P&E ERR.

3.5 Evaluation of Air Quality Impact

3.5.1 The cumulative air quality impact associated with the design changes of the noise barrier at the representative existing and planned ASRs in Year 2029 was assessed. The maximum differences between two scenarios (i.e. Proposed Change Scenario – Base Case Scenario) in hourly and annual average NO_2, daily and annual average RSP and FSP concentrations at the representative ASRs are summarised in **Table 3.4**.

Table 3.4 Summary of the Maximum Difference of NO_2, RSP and FSP Concentrations at Representative ASRs Between Two Scenarios

ASR ID	Height (m)	Maximum Air Pollutant Concentration Difference between two Scenarios (ΔD) (μg/m³)					
		Hourly NO_2	Annual NO_2	Daily RSP	Annual RSP	Daily FSP	Annual FSP
KTN-E88	1.5	3.743	0.438	0.020	0.009	0.019	0.008
KTN-E89	1.5	5.411	0.630	0.028	0.013	0.026	0.012
KTN-R2021	1.5	5.700	0.749	0.034	0.015	0.031	0.014
KTN-R2022	1.5	2.325	0.299	0.016	0.006	0.015	0.006
KTN-R2023	1.5	2.343	0.232	0.012	0.005	0.011	0.004

3.5.2 According to the predicted cumulative results based on the original noise barrier design presented in the P&E ERR (see **Table 3.3**), the results indicated that the 19th highest hourly average and the annual NO_2, 10th highest daily average and the annual average of RSP and FSP concentrations at the representative ASRs (which are located near the opening of noise barrier) would comply with the respective AQOs. Considering the change of noise barrier design, the predicted cumulative concentrations of the 19th highest hourly average and annual NO_2, 10th highest daily average and annual RSP and 10th highest daily average and annual FSP at the representative ASRs are summarised in **Table 3.5**. The details of assessment results are presented in **Appendix 3.6**.

Table 3.5 Predicted Cumulative Air Quality Impact at Representative Air Sensitive Receivers Associated with the Change of Noise Barrier Design

ASR ID	Height (m)	Predicted Cumulative Air Pollutant Concentration (C_P') (μg/m^3)					
		19th Highest Hourly NO_2	Annual NO_2	10th Highest Daily RSP	Annual RSP	10th Highest Daily FSP	Annual FSP
AQOs	**-**	**200**	**40**	**100**	**50**	**75**	**35**
KTN-E88	1.5	152.7	35.0	82.9	35.9	62.2	25.8
KTN-E89	1.5	155.4	35.4	82.9	35.9	62.2	25.8
KTN-R2021	1.5	160.8	36.8	82.9	36.0	62.2	25.9
KTN-R2022	1.5	140.7	31.4	82.9	35.7	62.2	25.7
KTN-R2023	1.5	146.6	33.2	82.9	35.8	62.2	25.7

3.5.3 According to the results listed in **Table 3.5**, the predicted cumulative RSP, FSP and NO_2 concentrations at the representative existing and planned ASRs located near the proposed openings of noise barriers would comply with the AQOs as stated in **Table 3.1**. Therefore, the assessment results demonstrate that the changes in the noise barrier design would not cause an adverse air quality impact to the surrounding ASRs during the operational phase.

4 TRAFFIC NOISE IMPACT ASSESSMENT

4.1 Introduction

4.1.1 As shown in **Figure 2.1**, the proposed changes at KTN-NB63 are localised, and therefore the traffic noise impact assessment was conducted at the noise sensitive receivers (NSRs) that are directly facing to the gaps between KTN-NB63A, NB63B and NB63C.

4.1.2 Traffic noise model and the traffic forecast for KTN NDA as approved in Traffic Noise Mitigation Plan (TNMP) for *Construction and operation of KTN NDA Road P1, P2 and Associated New Kwu Tung Interchange and Pak Shek Au Interchange Improvement* submitted under Condition 2.6 of EP-467/2013/A was adopted in this traffic noise impact assessment.

4.2 Environmental Legislation, Standards and Criteria

4.2.1 The criteria for assessing road traffic noise are given in the Technical Memorandum on Environmental Impact Assessment Process (EIAO-TM). The road traffic noise criterion is 70dB(A) for domestic premises, hotels, hostels and offices, and 65dB(A) for educational institutes and places of worship. For hospitals, clinics etc, a more stringent criterion of 55dB(A) is stipulated. It should be noted that all these criteria only apply to Noise Sensitive Receivers (NSRs) that rely on opened windows for ventilation.

4.3 Traffic Noise Assessment Methodology

4.3.1 Same road traffic noise assessment methodology as presented in Section 4.6.2.1 of the EIA Report was adopted in this noise impact assessment.

4.3.2 As mentioned in **Section 4.1.2**, the traffic noise impact at the representative NSRs in Year 2044 (i.e. same as that adopted in the TNMP under EP-467/2013/A) was assessed to evaluate the traffic noise compliance and the required mitigation measures for ultimate scenario. Traffic forecast for the Year 2044 (**Appendix 4.1** refers) as adopted in the TNMP under EP-467/2013/A was used for this localised traffic noise impact assessment. For without project scenario, the predicted overall noise levels at the design year (i.e. Year 2044) were extracted from the EIA Report.

4.4 Representative Noise Sensitive Receivers

4.4.1 The representative NSRs in this assessment follow same assessment points as adopted in the TNMP under EP-467/2013/A. Details of the representative NSRs are presented in **Table 4.1** and shown in **Figure 2.1**.

Table 4.1 Details of Representative Noise Sensitive Receivers

NSR(1)	Noise Assessment Point (NAP) (2)	Land Use (3)	Status	No. of Floor	Traffic Noise Criterion, $L_{10(1hr)}$, dB(A)
Enchi Lodge	R2021	R	Existing	2	70
C1-3	R2022 – R2024	CDA	Planned	3	70
C1-4	R2102 – R2103	R	Planned	3	70

Notes:
(1) The NSRs that are directly facing to the gaps between KTN-NB63A, NB63B and NB63C.
(2) Reference was made from Planning and Engineering Review for Accommodating Additional Population in KTN and FLN NDAs and for Remaining Packages of NDAs – Report on Environmental Review (July 2017) ("P&E ERR").
(3) R – Residential; CDA: Comprehensive Development Areas.

4.5 Evaluation of Traffic Noise Impact

4.5.1 A computer plot of the road scheme and a plan showing the location of existing roads, new roads and other roads is presented in **Appendix 4.2**.

4.5.2 The latest proposed location and extent of KTN-NB63 as presented in **Figure 2.1** has been incorporated in the noise model. The mitigated noise levels of the representative NSRs are summarised in **Table 4.2**, with detailed road traffic noise levels presented in **Appendix 4.3**.

Table 4.2 Predicted Traffic Noise Level at the Concerned NSRs with Proposed Changes for KTN-NB63 in Year 2044

NSR	NAP	Use (1)	$L_{10(1hr)}$ dB(A)		Compliance [Y/N]	Further Mitigation Measures Required [Y/N] (3)
			Criterion (2)	Predicted Noise Levels		
Enchi Lodge	R2021	R	70	68	Y	N
C1-3	R2022 – R2024	CDA	70	64 – 70	Y	N
C1-4	R2102 – R2103	R	70	66 – 67	Y	N

Notes:
(1) R – Residential; E – Educational; CDA – Comprehensive Development Areas.
(2) Relevant environmental standards / criteria: TM-EIAO noise standards for road traffic noise.
(3) For existing and planned NSRs outside and within the non-development area of NDA, direct mitigation measures are required when "With Project Overall Noise Level exceeds Noise Criteria" and, either "With Project - Without Project Overall Noise Level ≥ 1dB(A)" or "New Roads exceeds Noise Criteria" or "New Roads Contribution ≥ 1 dB(A)".

4.5.3 With the proposed changes of noise barrier KTN-NB63, the traffic noise levels at all planned and existing residential premises would still comply with the relevant noise criterion, and no residual impact is therefore anticipated. Hence, the proposed changes would not induce additional traffic noise impact to the NSRs.

4.5.4 Upon finalisation of the detailed design of the Project, the noise mitigation measures as shown in **Appendices 1.2** and **2.1** may need to be further refined but in any event will be properly and adequately designed to provide sufficient protection for the existing and planned noise sensitive receivers, such that the traffic noise impact will comply with EIAO-TM requirements. A plan containing the details of noise mitigation measures with supporting calculations will be submitted to EPD for approval prior to commencement of construction works.

5 ENVIRONMENTAL MONITORING AND AUDIT

5.1.1 Based on the findings of environmental review conducted above, the proposed minor changes will not result in unacceptable environmental impacts as compared with those identified in the approved EIA Report. Therefore, no additional environmental monitoring requirement due to the proposed changes is required and the EM&A requirements recommended in the approved EIA Report remain unchanged.

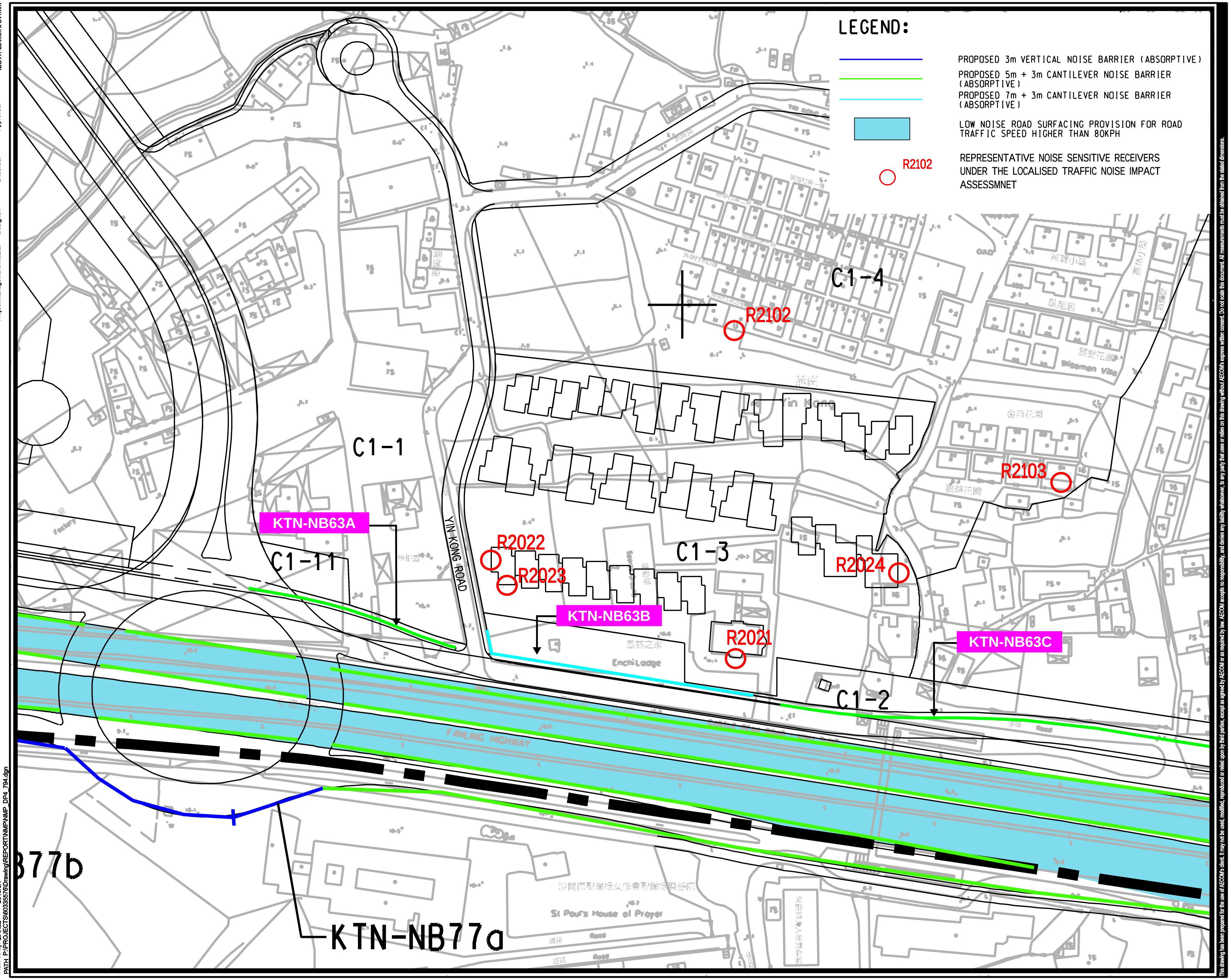
6 CONCLUSION

6.1.1 An environmental review was conducted for the proposed minor changes in traffic noise mitigation measures. The potential environmental issues due to the proposed minor changes were reviewed. It is concluded that the proposed variations of the Project in relation to the proposed minor changes to noise mitigation measures would not result in material change leading to adverse residual environmental impact with the mitigation measures in place and the Project complies with the EIAO-TM requirements in all relevant environmental issues revised. No additional environmental monitoring and audit requirements are therefore required.

[BLANK]

FIGURES

[BLANK]



AECOM

PROJECT

DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, PHASE 1 - DESIGN AND CONSTRUCTION

CLIENT

土木工程拓展署
CEDD Civil Engineering and Development Department

CONSULTANT

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.

STATUS

SCALE

DIMENSION UNIT

KEY PLAN

PROJECT NO. 60335576

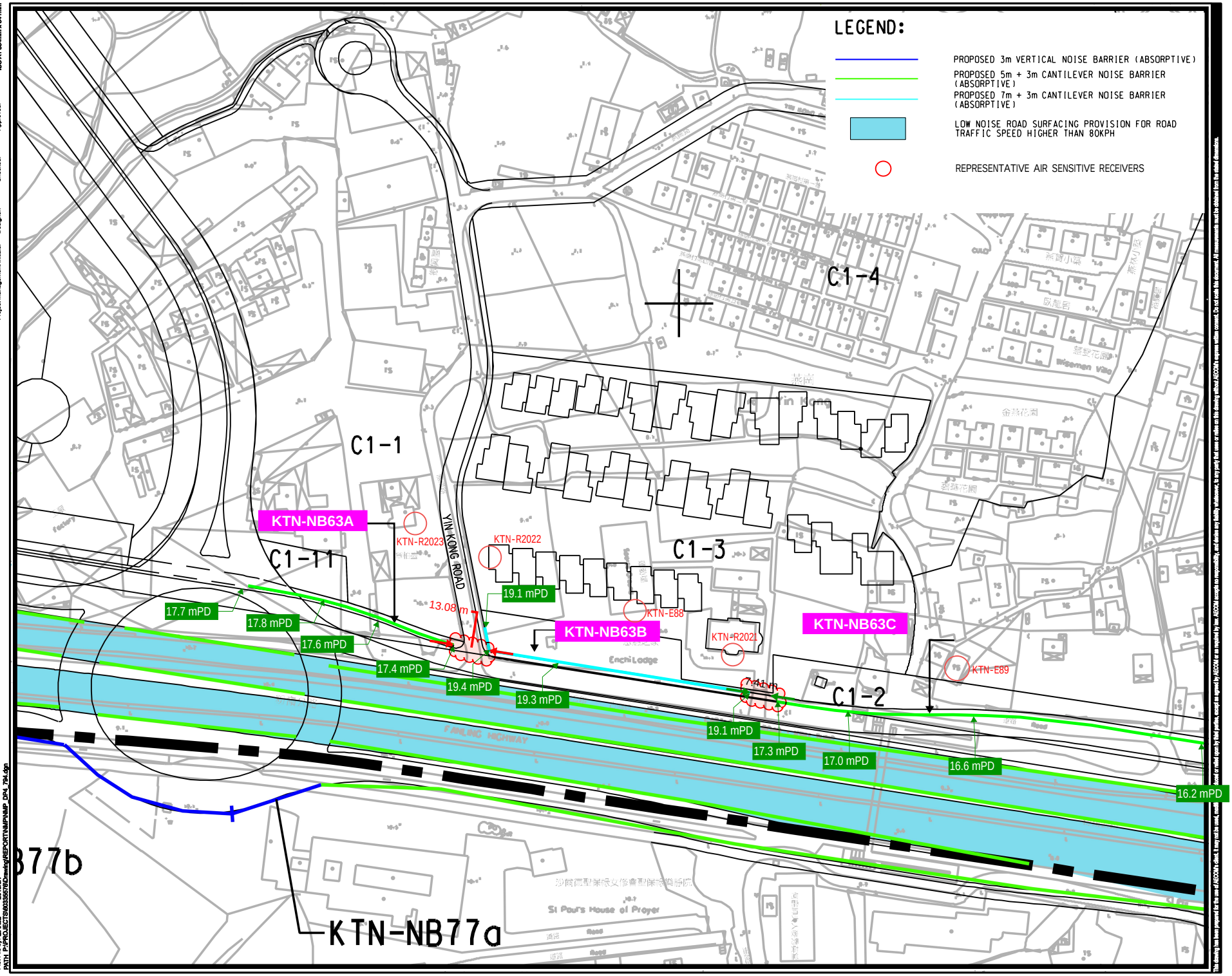
CONTRACT NO. CE 13/2014 (CE)

SHEET TITLE

PROPOSED CHANGES OF NOISE BARRIER KTN-NB63 AND LOCATIONS OF REPRESENTATIVE NOISE SENSITIVE RECEIVERS

SHEET NUMBER

FIGURE 2.1



AECOM

PROJECT
DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, PHASE 1 - DESIGN AND CONSTRUCTION

CLIENT
CEDD 土木工程拓展署 Civil Engineering and Development Department

CONSULTANT
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION

MR	DATE	DESCRIPTION	CHK.

STATUS

SCALE

DIMENSION UNIT

KEY PLAN

PROJECT NO. 60335576

CONTRACT NO. CE 13/2014 (CE)

SHEET TITLE
LOCATIONS OF REPRESENTATIVE AIR SENSITIVE RECEIVERS

SHEET NUMBER
FIGURE 1.1

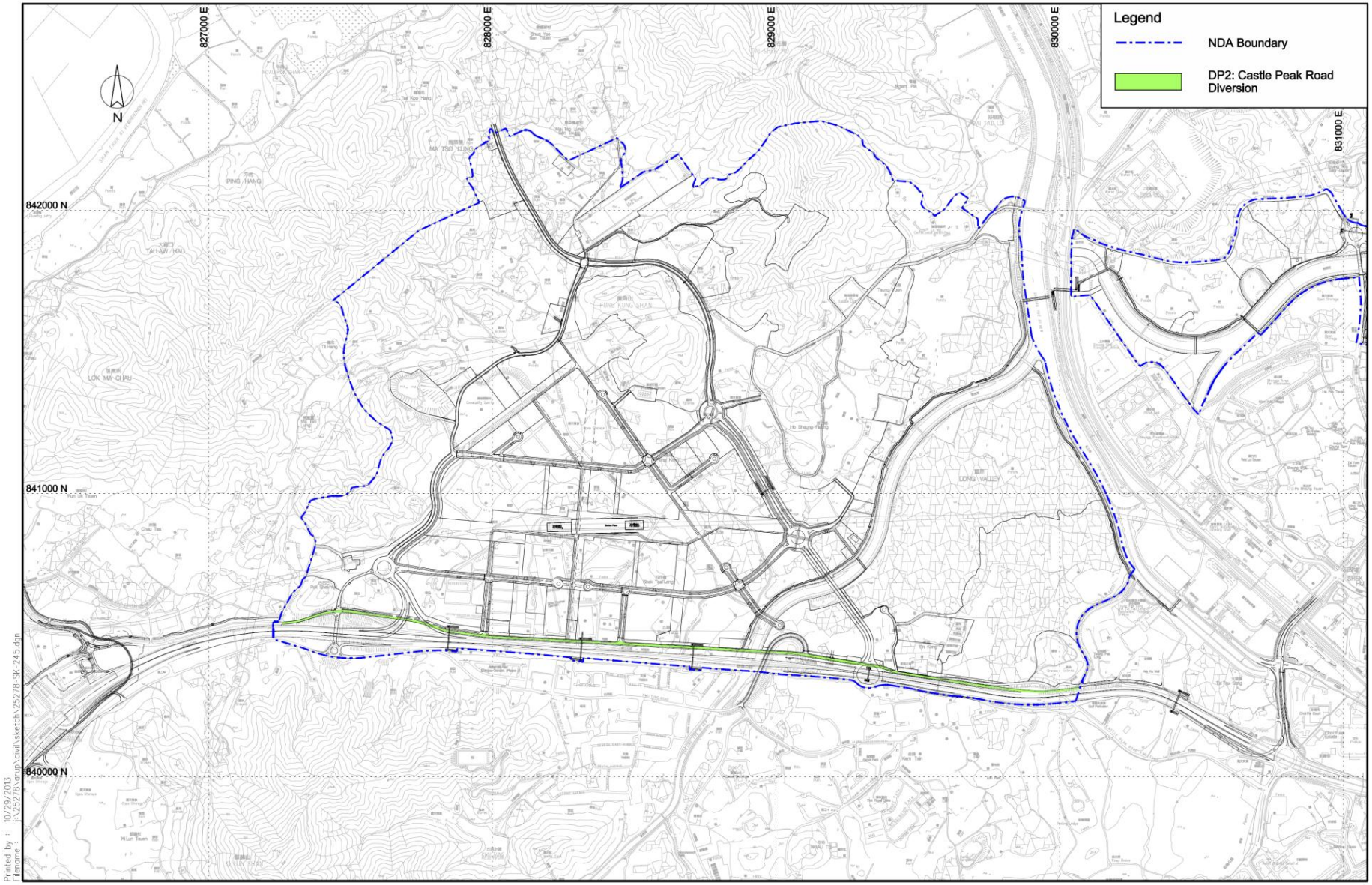
ISO A1 594mm x 841mm
Approved:
Checked:
Designer:
Project Management Initials:
Plot File by: LIANJ2
2019/5/7
PATH: P:\PROJECTS\60335576\DrawingINEPORT\NMP\NMP_DP4_794.dgn

APPENDICES

[BLANK]

Appendix 1.1
Location of the Project (DP2)

[BLANK]



Project Title: Castle Peak Road Diversion

Figure 1: Location Plan for Castle Peak Road Diversion Project

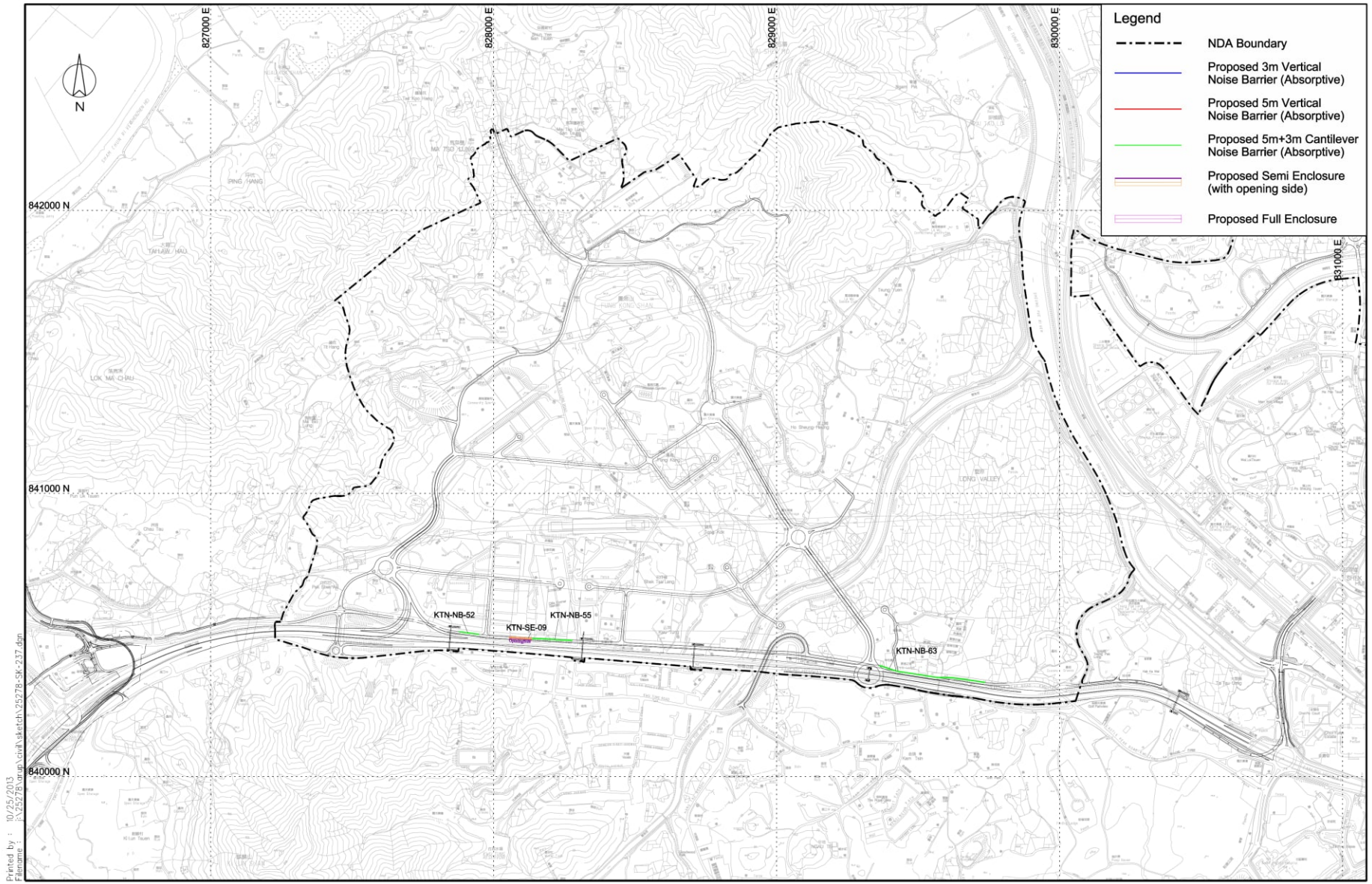
(Extracted from Drawing No. SK/245 of North East New Territories New Development Area Planning and Engineering Study)

Environmental Permit No: EP-466/2013

[BLANK]

Appendix 1.2
Excerpt of EP-466/2013 for Castle Peak Road Diversion

[BLANK]



Project Title: Castle Peak Road Diversion

Figure 4: Location Plan for the Proposed Noise Barriers

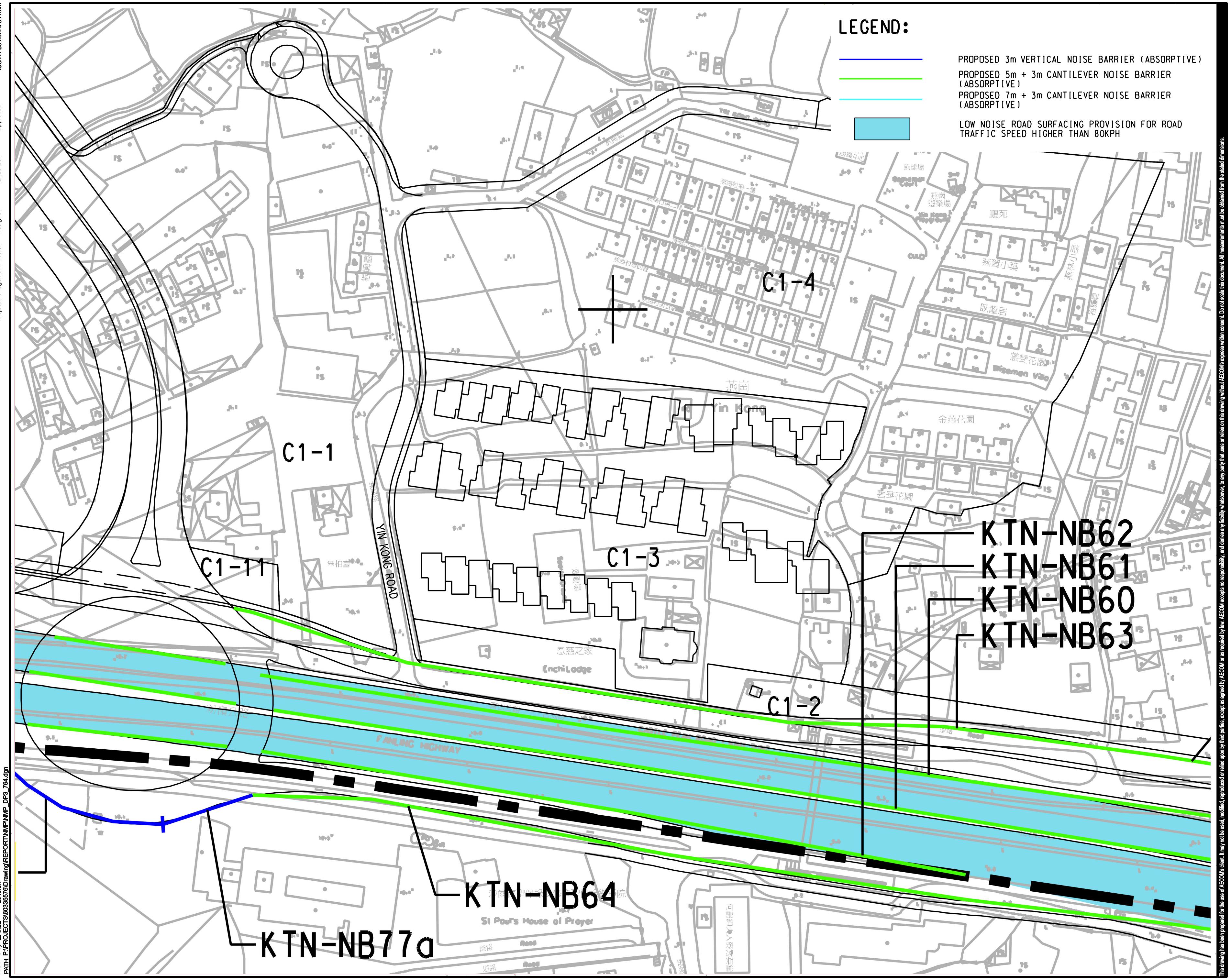
(Extracted from Drawing No. SK/237 of North East New Territories New Development Area Planning and Engineering Study)

Environmental Permit No: EP-466/2013

[BLANK]

Appendix 2.1
Location and Extent of KTN-NB63

[BLANK]



AECOM

PROJECT
DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, PHASE 1 - DESIGN AND CONSTRUCTION

CLIENT
土木工程拓展署
CEDD Civil Engineering and Development Department

CONSULTANT
AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS

ISSUE/REVISION

I/R	DATE	DESCRIPTION	CHK.

STATUS

SCALE

DIMENSION UNIT

KEY PLAN

PROJECT NO.
60335576

CONTRACT NO.
CE 13/2014 (CE)

SHEET TITLE
LOCATION AND EXTENT OF KTN-NB63

SHEET NUMBER
APPENDIX 2.1

ISO A1 594mm x 841mm
Approved:
Checked:
Designer:
Project Management Initials:
Plot File by: LIANJ2 2019/5/7
PATH P:\PROJECTS\60335576\Drawing\REPORT\NMP\NMP_DP3_764.dgn

[BLANK]

Appendix 3.1
Excerpt of Environmental Review Report

[BLANK]

A REVIEW ON AIR QUALITY IMPACT ASSESSMENT

A.1 Introduction

A.1.1 As discussed in **Section 2.1.1** of this ERR, changes on road alignment are proposed for DP3 and DP4. It is expected that the change in road alignment would only result in a minor change in air quality impact at air sensitive receivers (ASRs) and would unlikely cause exceedance of the applicable Air Quality Objectives (AQOs). A sensitivity test is conducted to confirm the anticipated changes in air quality impact at the representative ASRs in the proximity of the proposed changes in road alignment under "with" and "without" alignment change scenarios. The air quality impact due to changes in noise barriers is also expected to be minor as these changes will only lead to slight effect on the dispersion of vehicular emissions. A review on operational air quality impact assessment is therefore conducted to confirm the prediction based on the best available information on the sensitive receivers and traffic forecast, as well as latest noise mitigation proposal (**Appendix B** of this ERR refers) based on the findings of review on traffic noise impact assessment.

A.1.2 As mentioned in **Section 2.1.1** of this ERR, there is a minor change in the road alignment as shown in Figures **2.1– 2.3** of this ERR, it is expected that the change in construction dust impact at air sensitive receivers (ASRs) would be insignificant with adoption of good site practice and the mitigation measures recommended in the EIA Report. The finding of the EIA Report is still valid and further review on the construction dust impact is therefore considered not necessary.

A.2 Environmental Legislation, Policies, Plans, Standards and Criteria

A.2.1 The new Air Quality Objectives (AQOs) have been implemented on 1 January 2014. However, with reference to the general notice issued by EPD on 26 Jul 2013, "The New Air Quality Objectives and assessment of air quality impact of a project under the Environmental Impact Assessment Ordinance ('EIAO') (Cap. 499)", in relation to the EIAO, provide for a time-limited transitional period to the effect that, for a project in respect of which an environmental permit ('EP') has been issued under the EIAO before 1 January 2014, the new AQOs shall not apply to an application for variation of the EP submitted within 36 months from 1 January 2014.

A.2.2 Since the EP of the Project was granted on 21 November 2013, before 1 January 2014 and the application for variation of the EP will be submitted within 36 months from 1 January 2014, the new AQOs shall not apply to this assessment for variation of the EP.

A.2.3 The legislation, policies, plans, standards and criteria for air quality in the EIA stage shall be adopted. The relevant applicable AQOs are listed in **Table A1**.

Table A1 Applicable Hong Kong Air Quality Objectives (1987-2013)

Pollutant	Maximum Concentration (µg m-3) (1)			
	1 hour (2)	8 hour (3)	24 hour (3)	Annual (4)
Respirable Suspended Particulates (RSP) (5)	-	-	180	55
Sulphur Dioxide (SO_2)	800	-	350	80
Nitrogen Dioxide (NO_2)	300	-	150	80
Carbon Monoxide (CO)	30,000	10,000	-	-

Note:
(1) Measured at 298 K and 101.325 kPa.
(2) Not to be exceeded more than three times per year.
(3) Not to be exceeded more than once per year.
(4) Arithmetic mean.
(5) Suspended particulates in air with a nominal aerodynamic diameter of 10 mm or smaller.

(6) Photochemical oxidants are determined by measurement of ozone only.

A.3 Representative Air Sensitive Receivers

A.3.1 There is no change to the identified existing and planned air sensitive receivers (ASRs) in the Study Area as presented in the EIA Report. The representative ASRs in the vicinity of the DP3 and DP4 during operation phase in Year 2029 are listed in **Table A2** and its locations are shown in **Drawings A1.1** to **A1.4**. These existing and planned ASRs are included in this air quality impact assessment.

Table A2 Representative ASRs in the vicinity of DP3 and DP4

Site	ASR ID	Description	Land use	Building Heights (m)
A1-2	KTN-6 to KTN-11, KTN-530 to KTN-534	Planned Public Rental Housing	PRH	78.75 - 110.25
A1-4[1]	KTN-13 to KTN-15, KTN-17, KTN-18	Planned Residential and Commercial Buildings	R1c	68.85 - 97.2
A1-5[1]	KTN-20 to KTN-28	Planned Comprehensive Development Areas	CDA	68.85 - 97.2
A1-6[1]	KTN-29 to KTN-37	Planned Residential and Commercial Buildings	R1c	68.85 - 97.2
A2-11	KTN-66 to KTN-75	Planned Primary School	E	36
A2-13	KTN-76 to KTN-81	Planned Secondary School	E	36
A2-2[1]	KTN-92, KTN-510 to KTN-521, KTN-526 to KTN-529	Planned Public Rental Housing	PRH	78.75 - 110.25
A2-5	KTN-108 to KTN-115	Planned Residential and Commercial Buildings	R1c	68.85 - 97.2
A3-1	KTN-145 to KTN-149	Planned Primary School	E	36
A3-2	KTN-150 to KTN-154	Planned Secondary School	E	36
A3-4	KTN-175 to KTN-180	Planned Primary School	E	36
B2-10	KTN-196,KTN-200, KTN-202 to KTN-203, KTN-507 to KTN-509	Planned Comprehensive Development Areas	CDA	45 - 90
B2-12	KTN-204 to KTN-210	Planned Commercial, Research & Development	OU(C,R&D)	18 - 45
B2-2	KTN-211 to KTN219	Planned Hospital, Polyclinic	G	45
B2-5	KTN-220 to KTN-224, KTN-500 to KTN-501, KTN-522 to KTN-523	Planned Primary School	E	36
B2-7	KTN-231 to KTN-232, KTN-525	Planned Primary School	E	36

Site	ASR ID	Description	Land use	Building Heights (m)
B2-8	KTN-234, KTN-506	Planned Governmental Uses	G	45
-	KTN-235, KTN-502 to KTN-505	Planned Governmental Uses	G	40 - 45 [2]
B3-12	KTN-238 to KTN-247	Planned Commercial, Research & Development	OU(C,R&D)	18 - 45
B3-16	KTN-248 to KTN-249	Planned Visitor Centre	OU(VC)	10
B3-2	KTN-250 to KTN-258	Planned Post Office	OU(C,R&D)	18 - 45
B3-5	KTN-259 to KTN-264	Planned Commercial, Research & Development	OU(C,R&D)	18 - 45
B3-8	KTN-265 to KTN-270	Planned Hotel and Conference Facilities; Post Office	OU(C,R&D)	18 - 45
C1-11	KTN-271	Planned Vegetable Marketing and Credit Co-operative Society	IC	-
C1-9	KTN-272 to KTN-287	Planned Area for Wetland Enhancement Works and Nature Park	OU(NP)	-
D1-12	KTN-302 to KTN308	Planned Activity Centre	G(REC)	0
D1-13	KTN-309 to KTN314	Planned Activity Centre	G(REC)	0
D1-14	KTN-315 to KTN-320	Planned Government Reserve	G	36
D1-5	KTN-321 to KTN-326	Planned Village Resite	VR	8.23
E1-2	KTN-348 to KTN-352	Planned Primary School	E	36
E1-3	KTN-353, KTN-359 to 361	Planned District Headquarters and Divisional Police Station	G	56.7
E1-4	KTN-354 to KTN-358	Planned Fan Garden Junior Police Officers' Police Married Quarters	G	56.7
E1-5	KTN-362 to KTN367	Planned Secondary School	E	36
E1-6	KTN-368 to KTN-376	Planned Sports Centre	G(REC)	22.5
E1-7	KTN-377 to KTN-382	Planned Fire Station and Ambulance Depot	G	40.5
F1-1	KTN-383 to KTN-390	Planned Open Space and Cycle Park	O	-
F1-3[1]	KTN-391 to KTN-394	Planned Sports Ground/Sports Complex	G(REC)	13.5
F1-4	KTN-395 to KTN407	Planned Research and Development	OU(R&D)	45
B2-6	KTN-408 to KTN-411	Planned Disused School	G	13.5
PFS	KTN-524	Planned Secondary School	E	36

Remark:
[1] The assessment points adopted from the approved EIA Report have already presented a worst case.
[2] The height of 40m – 45m is assumed for worst-case scenario.

A.4 Methodology

A.4.1 Similar to the EIA study, the key air pollutants of vehicular emissions considered in the assessment are Nitrogen Dioxide (NO_2) and Respirable Suspended Particulates (RSP).

A.4.2 The Project programme as stated in the EIA Report is still valid. Referring to Appendix 2.1 of the approved EIA Report, the completion of construction works for DP3 and DP4 would be July 2029, the commencement year for these two DPs would therefore considered as Year 2029. In order to determine the worst emission rate within 15 years upon operation of the project, the vehicular emission burden for NO_2 and RSP are calculated for Year 2029 and Year 2044 based on the updated traffic forecast, as presented in **Annex A1,** and EMFAC-HK v3.1.1 model, the latest version released from EPD. The results for Year 2029 and Year 2044 are presented in **Table A3**. The detailed calculation is attached in **Annex A1**.

Table A3 Emission Burden of Open Roads at Various Years for DP3 and DP4

Year	Total Daily NO_x Emission(kg/day) (EIA)	Total Daily NO_x Emission(kg/day) (ERR)	Total Daily RSP Emission(kg/day) (EIA)	Total Daily RSP Emission(kg/day) (ERR)
2029	250	252	20	11
2044	187	165	16	6

A.4.3 Results indicate that the updated emission burden in Year 2029 would be the highest within 15 years upon operation of the DP3 and DP4, therefore, the model run is conducted for Year 2029.

Emission from Open Roads

A.4.4 According to "Guidelines on Choice of Models and Model Parameters", NO_2/NOx ratios of each vehicle type varies from type to type. NO_2/NOx ratio of each vehicle is extracted from the EMFAC-HK. With these extracted ratios, the emission rate of NOx estimated by EMFAC-HK can be further divided into emission rates of NO and NO_2. The NO_2/NOx ratios are presented in **Annex A2**.

A.4.5 The hourly emissions of NO, NO_2 and RSP are divided by the number of vehicles and the distance travelled to obtain the emission factors in gram per miles per vehicle. The calculated 24-hour emission factors of 16 vehicle classes for each road type are adopted in this air quality impact assessment. The detailed calculation of vehicular emission source is presented in **Annex A2**.

A.4.6 The USEPA approved line source air dispersion model, CALINE4 is used to assess vehicular emissions impact from existing and planned road network. Surface roughness coefficient of each modelling grid adopted in the CALINE4 model varies with time, ranging from 100 cm to 370 cm for mid-rise and high-rise development areas respectively. The surface roughness coefficient of each grid in the assessment year is 100 cm as adopted in the EIA Report. The grid-specific WRF meteorological data have also been adopted to calculate the hourly impact. PCRAMMET has been applied to generate Pasquill-Gifford stability class for the meteorological input to CALINE4 model based on the WRF meteorological data.

A.4.7 For the calculation of NO_2 concentrations, the predicted NO is converted to NO_2 based on the Ozone Limiting Method with the background ozone concentration in accordance with the EPD's Guidelines on Choice of Models and Model Parameters. The predicted NO_2 is directly adopted for the determination of Total NO_2 concentration.

A.4.8 Secondary air quality impact arising from the implementation of roadside noise barriers has been incorporated into the air quality model. Extent of the proposed noise mitigation measures are presented in the Review on Noise Impact Assessment (**Appendix B** refers) and are summarised in **Annex B7** of **Appendix B**.

Emission from Portal of Full Enclosure and Chimneys

A.4.9 The portal emissions from proposed full enclosures and chimney emissions within the 500 m study area are predicted by AERMOD model, Gaussian dispersion model recommended by HKEPD.

A.4.10 Portal emissions from full enclosures are modelled based on the procedures in Section III of the Permanent International Association of Road Congress Report (PIARC), 1991. It is assumed that emissions would emerge as an air jet along the axis of the road so that only the well-diluted parts gradually shear off. The pollutants are assumed to be ejected as a volume source in the model, with two-thirds of the total emissions dispersed in the first 50 m, and one third of the total emissions dispersed in the second 50 m. The detailed calculation of portal emission rates is presented in **Annex A3**.

A.4.11 As reviewed on existing available information, the information of the chimneys (including Shek Wu Hui Treatment Works Expansion and a proposed hospital in KTN) within 500m study area of DP3 and DP4 as stated in the EIA Report is still valid. Therefore, chimney parameters and chimney emission data presented in the EIA Report are adopted in this assessment. The detail information of the chimneys are presented in **Annex A4**.

Cumulative Assessment Approach

A.4.12 Year 2020 background concentrations from first layer of PATH-2016 (Pollutants in the Atmosphere and their Transport over Hong Kong) model is adopted to estimate future concentrations for Year 2029.

A.4.13 Hourly meteorological conditions including wind data, temperature, relative humidity, pressure cloud cover and mixing height of Year 2010 are extracted from the WRF meteorological data adopted in the PATH-2016 system. The minimum wind speed is capped at 1 metre per second. The height of the input data is assumed to be 9 meters above ground for the first layer of the WRF data as input.

A.4.14 Surface characteristic parameters such as albedo, Bowen ratio and surface roughness are required in the AERMET (the meteorological pre-processor of AERMOD). The land use characteristics of the surrounding are classified into sectors. The parameters of each sector are then suggested by AERMET by default according to its land use characteristics. The detailed assumptions are discussed in **Annex A5**.

A.4.15 Gradual plume rise option has been employed for all modelled pollutants. Dry deposition and depletion have been employed for particulate matter. Since particle size distribution is unknown for crematorium, Method 2 of particle dry deposition is adopted for this source. Particle size distribution adopted for chimneys (including Shek Wu Hui Treatment Works Expansion) and hospital (a proposed hospital in KTN as stated in EIA Report) are summarised in **Table A4**. Since the size distribution (less than 10 μm but larger than 2.5 μm) are known for various sources (except those from crematorium), Method 1 of particle dry deposition has been adopted for modelling using AERMOD.

Table A4 Particle Size Distribution of Chimney and Hospital

Particle Size, μm	Average Particle Size (μm)	Percentage %
0.625	0.31	63.6
1	0.81	3.6
1.25	1.13	1.8
2.5	1.88	7.3
6	4.25	12.7
30	8.00	10.9

Reference: Table 1.3-7, Section 1.3, AP-42 (Distillate Oil)

A.4.16 For the calculation of NO_2 concentrations from Industrial Sources, the conversion from NOx to NO_2 is based on the Ozone Limiting Method and the background ozone concentration, assuming the NO_2 to be 10% of NOx for Industrial Sources.

A.4.17 The cumulative air pollutant concentrations at the ASRs are calculated by the hour-by-hour sum of the PATH predicted Year 2020 background pollutant concentrations, the pollutant concentrations due to the open road emissions predicted by CALINE4 model, and the pollutant concentrations due to portals and chimney emissions predicted by AERMOD model. The maximum hourly, daily and annual average results have been calculated in accordance with the Title 40, Code of Federal Regulations, US Environmental Protection Agency (USEPA 40 CFR) Part 51 "Revision to the Guideline on Air Quality Models, Version 2005". The pollutant concentration predicted at an ASR amongst the 8760 hours (a year) have been ranked/ averaged to assess the cumulative impact.

A.5 Evaluation of Potential Air Quality Impact

A.5.1 The cumulative air quality impact due to emissions from open roads, portals and chimneys at representative existing and planned ASRs in the vicinity of DP3 and DP4 in Year 2029 has been evaluated. The predicted cumulative maximum hourly, daily and annual average NO_2, and maximum daily and annual average RSP concentrations at these representative existing and planned ASRs (excluding KTN-235, KTN-502 to KTN505) are summarized in **Table A5**. The detailed results for representative ASRs in the vicinity of DP3 and DP4 are presented in **Annex A6**.

Table A5 Summary of Cumulative NO_2 and RSP concentrations at Representative ASRs in the vicinity of DP3 and DP4 in Year 2029

	NO_2 Concentration (μg/m³)			RSP Concentration (μg/m³)	
	1-Hour	24-Hour	Annual	24-Hour	Annual
Assessment Result	106.4 – 265.5	42.6 – 101.4	14.2 – 40.6	112.3 – 123.6	34.0 – 36.1
Air Quality Objectives stated in approved EIA Report	300	150	80	180	55

A.5.2 According to **Table A5**, the predicted NO_2 and RSP concentrations at the representative existing and planned ASRs in the vicinity of DP3 and DP4 would comply with applicable AQOs as stated in the approved EIA Report.

An additional site, which locates south of Site B2-6, B2-7 and B2-B, is further reserved for governmental uses. KTN-235, KTN-502 to KTN505 are selected as assessment points based on the preliminary layout of the site. The air quality impact on the site is then predicted and summarized in

A.5.3 **Table A6**. The detailed results are presented in **Annex A6**. The prediction shows that the maximum hourly NO_2 concentration at KTN-502 would exceed the applicable AQOs as stated in the approved EIA Report. Owing to the nature of preliminary layout, which is yet to be designed, further revision of the layout is thus recommended to ensure compliance of the criteria.

Table A6 Summary of Cumulative NO_2 and RSP concentrations at The Governmental Reserve in Year 2029

	NO_2 Concentration (μg/m³)			RSP Concentration (μg/m³)	
	1-Hour	24-Hour	Annual	24-Hour	Annual
Prediction Result	109.0 – **303.9**	46.9 – 89.8	18.4 – 35.4	121.5 – 122.7	35.6 – 36.3
Air Quality Objectives stated in approved EIA Report	300	150	80	180	55

A.5.4 Further to **Table A5**, a summary of the predicted concentrations at worst hit level (i.e. 1.5mAG) of representative ASRs in the vicinity of DP3 and DP4 is presented in **Table A7**. It is noted that the maximum contribution from vehicular emissions to the overall air quality impact would be ranged from 65% - 96% for NO_2 and 1.3% - 2.1% for RSP. All the predicted cumulative pollutant concentration at the ASRs would comply with the applicable AQOs as stated in the approved EIA Report.

Table A7 Summary of Cumulative NO_2 and RSP Concentrations at the Representative ASRs in the vicinity of DP3 and DP4 at Worst Hit Level

Contribution	NO_2 Concentration (μg/m³)			RSP Concentration (μg/m³)	
	1-Hour	24-Hour	Annual	24-Hour	Annual
Background Concentration	8.1 – 104.1	18.2 – 46.1	13.3 – 17.5	112.3 – 122.7	34.0 – 35.5
Vehicular Emission (Open Road + Portal)	23.1 – 242.8	6.6 – 72.0	1.3 – 26.6	0.1 – 1.5	0.0 – 0.8
Cumulative Concentration	124.2 – 265.5	43.0 – 101.4	14.6 – 40.6	112.3 – 123.6	34.0 – 36.1
Maximum Percentage of Vehicular Emission contribution	96%	80%	65%	1.3%	2.1%

A.5.5 According to the predictions presented in **Annex A6**, the worst hit level generally appears at 1.5 metres above ground. Therefore contours of cumulative maximum hourly, daily and annual average NO_2, and maximum daily and annual average RSP concentrations at 1.5 metres above ground are predicted and illustrated in **Drawings A1.5** to **A1.9** respectively. It shows that the air quality impact at ASRs would comply with applicable AQOs as stated in the approved EIA Report.

A.5.6 Furthermore, a sensitivity test has been conducted to confirm the minor change of air quality impact due to the proposed change of road alignment. As review, the largest change in the road alignment found at DP3 and DP4 is the section in the vicinity of Fung Kong Shan. The ASRs will be located further away from the road alignment with proposed changes, except KTN-380, which will be located closer to the realigned road segment by 2.5 metres only. The

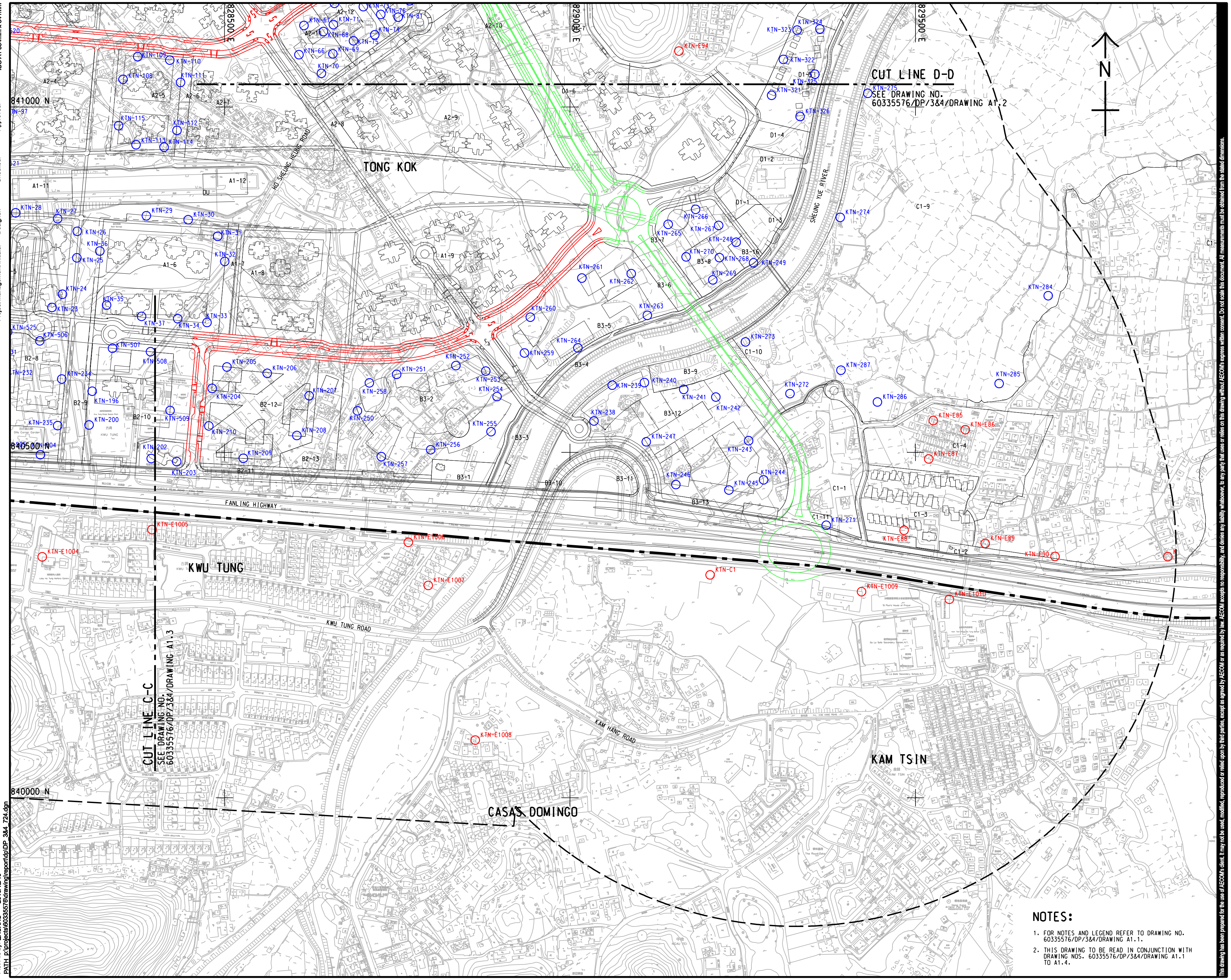
sensitivity test therefore adopts this realigned road section (highlighted in **Annex A7**) as a base case and the traffic flow of this road section is adopted for simulating with and without change in road alignment in the CALINE4 model. For the concerned ASR location, the assessment points are set at both sides of this road section with buffer distance from about 5m up to 20m (5 m per interval). The meteorological data adopts the grid (32, 54) where this road section locates. The Δ change in the concentration due to the variation of separation distance from the road alignment is then deduced based on the results. As NO_2 is a critical pollutant in the traffic emission impact (RSP concentrations are dominantly from the background concentration), the model run is conducted for prediction of maximum hourly, daily and annual average NO_2 only. The Δ change in the concentration due to the variation at the most affected ASR are summarized in **8**. The detailed calculation of Δ change is presented in **Annex A7**.

Table A8 Summary of Sensitivity Test Result

ASR	Δ change in NO_2 Concentration ($\mu g/m^3$)		
	1-Hour	24-Hour	Annual
KTN-380	0.00 – 0.62	-0.15 – 2.35	-0.14 – 1.00

A.5.7 According to the results presented in **8**, the maximum increase in the concentration due to realigned road section would be 2.35 $\mu g/m^3$. It would be an insignificant increase in the cumulative NO_2 concentration at the affected ASRs. Referring to **Table A5**, the predicted concentrations at the representative ASRs would also be well below the applicable AQOs as stated in the approved EIA Report, therefore, the proposed changes in the road alignment would not cause any adverse vehicular emission impact.

[BLANK]



NOTES:

1. FOR NOTES AND LEGEND REFER TO DRAWING NO. 60335576/DP/3&4/DRAWING A1.1.
2. THIS DRAWING TO BE READ IN CONJUNCTION WITH DRAWING NOS. 60335576/DP/3&4/DRAWING A1.1 TO A1.4.

AECOM

PROJECT 項目

DEVELOPMENT OF KWU TUNG NORTH AND FANLING NORTH NEW DEVELOPMENT AREAS, PHASE 1 - DESIGN AND CONSTRUCTION

CLIENT 業主

土木工程拓展署
CEDD Civil Engineering and Development Department

CONSULTANT 工程顧問公司

AECOM Asia Company Ltd.
www.aecom.com

SUB-CONSULTANTS 分判工程顧問公司

ISSUE/REVISION 修訂

I/R 修訂	DATE 日期	DESCRIPTION 內容摘要	CHK. 複核

STATUS 階段

SCALE 比例: A1 1 : 2500
DIMENSION UNIT 尺寸單位: METRES

KEY PLAN 索引圖 A1 1 : 150000

LOK MA CHAU LOOP
HUNG LUNG HANG
TARGET VALLEY

PROJECT NO. 項目編號: 60335576
CONTRACT NO. 合約編號: CE 13/2014 (CE)

SHEET TITLE 圖紙名稱

LOCATIONS OF AIR SENSITIVE RECEIVERS - EP - 467/2013 AND EP - 468/2013

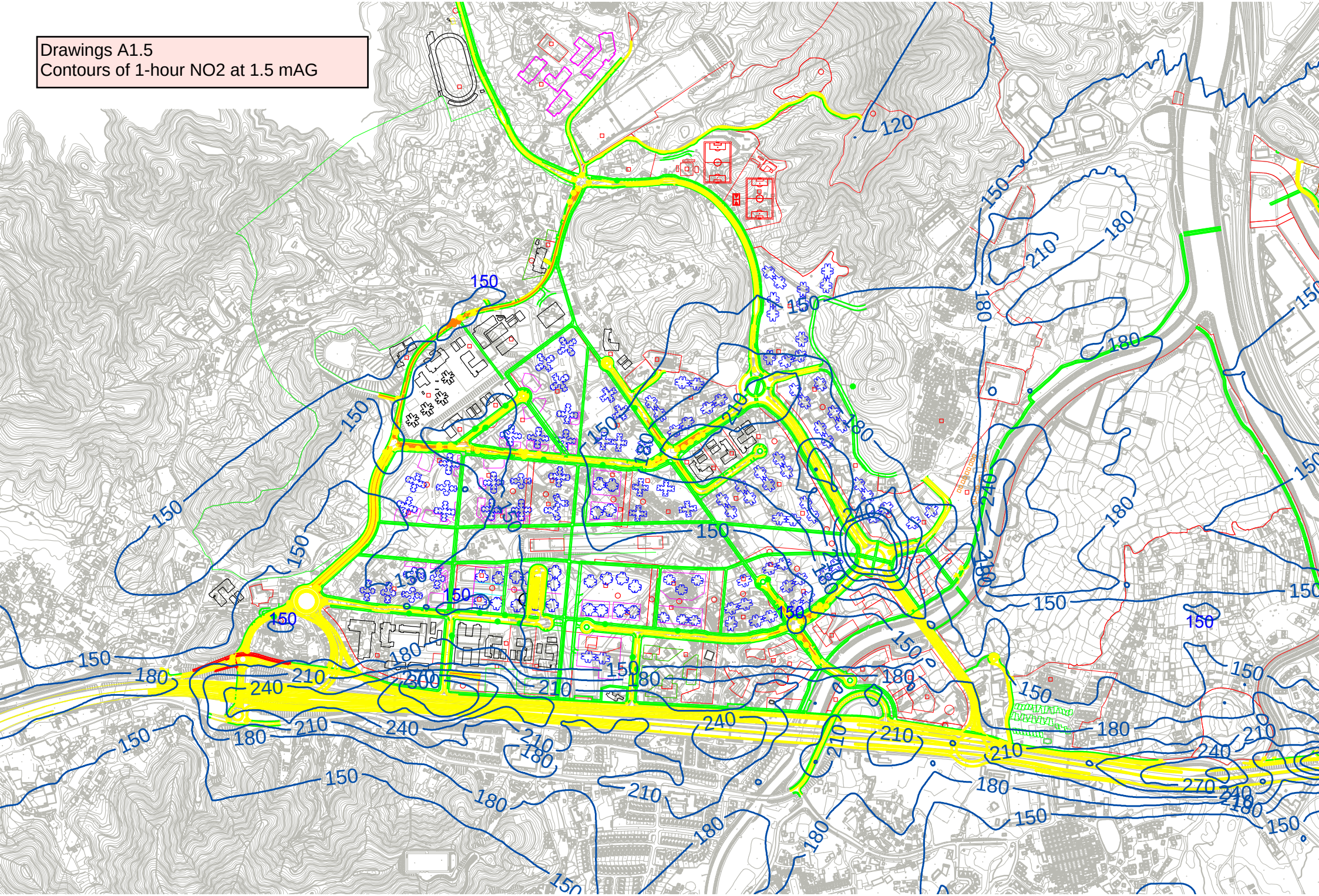
SHEET 4 OF 4

SHEET NUMBER 圖紙編號

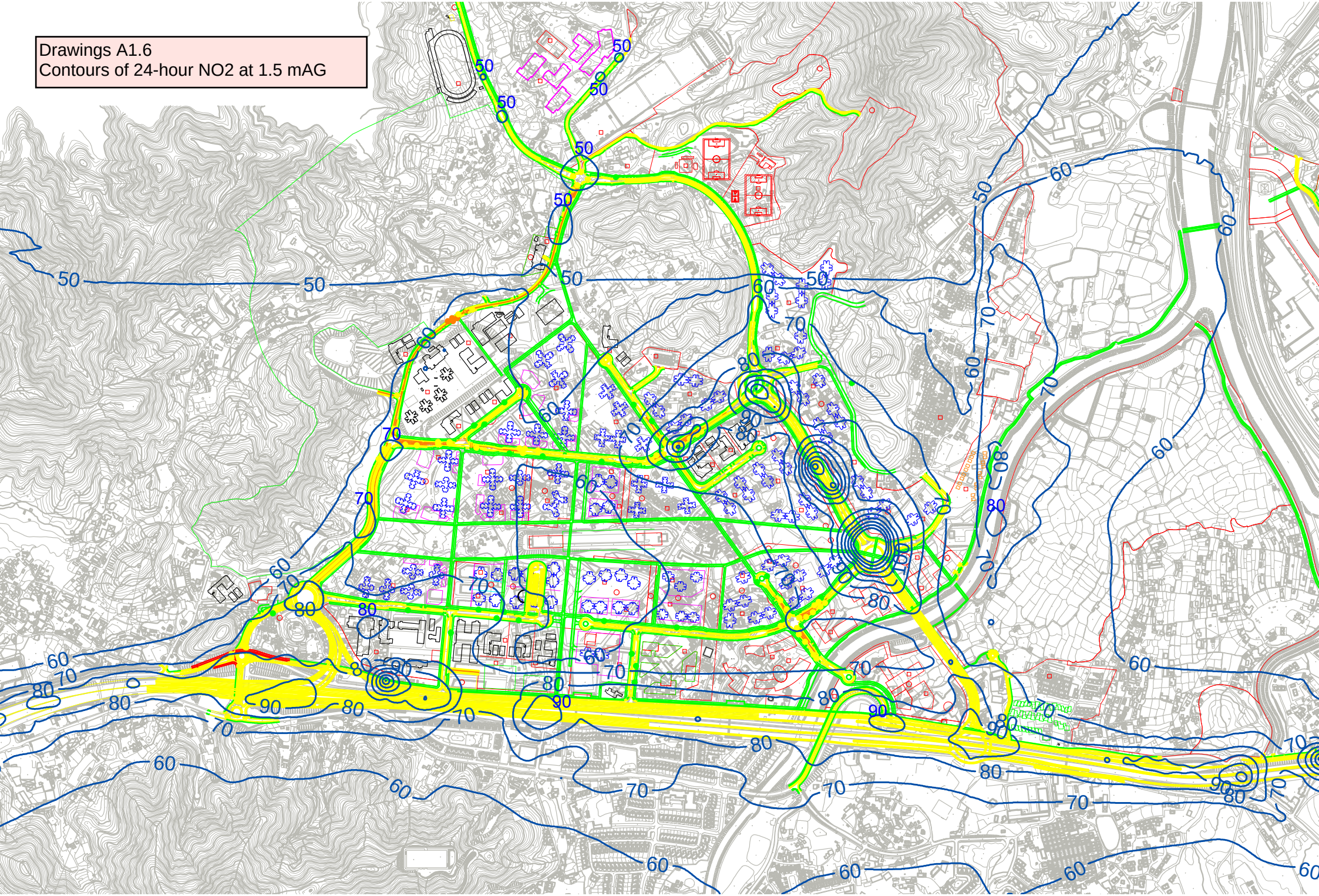
60335576/DP/3&4/DRAWING A1.4

ISO A1 594mm x 841mm
Approved:
Checked:
Designer:
Project Management Initials:
Plot File by: ZHUXHU 2016/12/19
PATH: p:\projects\60335576\drawing\report\dp\DP_3&4_724.dgn

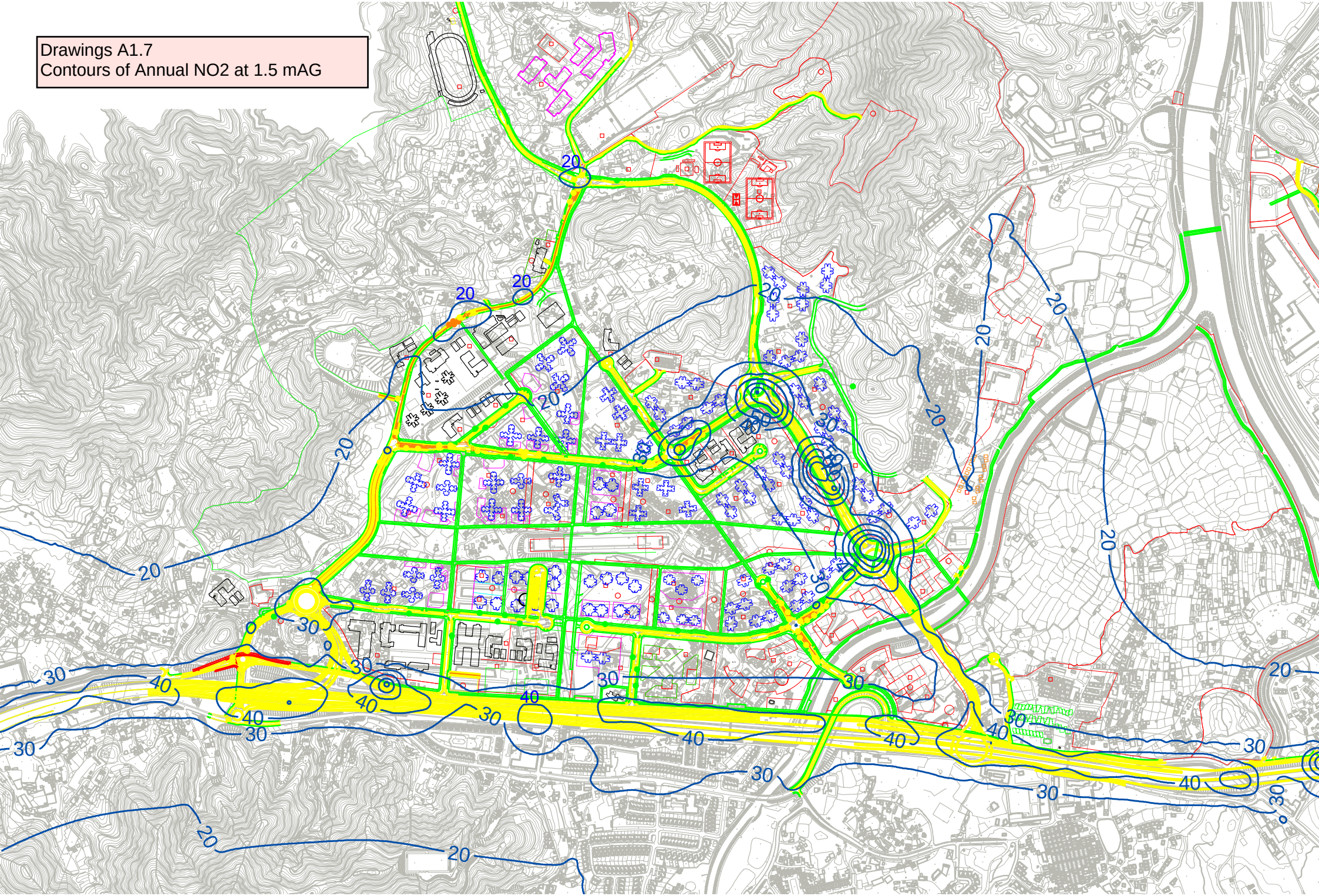
Drawings A1.5
Contours of 1-hour NO2 at 1.5 mAG



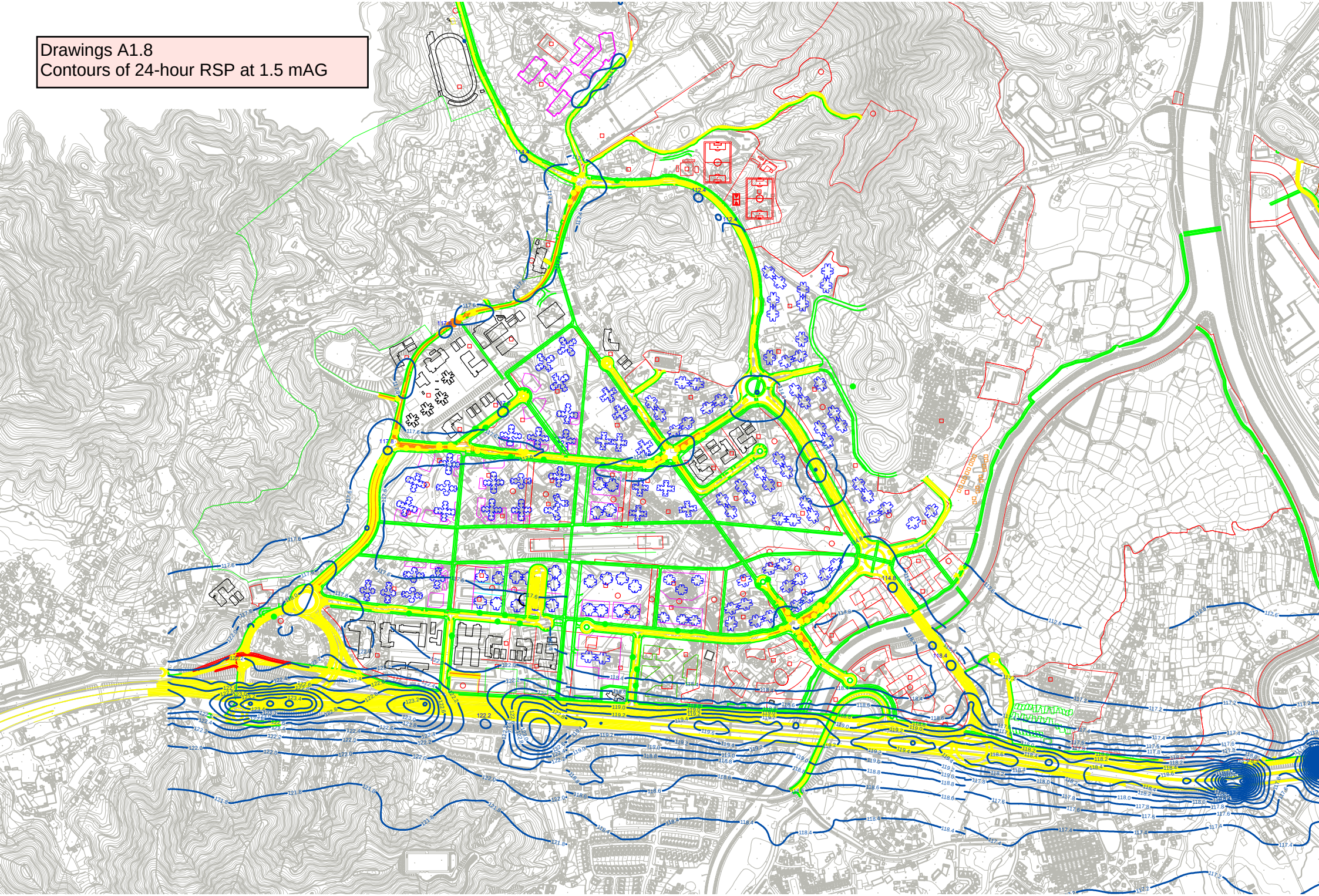
Drawings A1.6
Contours of 24-hour NO2 at 1.5 mAG



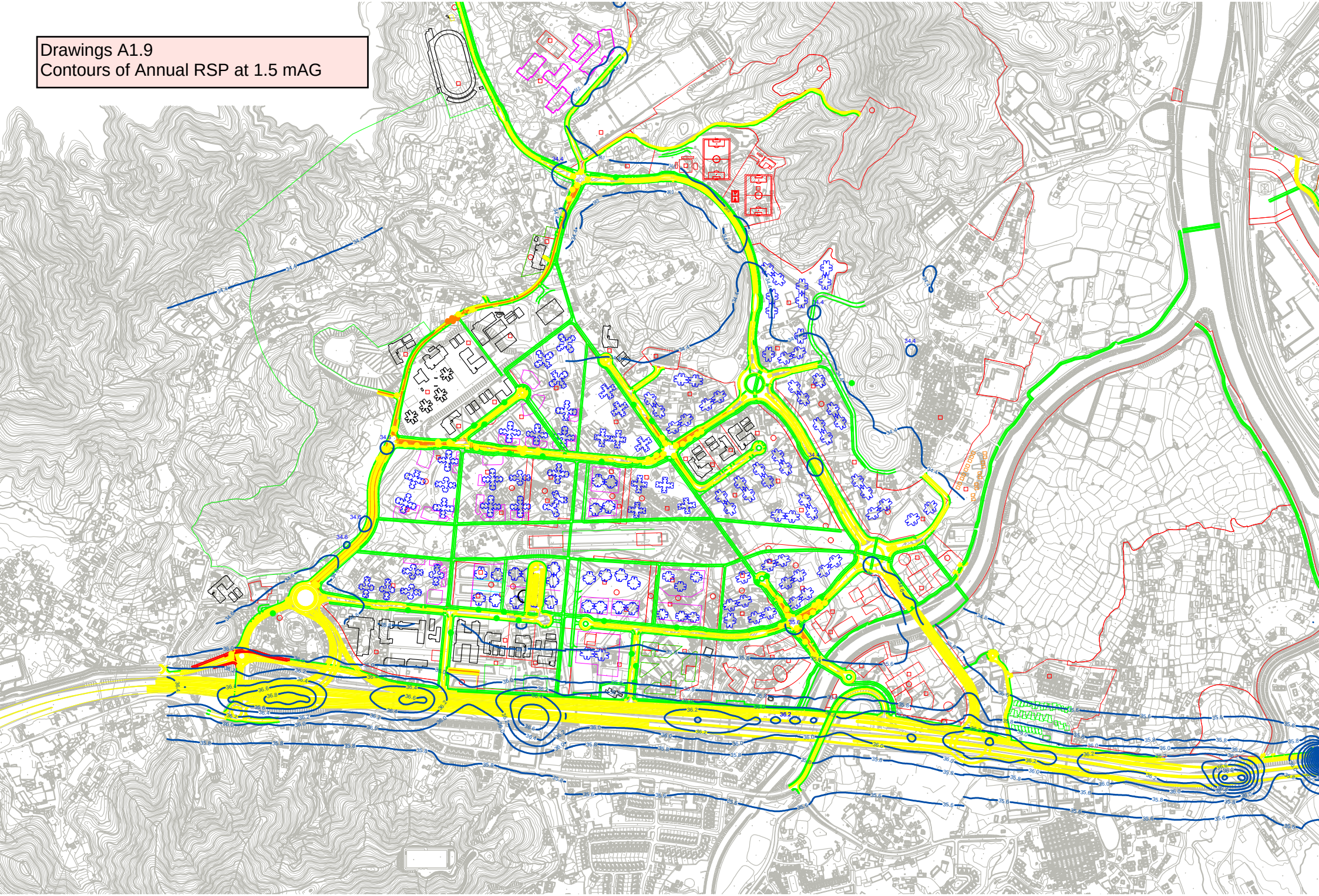
Drawings A1.7
Contours of Annual NO2 at 1.5 mAG



Drawings A1.8
Contours of 24-hour RSP at 1.5 mAG



Drawings A1.9
Contours of Annual RSP at 1.5 mAG



Annex A6 Detail Prediction (Year 2029)

Results Summary of Cumulative Max. 1-Hour NO_2 Concentration (µg/m^3) for All ASRs at Various Heights (m) above Ground
KTN NDA
Year: 2029

ASRID	Coordinate		Cumulative Max. 1-Hour NO_2 Concentration (µg/m^3) for All ASRs at Various Heights (m) above Ground																					
	X	Y	1.5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110
KTN-510	827858	840910	150.1	148.2	142.3	133.3	131.5	130.0	126.1	125.6	120.8	115.3	112.9	112.5	112.4	118.0	132.4	133.5	122.1	123.5	111.9	111.9	111.9	111.9	111.9
KTN-511	827957	840901	147.5	145.4	147.2	135.6	125.6	123.4	119.1	115.8	114.5	113.6	112.9	112.5	112.3	112.1	138.8	118.4	119.1	111.9	111.9	111.9	111.9	111.9	111.9
KTN-512	827813	840942	173.6	171.0	138.5	132.7	131.3	130.2	126.6	126.0	125.0	120.2	115.8	112.6	112.4	114.4	128.6	129.6	116.1	124.5	112.5	111.9	111.9	111.9	111.9
KTN-513	827809	840998	148.5	145.7	134.7	132.4	131.2	130.1	129.1	125.9	125.6	122.4	119.0	115.7	112.5	113.2	117.7	118.4	115.2	115.2	112.2	111.9	111.9	111.9	111.9
KTN-514	827827	841080	155.3	143.2	134.3	131.5	128.7	127.8	126.0	125.8	125.5	125.1	122.1	119.0	115.8	114.7	123.1	124.5	115.2	114.3	112.0	111.9	111.9	111.9	111.9
KTN-515	827876	841126	146.5	146.4	174.4	135.3	128.0	126.0	125.8	125.5	125.3	123.9	121.0	118.1	115.2	122.7	132.2	132.8	127.3	113.4	112.0	111.9	111.9	111.9	111.9
KTN-516	827944	841124	150.1	155.7	166.1	136.3	129.6	128.5	125.8	125.5	124.4	121.4	118.5	115.5	112.7	113.6	117.2	117.6	116.4	113.6	112.0	111.9	111.9	111.9	111.9
KTN-517	827988	841120	151.5	150.1	143.2	136.7	130.0	129.0	125.9	125.6	124.8	121.2	117.8	114.6	112.7	112.4	112.3	114.2	115.6	113.2	112.0	111.9	111.9	111.9	111.9
KTN-518	828059	841110	152.1	147.2	145.2	133.6	130.5	129.4	126.0	125.6	125.3	121.5	117.5	113.7	112.7	112.4	112.2	112.1	112.1	112.0	112.0	111.9	111.9	111.9	111.9
KTN-519	828112	841105	154.3	151.5	146.9	132.0	130.7	129.6	125.6	125.3	122.5	118.7	115.0	112.2	112.1	112.1	112.0	112.0	112.0	111.9	111.9	111.9	111.9	111.9	111.9
KTN-520	828168	841100	157.2	154.6	148.8	131.4	130.1	129.0	123.8	120.8	117.6	114.4	112.0	112.0	111.9	111.9	112.1	121.2	114.9	111.9	111.9	111.9	111.9	111.9	111.9
KTN-521	828155	840928	158.4	152.9	128.4	118.5	115.6	113.3	112.6	112.3	112.1	112.0	112.0	111.9	111.9	111.9	111.9	123.7	128.5	116.7	111.9	111.9	111.9	111.9	111.9
KTN-522	828005	840691	179.8	169.2	136.4	125.4	119.3	116.4	114.6	113.4	112.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-523	828065	840686	168.0	160.7	129.3	116.3	113.4	112.7	112.3	112.1	112.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-524	828117	840681	166.7	163.0	133.7	119.1	114.2	112.7	112.3	112.1	112.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-525	828186	840675	167.2	161.6	124.0	116.4	113.5	112.7	112.3	112.1	112.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-526	827900	841066	146.7	145.2	140.9	134.1	130.5	129.4	126.0	125.7	124.6	121.4	118.2	115.1	112.8	117.9	130.4	130.7	120.2	113.3	112.0	111.9	111.9	111.9	111.9
KTN-527	827875	841055	146.5	145.0	137.8	131.8	130.5	129.4	126.0	125.7	124.9	121.9	118.8	115.6	113.0	122.4	132.9	133.7	127.7	113.6	112.0	111.9	111.9	111.9	111.9
KTN-528	827851	840991	154.0	148.5	136.7	132.7	131.2	130.1	126.3	125.9	125.0	121.0	117.1	113.4	112.7	122.2	133.8	135.0	128.3	117.1	111.9	111.9	111.9	111.9	111.9
KTN-529	827864	840958	149.5	147.7	140.5	133.2	131.5	130.1	126.6	126.0	125.5	120.2	115.4	112.6	112.6	120.1	133.0	134.1	125.2	117.7	111.9	111.9	111.9	111.9	111.9
KTN-530	827756	840762	154.2	145.5	132.2	128.2	124.6	118.8	116.4	114.7	113.5	112.8	112.4	112.1	112.0	112.0	112.3	112.1	148.0	116.0	112.1	111.9	111.9	111.9	111.9
KTN-531	827770	840790	148.9	146.2	133.2	130.2	126.2	123.1	116.7	114.9	113.7	113.0	112.5	112.2	112.1	112.0	135.4	113.3	124.6	125.7	113.2	111.9	111.9	111.9	111.9
KTN-532	827772	840738	164.6	148.9	133.6	126.5	121.6	118.3	116.0	114.4	113.3	112.6	112.3	112.1	112.0	112.0	141.0	114.4	126.8	128.3	117.1	111.9	111.9	111.9	111.9
KTN-533	827825	840733	169.0	152.1	141.3	127.0	121.2	118.2	116.0	114.3	113.3	112.6	112.3	112.1	112.0	112.4	122.6	125.9	131.4	129.0	120.6	111.9	111.9	111.9	111.9
KTN-534	827828	840787	149.4	145.1	140.8	128.0	124.7	118.7	116.5	114.9	113.7	112.9	112.5	112.2	112.1	116.8	135.4	137.9	126.6	128.1	116.7	111.9	111.9	111.9	111.9
KTN-C1	829203	840323	208.8	196.0	159.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E85	829526	840546	145.1	142.8	143.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E86	829572	840533	143.0	141.0	143.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E87	829519	840491	146.3	142.1	132.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E88	829484	840387	193.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E89	829601	840368	197.6	183.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E90	829702	840349	218.0	194.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E91	829865	840349	248.4	221.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E94	829158	841081	172.2	164.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E97	829184	841209	168.7	167.2	184.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E99	829173	841330	170.6	165.7	165.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E100	829194	841384	172.8	169.2	166.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E101	829234	841419	172.9	171.7	168.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E102	829242	841521	160.3	159.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E123	828322	841919	126.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E128	828312	841880	126.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E154	829285	841187	161.9	161.5	167.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1002	827050	840407	159.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1003	828003	840422	225.8	211.0	156.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1004	828236	840349	189.3	171.8	156.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1005	828395	840388	216.8	202.1	144.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1006	828766	840370	262.6	246.7	156.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1007	828795	840307	185.0	178.5	159.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1008	828863	840084	187.6	184.4	162.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1009	829422	840298	187.7	183.1	162.8	158.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1010	829549	840287	202.5	195.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1019	827454	841401	131.9	131.7	130.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1021	827348	840783	141.1	140.3	133.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1023	827082	840574	160.0	158.3	153.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Annex A6 Detail Prediction (Year 2029)

Results Summary of Cumulative Annual-averaged NO_2 Concentration ($\mu g/m^3$) for All ASRs at Various Heights (m) above Ground
KTN NDA
Year: 2029

ASRID	Coordinate		Cumulative Annual-averaged NO_2 Concentration ($\mu g/m^3$) for All ASRs at Various Heights (m) above Ground																					
	X	Y	1.5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110
KTN-507	828338	840651	30.9	30.1	25.9	22.6	21.1	20.3	19.7	19.2	18.9	18.5	18.3	18.0	17.8	17.7	17.5	17.4	17.3	17.2	17.1	-	-	-	-
KTN-508	828393	840646	31.5	30.6	26.1	22.7	21.2	20.3	19.7	19.2	18.9	18.5	18.3	18.0	17.8	17.7	17.5	17.4	17.3	17.2	17.1	-	-	-	-
KTN-509	828421	840561	32.6	31.7	27.0	23.5	21.8	20.7	19.9	19.4	18.9	18.6	18.3	18.0	17.8	17.7	17.5	17.4	17.3	17.2	17.1	-	-	-	-
KTN-510	827858	840910	20.5	20.3	20.1	19.5	18.8	18.2	17.6	17.2	16.8	16.5	16.3	16.1	15.9	15.8	15.7	15.6	15.4	15.3	15.1	15.0	14.9	14.8	14.7
KTN-511	827957	840901	20.2	20.1	20.0	19.4	18.8	18.1	17.6	17.2	16.8	16.5	16.3	16.1	15.9	15.9	15.9	15.7	15.5	15.3	15.1	15.0	14.9	14.8	14.7
KTN-512	827813	840942	21.9	21.0	20.2	19.4	18.7	18.1	17.6	17.1	16.8	16.5	16.2	16.0	15.8	15.7	15.7	15.5	15.4	15.2	15.1	15.0	14.9	14.8	14.7
KTN-513	827809	840998	23.1	21.2	20.1	19.3	18.6	17.9	17.4	17.0	16.7	16.4	16.2	16.0	15.8	15.7	15.6	15.5	15.3	15.2	15.1	14.9	14.9	14.8	14.7
KTN-514	827827	841080	24.9	21.8	20.3	19.2	18.4	17.8	17.2	16.9	16.6	16.3	16.1	15.9	15.7	15.6	15.5	15.4	15.3	15.1	15.0	14.9	14.8	14.7	14.7
KTN-515	827876	841126	25.7	32.1	22.4	19.8	18.6	17.8	17.3	16.8	16.5	16.3	16.0	15.8	15.7	15.5	15.5	15.4	15.2	15.1	15.0	14.9	14.8	14.7	14.7
KTN-516	827944	841124	25.3	33.1	22.7	19.9	18.7	17.8	17.3	16.9	16.5	16.3	16.0	15.8	15.7	15.6	15.5	15.4	15.2	15.1	15.0	14.9	14.8	14.7	14.7
KTN-517	827988	841120	27.5	27.1	21.3	19.6	18.7	17.9	17.3	16.9	16.6	16.3	16.1	15.9	15.7	15.6	15.5	15.4	15.3	15.1	15.0	14.9	14.8	14.7	14.7
KTN-518	828059	841110	25.0	22.7	20.8	19.6	18.7	17.9	17.3	16.9	16.6	16.3	16.1	15.9	15.7	15.6	15.6	15.4	15.3	15.1	15.0	14.9	14.8	14.7	14.7
KTN-519	828112	841105	24.9	23.0	21.0	19.7	18.7	17.9	17.3	16.9	16.6	16.3	16.1	15.9	15.7	15.6	15.6	15.4	15.3	15.1	15.0	14.9	14.8	14.7	14.7
KTN-520	828168	841100	25.2	23.1	21.1	19.8	18.8	17.9	17.4	16.9	16.6	16.3	16.1	15.9	15.7	15.6	15.5	15.4	15.2	15.1	15.0	14.9	14.8	14.7	14.7
KTN-521	828155	840928	20.3	20.2	20.1	19.5	18.7	18.0	17.5	17.1	16.8	16.5	16.2	16.0	15.8	15.7	15.7	15.5	15.4	15.2	15.1	14.9	14.8	14.8	14.7
KTN-522	828005	840691	29.4	24.0	21.6	20.4	19.5	18.7	18.1	17.6	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-523	828065	840686	29.0	23.8	21.4	20.2	19.4	18.6	18.1	17.6	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-524	828117	840681	28.5	23.6	21.3	20.1	19.3	18.6	18.0	17.6	17.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-525	828186	840675	27.7	23.2	21.1	20.1	19.2	18.6	18.0	17.5	17.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-526	827900	841066	21.2	20.9	20.4	19.4	18.5	17.8	17.3	16.9	16.6	16.3	16.1	15.9	15.7	15.6	15.5	15.4	15.3	15.2	15.0	14.9	14.8	14.8	14.7
KTN-527	827875	841055	21.2	20.8	20.3	19.4	18.5	17.8	17.3	16.9	16.6	16.3	16.1	15.9	15.7	15.6	15.5	15.4	15.3	15.2	15.0	14.9	14.8	14.8	14.7
KTN-528	827851	840991	20.8	20.5	20.2	19.4	18.7	18.0	17.4	17.0	16.7	16.4	16.2	16.0	15.8	15.7	15.6	15.5	15.3	15.2	15.1	14.9	14.9	14.8	14.7
KTN-529	827864	840958	20.5	20.3	20.1	19.4	18.7	18.1	17.5	17.1	16.7	16.5	16.2	16.0	15.8	15.7	15.6	15.5	15.4	15.2	15.1	15.0	14.9	14.8	14.7
KTN-530	827756	840762	23.5	22.9	21.9	20.6	19.6	18.8	18.1	17.5	17.1	16.8	16.5	16.3	16.1	16.0	15.9	15.8	15.5	15.4	15.2	15.1	15.0	14.9	14.8
KTN-531	827770	840790	22.3	22.0	21.4	20.4	19.4	18.6	18.0	17.5	17.1	16.7	16.5	16.2	16.0	15.9	15.8	15.7	15.5	15.4	15.2	15.1	15.0	14.9	14.8
KTN-532	827772	840738	24.8	23.7	22.1	20.8	19.7	18.8	18.1	17.6	17.2	16.8	16.6	16.3	16.2	16.1	16.0	15.9	15.6	15.5	15.3	15.1	15.0	14.9	14.8
KTN-533	827825	840733	25.6	24.0	21.9	20.6	19.6	18.8	18.1	17.6	17.2	16.9	16.6	16.4	16.2	16.3	16.4	16.0	15.8	15.6	15.4	15.2	15.0	14.9	14.8
KTN-534	827828	840787	21.8	21.6	21.1	20.2	19.4	18.6	18.0	17.5	17.1	16.8	16.5	16.2	16.1	16.0	16.0	15.8	15.6	15.5	15.3	15.1	15.0	14.9	14.8
KTN-C1	829203	840323	32.3	31.0	27.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E85	829526	840546	24.9	24.6	23.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E86	829572	840533	24.7	24.4	23.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E87	829519	840491	26.0	25.7	24.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E88	829484	840387	34.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E89	829601	840368	34.8	33.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E90	829702	840349	36.1	33.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E91	829865	840349	34.7	32.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E94	829158	841081	24.5	23.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E97	829184	841209	21.1	21.0	19.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E99	829173	841330	20.4	19.8	18.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E100	829194	841384	19.7	19.2	17.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E101	829234	841419	18.5	18.4	17.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E102	829242	841521	18.0	17.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E123	828322	841919	16.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E128	828312	841880	19.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E154	829285	841187	19.4	19.4	18.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1002	827050	840407	28.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1003	828003	840422	26.4	25.7	23.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1004	828236	840349	28.0	26.7	24.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1005	828395	840388	36.6	34.0	28.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1006	828766	840370	38.9	37.1	28.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1007	828795	840307	30.2	29.5	26.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1008	828863	840084	23.5	23.3	21.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1009	829422	840298	35.1	33.3	28.8	25.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1010	829549	840287	38.0	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1019	827454	841401	17.1	17.1	17.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1021	827348	840783	21.0	20.9	20.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1023	827082	840574	28.2	27.5	25.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Annex 1.6 Detail Prediction (Year 2029)

Results Summary of Cumulative Max. 24-Hour RSP Concentration (μg/m^3) for All ASRs at Various Heights (m) above Ground
KTN NDA
Year: 2029

ASRID	Coordinate		Cumulative Max. 24-Hour RSP Concentration (μg/m^3) for All ASRs at Various Heights (m) above Ground																					
	X	Y	1.5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110
KTN-507	828338	840651	118.3	118.3	118.2	118.2	118.1	118.1	118.1	118.1	118.1	118.1	118.1	118.0	118.0	118.0	118.0	118.0	118.0	118.0	118.0	-	-	-	-
KTN-508	828393	840646	118.3	118.3	118.2	118.2	118.1	118.1	118.1	118.1	118.1	118.1	118.1	118.0	118.0	118.0	118.0	118.0	118.0	118.0	118.0	-	-	-	-
KTN-509	828421	840561	118.4	118.3	118.3	118.2	118.2	118.1	118.1	118.1	118.1	118.1	118.1	118.0	118.0	118.0	118.0	118.0	118.0	118.0	118.0	-	-	-	-
KTN-510	827858	840910	117.6	117.5	117.5	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-511	827957	840901	117.5	117.5	117.5	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-512	827813	840942	117.6	117.6	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-513	827809	840998	117.6	117.6	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-514	827827	841080	117.7	117.6	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-515	827876	841126	117.7	117.8	117.6	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-516	827944	841124	117.7	117.9	117.6	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-517	827988	841120	117.7	117.7	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-518	828059	841110	117.6	117.6	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-519	828112	841105	117.6	117.6	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-520	828168	841100	117.6	117.6	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-521	828155	840928	117.5	117.5	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-522	828005	840691	117.8	117.7	117.6	117.6	117.6	117.5	117.5	117.5	117.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-523	828065	840686	117.8	117.7	117.6	117.6	117.5	117.5	117.5	117.5	117.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-524	828117	840681	117.8	117.7	117.6	117.6	117.5	117.5	117.5	117.5	117.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-525	828186	840675	117.8	117.7	117.6	117.6	117.5	117.5	117.5	117.5	117.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-526	827900	841066	117.6	117.6	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-527	827875	841055	117.6	117.6	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-528	827851	840991	117.5	117.5	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-529	827864	840958	117.5	117.5	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3	117.3
KTN-530	827756	840762	117.7	117.7	117.6	117.6	117.6	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3
KTN-531	827770	840790	117.6	117.6	117.6	117.6	117.5	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3
KTN-532	827772	840738	117.7	117.7	117.7	117.6	117.6	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3
KTN-533	827825	840733	117.7	117.7	117.6	117.6	117.6	117.5	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3
KTN-534	827828	840787	117.6	117.6	117.6	117.5	117.5	117.5	117.5	117.5	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.4	117.3	117.3	117.3	117.3	117.3	117.3
KTN-C1	829203	840323	119.1	119.0	118.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E85	829526	840546	117.2	117.1	117.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E86	829572	840533	117.2	117.1	117.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E87	829519	840491	117.2	117.2	117.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E88	829484	840387	117.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E89	829601	840368	117.7	117.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E90	829702	840349	117.7	117.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E91	829865	840349	117.6	117.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E94	829158	841081	114.7	114.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E97	829184	841209	114.7	114.7	114.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E99	829173	841330	114.7	114.7	114.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E100	829194	841384	114.7	114.7	114.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E101	829234	841419	114.7	114.6	114.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E102	829242	841521	114.7	114.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E123	828322	841919	112.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E128	828312	841880	112.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E154	829285	841187	114.7	114.6	114.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1002	827050	840407	123.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1003	828003	840422	122.4	122.2	121.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1004	828236	840349	122.3	122.2	122.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1005	828395	840388	119.2	119.1	118.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1006	828766	840370	119.5	119.4	118.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1007	828795	840307	118.7	118.7	118.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1008	828863	840084	118.3	118.3	118.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1009	829422	840298	118.1	118.0	117.7	117.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1010	829549	840287	118.3	118.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1019	827454	841401	117.5	117.5	117.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1021	827348	840783	117.6	117.6	117.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1023	827082	840574	123.2	123.2	123.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

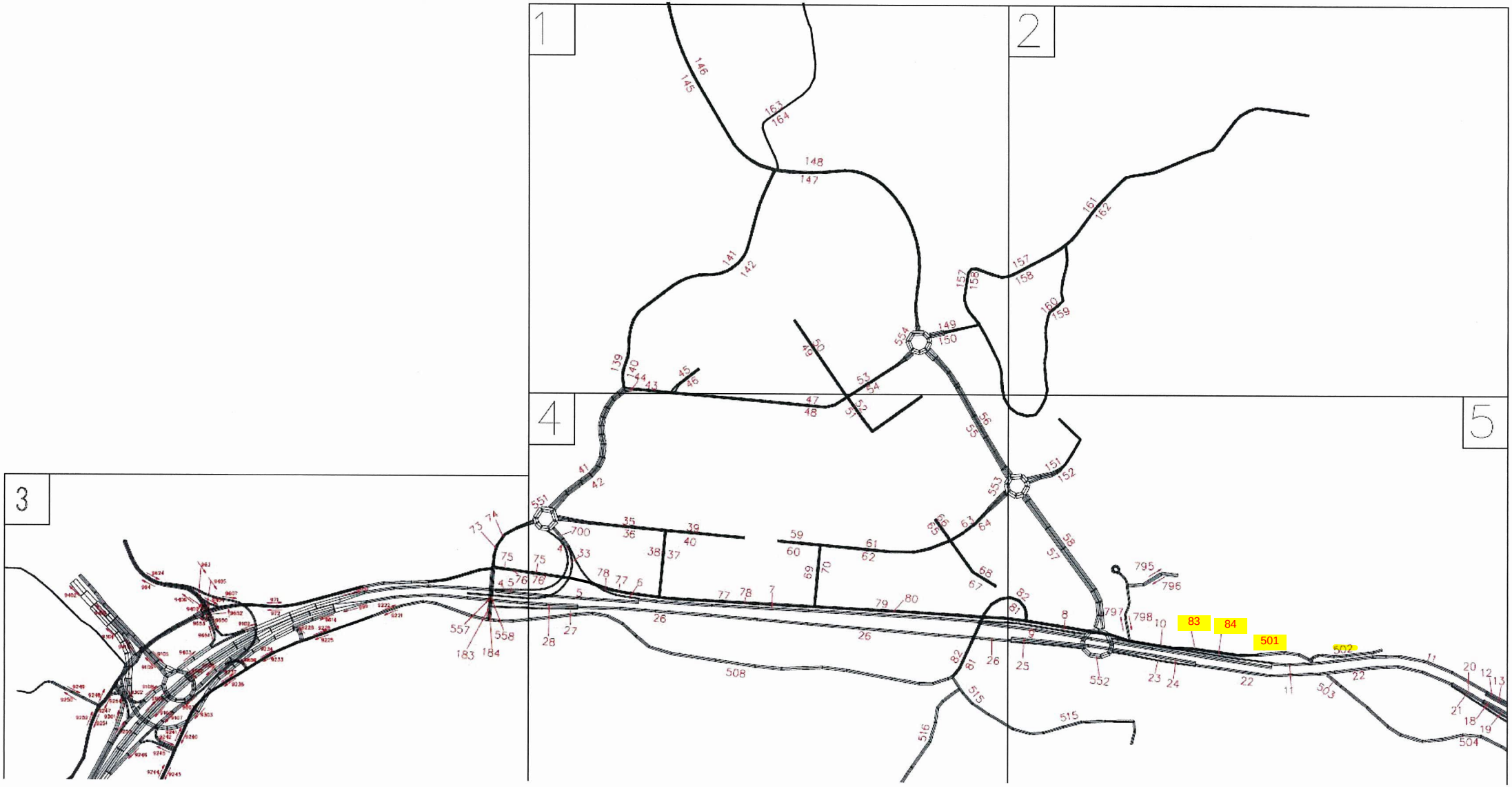
Annex 1.6 Detail Prediction (Year 2029)

Results Summary of Cumulative Annual-averaged RSP Concentration (µg/m^3) for All ASRs at Various Heights (m) above Ground
KTN NDA
Year: 2029

ASRID	Coordinate		Cumulative Annual-averaged RSP Concentration (µg/m^3) for All ASRs at Various Heights (m) above Ground																						
	X	Y	1.5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	100	105	110
KTN-507	828338	840651	35.6	35.6	35.5	35.5	35.5	35.5	35.5	35.5	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	-	-	-	-
KTN-508	828393	840646	35.6	35.6	35.5	35.5	35.5	35.5	35.5	35.5	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	-	-	-	-
KTN-509	828421	840561	35.7	35.6	35.6	35.6	35.5	35.5	35.5	35.5	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	-	-	-	-
KTN-510	827858	840910	34.5	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3
KTN-511	827957	840901	34.5	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3
KTN-512	827813	840942	34.5	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3
KTN-513	827809	840998	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3
KTN-514	827827	841080	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3
KTN-515	827876	841126	34.5	34.6	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3
KTN-516	827944	841124	34.5	34.7	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3	34.3
KTN-517	827988	841120	34.6	34.6	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3	34.3
KTN-518	828059	841110	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3	34.3
KTN-519	828112	841105	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3	34.3
KTN-520	828168	841100	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3	34.3
KTN-521	828155	840928	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3
KTN-522	828005	840691	34.6	34.6	34.5	34.5	34.5	34.5	34.5	34.4	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-523	828065	840686	34.6	34.6	34.5	34.5	34.5	34.5	34.5	34.4	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-524	828117	840681	34.6	34.6	34.5	34.5	34.5	34.5	34.5	34.4	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-525	828186	840675	34.6	34.5	34.5	34.5	34.5	34.5	34.5	34.4	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-526	827900	841066	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3
KTN-527	827875	841055	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3
KTN-528	827851	840991	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3
KTN-529	827864	840958	34.5	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3	34.3
KTN-530	827756	840762	34.5	34.5	34.5	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3
KTN-531	827770	840790	34.5	34.5	34.5	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3
KTN-532	827772	840738	34.6	34.5	34.5	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3
KTN-533	827825	840733	34.6	34.6	34.5	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3
KTN-534	827828	840787	34.5	34.5	34.5	34.5	34.5	34.5	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.4	34.3	34.3	34.3
KTN-C1	829203	840323	35.9	35.8	35.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E85	829526	840546	35.5	35.5	35.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E86	829572	840533	35.5	35.5	35.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E87	829519	840491	35.6	35.6	35.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E88	829484	840387	35.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E89	829601	840368	35.9	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E90	829702	840349	36.0	35.9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E91	829865	840349	35.9	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E94	829158	841081	34.4	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E97	829184	841209	34.4	34.4	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E99	829173	841330	34.4	34.4	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E100	829194	841384	34.4	34.4	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E101	829234	841419	34.4	34.4	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E102	829242	841521	34.4	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E123	828322	841919	34.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E128	828312	841880	34.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E154	829285	841187	34.4	34.4	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1002	827050	840407	35.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1003	828003	840422	35.9	35.9	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1004	828236	840349	36.0	35.9	35.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1005	828395	840388	36.0	35.9	35.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1006	828766	840370	36.1	36.0	35.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1007	828795	840307	35.7	35.7	35.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1008	828863	840084	35.5	35.5	35.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1009	829422	840298	35.9	35.8	35.7	35.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1010	829549	840287	36.1	36.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1019	827454	841401	34.4	34.4	34.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1021	827348	840783	34.5	34.5	34.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KTN-E1023	827082	840574	35.2	35.2	35.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Appendix 3.2
Traffic Forecast Data in Year 2029

[BLANK]



17 Road Links for this Study

Figure 1

Link No.	Time	Speed Limit	Speed (kph)	Total Vehicle	16 - Motorcycles (MC)	01 - Private Cars (PC)	02 - Taxi	11 - Non-franchised Bus<=6.4t	12 - Non-franchised Bus 6.4-15t	13 - Non-franchised Bus 15t-24t	18 - Non-franchised Bus >24t	9 - Private Light Bus <=3.5t	10 - Private Light Bus >3.5t	03 - Light Goods Vehicles<=2.5t	04 - Lt Goods Vehicles 2.5-3.5t	05 - Light Goods Vehicles>3.5t	06 - Heavy Goods Vehicles<=15t	07 - Heavy Goods Vehicles 15t-24t	17 - Heavy Goods Vehicles >24t	14 - Franchised Bus (SD)	15 - Franchised Bus (DD)	8 - Public Light Buses	Total
83	0000-0100	50	49	96	1.5%	58.4%	14.4%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	2.3%	1.4%	2.1%	0.4%	0.1%	0.1%	1.1%	17.7%	100.0%
83	0100-0200	50	49	67	1.5%	58.4%	14.4%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	2.3%	1.4%	2.1%	0.4%	0.1%	0.1%	1.1%	17.7%	100.0%
83	0200-0300	50	49	48	1.5%	58.4%	14.4%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	2.3%	1.4%	2.1%	0.4%	0.1%	0.1%	1.1%	17.7%	100.0%
83	0300-0400	50	49	34	1.4%	53.5%	13.2%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	3.7%	2.2%	3.4%	0.6%	0.2%	0.1%	1.2%	19.6%	100.0%
83	0400-0500	50	49	43	1.0%	53.9%	18.8%	0.2%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	3.4%	2.0%	3.5%	0.5%	0.1%	0.1%	0.9%	15.0%	100.0%
83	0500-0600	50	49	52	1.0%	53.9%	18.8%	0.2%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	3.4%	2.0%	3.5%	0.5%	0.1%	0.1%	0.9%	15.0%	100.0%
83	0600-0700	50	48	123	1.0%	53.9%	18.8%	0.2%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	3.4%	2.0%	3.5%	0.5%	0.1%	0.1%	0.9%	15.0%	100.0%
83	0700-0800	50	44	347	1.0%	53.9%	18.8%	0.2%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	3.4%	2.0%	3.5%	0.5%	0.1%	0.1%	0.9%	15.0%	100.0%
83	0800-0900	50	43	407	1.0%	54.4%	18.9%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	4.5%	2.7%	4.6%	0.7%	0.2%	0.1%	0.7%	11.5%	100.0%
83	0900-1000	50	44	337	0.9%	50.6%	17.6%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	0.2%	5.9%	3.5%	6.0%	0.9%	0.2%	0.1%	0.8%	13.0%	100.0%
83	1000-1100	50	45	328	1.0%	51.8%	18.0%	0.2%	0.1%	0.2%	0.0%	0.1%	0.1%	0.1%	5.4%	3.2%	5.4%	0.8%	0.2%	0.1%	0.7%	12.7%	100.0%
83	1100-1200	50	45	310	1.0%	53.6%	18.7%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	5.6%	3.3%	5.6%	0.8%	0.2%	0.0%	0.6%	10.0%	100.0%
83	1200-1300	50	45	314	1.0%	55.6%	19.4%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	4.4%	2.6%	4.5%	0.6%	0.2%	0.1%	0.6%	10.3%	100.0%
83	1300-1400	50	46	273	1.6%	62.0%	15.3%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	2.5%	1.5%	2.3%	0.4%	0.1%	0.1%	0.8%	12.9%	100.0%
83	1400-1500	50	45	297	1.5%	58.4%	14.4%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	2.3%	1.4%	2.1%	0.4%	0.1%	0.1%	1.1%	17.7%	100.0%
83	1500-1600	50	46	277	1.4%	53.5%	13.2%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	3.7%	2.2%	3.4%	0.6%	0.2%	0.1%	1.2%	19.6%	100.0%
83	1600-1700	50	46	255	1.4%	54.5%	13.4%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	4.9%	2.9%	4.6%	0.8%	0.2%	0.1%	0.9%	15.3%	100.0%
83	1700-1800	50	46	259	1.3%	50.2%	12.3%	0.2%	0.2%	0.2%	0.0%	0.1%	0.1%	0.2%	6.3%	3.7%	5.8%	1.1%	0.3%	0.1%	1.0%	17.1%	100.0%
83	1800-1900	50	45	281	1.3%	51.5%	12.7%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.2%	5.7%	3.4%	5.3%	1.0%	0.3%	0.1%	1.0%	16.7%	100.0%
83	1900-2000	50	46	237	1.4%	53.9%	13.3%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.2%	6.0%	3.6%	5.6%	1.0%	0.3%	0.1%	0.8%	13.3%	100.0%
83	2000-2100	50	47	185	1.4%	56.1%	13.8%	0.2%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	4.8%	2.9%	4.5%	0.8%	0.2%	0.1%	0.8%	13.8%	100.0%
83	2100-2200	50	47	191	1.6%	62.0%	15.3%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	2.5%	1.5%	2.3%	0.4%	0.1%	0.1%	0.8%	12.9%	100.0%
83	2200-2300	50	47	179	1.5%	58.4%	14.4%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	2.3%	1.4%	2.1%	0.4%	0.1%	0.1%	1.1%	17.7%	100.0%
83	2300-0000	50	48	150	1.5%	58.4%	14.4%	0.2%	0.1%	0.1%	0.0%	0.1%	0.0%	0.1%	2.3%	1.4%	2.1%	0.4%	0.1%	0.1%	1.1%	17.7%	100.0%
84	0000-0100	50	48	117	1.6%	62.6%	14.1%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.0%	1.2%	1.7%	0.3%	0.1%	0.1%	0.9%	14.8%	100.0%
84	0100-0200	50	49	82	1.6%	62.6%	14.1%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.0%	1.2%	1.7%	0.3%	0.1%	0.1%	0.9%	14.8%	100.0%
84	0200-0300	50	49	59	1.6%	62.6%	14.1%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.0%	1.2%	1.7%	0.3%	0.1%	0.1%	0.9%	14.8%	100.0%
84	0300-0400	50	49	41	1.5%	58.1%	13.1%	0.4%	0.3%	0.3%	0.0%	0.1%	0.1%	0.1%	3.3%	1.9%	2.8%	0.4%	0.1%	0.1%	1.0%	16.6%	100.0%
84	0400-0500	50	49	33	0.9%	48.5%	12.8%	0.6%	0.4%	0.5%	0.0%	0.2%	0.2%	0.1%	4.5%	2.7%	5.3%	0.8%	0.2%	0.1%	1.5%	20.6%	100.0%
84	0500-0600	50	49	41	0.9%	48.5%	12.8%	0.6%	0.4%	0.5%	0.0%	0.2%	0.2%	0.1%	4.5%	2.7%	5.3%	0.8%	0.2%	0.1%	1.5%	20.6%	100.0%
84	0600-0700	50	48	95	0.9%	48.5%	12.8%	0.6%	0.4%	0.5%	0.0%	0.2%	0.2%	0.1%	4.5%	2.7%	5.3%	0.8%	0.2%	0.1%	1.5%	20.6%	100.0%
84	0700-0800	50	45	269	0.9%	48.5%	12.8%	0.6%	0.4%	0.5%	0.0%	0.2%	0.2%	0.1%	4.5%	2.7%	5.3%	0.8%	0.2%	0.1%	1.5%	20.6%	100.0%
84	0800-0900	50	45	314	0.9%	49.1%	12.9%	0.5%	0.4%	0.4%	0.0%	0.2%	0.1%	0.2%	6.0%	3.6%	7.1%	1.1%	0.3%	0.1%	1.2%	15.9%	100.0%
84	0900-1000	50	45	267	0.8%	44.4%	11.7%	0.4%	0.3%	0.3%	0.0%	0.1%	0.1%	0.2%	7.6%	4.5%	8.9%	1.4%	0.4%	0.1%	1.3%	17.5%	100.0%
84	1000-1100	50	46	258	0.8%	45.8%	12.1%	0.6%	0.4%	0.4%	0.0%	0.2%	0.2%	0.2%	7.0%	4.1%	8.2%	1.3%	0.3%	0.1%	1.3%	17.1%	100.0%
84	1100-1200	50	46	240	0.9%	48.0%	12.6%	0.5%	0.4%	0.4%	0.0%	0.2%	0.1%	0.2%	7.3%	4.3%	8.6%	1.4%	0.4%	0.1%	1.0%	13.7%	100.0%
84	1200-1300	50	46	240	0.9%	50.7%	13.4%	0.4%	0.3%	0.3%	0.0%	0.1%	0.1%	0.2%	6.0%	3.5%	7.0%	1.1%	0.3%	0.1%	1.1%	14.4%	100.0%
84	1300-1400	50	45	336	1.7%	65.8%	14.8%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.2%	1.3%	1.9%	0.3%	0.1%	0.0%	0.6%	10.7%	100.0%
84	1400-1500	50	44	362	1.6%	62.6%	14.1%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.0%	1.2%	1.7%	0.3%	0.1%	0.1%	0.9%	14.8%	100.0%
84	1500-1600	50	45	333	1.5%	58.1%	13.1%	0.4%	0.3%	0.3%	0.0%	0.1%	0.1%	0.1%	3.3%	1.9%	2.8%	0.4%	0.1%	0.1%	1.0%	16.6%	100.0%
84	1600-1700	50	45	308	1.5%	59.0%	13.3%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	4.4%	2.6%	3.7%	0.6%	0.1%	0.1%	0.7%	12.9%	100.0%
84	1700-1800	50	45	309	1.4%	55.0%	12.4%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	5.6%	3.3%	4.8%	0.7%	0.2%	0.1%	0.8%	14.6%	100.0%
84	1800-1900	50	44	336	1.4%	56.2%	12.7%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	5.1%	3.0%	4.4%	0.7%	0.2%	0.1%	0.8%	14.2%	100.0%
84	1900-2000	50	45	286	1.5%	58.4%	13.2%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	5.3%	3.2%	4.6%	0.7%	0.2%	0.1%	0.7%	11.2%	100.0%
84	2000-2100	50	47	224	1.5%	60.5%	13.6%	0.2%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	4.3%	2.5%	3.7%	0.6%	0.1%	0.1%	0.7%	11.6%	100.0%
84	2100-2200	50	47	235	1.7%	65.8%	14.8%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.2%	1.3%	1.9%	0.3%	0.1%	0.0%	0.6%	10.7%	100.0%
84	2200-2300	50	47	218	1.6%	62.6%	14.1%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.0%	1.2%	1.7%	0.3%	0.1%	0.1%	0.9%	14.8%	100.0%
84	2300-0000	50	47	183	1.6%	62.6%	14.1%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.0%	1.2%	1.7%	0.3%	0.1%	0.1%	0.9%	14.8%	100.0%
501	0000-0100	50	48	213	1.6%	60.7%	14.2%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.1%	1.3%	1.9%	0.3%	0.1%	0.1%	0.9%	16.1%	100.0%
501	0100-0200	50	49	149	1.6%	60.7%	14.2%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.1%	1.3%	1.9%	0.3%	0.1%	0.1%	0.9%	16.1%	100.0%
501	0200-0300	50	49	106	1.6%	60.7%	14.2%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.1%	1.3%	1.9%	0.3%	0.1%	0.1%	0.9%	16.1%	100.0%
501	0300-0400	50	49	75	1.4%	56.0%	13.1%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	3.4%	2.0%	3.1%	0.5%	0.1%	0.1%	1.1%	18.0%	100.0%
501	0400-0500	50	49	76	1.0%	51.6%	16.2%	0.4%	0.3%	0.3%	0.0%	0.1%	0.1%	0.1%	3.9%	2.3%	4.3%	0.6%	0.2%	0.1%	1.2%	17.4%	100.0%
501	0500-0600	50	49	93	1.0%	51.6%	16.2%	0.4%	0.3%	0.3%	0.0%	0.1%	0.1%	0.1%	3.9%	2.3%	4.3%	0.6%	0.2%	0.1%	1.2%	17.4%	100.0%
501	0600-0700	50	48	218	1.0%	51.6%	16.2%	0.4%	0.3%	0.3%	0.0%	0.1%	0.1%	0.1%	3.9%	2.3%	4.3%	0.6%	0.2%	0.1%	1.2%	17.4%	100.0%
501	0700-0800	50	45	616	1.0%	51.6%	16.2%	0.4%	0.3%	0.3%	0.0%	0.1%	0.1%	0.1%	3.9%	2.3%	4.3%	0.6%	0.2%	0.1%	1.2%	17.4%	100.0%
501	0800-0900	50	44	721	1.0%	52.1%	16.3%	0.3%	0.2%	0.3%	0.0%	0.1%	0.1%	0.1%	5.2%	3.1%	5.7%	0.9%	0.2%	0.1%	0.9%	13.4%	100.0%
501	0900-1000	50	45	605	0.9%	47.8%	15.0%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.2%	6.6%	3.9%	7.3%	1.1%	0.3%	0.1%	1.0%	15.0%	100.0%
501	1000-1100	50	45	585	0.9%	49.2%	15.4%	0.4%	0.3%	0.3%	0.0%	0.1%	0.1%	0.2%	6.1%	3.6%	6.7%	1.0%	0.3%	0.1%	1.0%	14.6%	100.0%
501	1100-1200	50	45	550	0.9%	51.1%	16.0%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.2%	6.3%	3.8%	6.9%	1.0%	0.3%	0.1%	0.8%	11.6%	100.0%
501	1200-1300	50	46	554	1.0%	53.5%	16.8%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	5.1%	3.0%	5.6%	0.8%	0.2%	0.1%	0.8%	12.1%	100.0%
501	1300-1400	50	45	609	1.6%	64.1%	15.0%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.3%	1.4%	2.1%	0.3%	0.1%	0.1%	0.7%	11.6%	100.0%
501	1400-1500	50	45	659	1.6%	60.7%	14.2%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.1%	1.3%	1.9%	0.3%	0.1%	0.1%	0.9%	16.1%	100.0%
501	1500-1600	50	45	610	1.4%	56.0%	13.1%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	3.4%	2.0%	3.1%	0.5%	0.1%	0.1%	1.1%	18.0%	100.0%
501	1600-1700	50	46	564	1.5%	57.0%	13.3%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	4.6%	2.7%	4.1%	0.7%	0.2%	0.1%	0.8%	14.0%	100.0%
501	1700-1800	50	45	568	1.4%	52.8%	12.4%	0.2%	0.2%	0.2%	0.0%	0.1%	0.1%	0.2%	5.9%	3.5%	5.3%	0.9%	0.2%	0.1%	0.9%	15.8%	100.0%
501	1800-1900	50	45	617	1.4%	54.1%	12.7%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	5.4%	3.2%	4.8%	0.8%	0.2%	0.1%	0.9%	15.3%	100.0%
501	1900-2000	50	46	523	1.4%	56.4%	13.2%	0.3%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	5.6%	3.4%	5.0%	0.8%	0.2%	0.1%	0.7%	12.1%	100.0%
501	2000-2100	50	47	409	1.5%	58.5%	13.7%	0.2%	0.2%	0.2%	0.0%	0.1%	0.1%	0.1%	4.5%	2.7%	4.0%	0.7%	0.2%	0.1%	0.7%	12.6%	100.0%
501	2100-2200	50	47	426	1.6%	64.1%	15.0%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.3%	1.4%	2.1%	0.3%	0.1%	0.1%	0.7%	11.6%	100.0%
501	2200-2300	50	47	396	1.6%	60.7%	14.2%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.1%	1.3%	1.9%	0.3%	0.1%	0.1%	0.9%	16.1%	100.0%
501	2300-0000	50	47	333	1.6%	60.7%	14.2%	0.2%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	2.1%	1.3%	1.9%	0.3%	0.1%	0.1%	0.9%	16.1%	100.0%

Appendix 3.3
EMFAC-HK Model Assumption

[BLANK]

Appendix 3.3 EMFAC-HK Model Assumptions

Estimation of Vehicular Emission for the Study Area with EMFAC-HK model

EMFAC-HK v4.3 model was adopted to estimate the vehicular emission rates of NO_X, NO_2, RSP and FSP. The input parameters and model assumptions made in EMFAC-HK model are summarized as follows.

Model Year

EMFAC-HK considers 45 years of model years for the estimation of vehicular emission. The model years start from 45 years preceding the year of interest to the year of interest as the final model year. The following table summarizes the starting and final model years of the assessment year implemented in EMFAC-HK.

Table 1 Starting and Final Model Years in EMFAC-HK

Scenario Year	Starting Model Year	Final Model Year
2029	1985	2029

Vehicle Technology fraction

Exhaust technology fraction and evaporative technology fraction in the model are based on the default value.

The "2018 Licensed Vehicle by Age and Technology Group Fractions" provided in EPD's website, was adopted in this assessment. Since the provided exhaust technology fractions are only up to Year 2018 at the time of the assessment, those after Year 2018 are projected in accordance with EPD's *Guideline on Modelling Vehicle Emissions* – Appendix 3 "Implementation Schedule of Vehicle Emission Standards in Hong Kong (updated as at May 2020)" and Appendix 4 "EMFAC-HK Technology Group Indexes (Released in January 2021)".

Vehicle Population

As recommended in the EPD's *Guideline on Modelling Vehicle Emissions*, default vehicle populations forecast in EMFAC-HK was used.

Vehicle Accrual

The default accrual rates in EMFAC-HK are estimated from the local mileage data adjusted to reflect the total VKT for each vehicle class. The default value was used.

Travelling Speed

Based on the available speed information provided by traffic consultant, emission factors of each vehicle class were adopted according to the travelling speed of each road link at each hour. All the vehicle classes on the same road link were assumed to have the same travelling speed, except medium goods vehicles, heavy goods vehicles, buses and public light buses, which have speed limit.

In accordance with the Road Traffic Ordinance, for any road with design speed limit of 70 kph or above, the speed limit for medium goods vehicles, heavy goods vehicles and buses would be limited to not more than 70 kph. Thus, for medium goods vehicles, heavy goods vehicles and buses, the flow speed or 70 kph, whichever is lower, have been adopted. For the public light buses, the speed limit should be limited to speed limit of the carriageway or 80 kph, whichever is lower, were adopted.

Appendix 3.3 EMFAC-HK Model Assumptions

Temperature and Humidity Profile

For the estimation of air quality impact of NO_2, RSP and FSP, the lowest temperature (2^oC) and relative humidity (13%) provide by HKO at Sheung Shui automatic weather station for Year 2021 were adopted for the model input.

Vehicle Kilometres Travel (VKT)

The "vehicle fleet" refers to all motor vehicles operating on roads within this assessment area. The modelled fleet was broken down into 18 vehicle classes based on the information in the Transport Monthly Digest and vehicle population provided by EPD.

Vehicle-kilometre-travelled (VKT) represents the total distance travelled on a weekday. The VKT is calculated by multiplying the number of vehicles, which based on the highest predicted hourly traffic flow, and the length of road travelled in the assessment area. The diurnal variation of VKT in the assessment area was provided by the traffic consultant.

Trips

Start emissions of all the concerned vehicle classes in the assessment were simulated by broad-brush approach. Diurnal variation of daily trips was used to estimate the start emissions of petrol, LPG vehicles and diesel vehicles fitted with selective catalytic reduction (SCR) devices. Zero trip was assumed for roads without cold start as no cold start would be anticipated on these roads.

Start emissions of vehicles were assigned on local and rural roads with post speed of 50 km/hr with the number of trips for each vehicle class assumed directly proportional to VKT (Trips per VKT) and is estimated by the following formula

$$\begin{aligned} &Trip\ for\ local\ and\ rural\ roads\ within\ the\ study\ area \\ &= VKT\ for\ local\ and\ rural\ roads\ within\ the\ study\ area \\ &\times \frac{Trip\ for\ local\ and\ rural\ roads\ within\ Hong\ Kong}{VKT\ for\ all\ roads\ within\ Hong\ Kong\ \times\ Proportion\ of\ local\ and\ rural\ roads} \end{aligned}$$

Trips within Hong Kong and VKT within Hong Kong were obtained from the default values from EMFAC-HK. The proportion was calculated from the Annual Traffic Census prepared by Transport Department and is presented in **Annex A**. VKT within the study area was calculated by multiplying the number of vehicles by the distance travelled within the study area. The trips per VKT is also presented in **Annex B**.

The highest NO_x (and the corresponding NO and NO_2), RSP and FSP start emission factor for each vehicle class among different soak time were adopted as a conservative approach.

Estimation of Composite Vehicular Emission Factor

Referring to the EPD's *Guideline on Modelling Vehicle Emissions*, "Emfac mode" was used for calculating emission factors in terms of grams of pollutants emitted per vehicle activity. It was applied for this Project, since it provides the emission factors according to the actual hourly travelling speeds of vehicles of each road.

Assuming that NO_X is comprised of NO and NO_2 only, the hourly emission of NO was calculated as the difference in emissions between NO_x and NO_2 extracted from EMFAC-HK for each vehicle type.

Appendix 3.3 EMFAC-HK Model Assumptions

Both running exhaust and starting emissions were considered for road with post speed of 50km/hr. The 24-hour traffic flows and composite emission factors for each road adopted in the subsequent air dispersion modelling are presented in **Appendix 3.4.**

Annex A

Proportion of Local and Rural Roads within Hong Kong

Region	Average Daily Vehicle-Kilometre in Year 2020		
	Major Roads	**Minor Roads**	**Total**
HK Island	4691050	1032862	5723912
Kowloon	7744913	990825	8735737
New Territories	19379692	2670039	22049731
Total	**31815655**	**4693726**	**36509380**
Percentage	**87%**	**13%**	**100%**

Annex B

Year 2029	No. of Trips within HK			VKT within HK			VKT for Local and Rural Roads within HK			Trips per VKT
	Petrol	Diesel	LPG	Petrol	Diesel	LPG	Petrol	Diesel	LPG	
01 - Private Cars (PC)	1037042	17169	0	19912582	321950	0	2568723	41532	0	0.40387
02 - Taxi	7	0	73202	763	0	7865438	98	0	1014642	0.07215
03 - Light Goods Vehicles<=2.5t	81	2318	0	1340	39885	0	173	5145	0	0.45127
04 - Lt Goods Vehicles 2.5-3.5t	5811	223984	0	94536	3804086	0	12195	490727	0	0.45692
05 - Light Goods Vehicles>3.5t	0	82517	0	0	2010846	0	0	259399	0	0.31811
06 - Medium Goods Vehicles<=15t	0	53089	0	0	1137952	0	0	146796	0	0.36165
07 - Medium Goods Vehicles15-24t	0	104366	0	0	2243421	0	0	289401	0	0.36063
08 - Public Light Buses	0	12567	4726	0	757494	284788	0	97717	36738	0.12862
09 - Private Light Bus <=3.5t	235	1201	0	4793	40041	0	618	5165	0	0.24836
10 - Private Light Bus >3.5t	11	9842	1359	211	280200	25201	27	36146	3251	0.28442
11 - Non-franchised Bus<=6.4t	0	10186	0	0	313337	0	0	40420	0	0.25200
12 - Non-franchised Bus 6.4-15t	0	7067	0	0	212191	0	0	27373	0	0.25816
13 - Non-franchised Bus 15-24t	0	15513	0	0	464657	0	0	59941	0	0.25880
14 - Franchised Bus (SD)	0	2934	0	0	49209	0	0	6348	0	0.46215
15 - Franchised Bus (DD)	0	62351	0	0	1276354	0	0	164650	0	0.37869
16 - Motorcycles (MC)	427576	0	0	1184522	0	0	152803	0	0	2.79821
17 - Heavy Goods Vehicles>24t	0	27265	0	0	586082	0	0	75605	0	0.36063
18 - Non-franchised Bus >24t	0	8	0	0	239	0	0	31	0	0.25919
19 - <Placeholder (P3)>	0	0	0	0	0	0	0	0	0	0.00000
20 - <Placeholder (P4)>	0	0	0	0	0	0	0	0	0	0.00000
21 - <Placeholder (P5)>	0	0	0	0	0	0	0	0	0	0.00000

[BLANK]

Appendix 3.4
Hourly Composite Vehicular Emission Factor and Summary of Vehicular Emission Factors of 18 Vehicle Classes

[BLANK]

Improvement of Tai Tau Leng Roundabout and Fanling Highway (Kwu Tung Section) (Base Case Scenario - Year 2029)
Summary of Composite Vehicular Emission Factors for CALINE4 Model

Open Road 24 hour NO Emission Factor (g/mile-veh) and Traffic Profile

No. of CALINE 4 Model Links	Link Type [1]	X-Start	Y-Start	X-End	Y-End	Height	Width	Length	Hour 01		Hour 02		Hour 03		Hour 04		Hour 05		Hour 06		Hour 07		Hour 08		Hour 09		Hour 10		Hour 11		Hour 12		Hour 13		Hour 14		Hour 15		Hour 16		Hour 17		Hour 18		Hour 19		Hour 20		Hour 21		Hour 22		Hour 23		Hour 24	
									Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF
1	1	829103.6	840429.6	829361.5	840388.1	0.0	13.3	261.3	213	0.716	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.926	721	0.889	605	0.988	585	0.949	550	0.884	554	0.836	609	0.633	659	0.736	610	0.838	564	0.791	568	0.885	617	0.864	523	0.790	409	0.742	426	0.626	396	0.723	333	0.720
2	3	829360.9	840386.1	829424.8	840365.6	7.1	10.3	67.1	213	0.716	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.926	721	0.889	605	0.988	585	0.949	550	0.884	554	0.836	609	0.633	659	0.736	610	0.838	564	0.791	568	0.885	617	0.864	523	0.790	409	0.742	426	0.626	396	0.723	333	0.720
3	3	829424.8	840365.6	829560.0	840344.2	7.1	10.3	136.9	213	0.716	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.926	721	0.889	605	0.988	585	0.949	550	0.884	554	0.836	609	0.633	659	0.736	610	0.838	564	0.791	568	0.885	617	0.864	523	0.790	409	0.742	426	0.626	396	0.723	333	0.720
4	3	829560.0	840344.2	829625.5	840342.3	7.1	10.3	65.5	213	0.716	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.926	721	0.889	605	0.988	585	0.949	550	0.884	554	0.836	609	0.633	659	0.736	610	0.838	564	0.791	568	0.885	617	0.864	523	0.790	409	0.742	426	0.626	396	0.723	333	0.720
5	3	829625.5	840342.3	829737.0	840325.5	7.1	10.3	112.8	213	0.716	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.926	721	0.889	605	0.988	585	0.949	550	0.884	554	0.836	609	0.633	659	0.736	610	0.838	564	0.791	568	0.885	617	0.864	523	0.790	409	0.742	426	0.626	396	0.723	333	0.720
6	1	829737.5	840327.9	829816.2	840325.1	0.0	13.0	78.7	213	0.718	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.922	721	0.889	605	0.984	585	0.953	550	0.887	554	0.833	609	0.635	659	0.733	610	0.841	564	0.788	568	0.889	617	0.861	523	0.787	409	0.742	426	0.626	396	0.723	333	0.723
7	1	829816.2	840325.1	829920.8	840332.6	0.0	13.0	104.9	213	0.718	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.922	721	0.889	605	0.984	585	0.953	550	0.887	554	0.833	609	0.635	659	0.733	610	0.841	564	0.788	568	0.889	617	0.861	523	0.787	409	0.742	426	0.626	396	0.723	333	0.723
8	1	829920.8	840332.6	829983.0	840310.3	0.0	13.0	66.0	213	0.718	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.922	721	0.889	605	0.984	585	0.953	550	0.887	554	0.833	609	0.635	659	0.733	610	0.841	564	0.788	568	0.889	617	0.861	523	0.787	409	0.742	426	0.626	396	0.723	333	0.723

[1] Link Type No. 1- At grade, 2- Depressed, 3- Fill, 4- Bridge

Open Road 24 hour NO2 Emission Factor (g/mile-veh) and Traffic Profile

No. of CALINE 4 Model Links	Link Type [1]	X-Start	Y-Start	X-End	Y-End	Height	Width	Length	Hour 01		Hour 02		Hour 03		Hour 04		Hour 05		Hour 06		Hour 07		Hour 08		Hour 09		Hour 10		Hour 11		Hour 12		Hour 13		Hour 14		Hour 15		Hour 16		Hour 17		Hour 18		Hour 19		Hour 20		Hour 21		Hour 22		Hour 23		Hour 24	
									Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF
1	1	829103.6	840429.6	829361.5	840388.1	0.0	13.3	261.3	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.144	721	0.156	605	0.186	585	0.174	550	0.169	554	0.147	609	0.084	659	0.095	610	0.123	564	0.130	568	0.155	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.092
2	3	829360.9	840386.1	829424.8	840365.6	7.1	10.3	67.1	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.144	721	0.156	605	0.186	585	0.174	550	0.169	554	0.147	609	0.084	659	0.095	610	0.123	564	0.130	568	0.155	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.092
3	3	829424.8	840365.6	829560.0	840344.2	7.1	10.3	136.9	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.144	721	0.156	605	0.186	585	0.174	550	0.169	554	0.147	609	0.084	659	0.095	610	0.123	564	0.130	568	0.155	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.092
4	3	829560.0	840344.2	829625.5	840342.3	7.1	10.3	65.5	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.144	721	0.156	605	0.186	585	0.174	550	0.169	554	0.147	609	0.084	659	0.095	610	0.123	564	0.130	568	0.155	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.092
5	3	829625.5	840342.3	829737.0	840325.5	7.1	10.3	112.8	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.144	721	0.156	605	0.186	585	0.174	550	0.169	554	0.147	609	0.084	659	0.095	610	0.123	564	0.130	568	0.155	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.092
6	1	829737.5	840327.9	829816.2	840325.1	0.0	13.0	78.7	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.143	721	0.156	605	0.185	585	0.175	550	0.170	554	0.146	609	0.084	659	0.094	610	0.124	564	0.129	568	0.156	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.093
7	1	829816.2	840325.1	829920.8	840332.6	0.0	13.0	104.9	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.143	721	0.156	605	0.185	585	0.175	550	0.170	554	0.146	609	0.084	659	0.094	610	0.124	564	0.129	568	0.156	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.093
8	1	829920.8	840332.6	829983.0	840310.3	0.0	13.0	66.0	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.143	721	0.156	605	0.185	585	0.175	550	0.170	554	0.146	609	0.084	659	0.094	610	0.124	564	0.129	568	0.156	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.093

[1] Link Type No. 1- At grade, 2- Depressed, 3- Fill, 4- Bridge

Open Road 24 hour RSP Emission Factor (g/mile-veh) and Traffic Profile

No. of CALINE 4 Model Links	Link Type [1]	X-Start	Y-Start	X-End	Y-End	Height	Width	Length	Hour 01		Hour 02		Hour 03		Hour 04		Hour 05		Hour 06		Hour 07		Hour 08		Hour 09		Hour 10		Hour 11		Hour 12		Hour 13		Hour 14		Hour 15		Hour 16		Hour 17		Hour 18		Hour 19		Hour 20		Hour 21		Hour 22		Hour 23		Hour 24	
									Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF
1	1	829103.6	840429.6	829361.5	840388.1	0.0	13.3	261.3	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.021	550	0.020	554	0.019	609	0.017	659	0.018	610	0.020	564	0.020	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
2	3	829360.9	840386.1	829424.8	840365.6	7.1	10.3	67.1	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.021	550	0.020	554	0.019	609	0.017	659	0.018	610	0.020	564	0.020	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
3	3	829424.8	840365.6	829560.0	840344.2	7.1	10.3	136.9	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.021	550	0.020	554	0.019	609	0.017	659	0.018	610	0.020	564	0.020	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
4	3	829560.0	840344.2	829625.5	840342.3	7.1	10.3	65.5	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.021	550	0.020	554	0.019	609	0.017	659	0.018	610	0.020	564	0.020	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
5	3	829625.5	840342.3	829737.0	840325.5	7.1	10.3	112.8	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.021	550	0.020	554	0.019	609	0.017	659	0.018	610	0.020	564	0.020	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
6	1	829737.5	840327.9	829816.2	840325.1	0.0	13.0	78.7	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.022	550	0.021	554	0.019	609	0.017	659	0.018	610	0.020	564	0.019	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
7	1	829816.2	840325.1	829920.8	840332.6	0.0	13.0	104.9	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.022	550	0.021	554	0.019	609	0.017	659	0.018	610	0.020	564	0.019	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
8	1	829920.8	840332.6	829983.0	840310.3	0.0	13.0	66.0	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.022	550	0.021	554	0.019	609	0.017	659	0.018	610	0.020	564	0.019	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018

[1] Link Type No. 1- At grade, 2- Depressed, 3- Fill, 4- Bridge

Open Road 24 hour FSP Emission Factor (g/mile-veh) and Traffic Profile

No. of CALINE 4 Model Links	Link Type [1]	X-Start	Y-Start	X-End	Y-End	Height	Width	Length	Hour 01		Hour 02		Hour 03		Hour 04		Hour 05		Hour 06		Hour 07		Hour 08		Hour 09		Hour 10		Hour 11		Hour 12		Hour 13		Hour 14		Hour 15		Hour 16		Hour 17		Hour 18		Hour 19		Hour 20		Hour 21		Hour 22		Hour 23		Hour 24	
									Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF
1	1	829103.6	840429.6	829361.5	840388.1	0.0	13.3	261.3	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.018	564	0.018	568	0.019	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
2	3	829360.9	840386.1	829424.8	840365.6	7.1	10.3	67.1	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.018	564	0.018	568	0.019	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
3	3	829424.8	840365.6	829560.0	840344.2	7.1	10.3	136.9	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.018	564	0.018	568	0.019	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
4	3	829560.0	840344.2	829625.5	840342.3	7.1	10.3	65.5	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.018	564	0.018	568	0.019	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
5	3	829625.5	840342.3	829737.0	840325.5	7.1	10.3	112.8	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.018	564	0.018	568	0.019	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
6	1	829737.5	840327.9	829816.2	840325.1	0.0	13.0	78.7	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.019	564	0.018	568	0.020	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
7	1	829816.2	840325.1	829920.8	840332.6	0.0	13.0	104.9	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.019	564	0.018	568	0.020	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
8	1	829920.8	840332.6	829983.0	840310.3	0.0	13.0	66.0	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.019	564	0.018	568	0.020	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016

[1] Link Type No. 1- At grade, 2- Depressed, 3- Fill, 4- Bridge

Improvement of Tai Tau Leng Roundabout and Fanling Highway (Kwu Tung Section) (Proposed Change Scenario - Year 2029)
Summary of Composite Vehicular Emission Factors for CALINE4 Model

Open Road 24 hour NO Emission Factor (g/mile-veh) and Traffic Profile

No. of CALINE 4 Model Links	Link Type [1]	X-Start	Y-Start	X-End	Y-End	Height	Width	Length	Hour 01		Hour 02		Hour 03		Hour 04		Hour 05		Hour 06		Hour 07		Hour 08		Hour 09		Hour 10		Hour 11		Hour 12		Hour 13		Hour 14		Hour 15		Hour 16		Hour 17		Hour 18		Hour 19		Hour 20		Hour 21		Hour 22		Hour 23		Hour 24	
									Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF
1	1	829103.6	840429.6	829361.5	840388.1	0.0	13.3	261.3	213	0.716	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.926	721	0.889	605	0.988	585	0.949	550	0.884	554	0.836	609	0.633	659	0.736	610	0.838	564	0.791	568	0.885	617	0.864	523	0.790	409	0.742	426	0.626	396	0.723	333	0.720
2	1	829361.5	840388.1	829387.1	840381.3	0.0	13.3	26.5	213	0.716	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.926	721	0.889	605	0.988	585	0.949	550	0.884	554	0.836	609	0.633	659	0.736	610	0.838	564	0.791	568	0.885	617	0.864	523	0.790	409	0.742	426	0.626	396	0.723	333	0.720
3	1	829387.1	840381.3	829425.4	840368.3	0.0	13.3	40.4	213	0.716	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.926	721	0.889	605	0.988	585	0.949	550	0.884	554	0.836	609	0.633	659	0.736	610	0.838	564	0.791	568	0.885	617	0.864	523	0.790	409	0.742	426	0.626	396	0.723	333	0.720
4	1	829425.4	840368.3	829558.3	840347.1	0.0	13.3	134.6	213	0.716	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.926	721	0.889	605	0.988	585	0.949	550	0.884	554	0.836	609	0.633	659	0.736	610	0.838	564	0.791	568	0.885	617	0.864	523	0.790	409	0.742	426	0.626	396	0.723	333	0.720
5	1	829558.3	840347.1	829625.3	840345.2	0.0	13.3	67.0	213	0.716	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.926	721	0.889	605	0.988	585	0.949	550	0.884	554	0.836	609	0.633	659	0.736	610	0.838	564	0.791	568	0.885	617	0.864	523	0.790	409	0.742	426	0.626	396	0.723	333	0.720
6	1	829625.3	840345.2	829651.8	840341.9	0.0	13.3	26.8	213	0.716	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.926	721	0.889	605	0.988	585	0.949	550	0.884	554	0.836	609	0.633	659	0.736	610	0.838	564	0.791	568	0.885	617	0.864	523	0.790	409	0.742	426	0.626	396	0.723	333	0.720
7	1	829651.8	840341.9	829737.5	840327.9	0.0	13.3	86.8	213	0.716	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.926	721	0.889	605	0.988	585	0.949	550	0.884	554	0.836	609	0.633	659	0.736	610	0.838	564	0.791	568	0.885	617	0.864	523	0.790	409	0.742	426	0.626	396	0.723	333	0.720
8	1	829737.5	840327.9	829816.2	840325.1	0.0	13.0	78.7	213	0.718	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.922	721	0.889	605	0.984	585	0.953	550	0.887	554	0.833	609	0.635	659	0.733	610	0.841	564	0.788	568	0.889	617	0.861	523	0.787	409	0.742	426	0.626	396	0.723	333	0.723
9	1	829816.2	840325.1	829920.8	840332.6	0.0	13.0	104.9	213	0.718	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.922	721	0.889	605	0.984	585	0.953	550	0.887	554	0.833	609	0.635	659	0.733	610	0.841	564	0.788	568	0.889	617	0.861	523	0.787	409	0.742	426	0.626	396	0.723	333	0.723
10	1	829920.8	840332.6	829983.0	840310.3	0.0	13.0	66.0	213	0.718	149	0.713	106	0.713	75	0.818	76	0.896	93	0.896	218	0.902	616	0.922	721	0.889	605	0.984	585	0.953	550	0.887	554	0.833	609	0.635	659	0.733	610	0.841	564	0.788	568	0.889	617	0.861	523	0.787	409	0.742	426	0.626	396	0.723	333	0.723

[1] Link Type No. 1- At grade, 2- Depressed, 3- Fill, 4- Bridge

Open Road 24 hour NO2 Emission Factor (g/mile-veh) and Traffic Profile

No. of CALINE 4 Model Links	Link Type [1]	X-Start	Y-Start	X-End	Y-End	Height	Width	Length	Hour 01		Hour 02		Hour 03		Hour 04		Hour 05		Hour 06		Hour 07		Hour 08		Hour 09		Hour 10		Hour 11		Hour 12		Hour 13		Hour 14		Hour 15		Hour 16		Hour 17		Hour 18		Hour 19		Hour 20		Hour 21		Hour 22		Hour 23		Hour 24	
									Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF
1	1	829103.6	840429.6	829361.5	840388.1	0.0	13.3	261.3	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.144	721	0.156	605	0.186	585	0.174	550	0.169	554	0.147	609	0.084	659	0.095	610	0.123	564	0.130	568	0.155	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.092
2	1	829361.5	840388.1	829387.1	840381.3	0.0	13.3	26.5	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.144	721	0.156	605	0.186	585	0.174	550	0.169	554	0.147	609	0.084	659	0.095	610	0.123	564	0.130	568	0.155	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.092
3	1	829387.1	840381.3	829425.4	840368.3	0.0	13.3	40.4	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.144	721	0.156	605	0.186	585	0.174	550	0.169	554	0.147	609	0.084	659	0.095	610	0.123	564	0.130	568	0.155	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.092
4	1	829425.4	840368.3	829558.3	840347.1	0.0	13.3	134.6	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.144	721	0.156	605	0.186	585	0.174	550	0.169	554	0.147	609	0.084	659	0.095	610	0.123	564	0.130	568	0.155	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.092
5	1	829558.3	840347.1	829625.3	840345.2	0.0	13.3	67.0	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.144	721	0.156	605	0.186	585	0.174	550	0.169	554	0.147	609	0.084	659	0.095	610	0.123	564	0.130	568	0.155	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.092
6	1	829625.3	840345.2	829651.8	840341.9	0.0	13.3	26.8	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.144	721	0.156	605	0.186	585	0.174	550	0.169	554	0.147	609	0.084	659	0.095	610	0.123	564	0.130	568	0.155	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.092
7	1	829651.8	840341.9	829737.5	840327.9	0.0	13.3	86.8	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.144	721	0.156	605	0.186	585	0.174	550	0.169	554	0.147	609	0.084	659	0.095	610	0.123	564	0.130	568	0.155	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.092
8	1	829737.5	840327.9	829816.2	840325.1	0.0	13.0	78.7	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.143	721	0.156	605	0.185	585	0.175	550	0.170	554	0.146	609	0.084	659	0.094	610	0.124	564	0.129	568	0.156	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.093
9	1	829816.2	840325.1	829920.8	840332.6	0.0	13.0	104.9	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.143	721	0.156	605	0.185	585	0.175	550	0.170	554	0.146	609	0.084	659	0.094	610	0.124	564	0.129	568	0.156	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.093
10	1	829920.8	840332.6	829983.0	840310.3	0.0	13.0	66.0	213	0.092	149	0.091	106	0.091	75	0.120	76	0.139	93	0.139	218	0.140	616	0.143	721	0.156	605	0.185	585	0.175	550	0.170	554	0.146	609	0.084	659	0.094	610	0.124	564	0.129	568	0.156	617	0.148	523	0.141	409	0.122	426	0.083	396	0.093	333	0.093

[1] Link Type No. 1- At grade, 2- Depressed, 3- Fill, 4- Bridge

Open Road 24 hour RSP Emission Factor (g/mile-veh) and Traffic Profile

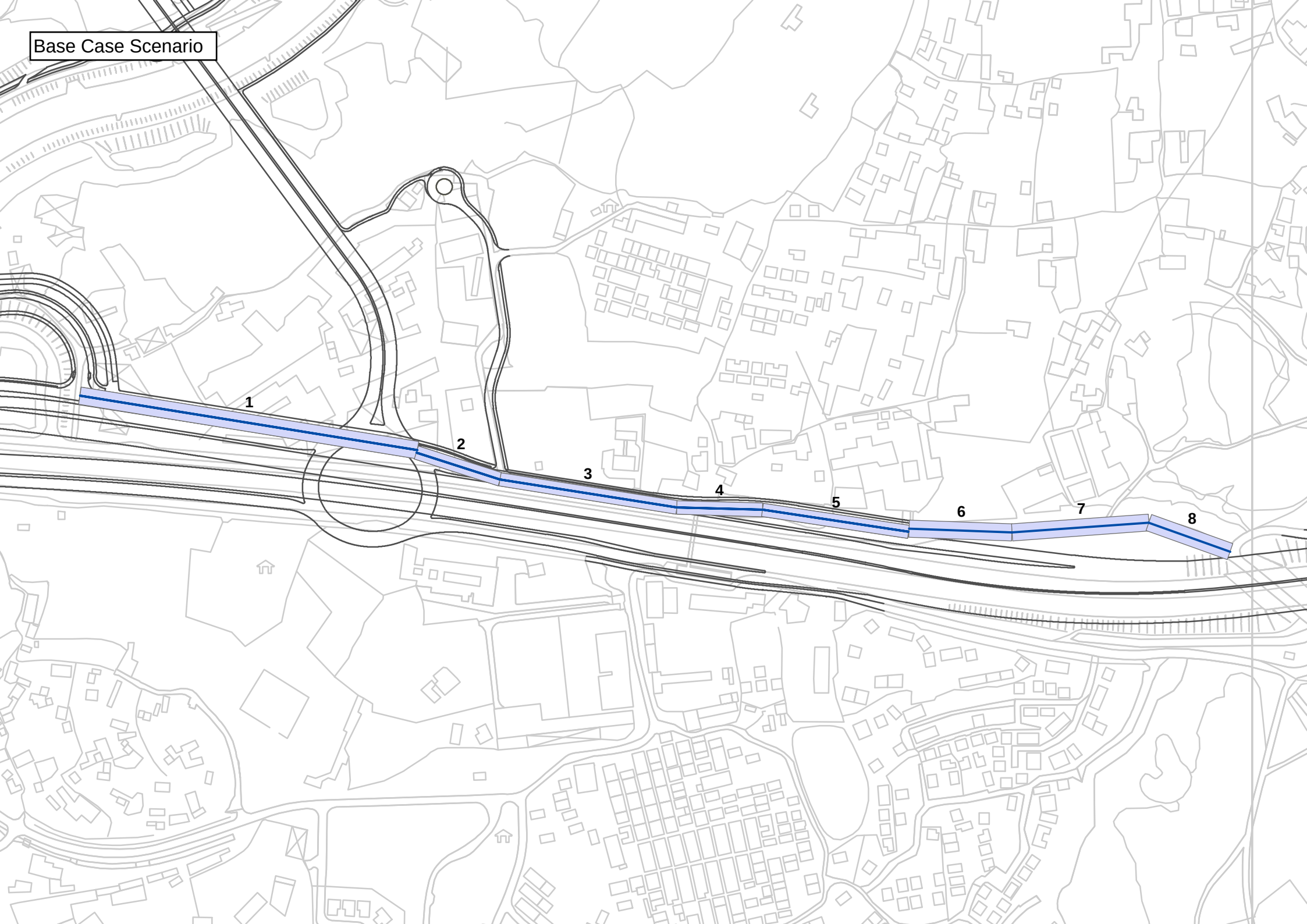
No. of CALINE 4 Model Links	Link Type [1]	X-Start	Y-Start	X-End	Y-End	Height	Width	Length	Hour 01		Hour 02		Hour 03		Hour 04		Hour 05		Hour 06		Hour 07		Hour 08		Hour 09		Hour 10		Hour 11		Hour 12		Hour 13		Hour 14		Hour 15		Hour 16		Hour 17		Hour 18		Hour 19		Hour 20		Hour 21		Hour 22		Hour 23		Hour 24	
									Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF
1	1	829103.6	840429.6	829361.5	840388.1	0.0	13.3	261.3	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.021	550	0.020	554	0.019	609	0.017	659	0.018	610	0.020	564	0.020	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
2	1	829361.5	840388.1	829387.1	840381.3	0.0	13.3	26.5	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.021	550	0.020	554	0.019	609	0.017	659	0.018	610	0.020	564	0.020	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
3	1	829387.1	840381.3	829425.4	840368.3	0.0	13.3	40.4	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.021	550	0.020	554	0.019	609	0.017	659	0.018	610	0.020	564	0.020	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
4	1	829425.4	840368.3	829558.3	840347.1	0.0	13.3	134.6	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.021	550	0.020	554	0.019	609	0.017	659	0.018	610	0.020	564	0.020	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
5	1	829558.3	840347.1	829625.3	840345.2	0.0	13.3	67.0	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.021	550	0.020	554	0.019	609	0.017	659	0.018	610	0.020	564	0.020	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
6	1	829625.3	840345.2	829651.8	840341.9	0.0	13.3	26.8	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.021	550	0.020	554	0.019	609	0.017	659	0.018	610	0.020	564	0.020	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
7	1	829651.8	840341.9	829737.5	840327.9	0.0	13.3	86.8	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.021	550	0.020	554	0.019	609	0.017	659	0.018	610	0.020	564	0.020	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
8	1	829737.5	840327.9	829816.2	840325.1	0.0	13.0	78.7	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.022	550	0.021	554	0.019	609	0.017	659	0.018	610	0.020	564	0.019	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
9	1	829816.2	840325.1	829920.8	840332.6	0.0	13.0	104.9	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.022	550	0.021	554	0.019	609	0.017	659	0.018	610	0.020	564	0.019	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018
10	1	829920.8	840332.6	829983.0	840310.3	0.0	13.0	66.0	213	0.018	149	0.017	106	0.017	75	0.019	76	0.020	93	0.020	218	0.020	616	0.021	721	0.020	605	0.022	585	0.022	550	0.021	554	0.019	609	0.017	659	0.018	610	0.020	564	0.019	568	0.021	617	0.021	523	0.020	409	0.018	426	0.016	396	0.018	333	0.018

[1] Link Type No. 1- At grade, 2- Depressed, 3- Fill, 4- Bridge

Open Road 24 hour FSP Emission Factor (g/mile-veh) and Traffic Profile

No. of CALINE 4 Model Links	Link Type [1]	X-Start	Y-Start	X-End	Y-End	Height	Width	Length	Hour 01		Hour 02		Hour 03		Hour 04		Hour 05		Hour 06		Hour 07		Hour 08		Hour 09		Hour 10		Hour 11		Hour 12		Hour 13		Hour 14		Hour 15		Hour 16		Hour 17		Hour 18		Hour 19		Hour 20		Hour 21		Hour 22		Hour 23		Hour 24	
									Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF	Flow	EmF
1	1	829103.6	840429.6	829361.5	840388.1	0.0	13.3	261.3	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.018	564	0.018	568	0.019	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
2	1	829361.5	840388.1	829387.1	840381.3	0.0	13.3	26.5	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.018	564	0.018	568	0.019	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
3	1	829387.1	840381.3	829425.4	840368.3	0.0	13.3	40.4	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.018	564	0.018	568	0.019	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
4	1	829425.4	840368.3	829558.3	840347.1	0.0	13.3	134.6	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.018	564	0.018	568	0.019	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
5	1	829558.3	840347.1	829625.3	840345.2	0.0	13.3	67.0	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.018	564	0.018	568	0.019	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
6	1	829625.3	840345.2	829651.8	840341.9	0.0	13.3	26.8	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.018	564	0.018	568	0.019	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
7	1	829651.8	840341.9	829737.5	840327.9	0.0	13.3	86.8	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.018	564	0.018	568	0.019	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
8	1	829737.5	840327.9	829816.2	840325.1	0.0	13.0	78.7	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.019	564	0.018	568	0.020	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
9	1	829816.2	840325.1	829920.8	840332.6	0.0	13.0	104.9	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.019	564	0.018	568	0.020	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016
10	1	829920.8	840332.6	829983.0	840310.3	0.0	13.0	66.0	213	0.016	149	0.016	106	0.016	75	0.018	76	0.018	93	0.018	218	0.018	616	0.019	721	0.019	605	0.020	585	0.020	550	0.019	554	0.018	609	0.015	659	0.017	610	0.019	564	0.018	568	0.020	617	0.019	523	0.018	409	0.017	426	0.015	396	0.016	333	0.016

[1] Link Type No. 1- At grade, 2- Depressed, 3- Fill, 4- Bridge


Base Case Scenario
1
2
3
4
5
6
7
8


Proposed Change Scenario
1
2
3
4
5
6
7
8
9
10

Appendix 3.4 Summary of Vehicular Emission Factors of 18 Vehicle Classes

Improvement of Tai Tau Leng Roundabout and Fanling Highway (Kwu Tung Section)
Running Exhaust Emission Factor (gram/mile/vehicle) - NO (Year 2029)

Speed (km/hr)	16 - Motorcycles (MC)	01 - Private Cars (PC)	02 - Taxi	11 - Non-franchised Bus<=6.4t	12 - Non-franchised Bus 6.4-15t	13 - Non-franchised Bus 15t-24t	18 - Non-franchised Bus >24t	9 - Private Light Bus <=3.5t	10 - Private Light Bus >3.5t	03 - Light Goods Vehicles<=2.5t	04 - Lt Goods Vehicles 2.5-3.5t	05 - Light Goods Vehicles>3.5t	06 - Heavy Goods Vehicles<=15t	07 - Heavy Goods Vehicles 15t-24t	17 - Heavy Goods Vehicles >24t	14 - Franchised Bus (SD)	15 - Franchised Bus (DD)	8 - Public Light Buses
1	0.58065	0.07532	3.06306	2.76582	3.54522	9.58654	4.69671	2.22411	1.79555	3.18763	3.18441	2.54486	4.01789	7.59964	9.32309	8.15310	21.05215	2.04725
2	0.58065	0.07532	3.06306	2.76582	3.54522	9.58654	4.69671	2.22411	1.79555	3.18763	3.18441	2.54486	4.01789	7.59964	9.32309	8.15310	21.05215	2.04725
3	0.58065	0.07532	3.06306	2.76582	3.54522	9.58638	4.69671	2.22411	1.79555	3.18763	3.18441	2.54486	4.01789	7.59964	9.32309	8.15310	21.05215	2.04725
4	0.58065	0.07532	3.06306	2.76582	3.54522	9.58654	4.69671	2.22411	1.79555	3.18763	3.18441	2.54486	4.01789	7.59964	9.32309	8.15310	21.05215	2.04725
5	0.57116	0.07451	2.67537	2.76582	3.54522	9.58638	4.69671	2.22266	1.79555	3.18618	3.18393	2.54486	4.01789	7.59964	9.32309	8.15310	21.05215	2.04725
6	0.56182	0.07258	2.38827	2.76582	3.54522	9.58638	4.69671	2.22138	1.79555	3.18489	3.18360	2.54486	4.01789	7.59964	9.32309	8.15310	21.05215	2.04725
7	0.55265	0.07081	2.16972	2.76582	3.54522	9.58638	4.69671	2.22009	1.79555	3.18393	3.18328	2.54486	4.01789	7.59964	9.32309	8.15310	21.05215	2.04725
8	0.54396	0.06888	1.99639	2.76582	3.54522	9.58654	4.69671	2.21880	1.79555	3.18296	3.18312	2.54486	4.01789	7.59964	9.32309	8.15310	21.05215	2.04725
9	0.53543	0.06711	1.85525	2.57141	3.35226	9.12080	4.69671	2.10180	1.68016	3.01301	3.01237	2.41225	3.79870	7.23223	8.78975	7.62427	19.33884	1.95149
10	0.52722	0.06550	1.73713	2.40082	3.17572	8.71605	4.69671	1.99205	1.57844	2.85498	2.85385	2.29122	3.59994	6.91294	8.32626	7.16464	17.86484	1.86491
11	0.51917	0.06373	1.63702	2.25646	3.01993	8.21490	4.49152	1.89291	1.49170	2.71400	2.71191	2.18501	3.42662	6.51591	7.82479	6.71515	16.63724	1.78959
12	0.51161	0.06228	1.55044	2.13222	2.88056	7.56617	4.03446	1.80263	1.41671	2.58654	2.58348	2.09038	3.27308	6.00060	7.24285	6.24425	15.34493	1.72280
13	0.50405	0.06083	1.47496	2.02391	2.75488	7.01433	3.65112	1.71974	1.35104	2.47034	2.46648	2.00556	3.13597	5.56221	6.74605	5.84063	14.23159	1.66277
14	0.49697	0.05955	1.40818	1.92864	2.64077	6.53909	3.32539	1.64314	1.29263	2.36364	2.35898	1.92848	3.01189	5.18482	6.31668	5.49060	13.30815	1.60854
15	0.48988	0.05826	1.34879	1.84383	2.53617	6.12532	3.04520	1.57169	1.24064	2.26515	2.25952	1.85815	2.89923	4.85620	5.94138	5.18370	12.52021	1.55897
16	0.48296	0.05697	1.29552	1.76819	2.43944	5.76177	2.80219	1.50490	1.19381	2.17342	2.16698	1.79361	2.79607	4.56732	5.61066	4.91220	11.83576	1.51327
17	0.47653	0.05601	1.24740	1.69963	2.35013	5.43958	2.58927	1.44229	1.15132	2.08796	2.08088	1.73375	2.70096	4.31175	5.31679	4.67032	11.23306	1.47110
18	0.47009	0.05472	1.20363	1.63767	2.26676	5.15231	2.40146	1.38355	1.11238	2.00798	1.99977	1.67838	2.61309	4.08355	5.05382	4.45338	10.69715	1.43167
19	0.46397	0.05375	1.16372	1.58102	2.18887	4.89434	2.23474	1.32771	1.07681	1.93266	1.92349	1.62672	2.53150	3.87868	4.81725	4.25736	10.21628	1.39498
20	0.45802	0.05279	1.12702	1.52904	2.11580	4.66146	2.08571	1.27492	1.04398	1.86153	1.85155	1.57828	2.45522	3.69377	4.60305	4.07953	9.78240	1.36038
21	0.45223	0.05166	1.09323	1.48124	2.04676	4.45000	1.95197	1.22471	1.01373	1.79426	1.78348	1.53290	2.38376	3.52607	4.40815	3.91747	9.38811	1.32803
22	0.44675	0.05086	1.06217	1.43698	1.98175	4.25720	1.83127	1.17691	0.98540	1.73053	1.71878	1.48993	2.31649	3.37302	4.23000	3.76892	9.02794	1.29729
23	0.44144	0.04989	1.03320	1.39594	1.92027	4.08097	1.72184	1.13121	0.95917	1.66969	1.65714	1.44954	2.25324	3.23285	4.06649	3.63229	8.69770	1.26832
24	0.43613	0.04908	1.00616	1.35796	1.86185	3.91875	1.62222	1.08743	0.93455	1.61176	1.59824	1.41123	2.19354	3.10426	3.91586	3.50612	8.39353	1.24064
25	0.43114	0.04812	0.98106	1.32240	1.80617	3.76924	1.53113	1.04559	0.91153	1.55656	1.54207	1.37486	2.13673	2.98565	3.77681	3.38928	8.11206	1.21457
26	0.42632	0.04748	0.95756	1.28892	1.75306	3.63100	1.44760	1.00520	0.88965	1.50345	1.48816	1.34010	2.08313	2.87574	3.64790	3.28065	7.85118	1.18963
27	0.42149	0.04651	0.93551	1.25770	1.70253	3.50258	1.37084	0.96673	0.86937	1.45259	1.43650	1.30711	2.03180	2.77403	3.52784	3.17958	7.60817	1.16597
28	0.41698	0.04571	0.91459	1.22825	1.65392	3.38316	1.30019	0.92940	0.85006	1.40383	1.38693	1.27573	1.98287	2.67924	3.41599	3.08511	7.38158	1.14328
29	0.41264	0.04522	0.89512	1.20057	1.60741	3.27180	1.23485	0.89351	0.83171	1.35684	1.33914	1.24531	1.93636	2.59088	3.31155	2.99660	7.16963	1.12155
30	0.40829	0.04442	0.87677	1.17434	1.56283	3.16751	1.17418	0.85875	0.81449	1.31162	1.29311	1.21650	1.89178	2.50816	3.21354	2.91372	6.97071	1.10095
31	0.40427	0.04361	0.85907	1.14955	1.46305	3.07015	1.11801	0.76025	0.79807	1.19349	1.17160	1.15969	1.81051	2.43091	3.12164	2.83550	6.78387	1.08116
32	0.40024	0.04297	0.84233	1.12606	1.42459	2.97857	1.06555	0.73112	0.78246	1.15535	1.13266	1.13459	1.77140	2.35801	3.03522	2.76196	6.60764	1.06217
33	0.39638	0.04216	0.82640	1.10369	1.38854	2.89215	1.01662	0.70425	0.76750	1.11962	1.09661	1.11077	1.73471	2.28977	2.95363	2.69259	6.44156	1.04398
34	0.39284	0.04168	0.81127	1.08244	1.35491	2.81088	0.97092	0.67898	0.75349	1.08631	1.06265	1.08840	1.69979	2.22524	2.87670	2.62693	6.28449	1.02676
35	0.38930	0.04104	0.79679	1.06217	1.32288	2.73428	0.92811	0.65532	0.73998	1.05509	1.03095	1.06716	1.66696	2.16425	2.80412	2.56465	6.13562	1.01002
36	0.38576	0.04039	0.78295	1.04285	1.29295	2.66185	0.88804	0.63344	0.72710	1.02547	1.00117	1.04720	1.63574	2.10679	2.73508	2.50575	5.99448	0.99409
37	0.38238	0.03975	0.76975	1.02435	1.26446	2.59314	0.85022	0.61268	0.71455	0.99795	0.97317	1.02821	1.60613	2.05240	2.66974	2.44958	5.86043	0.97896
38	0.37932	0.03927	0.75720	1.00681	1.23759	2.52796	0.81497	0.59337	0.70296	0.97204	0.94678	1.01002	1.57796	2.00074	2.60762	2.39631	5.73281	0.96416
39	0.37610	0.03862	0.74513	0.99007	1.21216	2.46616	0.78150	0.57502	0.69170	0.94758	0.92199	0.99280	1.55109	1.95165	2.54856	2.34546	5.61130	0.95016
40	0.37321	0.03814	0.73354	0.97381	1.18786	2.40726	0.74995	0.55780	0.68075	0.92425	0.89834	0.97655	1.52534	1.90498	2.49223	2.29702	5.49527	0.93696
41	0.37031	0.03750	0.72243	0.95820	1.16500	2.35141	0.72034	0.54154	0.67045	0.90236	0.87613	0.96062	1.50087	1.86072	2.43864	2.25083	5.38454	0.92409
42	0.36774	0.03685	0.71165	0.94324	1.14296	2.29798	0.69218	0.52609	0.66047	0.88160	0.85521	0.94581	1.47738	1.81840	2.38746	2.20657	5.27881	0.91185
43	0.36500	0.03637	0.70135	0.92891	1.12220	2.24697	0.66562	0.51177	0.65082	0.86180	0.83509	0.93149	1.45501	1.77800	2.33854	2.16425	5.17742	0.90027
44	0.36242	0.03605	0.69137	0.91507	1.10224	2.19852	0.64036	0.49793	0.64181	0.84314	0.81610	0.91765	1.43344	1.73922	2.29171	2.12369	5.08038	0.88916
45	0.36001	0.03541	0.68188	0.90204	1.08309	2.15185	0.61638	0.48490	0.63295	0.82527	0.79807	0.90461	1.41284	1.70253	2.24681	2.08458	4.98720	0.87838
46	0.35776	0.03492	0.67271	0.88916	1.06474	2.10744	0.59385	0.47250	0.62459	0.80821	0.78085	0.89206	1.39289	1.66728	2.20400	2.04741	4.89788	0.86840
47	0.35550	0.03444	0.66385	0.87661	1.04736	2.06479	0.57228	0.46076	0.61638	0.79212	0.76444	0.87983	1.37390	1.63332	2.16264	2.01152	4.81210	0.85875
48	0.35325	0.03396	0.65516	0.86470	1.03062	2.02391	0.55168	0.44949	0.60865	0.77651	0.74883	0.86808	1.35555	1.60081	2.12305	1.97708	4.72954	0.84957
49	0.35132	0.03347	0.64696	0.85327	1.01453	1.98464	0.53205	0.43871	0.60109	0.76170	0.73402	0.85681	1.33785	1.56975	2.08507	1.94393	4.65004	0.84104
50	0.34939	0.03315	0.63891	0.84217	0.99908	1.94698	0.51338	0.42873	0.59385	0.74770	0.71970	0.84603	1.32079	1.53998	2.04853	1.91190	4.57327	0.83284
51	0.34746	0.03267	0.63118	0.83139	0.98427	1.91077	0.49584	0.41875	0.58677	0.73434	0.70602	0.83573	1.30437	1.51133	2.01329	1.88116	4.56925	0.82511
52	0.34569	0.03219	0.62362	0.82077	0.96995	1.87585	0.47878	0.40958	0.58017	0.72131	0.69282	0.82559	1.28844	1.48365	1.97933	1.85139	4.56539	0.81771
53	0.34408	0.03187	0.61622	0.81079	0.95627	1.84238	0.46253	0.40073	0.57373	0.70892	0.68011	0.81594	1.27299	1.45710	1.94666	1.82290	4.56169	0.81095
54	0.34247	0.03138	0.60914	0.80097	0.94291	1.81003	0.44724	0.39220	0.56762	0.69685	0.66820	0.80644	1.25819	1.43151	1.91512	1.79506	4.55815	0.80451
55	0.34086	0.03106	0.60238	0.79131	0.93004	1.77897	0.43243	0.38399	0.56166	0.68542	0.65645	0.79727	1.24386	1.40689	1.88470	1.76835	4.55460	0.79856
56	0.33957	0.03058	0.59578	0.78230	0.91781	1.74904	0.41811	0.37626	0.55603	0.67464	0.64551	0.78842	1.23002	1.38307	1.85525	1.74260	4.55122	0.79308
57	0.33812	0.03026	0.58934	0.77329	0.90590	1.71991	0.40475	0.36870	0.55056	0.66385	0.63473	0.78005	1.21650	1.36006	1.82693	1.71765	4.54801	0.78793
58	0.33700	0.02993	0.58307	0.76444	0.89431	1.69206	0.39155	0.36146	0.54525	0.65372	0.62443	0.77184	1.20347	1.33785	1.79941	1.69335	4.54479	0.78311
59	0.33571	0.02961	0.57695	0.75607	0.88321	1.66503	0.37916	0.35470	0.54026	0.64406	0.61461	0.76379	1.19075	1.31660	1.77285	1.66986	4.54189	0.77892
60	0.33474	0.02929	0.57100	0.74786	0.87243	1.63879	0.36725	0.34810	0.53527	0.63456	0.60479	0.75607	1.17852	1.29568	1.74710	1.64716	4.53883	0.77506
61	0.33362	0.02897	0.56826	0.74786	0.86744	1.62994	0.35583	0.34215	0.53527	0.62797	0.59803	0.74834	1.17498	1.28860	1.74083	1.64362	4.53610	0.77474
62	0.33265	0.02849	0.56601	0.74786	0.86245	1.62125	0.34488	0.33619	0.53527	0.62169	0.59143	0.74110	1.17160	1.28168	1.73487	1.64024	4.53336	0.77490
63	0.33169	0.02816	0.56375	0.74786	0.85778	1.61305	0.33426	0.33088	0.53527	0.61557	0.58500	0.73402	1.16854	1.27508	1.72908	1.63686	4.53063	0.77522
64	0.33104	0.02784	0.56182	0.74786	0.85327	1.60500	0.32412	0.32557	0.53543	0.60978	0.57904	0.72710	1.16549	1.26865	1.72361	1.63381	4.52805	0.77603
65	0.33024	0.02752	0.55973	0.74786	0.84893	1.59743	0.31430	0.32042	0.53575	0.60431	0.57325	0.72034	1.16259	1.26269	1.71814	1.63091	4.52548	0.77699
66	0.32959	0.02720	0.55796	0.74786	0.84893	1.59743	0.31430	0.31543	0.53607	0.59900	0.56745	0.71390	1.16259	1.26269	1.71814	1.63091	4.52548	0.77828
67	0.32895	0.02704	0.55635	0.74786	0.84893	1.59743	0.31430	0.31060	0.53639	0.59369	0.56198	0.70747	1.16259	1.26269	1.71814	1.63091	4.52548	0.77989
68	0.32863	0.02672	0.55490	0.74786	0.84893	1.59743	0.31430	0.30610	0.53672	0.58870	0.55683	0.70119	1.16259	1.26269	1.71814	1.63091	4.52548	0.78182
69	0.32815	0.02639	0.55345	0.74786	0.84893	1.59743	0.31430	0.30175	0.53720	0.58387	0.55168	0.69524	1.16259	1.26269	1.71814	1.63091	4.52548	0.78407
70	0.32766	0.02607	0.55217	0.74786	0.84893	1.59743	0.31430	0.29741	0.53784	0.57936	0.54669	0.68928	1.16259	1.26269	1.71814	1.63091	4.52548	0.78649
71	0.32734	0.02575	0.55120	0.74786	0.84893	1.59743	0.31430	0.29338	0.53849	0.57486	0.54203	0.68751	1.16259	1.26269	1.71814	1.63091	4.52548	0.78922
72	0.32718	0.02559	0.55040	0.74786	0.84893	1.59743	0.31430	0.28952	0.53913	0.57051	0.53736	0.68574	1.16259	1.26269	1.71814	1.63091	4.52548	0.79228
73	0.32702	0.02527	0.54943	0.74786	0.84893	1.59743	0.31430	0.28566	0.53993	0.56633	0.53301	0.68413	1.16259	1.26269	1.71814	1.63091	4.52548	0.79582
74	0.32686	0.02494	0.54879	0.74786	0.84893	1.59743	0.31430	0.28196	0.54074	0.56230	0.52867	0.68252	1.16259	1.26269	1.71814	1.63091	4.52548	0.79952
75	0.32686	0.02462	0.54830	0.74786	0.84893	1.59743	0.31430	0.27842	0.54171	0.55844	0.52465	0.68091	1.16259	1.26269	1.71814	1.63091	4.52548	0.80355
76	0.32686	0.02446	0.54782	0.74786	0.84893	1.59743	0.31430	0.27488	0.54267	0.55474	0.52062	0.67930	1.16259	1.26269	1.71814	1.63091	4.52548	0.80789
77	0.32702	0.02414	0.54766	0.74786	0.84893	1.59743	0.31430	0.27150	0.54364	0.55120	0.51660	0.67786	1.16259	1.26269	1.71814	1.63091	4.52548	0.81256
78	0.32718	0.02382	0.54750	0.74786	0.84893	1.59743	0.31430	0.26828	0.54476	0.54782	0.51290	0.67641	1.16259	1.26269	1.71814	1.63091	4.52548	0.81722
79	0.32750	0.02382	0.54750	0.74786	0.84893	1.59743	0.31430	0.26522	0.54589	0.54428	0.50936	0.67512	1.16259	1.26269	1.71814	1.63091	4.52548	0.82254
80	0.32782	0.02350	0.54766	0.74786	0.84893	1.59743	0.31430	0.26232	0.54718	0.54106	0.50566	0.67367	1.16259	1.26269	1.71814	1.63091	4.52548	0.82801
81	0.32815	0.02334	0.54798	0.74786	0.84893	1.59743	0.31430	0.25927	0.54846	0.53800	0.50228	0.67238	1.16259	1.26269	1.71814	1.63091	4.52548	0.83380
82	0.32863	0.02301	0.54846	0.74786	0.84893	1.59743	0.31430	0.25653	0.54991	0.53479	0.49890	0.67110	1.16259	1.26269	1.71814	1.63091	4.52548	0.83992
83	0.32911	0.02285	0.54895	0.74786	0.84893	1.59743	0.31430	0.25379	0.55136	0.53205	0.49584	0.66981	1.16259	1.26269	1.71814	1.63091	4.52548	0.84635
84	0.32975	0.02253	0.54975	0.74786	0.84893	1.59743	0.31430	0.25106	0.55281	0.52899	0.49262	0.66868	1.16259	1.26269	1.71814	1.63091	4.52548	0.85295
85	0.33040	0.02237	0.55056	0.74786	0.84893	1.59743	0.31430	0.24864	0.55442	0.52642	0.48956	0.66756	1.16259	1.26269	1.71814	1.63091	4.52548	0.86003
86	0.33120	0.02221	0.55136	0.74786	0.84893	1.59743	0.31430	0.24607	0.55603	0.52368	0.48667	0.66643	1.16259	1.26269	1.71814	1.63091	4.52548	0.86728
87	0.33185	0.02189	0.55249	0.74786	0.84893	1.59743	0.31430	0.24382	0.55764	0.52094	0.48377	0.66514	1.16259	1.26269	1.71814	1.63091	4.52548	0.87484
88	0.33265	0.02173	0.55378	0.74786	0.84893	1.59743	0.31430	0.24156	0.55941	0.51869	0.48103	0.66418	1.16259	1.26269	1.71814	1.63091	4.52548	0.88273
89	0.33362	0.02157	0.55522	0.74786	0.84893	1.59743	0.31430	0.24028	0.56134	0.51740	0.47975	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	0.89077
90	0.33474	0.02124	0.55667	0.74786	0.84893	1.59743	0.31430	0.24028	0.56327	0.51773	0.47975	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	0.89930
91	0.33571	0.02108	0.55844	0.74786	0.84893	1.59743	0.31430	0.24044	0.56504	0.51805	0.47991	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	0.90815
92	0.33684	0.02092	0.56021	0.74786	0.84893	1.59743	0.31430	0.24060	0.56713	0.51821	0.47991	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	0.91700
93	0.33796	0.02076	0.56230	0.74786	0.84893	1.59743	0.31430	0.24076	0.56922	0.51853	0.48007	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	0.92650
94	0.33941	0.02060	0.56424	0.74786	0.84893	1.59743	0.31430	0.24092	0.57132	0.51885	0.48007	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	0.93616
95	0.34086	0.02044	0.56665	0.74786	0.84893	1.59743	0.31430	0.24108	0.57357	0.51917	0.48023	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	0.94597
96	0.34215	0.02028	0.56890	0.74786	0.84893	1.59743	0.31430	0.24124	0.57582	0.51950	0.48023	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	0.95611
97	0.34376	0.02028	0.57148	0.74786	0.84893	1.59743	0.31430	0.24140	0.57824	0.51966	0.48039	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	0.96673
98	0.34520	0.02012	0.57421	0.74786	0.84893	1.59743	0.31430	0.24172	0.58065	0.51998	0.48055	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	0.97735
99	0.34697	0.01996	0.57711	0.74786	0.84893	1.59743	0.31430	0.24188	0.58307	0.52030	0.48055	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	0.98846
100	0.34874	0.01979	0.58001	0.74786	0.84893	1.59743	0.31430	0.24205	0.58564	0.52078	0.48071	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	0.99989
101	0.35052	0.01963	0.58323	0.74786	0.84893	1.59743	0.31430	0.24237	0.58838	0.52111	0.48071	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.01147
102	0.35245	0.01947	0.58661	0.74786	0.84893	1.59743	0.31430	0.24253	0.59095	0.52143	0.48087	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.02354
103	0.35438	0.01931	0.59015	0.74786	0.84893	1.59743	0.31430	0.24285	0.59369	0.52191	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.03561
104	0.35647	0.01915	0.59385	0.74786	0.84893	1.59743	0.31430	0.24317	0.59658	0.52223	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.04833
105	0.35776	0.01915	0.59610	0.74786	0.84893	1.59743	0.31430	0.24333	0.59932	0.52239	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.06120
106	0.35776	0.01915	0.59610	0.74786	0.84893	1.59743	0.31430	0.24333	0.60222	0.52239	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.07408
107	0.35776	0.01931	0.59610	0.74786	0.84893	1.59743	0.31430	0.24333	0.60527	0.52239	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.08759
108	0.35776	0.01931	0.59610	0.74786	0.84893	1.59743	0.31430	0.24333	0.60833	0.52239	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.10111
109	0.35776	0.01947	0.59610	0.74786	0.84893	1.59743	0.31430	0.24333	0.61155	0.52239	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.11528
110	0.35776	0.01931	0.59610	0.74786	0.84893	1.59743	0.31430	0.24333	0.61477	0.52239	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.12944
111	0.35776	0.01947	0.59610	0.74786	0.84893	1.59743	0.31430	0.24333	0.61799	0.52239	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.14408
112	0.35776	0.01947	0.59610	0.74786	0.84893	1.59743	0.31430	0.24333	0.62137	0.52239	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.15889
113	0.35776	0.01963	0.59610	0.74786	0.84893	1.59743	0.31430	0.24333	0.62475	0.52239	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.17402
114	0.35776	0.01963	0.59610	0.74786	0.84893	1.59743	0.31430	0.24333	0.62813	0.52239	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.18947
115	0.35776	0.01979	0.59610	0.74786	0.84893	1.59743	0.31430	0.24333	0.63151	0.52239	0.48103	0.66353	1.16259	1.26269	1.71814	1.63091	4.52548	1.20508

Starting Emission Factor (gram/trip) - NO (Year 2029)

Time (min)	16 - Motorcycles (MC)	01 - Private Cars (PC)	02 - Taxi	11 - Non-franchised Bus<=6.4t	12 - Non-franchised Bus 6.4-15t	13 - Non-franchised Bus 15t-24t	18 - Non-franchised Bus >24t	9 - Private Light Bus <=3.5t	10 - Private Light Bus >3.5t	03 - Light Goods Vehicles<=2.5t	04 - Lt Goods Vehicles 2.5-3.5t	05 - Light Goods Vehicles>3.5t	06 - Heavy Goods Vehicles<=15t	07 - Heavy Goods Vehicles 15t-24t	17 - Heavy Goods Vehicles >24t	14 - Franchised Bus (SD)	15 - Franchised Bus (DD)	8 - Public Light Buses
5	0.06850	0.05500	1.04190	0.03970	0.07240	0.15750	0.08340	0.02210	0.18630	0.00480	0.00100	0.03840	0.06520	0.14140	0.15980	0.25190	0.69340	0.53320
10	0.08030	0.05610	1.05910	0.07130	0.13040	0.28370	0.15000	0.02700	0.29040	0.00550	0.00110	0.06900	0.11740	0.25460	0.28760	0.45340	1.24810	0.81210
20	0.10120	0.05800	1.09280	0.09520	0.17390	0.37820	0.20000	0.03540	0.44610	0.00690	0.00120	0.09210	0.15650	0.33940	0.38340	0.60460	1.66410	1.27790
30	0.11870	0.05990	1.12540	0.13480	0.24640	0.53570	0.28340	0.04250	0.59020	0.00810	0.00130	0.13050	0.22170	0.48090	0.54320	0.85640	2.35750	1.67270
40	0.13270	0.06180	1.15690	0.16650	0.30430	0.66180	0.35000	0.04800	0.70240	0.00900	0.00140	0.16120	0.27390	0.59410	0.67100	1.05790	2.91220	1.97870
50	0.14340	0.06350	1.18730	0.22210	0.40570	0.88240	0.46670	0.05190	0.80990	0.00970	0.00150	0.21490	0.36520	0.79210	0.89460	1.41050	3.88290	2.21930
60	0.15060	0.06510	1.21670	0.32520	0.59410	1.29200	0.68330	0.05430	0.93260	0.01020	0.00160	0.31460	0.53470	1.15980	1.31000	2.06540	5.68570	2.41270
120	0.15450	0.07230	1.35410	0.40440	0.73900	1.60720	0.85000	0.05620	1.02240	0.01080	0.00170	0.39140	0.66520	1.44270	1.62960	2.56920	7.07250	2.54560
180	0.15380	0.08150	1.52850	0.59480	1.08670	2.36350	1.24990	0.06350	1.18160	0.01120	0.00190	0.57560	0.97820	2.12160	2.39640	3.77820	10.40070	2.67960
240	0.15050	0.08080	1.51590	0.77720	1.42000	3.08830	1.63320	0.06300	1.33290	0.01100	0.00190	0.75220	1.27820	2.77240	3.13140	4.93680	13.59020	2.80330
300	0.14630	0.07980	1.49470	0.87230	1.59390	3.46650	1.83320	0.06240	1.40850	0.01080	0.00190	0.84430	1.43470	3.11180	3.51480	5.54140	15.25430	2.85740
360	0.14120	0.07820	1.46480	1.03090	1.88370	4.09680	2.16660	0.06170	1.53690	0.01040	0.00180	0.99780	1.69560	3.67760	4.15380	6.54890	18.02780	2.95460
420	0.13530	0.07610	1.42630	1.13400	2.07200	4.50650	2.38320	0.06060	1.61670	0.01010	0.00180	1.09750	1.86510	4.04530	4.56920	7.20380	19.83060	3.00600
480	0.12850	0.07360	1.37910	1.18950	2.17350	4.72700	2.49990	0.05950	1.65480	0.00970	0.00180	1.15130	1.95640	4.24340	4.79300	7.55640	20.80130	3.01740
540	0.12090	0.07070	1.32330	1.22130	2.23140	4.85300	2.56660	0.05800	1.67140	0.00920	0.00170	1.18200	2.00860	4.35650	4.92080	7.75790	21.35610	3.00680
600	0.11240	0.06730	1.25880	1.25290	2.28940	4.97910	2.63320	0.05650	1.68660	0.00870	0.00160	1.21260	2.06080	4.46970	5.04860	7.95940	21.91080	2.99180
660	0.10310	0.06340	1.18570	1.26880	2.31840	5.04220	2.66660	0.05470	1.68700	0.00810	0.00150	1.22800	2.08680	4.52630	5.11240	8.06020	22.18810	2.96060
720	0.09290	0.05910	1.10390	1.26880	2.31840	5.04220	2.66660	0.05270	1.67270	0.00750	0.00140	1.22800	2.08680	4.52630	5.11240	8.06020	22.18810	2.91310

Appendix 3.4 Summary of Vehicular Emission Factors of 18 Vehicle Classes

Improvement of Tai Tau Leng Roundabout and Fanling Highway (Kwu Tung Section)
Running Exhaust Emission Factor (gram/mile/vehicle) - NO_2 (Year 2029)

Speed (km/hr)	16 - Motorcycles (MC)	01 - Private Cars (PC)	02 - Taxi	11 - Non-franchised Bus<=6.4t	12 - Non-franchised Bus 6.4-15t	13 - Non-franchised Bus 15t-24t	18 - Non-franchised Bus >24t	9 - Private Light Bus <=3.5t	10 - Private Light Bus >3.5t	03 - Light Goods Vehicles<=2.5t	04 - Lt Goods Vehicles 2.5-3.5t	05 - Light Goods Vehicles>3.5t	06 - Heavy Goods Vehicles<=15t	07 - Heavy Goods Vehicles 15t-24t	17 - Heavy Goods Vehicles >24t	14 - Franchised Bus (SD)	15 - Franchised Bus (DD)	8 - Public Light Buses
1	0.03058	0.00418	0.08562	1.07552	1.74614	2.28205	2.31343	0.54058	0.61944	0.28244	0.25878	0.98975	1.78492	2.18179	2.32373	0.76122	1.20395	0.44579
2	0.03058	0.00418	0.08562	1.07552	1.74614	2.28205	2.31343	0.54058	0.61944	0.28244	0.25878	0.98975	1.78492	2.18179	2.32373	0.76122	1.20395	0.44579
3	0.03058	0.00418	0.08562	1.07552	1.74614	2.28205	2.31343	0.54058	0.61944	0.28244	0.25878	0.98975	1.78492	2.18179	2.32373	0.76122	1.20395	0.44579
4	0.03058	0.00418	0.08562	1.07552	1.74614	2.28205	2.31343	0.54058	0.61944	0.28244	0.25878	0.98975	1.78492	2.18179	2.32373	0.76122	1.20395	0.44579
5	0.03009	0.00402	0.07483	1.07552	1.74614	2.28205	2.31343	0.54058	0.61944	0.28244	0.25878	0.98975	1.78492	2.18179	2.32373	0.76122	1.20395	0.44579
6	0.02961	0.00402	0.06679	1.07552	1.74614	2.28205	2.31343	0.54042	0.61944	0.28244	0.25878	0.98975	1.78492	2.18179	2.32373	0.76122	1.20395	0.44579
7	0.02913	0.00386	0.06067	1.07552	1.74614	2.28205	2.31343	0.54042	0.61944	0.28228	0.25878	0.98975	1.78492	2.18179	2.32373	0.76122	1.20395	0.44579
8	0.02865	0.00386	0.05584	1.07552	1.74614	2.28205	2.31343	0.54026	0.61944	0.28228	0.25878	0.98975	1.78492	2.18179	2.32373	0.76122	1.20395	0.44579
9	0.02816	0.00370	0.05182	0.99989	1.65119	2.24520	2.31343	0.51129	0.57598	0.26715	0.24494	0.93809	1.68756	2.12401	2.24005	0.74786	1.15615	0.41473
10	0.02768	0.00354	0.04860	0.93374	1.56412	2.21317	2.31343	0.48409	0.53784	0.25331	0.23207	0.89109	1.59937	2.07380	2.16730	0.73627	1.11511	0.38753
11	0.02736	0.00354	0.04571	0.87758	1.48736	2.10695	2.21220	0.45963	0.50566	0.24076	0.22064	0.84973	1.52196	1.96823	2.05095	0.70071	1.08100	0.36436
12	0.02688	0.00338	0.04329	0.82913	1.41880	1.90739	1.98706	0.43726	0.47781	0.22965	0.21034	0.81304	1.45356	1.79120	1.87585	0.63473	0.94887	0.34440
13	0.02655	0.00338	0.04120	0.78713	1.35700	1.73938	1.79828	0.41666	0.45351	0.21951	0.20101	0.77989	1.39208	1.64169	1.72763	0.57920	0.83364	0.32718
14	0.02607	0.00322	0.03943	0.74995	1.30067	1.59615	1.63783	0.39767	0.43227	0.21018	0.19248	0.74995	1.33672	1.51391	1.60049	0.53173	0.75172	0.31189
15	0.02575	0.00322	0.03766	0.71712	1.24901	1.47255	1.49991	0.38013	0.41328	0.20149	0.18459	0.72260	1.28619	1.40335	1.49041	0.49085	0.68896	0.29821
16	0.02543	0.00322	0.03621	0.68751	1.20154	1.36488	1.38017	0.36371	0.39622	0.19360	0.17735	0.69749	1.24000	1.30695	1.39401	0.45528	0.63859	0.28614
17	0.02511	0.00306	0.03492	0.66096	1.15744	1.27042	1.27541	0.34826	0.38093	0.18620	0.17043	0.67432	1.19735	1.22197	1.30888	0.42406	0.59707	0.27504
18	0.02478	0.00306	0.03364	0.63682	1.11640	1.18673	1.18287	0.33362	0.36709	0.17928	0.16415	0.65275	1.15776	1.14666	1.23324	0.39638	0.56182	0.26506
19	0.02446	0.00290	0.03251	0.61477	1.07810	1.11222	1.10079	0.31994	0.35438	0.17268	0.15820	0.63263	1.12091	1.07939	1.16549	0.37176	0.53157	0.25605
20	0.02414	0.00290	0.03154	0.59465	1.04205	1.04543	1.02741	0.30690	0.34279	0.16657	0.15257	0.61380	1.08663	1.01904	1.10449	0.34955	0.50501	0.24768
21	0.02382	0.00290	0.03058	0.57598	1.00825	0.98540	0.96142	0.29451	0.33201	0.16077	0.14725	0.59610	1.05444	0.96448	1.04945	0.32959	0.48152	0.23995
22	0.02350	0.00274	0.02961	0.55893	0.97623	0.93101	0.90188	0.28260	0.32219	0.15514	0.14211	0.57952	1.02419	0.91507	0.99940	0.31157	0.46076	0.23287
23	0.02317	0.00274	0.02881	0.54299	0.94581	0.88144	0.84796	0.27134	0.31302	0.14999	0.13728	0.56375	0.99554	0.87017	0.95370	0.29515	0.44193	0.22627
24	0.02301	0.00274	0.02816	0.52803	0.91700	0.83638	0.79888	0.26071	0.30449	0.14500	0.13277	0.54879	0.96850	0.82897	0.91185	0.28019	0.42487	0.22016
25	0.02269	0.00274	0.02736	0.51419	0.88965	0.79502	0.75414	0.25025	0.29644	0.14017	0.12843	0.53462	0.94291	0.79115	0.87323	0.26651	0.40942	0.21436
26	0.02237	0.00257	0.02672	0.50131	0.86357	0.75687	0.71310	0.24044	0.28904	0.13567	0.12424	0.52127	0.91845	0.75639	0.83766	0.25395	0.39525	0.20905
27	0.02221	0.00257	0.02607	0.48908	0.83847	0.72195	0.67528	0.23078	0.28196	0.13132	0.12022	0.50839	0.89528	0.72420	0.80483	0.24237	0.38222	0.20390
28	0.02189	0.00257	0.02559	0.47765	0.81465	0.68960	0.64036	0.22161	0.27536	0.12714	0.11636	0.49600	0.87323	0.69443	0.77442	0.23158	0.37015	0.19924
29	0.02173	0.00241	0.02494	0.46687	0.79180	0.65951	0.60817	0.21276	0.26924	0.12311	0.11265	0.48441	0.85199	0.66675	0.74593	0.22161	0.35888	0.19473
30	0.02157	0.00241	0.02446	0.45673	0.76975	0.63167	0.57840	0.20423	0.26329	0.11925	0.10911	0.47315	0.83171	0.64116	0.71954	0.21227	0.34858	0.19055
31	0.02124	0.00241	0.02398	0.44708	0.72050	0.60560	0.55056	0.17976	0.25782	0.10960	0.10026	0.45094	0.79325	0.61702	0.69475	0.20374	0.33877	0.18652
32	0.02108	0.00241	0.02350	0.43790	0.70167	0.58130	0.52481	0.17268	0.25251	0.10622	0.09720	0.44112	0.77570	0.59465	0.67158	0.19570	0.32975	0.18266
33	0.02092	0.00241	0.02301	0.42921	0.68397	0.55876	0.50067	0.16592	0.24752	0.10316	0.09431	0.43195	0.75897	0.57357	0.64985	0.18813	0.32123	0.17912
34	0.02060	0.00225	0.02269	0.42100	0.66723	0.53752	0.47830	0.15981	0.24269	0.10026	0.09173	0.42326	0.74336	0.55394	0.62941	0.18105	0.31318	0.17558
35	0.02044	0.00225	0.02221	0.41312	0.65162	0.51757	0.45721	0.15401	0.23818	0.09753	0.08916	0.41505	0.72855	0.53543	0.61010	0.17445	0.30561	0.17236
36	0.02028	0.00225	0.02189	0.40555	0.63682	0.49874	0.43742	0.14854	0.23384	0.09511	0.08690	0.40716	0.71439	0.51789	0.59192	0.16818	0.29853	0.16930
37	0.02012	0.00225	0.02157	0.39847	0.62282	0.48103	0.41891	0.14355	0.22981	0.09270	0.08465	0.39976	0.70103	0.50147	0.57486	0.16238	0.29177	0.16625
38	0.01996	0.00209	0.02108	0.39155	0.60962	0.46446	0.40137	0.13873	0.22579	0.09045	0.08256	0.39284	0.68832	0.48586	0.55860	0.15675	0.28534	0.16351
39	0.01979	0.00209	0.02076	0.38496	0.59707	0.44869	0.38496	0.13438	0.22193	0.08819	0.08063	0.38608	0.67625	0.47105	0.54315	0.15160	0.27938	0.16077
40	0.01963	0.00209	0.02044	0.37868	0.58516	0.43388	0.36951	0.13020	0.21839	0.08626	0.07886	0.37964	0.66482	0.45721	0.52867	0.14661	0.27359	0.15804
41	0.01947	0.00209	0.02012	0.37272	0.57373	0.41972	0.35486	0.12617	0.21485	0.08433	0.07709	0.37369	0.65372	0.44386	0.51467	0.14194	0.26812	0.15562
42	0.01931	0.00209	0.01979	0.36693	0.56295	0.40652	0.34102	0.12247	0.21163	0.08256	0.07532	0.36774	0.64325	0.43130	0.50147	0.13744	0.26281	0.15321
43	0.01915	0.00209	0.01963	0.36130	0.55265	0.39381	0.32782	0.11877	0.20841	0.08079	0.07387	0.36226	0.63312	0.41940	0.48892	0.13325	0.25782	0.15080
44	0.01915	0.00193	0.01931	0.35599	0.54283	0.38174	0.31543	0.11555	0.20519	0.07918	0.07226	0.35695	0.62346	0.40813	0.47701	0.12923	0.25299	0.14854
45	0.01899	0.00193	0.01899	0.35068	0.53350	0.37031	0.30368	0.11233	0.20229	0.07757	0.07081	0.35180	0.61429	0.39719	0.46558	0.12553	0.24848	0.14645
46	0.01883	0.00193	0.01883	0.34569	0.52449	0.35937	0.29242	0.10927	0.19940	0.07612	0.06952	0.34681	0.60544	0.38689	0.45464	0.12183	0.24414	0.14436
47	0.01867	0.00193	0.01851	0.34102	0.51579	0.34907	0.28180	0.10638	0.19666	0.07467	0.06824	0.34215	0.59691	0.37707	0.44434	0.11845	0.23979	0.14243
48	0.01867	0.00193	0.01835	0.33635	0.50759	0.33909	0.27166	0.10364	0.19393	0.07339	0.06695	0.33764	0.58870	0.36774	0.43436	0.11507	0.23577	0.14050
49	0.01851	0.00193	0.01802	0.33185	0.49970	0.32975	0.26216	0.10107	0.19135	0.07210	0.06566	0.33330	0.58081	0.35872	0.42471	0.11185	0.23191	0.13856
50	0.01835	0.00177	0.01786	0.32750	0.49214	0.32074	0.25299	0.09849	0.18894	0.07081	0.06453	0.32911	0.57325	0.35003	0.41553	0.10895	0.22820	0.13679
51	0.01835	0.00177	0.01754	0.32332	0.48473	0.31205	0.24414	0.09624	0.18652	0.06952	0.06341	0.32493	0.56585	0.34182	0.40684	0.10606	0.22660	0.13502
52	0.01819	0.00177	0.01738	0.31929	0.47765	0.30384	0.23577	0.09399	0.18411	0.06840	0.06244	0.32106	0.55876	0.33394	0.39831	0.10332	0.22499	0.13341
53	0.01819	0.00177	0.01722	0.31527	0.47089	0.29596	0.22788	0.09173	0.18186	0.06727	0.06148	0.31720	0.55200	0.32637	0.39027	0.10058	0.22338	0.13181
54	0.01802	0.00177	0.01706	0.31157	0.46446	0.28839	0.22016	0.08964	0.17960	0.06630	0.06035	0.31366	0.54541	0.31897	0.38254	0.09817	0.22193	0.13020
55	0.01802	0.00177	0.01674	0.30787	0.45818	0.28115	0.21292	0.08771	0.17751	0.06534	0.05955	0.31012	0.53897	0.31205	0.37498	0.09576	0.22048	0.12875
56	0.01786	0.00177	0.01658	0.30417	0.45206	0.27407	0.20600	0.08578	0.17542	0.06421	0.05858	0.30674	0.53269	0.30529	0.36790	0.09334	0.21919	0.12714
57	0.01786	0.00177	0.01642	0.30079	0.44611	0.26747	0.19924	0.08401	0.17349	0.06341	0.05778	0.30336	0.52674	0.29886	0.36081	0.09109	0.21791	0.12569
58	0.01770	0.00161	0.01625	0.29741	0.44048	0.26104	0.19296	0.08224	0.17156	0.06244	0.05681	0.30014	0.52094	0.29274	0.35422	0.08900	0.21662	0.12440
59	0.01770	0.00161	0.01609	0.29403	0.43501	0.25476	0.18684	0.08047	0.16962	0.06148	0.05601	0.29708	0.51531	0.28662	0.34778	0.08690	0.21533	0.12295
60	0.01754	0.00161	0.01593	0.29081	0.42969	0.24897	0.18089	0.07886	0.16785	0.06067	0.05536	0.29403	0.50984	0.28099	0.34150	0.08497	0.21420	0.12167
61	0.01754	0.00161	0.01593	0.29081	0.42712	0.24446	0.17526	0.07741	0.16785	0.06019	0.05488	0.29113	0.50823	0.27745	0.33845	0.08352	0.21292	0.12167
62	0.01754	0.00161	0.01577	0.29081	0.42487	0.24028	0.16979	0.07612	0.16785	0.05971	0.05440	0.28823	0.50662	0.27407	0.33555	0.08208	0.21179	0.12167
63	0.01754	0.00161	0.01577	0.29081	0.42245	0.23609	0.16464	0.07467	0.16785	0.05922	0.05391	0.28550	0.50501	0.27069	0.33265	0.08079	0.21082	0.12167
64	0.01738	0.00161	0.01561	0.29081	0.42020	0.23223	0.15965	0.07339	0.16785	0.05874	0.05343	0.28276	0.50340	0.26763	0.32992	0.07950	0.20970	0.12167
65	0.01738	0.00161	0.01561	0.29081	0.41811	0.22837	0.15482	0.07210	0.16785	0.05826	0.05295	0.28019	0.50195	0.26458	0.32734	0.07821	0.20873	0.12167
66	0.01738	0.00161	0.01561	0.29081	0.41811	0.22837	0.15482	0.07097	0.16785	0.05778	0.05263	0.27761	0.50195	0.26458	0.32734	0.07821	0.20873	0.12167
67	0.01738	0.00145	0.01545	0.29081	0.41811	0.22837	0.15482	0.06985	0.16785	0.05745	0.05230	0.27520	0.50195	0.26458	0.32734	0.07821	0.20873	0.12167
68	0.01722	0.00145	0.01545	0.29081	0.41811	0.22837	0.15482	0.06872	0.16785	0.05697	0.05182	0.27278	0.50195	0.26458	0.32734	0.07821	0.20873	0.12167
69	0.01722	0.00145	0.01545	0.29081	0.41811	0.22837	0.15482	0.06759	0.16785	0.05665	0.05150	0.27037	0.50195	0.26458	0.32734	0.07821	0.20873	0.12167
70	0.01722	0.00145	0.01545	0.29081	0.41811	0.22837	0.15482	0.06663	0.16785	0.05617	0.05118	0.26812	0.50195	0.26458	0.32734	0.07821	0.20873	0.12183
71	0.01722	0.00145	0.01545	0.29081	0.41811	0.22837	0.15482	0.06550	0.16785	0.05584	0.05086	0.26731	0.50195	0.26458	0.32734	0.07821	0.20873	0.12183
72	0.01722	0.00145	0.01529	0.29081	0.41811	0.22837	0.15482	0.06453	0.16785	0.05552	0.05053	0.26667	0.50195	0.26458	0.32734	0.07821	0.20873	0.12183
73	0.01722	0.00145	0.01529	0.29081	0.41811	0.22837	0.15482	0.06357	0.16785	0.05520	0.05021	0.26602	0.50195	0.26458	0.32734	0.07821	0.20873	0.12183
74	0.01722	0.00145	0.01529	0.29081	0.41811	0.22837	0.15482	0.06276	0.16785	0.05488	0.04989	0.26538	0.50195	0.26458	0.32734	0.07821	0.20873	0.12183
75	0.01722	0.00145	0.01529	0.29081	0.41811	0.22837	0.15482	0.06180	0.16785	0.05456	0.04957	0.26474	0.50195	0.26458	0.32734	0.07821	0.20873	0.12183
76	0.01722	0.00145	0.01529	0.29081	0.41811	0.22837	0.15482	0.06099	0.16785	0.05423	0.04925	0.26425	0.50195	0.26458	0.32734	0.07821	0.20873	0.12183
77	0.01722	0.00145	0.01529	0.29081	0.41811	0.22837	0.15482	0.06019	0.16785	0.05391	0.04908	0.26361	0.50195	0.26458	0.32734	0.07821	0.20873	0.12183
78	0.01722	0.00145	0.01529	0.29081	0.41811	0.22837	0.15482	0.05938	0.16785	0.05359	0.04876	0.26313	0.50195	0.26458	0.32734	0.07821	0.20873	0.12199
79	0.01722	0.00129	0.01529	0.29081	0.41811	0.22837	0.15482	0.05858	0.16785	0.05343	0.04844	0.26248	0.50195	0.26458	0.32734	0.07821	0.20873	0.12199
80	0.01722	0.00129	0.01529	0.29081	0.41811	0.22837	0.15482	0.05778	0.16785	0.05311	0.04828	0.26200	0.50195	0.26458	0.32734	0.07821	0.20873	0.12199
81	0.01722	0.00129	0.01529	0.29081	0.41811	0.22837	0.15482	0.05713	0.16785	0.05279	0.04796	0.26152	0.50195	0.26458	0.32734	0.07821	0.20873	0.12199
82	0.01722	0.00129	0.01529	0.29081	0.41811	0.22837	0.15482	0.05633	0.16785	0.05263	0.04780	0.26104	0.50195	0.26458	0.32734	0.07821	0.20873	0.12199
83	0.01738	0.00129	0.01529	0.29081	0.41811	0.22837	0.15482	0.05568	0.16785	0.05230	0.04748	0.26055	0.50195	0.26458	0.32734	0.07821	0.20873	0.12199
84	0.01738	0.00129	0.01529	0.29081	0.41811	0.22837	0.15482	0.05504	0.16785	0.05214	0.04731	0.26007	0.50195	0.26458	0.32734	0.07821	0.20873	0.12215
85	0.01738	0.00129	0.01529	0.29081	0.41811	0.22837	0.15482	0.05440	0.16785	0.05182	0.04715	0.25959	0.50195	0.26458	0.32734	0.07821	0.20873	0.12215
86	0.01738	0.00129	0.01545	0.29081	0.41811	0.22837	0.15482	0.05375	0.16785	0.05166	0.04683	0.25910	0.50195	0.26458	0.32734	0.07821	0.20873	0.12215
87	0.01754	0.00129	0.01545	0.29081	0.41811	0.22837	0.15482	0.05311	0.16785	0.05150	0.04667	0.25878	0.50195	0.26458	0.32734	0.07821	0.20873	0.12215
88	0.01754	0.00129	0.01545	0.29081	0.41811	0.22837	0.15482	0.05246	0.16785	0.05118	0.04651	0.25830	0.50195	0.26458	0.32734	0.07821	0.20873	0.12231
89	0.01754	0.00129	0.01545	0.29081	0.41811	0.22837	0.15482	0.05230	0.16785	0.05118	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12231
90	0.01754	0.00129	0.01561	0.29081	0.41811	0.22837	0.15482	0.05230	0.16785	0.05118	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12231
91	0.01770	0.00129	0.01561	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05118	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12231
92	0.01770	0.00129	0.01561	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05118	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12247
93	0.01786	0.00129	0.01561	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05118	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12247
94	0.01786	0.00129	0.01577	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05118	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12247
95	0.01786	0.00129	0.01577	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05118	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12263
96	0.01802	0.00129	0.01593	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05118	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12263
97	0.01802	0.00113	0.01593	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05134	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12263
98	0.01819	0.00113	0.01609	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05134	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12279
99	0.01819	0.00113	0.01609	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05134	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12279
100	0.01835	0.00113	0.01625	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05134	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12279
101	0.01851	0.00113	0.01625	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05134	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12295
102	0.01851	0.00113	0.01642	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05134	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12295
103	0.01867	0.00113	0.01642	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05134	0.04635	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12311
104	0.01883	0.00113	0.01658	0.29081	0.41811	0.22837	0.15482	0.05230	0.16802	0.05134	0.04651	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12311
105	0.01883	0.00113	0.01658	0.29081	0.41811	0.22837	0.15482	0.05230	0.16818	0.05134	0.04651	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12311
106	0.01883	0.00113	0.01658	0.29081	0.41811	0.22837	0.15482	0.05230	0.16818	0.05134	0.04651	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12328
107	0.01883	0.00113	0.01658	0.29081	0.41811	0.22837	0.15482	0.05230	0.16818	0.05134	0.04651	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12328
108	0.01883	0.00113	0.01658	0.29081	0.41811	0.22837	0.15482	0.05230	0.16818	0.05134	0.04651	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12344
109	0.01883	0.00113	0.01658	0.29081	0.41811	0.22837	0.15482	0.05230	0.16818	0.05134	0.04651	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12344
110	0.01883	0.00129	0.01658	0.29081	0.41811	0.22837	0.15482	0.05230	0.16818	0.05134	0.04651	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12360
111	0.01883	0.00129	0.01658	0.29081	0.41811	0.22837	0.15482	0.05230	0.16818	0.05134	0.04651	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12360
112	0.01883	0.00129	0.01658	0.29081	0.41811	0.22837	0.15482	0.05230	0.16818	0.05134	0.04651	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12360
113	0.01883	0.00129	0.01658	0.29081	0.41811	0.22837	0.15482	0.05230	0.16818	0.05134	0.04651	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12376
114	0.01883	0.00129	0.01658	0.29081	0.41811	0.22837	0.15482	0.05230	0.16818	0.05134	0.04651	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12376
115	0.01883	0.00129	0.01658	0.29081	0.41811	0.22837	0.15482	0.05230	0.16834	0.05134	0.04651	0.25814	0.50195	0.26458	0.32734	0.07821	0.20873	0.12392

Starting Emission Factor (gram/trip) - NO_2 (Year 2029)

Time (min)	16 - Motorcycles (MC)	01 - Private Cars (PC)	02 - Taxi	11 - Non-franchised Bus<=6.4t	12 - Non-franchised Bus 6.4-15t	13 - Non-franchised Bus 15t-24t	18 - Non-franchised Bus >24t	9 - Private Light Bus <=3.5t	10 - Private Light Bus >3.5t	03 - Light Goods Vehicles<=2.5t	04 - Lt Goods Vehicles 2.5-3.5t	05 - Light Goods Vehicles>3.5t	06 - Heavy Goods Vehicles<=15t	07 - Heavy Goods Vehicles 15t-24t	17 - Heavy Goods Vehicles >24t	14 - Franchised Bus (SD)	15 - Franchised Bus (DD)	8 - Public Light Buses
5	0.00360	0.00290	0.02920	0.01540	0.03570	0.03550	0.04100	0.00120	0.01390	0.00020	0.00010	0.01490	0.02960	0.03160	0.02860	0.02700	0.04810	0.01410
10	0.00420	0.00290	0.02970	0.02780	0.06420	0.06380	0.07390	0.00140	0.02480	0.00030	0.00010	0.02690	0.05330	0.05690	0.05150	0.04860	0.08650	0.02460
20	0.00530	0.00310	0.03060	0.03700	0.08560	0.08510	0.09850	0.00190	0.03340	0.00040	0.00010	0.03580	0.07110	0.07590	0.06870	0.06480	0.11540	0.03390
30	0.00620	0.00320	0.03150	0.05240	0.12130	0.12060	0.13950	0.00220	0.04700	0.00040	0.00010	0.05070	0.10070	0.10750	0.09730	0.09190	0.16340	0.04730
40	0.00700	0.00320	0.03240	0.06480	0.14990	0.14900	0.17240	0.00250	0.05800	0.00050	0.00010	0.06270	0.12440	0.13270	0.12020	0.11350	0.20190	0.05790
50	0.00750	0.00330	0.03330	0.08630	0.19980	0.19860	0.22980	0.00270	0.07660	0.00050	0.00010	0.08360	0.16580	0.17700	0.16030	0.15130	0.26920	0.07510
60	0.00790	0.00340	0.03410	0.12640	0.29260	0.29090	0.33660	0.00290	0.11090	0.00050	0.00010	0.12240	0.24280	0.25920	0.23470	0.22160	0.39420	0.10560
120	0.00810	0.00380	0.03800	0.15730	0.36400	0.36180	0.41860	0.00300	0.13720	0.00060	0.00010	0.15220	0.30200	0.32240	0.29190	0.27560	0.49030	0.12910
180	0.00810	0.00430	0.04280	0.23130	0.53530	0.53210	0.61570	0.00330	0.20010	0.00060	0.00010	0.22390	0.44410	0.47410	0.42930	0.40530	0.72110	0.18430
240	0.00790	0.00430	0.04250	0.30220	0.69940	0.69520	0.80450	0.00330	0.26030	0.00060	0.00010	0.29250	0.58030	0.61940	0.56090	0.52960	0.94220	0.23720
300	0.00770	0.00420	0.04190	0.33920	0.78500	0.78030	0.90300	0.00330	0.29180	0.00060	0.00010	0.32830	0.65140	0.69530	0.62960	0.59440	1.05760	0.26480
360	0.00740	0.00410	0.04110	0.40090	0.92780	0.92220	1.06710	0.00320	0.34410	0.00060	0.00010	0.38800	0.76980	0.82170	0.74410	0.70250	1.24990	0.31080
420	0.00710	0.00400	0.04000	0.44100	1.02060	1.01440	1.17390	0.00320	0.37820	0.00050	0.00010	0.42680	0.84680	0.90390	0.81850	0.77270	1.37490	0.34060
480	0.00680	0.00390	0.03870	0.46260	1.07050	1.06410	1.23130	0.00310	0.39650	0.00050	0.00010	0.44770	0.88830	0.94810	0.85850	0.81060	1.44220	0.35660
540	0.00640	0.00370	0.03710	0.47490	1.09910	1.09250	1.26410	0.00310	0.40690	0.00050	0.00010	0.45960	0.91190	0.97340	0.88140	0.83220	1.48060	0.36560
600	0.00590	0.00350	0.03530	0.48730	1.12760	1.12090	1.29700	0.00300	0.41730	0.00050	0.00010	0.47160	0.93560	0.99870	0.90430	0.85380	1.51910	0.37460
660	0.00540	0.00330	0.03320	0.49340	1.14190	1.13500	1.31340	0.00290	0.42250	0.00040	0.00010	0.47760	0.94750	1.01130	0.91580	0.86460	1.53830	0.37900
720	0.00490	0.00310	0.03090	0.49340	1.14190	1.13500	1.31340	0.00280	0.42240	0.00040	0.00010	0.47760	0.94750	1.01130	0.91580	0.86460	1.53830	0.37880

Appendix 3.4 Summary of Vehicular Emission Factors of 18 Vehicle Classes

Improvement of Tai Tau Leng Roundabout and Fanling Highway (Kwu Tung Section)
Running Exhaust Emission Factor (gram/mile/vehicle) - RSP (Year 2029)

Speed (km/hr)	16 - Motorcycles (MC)	01 - Private Cars (PC)	02 - Taxi	11 - Non-franchised Bus<=6.4t	12 - Non-franchised Bus 6.4-15t	13 - Non-franchised Bus 15t-24t	18 - Non-franchised Bus >24t	9 - Private Light Bus <=3.5t	10 - Private Light Bus >3.5t	03 - Light Goods Vehicles<=2.5t	04 - Lt Goods Vehicles 2.5-3.5t	05 - Light Goods Vehicles>3.5t	06 - Heavy Goods Vehicles<=15t	07 - Heavy Goods Vehicles 15t-24t	17 - Heavy Goods Vehicles >24t	14 - Franchised Bus (SD)	15 - Franchised Bus (DD)	8 - Public Light Buses
1	0.02028	0.01545	0.00000	0.14468	0.09978	0.37964	0.17461	0.02366	0.09173	0.03460	0.03412	0.09254	0.18829	0.35486	0.43452	0.26570	0.69524	0.08594
2	0.02028	0.01545	0.00000	0.14468	0.09978	0.37964	0.17461	0.02366	0.09173	0.03460	0.03412	0.09254	0.18829	0.35486	0.43452	0.26570	0.69524	0.08594
3	0.02028	0.01545	0.00000	0.14468	0.09978	0.37964	0.17461	0.02366	0.09173	0.03460	0.03412	0.09254	0.18829	0.35486	0.43452	0.26570	0.69524	0.08594
4	0.02028	0.01545	0.00000	0.14468	0.09978	0.37964	0.17461	0.02366	0.09173	0.03460	0.03412	0.09254	0.18829	0.35486	0.43452	0.26570	0.69524	0.08594
5	0.01996	0.01545	0.00000	0.14468	0.09978	0.37964	0.17461	0.02366	0.09173	0.03460	0.03412	0.09254	0.18829	0.35486	0.43452	0.26570	0.69524	0.08594
6	0.01979	0.01545	0.00000	0.14468	0.09978	0.37964	0.17461	0.02366	0.09173	0.03460	0.03412	0.09254	0.18829	0.35486	0.43452	0.26570	0.69524	0.08594
7	0.01947	0.01545	0.00000	0.14468	0.09978	0.37964	0.17461	0.02366	0.09173	0.03460	0.03412	0.09254	0.18829	0.35486	0.43452	0.26570	0.69524	0.08594
8	0.01931	0.01545	0.00000	0.14468	0.09978	0.37964	0.17461	0.02366	0.09173	0.03460	0.03412	0.09254	0.18829	0.35486	0.43452	0.26570	0.69524	0.08594
9	0.01915	0.01545	0.00000	0.13808	0.09560	0.35470	0.16415	0.02317	0.08739	0.03347	0.03315	0.08803	0.16995	0.33120	0.40539	0.25090	0.65677	0.08208
10	0.01899	0.01545	0.00000	0.13164	0.09189	0.33265	0.15466	0.02285	0.08336	0.03251	0.03219	0.08401	0.15482	0.31044	0.37964	0.23786	0.62266	0.07838
11	0.01851	0.01529	0.00000	0.12585	0.08867	0.31382	0.14629	0.02221	0.07966	0.03154	0.03122	0.08047	0.14259	0.29258	0.35776	0.22660	0.59320	0.07500
12	0.01754	0.01448	0.00000	0.12054	0.08578	0.29725	0.13889	0.02140	0.07628	0.03058	0.03026	0.07741	0.13245	0.27713	0.33877	0.21662	0.56762	0.07178
13	0.01674	0.01368	0.00000	0.11555	0.08320	0.28292	0.13229	0.02060	0.07323	0.02961	0.02945	0.07451	0.12392	0.26361	0.32219	0.20809	0.54492	0.06888
14	0.01593	0.01304	0.00000	0.11104	0.08079	0.27005	0.12633	0.01979	0.07033	0.02881	0.02849	0.07210	0.11668	0.25154	0.30755	0.20036	0.52481	0.06614
15	0.01513	0.01239	0.00000	0.10670	0.07870	0.25862	0.12102	0.01899	0.06759	0.02800	0.02768	0.06985	0.11040	0.24092	0.29451	0.19344	0.50678	0.06357
16	0.01448	0.01175	0.00000	0.10284	0.07677	0.24832	0.11619	0.01835	0.06518	0.02720	0.02688	0.06775	0.10493	0.23126	0.28276	0.18717	0.49037	0.06132
17	0.01368	0.01110	0.00000	0.09914	0.07483	0.23899	0.11169	0.01754	0.06276	0.02639	0.02607	0.06598	0.10026	0.22257	0.27230	0.18137	0.47556	0.05906
18	0.01304	0.01062	0.00000	0.09576	0.07323	0.23046	0.10767	0.01706	0.06067	0.02559	0.02543	0.06421	0.09592	0.21469	0.26264	0.17622	0.46188	0.05697
19	0.01255	0.01014	0.00000	0.09238	0.07162	0.22257	0.10396	0.01642	0.05858	0.02494	0.02462	0.06260	0.09222	0.20761	0.25379	0.17140	0.44949	0.05504
20	0.01191	0.00966	0.00000	0.08948	0.07017	0.21549	0.10058	0.01577	0.05665	0.02414	0.02398	0.06116	0.08867	0.20085	0.24575	0.16705	0.43790	0.05311
21	0.01143	0.00917	0.00000	0.08658	0.06888	0.20889	0.09737	0.01529	0.05488	0.02350	0.02334	0.05987	0.08562	0.19473	0.23818	0.16287	0.42712	0.05150
22	0.01094	0.00869	0.00000	0.08385	0.06743	0.20278	0.09447	0.01481	0.05311	0.02285	0.02269	0.05858	0.08288	0.18910	0.23126	0.15900	0.41714	0.04989
23	0.01046	0.00837	0.00000	0.08143	0.06630	0.19714	0.09173	0.01432	0.05166	0.02237	0.02205	0.05745	0.08031	0.18395	0.22499	0.15546	0.40781	0.04828
24	0.00998	0.00805	0.00000	0.07902	0.06518	0.19183	0.08932	0.01384	0.05005	0.02173	0.02157	0.05633	0.07805	0.17896	0.21903	0.15208	0.39912	0.04683
25	0.00966	0.00772	0.00000	0.07677	0.06405	0.18701	0.08690	0.01336	0.04876	0.02124	0.02092	0.05536	0.07580	0.17445	0.21340	0.14903	0.39091	0.04554
26	0.00917	0.00740	0.00000	0.07467	0.06293	0.18234	0.08465	0.01287	0.04748	0.02060	0.02044	0.05440	0.07387	0.17011	0.20825	0.14613	0.38318	0.04426
27	0.00885	0.00708	0.00000	0.07274	0.06196	0.17799	0.08272	0.01255	0.04619	0.02012	0.01996	0.05359	0.07194	0.16608	0.20326	0.14323	0.37594	0.04297
28	0.00853	0.00676	0.00000	0.07097	0.06099	0.17397	0.08079	0.01223	0.04506	0.01963	0.01947	0.05263	0.07033	0.16238	0.19859	0.14066	0.36902	0.04184
29	0.00821	0.00644	0.00000	0.06920	0.06019	0.17011	0.07886	0.01175	0.04394	0.01915	0.01899	0.05198	0.06872	0.15884	0.19425	0.13808	0.36259	0.04072
30	0.00789	0.00628	0.00000	0.06743	0.05922	0.16657	0.07725	0.01143	0.04281	0.01867	0.01851	0.05118	0.06711	0.15546	0.19022	0.13583	0.35631	0.03975
31	0.00756	0.00595	0.00000	0.06598	0.05842	0.16303	0.07564	0.01110	0.04184	0.01819	0.01802	0.05053	0.06582	0.15224	0.18636	0.13358	0.35052	0.03879
32	0.00740	0.00579	0.00000	0.06453	0.05761	0.15981	0.07403	0.01078	0.04104	0.01786	0.01770	0.04989	0.06437	0.14919	0.18266	0.13132	0.34488	0.03798
33	0.00708	0.00563	0.00000	0.06309	0.05681	0.15675	0.07274	0.01046	0.04007	0.01738	0.01722	0.04925	0.06325	0.14629	0.17912	0.12939	0.33957	0.03701
34	0.00692	0.00531	0.00000	0.06180	0.05617	0.15385	0.07129	0.01030	0.03927	0.01706	0.01690	0.04860	0.06212	0.14371	0.17574	0.12746	0.33442	0.03637
35	0.00660	0.00515	0.00000	0.06067	0.05536	0.15112	0.07001	0.00998	0.03862	0.01658	0.01642	0.04812	0.06099	0.14098	0.17268	0.12553	0.32959	0.03557
36	0.00644	0.00499	0.00000	0.05955	0.05472	0.14838	0.06888	0.00966	0.03782	0.01625	0.01609	0.04764	0.05987	0.13856	0.16962	0.12376	0.32493	0.03492
37	0.00628	0.00483	0.00000	0.05842	0.05407	0.14597	0.06775	0.00950	0.03718	0.01593	0.01577	0.04715	0.05890	0.13615	0.16673	0.12199	0.32042	0.03428
38	0.00612	0.00467	0.00000	0.05745	0.05343	0.14355	0.06663	0.00917	0.03653	0.01561	0.01545	0.04667	0.05794	0.13406	0.16399	0.12038	0.31608	0.03364
39	0.00579	0.00451	0.00000	0.05665	0.05279	0.14130	0.06550	0.00901	0.03605	0.01529	0.01513	0.04635	0.05713	0.13181	0.16126	0.11877	0.31189	0.03299
40	0.00563	0.00435	0.00000	0.05568	0.05214	0.13905	0.06453	0.00885	0.03541	0.01497	0.01481	0.04587	0.05617	0.12971	0.15884	0.11732	0.30787	0.03251
41	0.00547	0.00418	0.00000	0.05488	0.05150	0.13696	0.06357	0.00853	0.03492	0.01465	0.01448	0.04554	0.05536	0.12778	0.15627	0.11571	0.30417	0.03203
42	0.00531	0.00418	0.00000	0.05423	0.05102	0.13486	0.06276	0.00837	0.03444	0.01432	0.01416	0.04522	0.05472	0.12585	0.15401	0.11442	0.30046	0.03154
43	0.00531	0.00402	0.00000	0.05343	0.05037	0.13293	0.06196	0.00821	0.03412	0.01400	0.01400	0.04490	0.05391	0.12408	0.15176	0.11298	0.29676	0.03122
44	0.00515	0.00386	0.00000	0.05279	0.04989	0.13116	0.06116	0.00805	0.03364	0.01384	0.01368	0.04458	0.05327	0.12231	0.14967	0.11169	0.29338	0.03074
45	0.00499	0.00386	0.00000	0.05214	0.04941	0.12939	0.06035	0.00789	0.03331	0.01352	0.01336	0.04426	0.05246	0.12070	0.14758	0.11040	0.29000	0.03042
46	0.00483	0.00370	0.00000	0.05166	0.04892	0.12762	0.05955	0.00772	0.03283	0.01320	0.01320	0.04410	0.05182	0.11909	0.14548	0.10911	0.28679	0.03009
47	0.00483	0.00354	0.00000	0.05118	0.04844	0.12601	0.05890	0.00756	0.03251	0.01304	0.01287	0.04377	0.05134	0.11748	0.14355	0.10799	0.28373	0.02977
48	0.00467	0.00354	0.00000	0.05069	0.04796	0.12440	0.05826	0.00740	0.03235	0.01271	0.01271	0.04361	0.05069	0.11587	0.14178	0.10686	0.28067	0.02961
49	0.00451	0.00338	0.00000	0.05021	0.04748	0.12295	0.05761	0.00724	0.03203	0.01255	0.01239	0.04345	0.05005	0.11442	0.14001	0.10573	0.27777	0.02929
50	0.00451	0.00338	0.00000	0.04989	0.04699	0.12151	0.05697	0.00708	0.03170	0.01239	0.01223	0.04329	0.04957	0.11314	0.13824	0.10461	0.27488	0.02913
51	0.00435	0.00322	0.00000	0.04957	0.04651	0.12102	0.05649	0.00692	0.03154	0.01207	0.01207	0.04313	0.04908	0.11282	0.13808	0.10461	0.27488	0.02881
52	0.00435	0.00322	0.00000	0.04925	0.04603	0.12070	0.05584	0.00692	0.03138	0.01191	0.01191	0.04297	0.04860	0.11265	0.13792	0.10445	0.27472	0.02865
53	0.00418	0.00322	0.00000	0.04892	0.04571	0.12038	0.05536	0.00676	0.03106	0.01175	0.01159	0.04281	0.04812	0.11249	0.13776	0.10445	0.27472	0.02849
54	0.00418	0.00306	0.00000	0.04860	0.04522	0.12006	0.05488	0.00660	0.03090	0.01159	0.01143	0.04265	0.04764	0.11233	0.13760	0.10429	0.27455	0.02832
55	0.00402	0.00306	0.00000	0.04828	0.04474	0.11974	0.05440	0.00644	0.03074	0.01143	0.01127	0.04265	0.04715	0.11217	0.13744	0.10429	0.27455	0.02816
56	0.00402	0.00290	0.00000	0.04812	0.04442	0.11941	0.05391	0.00644	0.03058	0.01127	0.01110	0.04249	0.04667	0.11201	0.13728	0.10412	0.27439	0.02816
57	0.00386	0.00290	0.00000	0.04796	0.04394	0.11909	0.05343	0.00628	0.03058	0.01110	0.01094	0.04249	0.04619	0.11185	0.13728	0.10412	0.27439	0.02800
58	0.00386	0.00290	0.00000	0.04780	0.04361	0.11877	0.05311	0.00628	0.03042	0.01094	0.01078	0.04249	0.04587	0.11169	0.13712	0.10396	0.27423	0.02784
59	0.00386	0.00290	0.00000	0.04764	0.04329	0.11861	0.05263	0.00612	0.03026	0.01078	0.01062	0.04249	0.04538	0.11153	0.13696	0.10396	0.27423	0.02784
60	0.00370	0.00274	0.00000	0.04748	0.04281	0.11829	0.05230	0.00595	0.03026	0.01062	0.01046	0.04249	0.04506	0.11137	0.13696	0.10380	0.27423	0.02768
61	0.00370	0.00274	0.00000	0.04731	0.04249	0.11813	0.05198	0.00595	0.03009	0.01046	0.01030	0.04249	0.04474	0.11121	0.13679	0.10380	0.27407	0.02768
62	0.00370	0.00274	0.00000	0.04715	0.04216	0.11780	0.05166	0.00579	0.02993	0.01030	0.01014	0.04249	0.04442	0.11104	0.13663	0.10364	0.27407	0.02752
63	0.00370	0.00274	0.00000	0.04699	0.04184	0.11764	0.05134	0.00579	0.02993	0.01014	0.01014	0.04249	0.04394	0.11104	0.13663	0.10364	0.27391	0.02752
64	0.00354	0.00257	0.00000	0.04699	0.04152	0.11748	0.05102	0.00579	0.02993	0.00998	0.00998	0.04249	0.04361	0.11088	0.13647	0.10364	0.27391	0.02752
65	0.00354	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00563	0.02977	0.00998	0.00982	0.04265	0.04329	0.11072	0.13647	0.10348	0.27391	0.02736
66	0.00354	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00563	0.02977	0.00982	0.00966	0.04265	0.04329	0.11072	0.13647	0.10348	0.27391	0.02736
67	0.00354	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00547	0.02961	0.00966	0.00966	0.04281	0.04329	0.11072	0.13647	0.10348	0.27391	0.02736
68	0.00354	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00547	0.02961	0.00950	0.00950	0.04297	0.04329	0.11072	0.13647	0.10348	0.27391	0.02720
69	0.00338	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00547	0.02961	0.00950	0.00933	0.04297	0.04329	0.11072	0.13647	0.10348	0.27391	0.02720
70	0.00338	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.02945	0.00933	0.00933	0.04313	0.04329	0.11072	0.13647	0.10348	0.27391	0.02720
71	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.02945	0.00933	0.00917	0.04329	0.04329	0.11072	0.13647	0.10348	0.27391	0.02704
72	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.02945	0.00917	0.00917	0.04345	0.04329	0.11072	0.13647	0.10348	0.27391	0.02704
73	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.02945	0.00917	0.00901	0.04361	0.04329	0.11072	0.13647	0.10348	0.27391	0.02704
74	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00515	0.02945	0.00901	0.00901	0.04394	0.04329	0.11072	0.13647	0.10348	0.27391	0.02704
75	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00515	0.02945	0.00901	0.00885	0.04410	0.04329	0.11072	0.13647	0.10348	0.27391	0.02704
76	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00515	0.02945	0.00885	0.00885	0.04426	0.04329	0.11072	0.13647	0.10348	0.27391	0.02704
77	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00515	0.02945	0.00885	0.00869	0.04458	0.04329	0.11072	0.13647	0.10348	0.27391	0.02704
78	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.02945	0.00869	0.00869	0.04474	0.04329	0.11072	0.13647	0.10348	0.27391	0.02704
79	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.02945	0.00869	0.00853	0.04506	0.04329	0.11072	0.13647	0.10348	0.27391	0.02720
80	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.02945	0.00853	0.00853	0.04538	0.04329	0.11072	0.13647	0.10348	0.27391	0.02720
81	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.02961	0.00853	0.00853	0.04571	0.04329	0.11072	0.13647	0.10348	0.27391	0.02720
82	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.02961	0.00853	0.00837	0.04603	0.04329	0.11072	0.13647	0.10348	0.27391	0.02720
83	0.00338	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.02961	0.00837	0.00837	0.04635	0.04329	0.11072	0.13647	0.10348	0.27391	0.02720
84	0.00354	0.00241	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.02977	0.00837	0.00837	0.04667	0.04329	0.11072	0.13647	0.10348	0.27391	0.02736
85	0.00354	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.02977	0.00837	0.00821	0.04699	0.04329	0.11072	0.13647	0.10348	0.27391	0.02736
86	0.00354	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.02977	0.00837	0.00821	0.04748	0.04329	0.11072	0.13647	0.10348	0.27391	0.02736
87	0.00354	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.02993	0.00821	0.00821	0.04780	0.04329	0.11072	0.13647	0.10348	0.27391	0.02752
88	0.00354	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.02993	0.00821	0.00821	0.04828	0.04329	0.11072	0.13647	0.10348	0.27391	0.02752
89	0.00354	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.03009	0.00821	0.00805	0.04876	0.04329	0.11072	0.13647	0.10348	0.27391	0.02752
90	0.00370	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.03009	0.00821	0.00805	0.04925	0.04329	0.11072	0.13647	0.10348	0.27391	0.02768
91	0.00370	0.00257	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.03026	0.00821	0.00805	0.04973	0.04329	0.11072	0.13647	0.10348	0.27391	0.02768
92	0.00370	0.00274	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.03042	0.00805	0.00805	0.05021	0.04329	0.11072	0.13647	0.10348	0.27391	0.02784
93	0.00386	0.00274	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.03042	0.00805	0.00805	0.05069	0.04329	0.11072	0.13647	0.10348	0.27391	0.02784
94	0.00386	0.00274	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.03058	0.00805	0.00805	0.05118	0.04329	0.11072	0.13647	0.10348	0.27391	0.02800
95	0.00386	0.00274	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.03074	0.00805	0.00805	0.05182	0.04329	0.11072	0.13647	0.10348	0.27391	0.02816
96	0.00402	0.00274	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.03090	0.00805	0.00805	0.05246	0.04329	0.11072	0.13647	0.10348	0.27391	0.02816
97	0.00402	0.00290	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.03106	0.00805	0.00805	0.05295	0.04329	0.11072	0.13647	0.10348	0.27391	0.02832
98	0.00402	0.00290	0.00000	0.04683	0.04104	0.11716	0.05069	0.00499	0.03122	0.00805	0.00789	0.05359	0.04329	0.11072	0.13647	0.10348	0.27391	0.02849
99	0.00418	0.00290	0.00000	0.04683	0.04104	0.11716	0.05069	0.00515	0.03138	0.00805	0.00789	0.05440	0.04329	0.11072	0.13647	0.10348	0.27391	0.02865
100	0.00418	0.00306	0.00000	0.04683	0.04104	0.11716	0.05069	0.00515	0.03154	0.00805	0.00789	0.05504	0.04329	0.11072	0.13647	0.10348	0.27391	0.02881
101	0.00435	0.00306	0.00000	0.04683	0.04104	0.11716	0.05069	0.00515	0.03170	0.00805	0.00789	0.05568	0.04329	0.11072	0.13647	0.10348	0.27391	0.02897
102	0.00435	0.00306	0.00000	0.04683	0.04104	0.11716	0.05069	0.00515	0.03187	0.00805	0.00789	0.05649	0.04329	0.11072	0.13647	0.10348	0.27391	0.02913
103	0.00451	0.00322	0.00000	0.04683	0.04104	0.11716	0.05069	0.00515	0.03219	0.00805	0.00805	0.05729	0.04329	0.11072	0.13647	0.10348	0.27391	0.02929
104	0.00467	0.00322	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.03235	0.00805	0.00805	0.05810	0.04329	0.11072	0.13647	0.10348	0.27391	0.02945
105	0.00467	0.00322	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.03251	0.00805	0.00805	0.05906	0.04329	0.11072	0.13647	0.10348	0.27391	0.02961
106	0.00467	0.00338	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.03283	0.00805	0.00805	0.06003	0.04329	0.11072	0.13647	0.10348	0.27391	0.02977
107	0.00467	0.00338	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.03315	0.00805	0.00805	0.06099	0.04329	0.11072	0.13647	0.10348	0.27391	0.02993
108	0.00467	0.00338	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.03331	0.00821	0.00805	0.06196	0.04329	0.11072	0.13647	0.10348	0.27391	0.03026
109	0.00467	0.00338	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.03364	0.00821	0.00805	0.06309	0.04329	0.11072	0.13647	0.10348	0.27391	0.03042
110	0.00467	0.00338	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.03396	0.00821	0.00805	0.06421	0.04329	0.11072	0.13647	0.10348	0.27391	0.03074
111	0.00467	0.00338	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.03428	0.00821	0.00805	0.06550	0.04329	0.11072	0.13647	0.10348	0.27391	0.03090
112	0.00467	0.00338	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.03460	0.00821	0.00821	0.06679	0.04329	0.11072	0.13647	0.10348	0.27391	0.03122
113	0.00467	0.00338	0.00000	0.04683	0.04104	0.11716	0.05069	0.00531	0.03492	0.00821	0.00821	0.06808	0.04329	0.11072	0.13647	0.10348	0.27391	0.03154
114	0.00467	0.00338	0.00000	0.04683	0.04104	0.11716	0.05069	0.00547	0.03541	0.00837	0.00821	0.06968	0.04329	0.11072	0.13647	0.10348	0.27391	0.03187
115	0.00467	0.00338	0.00000	0.04683	0.04104	0.11716	0.05069	0.00547	0.03573	0.00837	0.00821	0.07113	0.04329	0.11072	0.13647	0.10348	0.27391	0.03219

Starting Emission Factor (gram/trip) - RSP (Year 2029)

Time (min)	16 - Motorcycles (MC)	01 - Private Cars (PC)	02 - Taxi	11 - Non-franchised Bus<=6.4t	12 - Non-franchised Bus 6.4-15t	13 - Non-franchised Bus 15t-24t	18 - Non-franchised Bus >24t	9 - Private Light Bus <=3.5t	10 - Private Light Bus >3.5t	03 - Light Goods Vehicles<=2.5t	04 - Lt Goods Vehicles 2.5-3.5t	05 - Light Goods Vehicles>3.5t	06 - Heavy Goods Vehicles<=15t	07 - Heavy Goods Vehicles 15t-24t	17 - Heavy Goods Vehicles >24t	14 - Franchised Bus (SD)	15 - Franchised Bus (DD)	8 - Public Light Buses
5	0.00250	0.00040	0.00000	0.00000	0.00000	0.00000	0.00000	0.00010	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
10	0.00270	0.00080	0.00000	0.00000	0.00000	0.00000	0.00000	0.00030	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
20	0.00310	0.00150	0.00000	0.00000	0.00000	0.00000	0.00000	0.00050	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
30	0.00350	0.00220	0.00000	0.00000	0.00000	0.00000	0.00000	0.00070	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
40	0.00390	0.00290	0.00000	0.00000	0.00000	0.00000	0.00000	0.00090	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
50	0.00430	0.00360	0.00000	0.00000	0.00000	0.00000	0.00000	0.00110	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
60	0.00460	0.00420	0.00000	0.00000	0.00000	0.00000	0.00000	0.00130	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
120	0.00700	0.00700	0.00000	0.00000	0.00000	0.00000	0.00000	0.00200	0.00000	0.00020	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
180	0.00800	0.00780	0.00000	0.00000	0.00000	0.00000	0.00000	0.00220	0.00000	0.00030	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
240	0.00880	0.00850	0.00000	0.00000	0.00000	0.00000	0.00000	0.00240	0.00000	0.00030	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
300	0.00960	0.00920	0.00000	0.00000	0.00000	0.00000	0.00000	0.00260	0.00000	0.00030	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
360	0.01030	0.00980	0.00000	0.00000	0.00000	0.00000	0.00000	0.00270	0.00000	0.00030	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
420	0.01090	0.01020	0.00000	0.00000	0.00000	0.00000	0.00000	0.00280	0.00000	0.00040	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
480	0.01150	0.01060	0.00000	0.00000	0.00000	0.00000	0.00000	0.00290	0.00000	0.00040	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
540	0.01200	0.01090	0.00000	0.00000	0.00000	0.00000	0.00000	0.00300	0.00000	0.00040	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
600	0.01240	0.01110	0.00000	0.00000	0.00000	0.00000	0.00000	0.00300	0.00000	0.00040	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
660	0.01270	0.01110	0.00000	0.00000	0.00000	0.00000	0.00000	0.00310	0.00000	0.00040	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
720	0.01290	0.01110	0.00000	0.00000	0.00000	0.00000	0.00000	0.00310	0.00000	0.00040	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Appendix 3.4 Summary of Vehicular Emission Factors of 18 Vehicle Classes

Improvement of Tai Tau Leng Roundabout and Fanling Highway (Kwu Tung Section)
Running Exhaust Emission Factor (gram/mile/vehicle) - FSP (Year 2029)

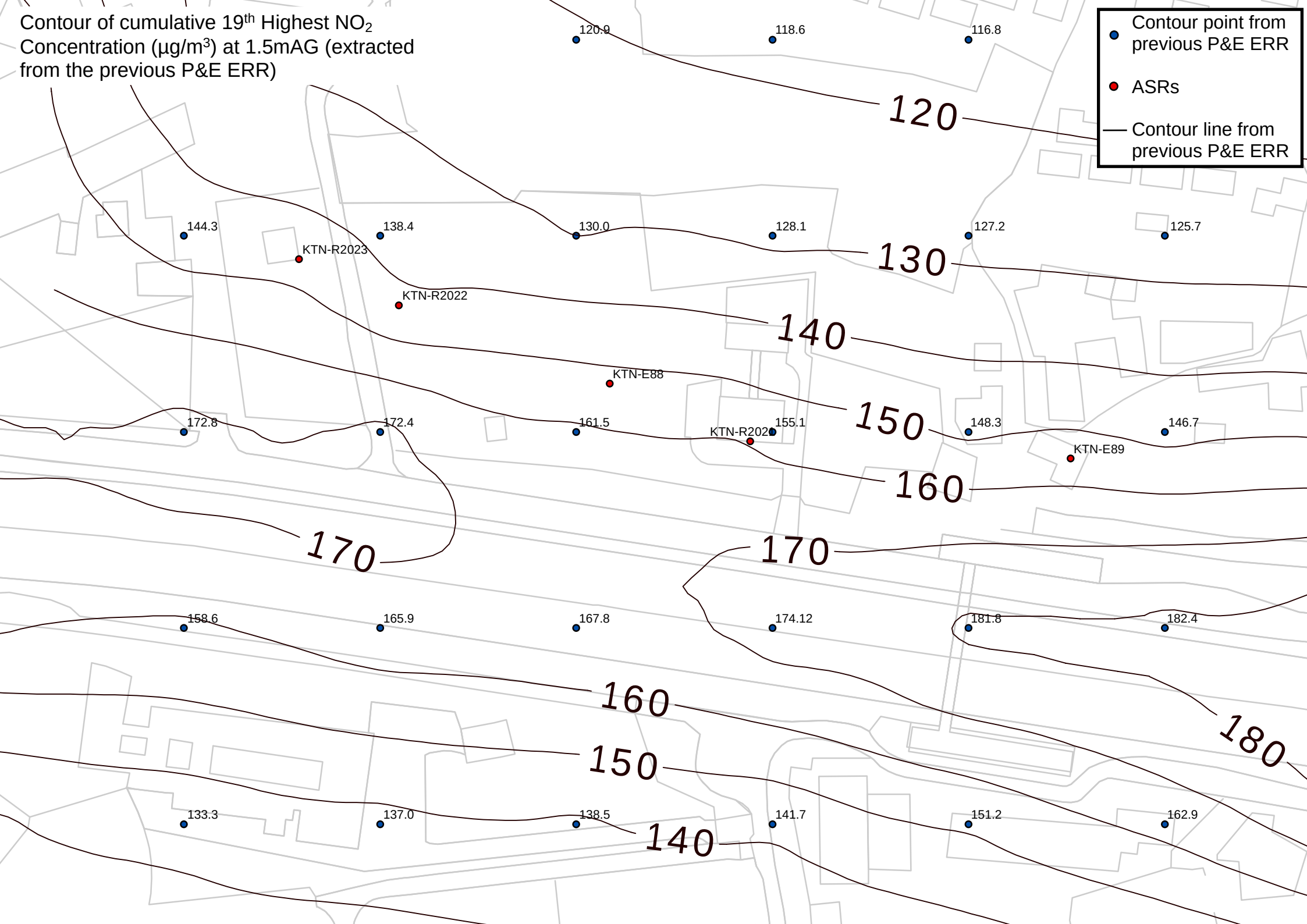
Speed (km/hr)	16 - Motorcycles (MC)	01 - Private Cars (PC)	02 - Taxi	11 - Non-franchised Bus<=6.4t	12 - Non-franchised Bus 6.4-15t	13 - Non-franchised Bus 15t-24t	18 - Non-franchised Bus >24t	9 - Private Light Bus <=3.5t	10 - Private Light Bus >3.5t	03 - Light Goods Vehicles<=2.5t	04 - Lt Goods Vehicles 2.5-3.5t	05 - Light Goods Vehicles>3.5t	06 - Heavy Goods Vehicles<=15t	07 - Heavy Goods Vehicles 15t-24t	17 - Heavy Goods Vehicles >24t	14 - Franchised Bus (SD)	15 - Franchised Bus (DD)	8 - Public Light Buses
1	0.01738	0.01432	0.00000	0.13309	0.09173	0.34923	0.16061	0.02173	0.08433	0.03187	0.03138	0.08513	0.17317	0.32637	0.39976	0.24446	0.63971	0.07918
2	0.01738	0.01432	0.00000	0.13309	0.09173	0.34923	0.16061	0.02173	0.08433	0.03187	0.03138	0.08513	0.17317	0.32637	0.39976	0.24446	0.63971	0.07918
3	0.01738	0.01432	0.00000	0.13309	0.09173	0.34923	0.16061	0.02173	0.08433	0.03187	0.03138	0.08513	0.17317	0.32637	0.39976	0.24446	0.63971	0.07918
4	0.01738	0.01432	0.00000	0.13309	0.09173	0.34923	0.16061	0.02173	0.08433	0.03187	0.03138	0.08513	0.17317	0.32637	0.39976	0.24446	0.63971	0.07918
5	0.01722	0.01432	0.00000	0.13309	0.09173	0.34923	0.16061	0.02173	0.08433	0.03170	0.03138	0.08513	0.17317	0.32637	0.39976	0.24446	0.63971	0.07918
6	0.01706	0.01432	0.00000	0.13309	0.09173	0.34923	0.16061	0.02173	0.08433	0.03170	0.03138	0.08513	0.17317	0.32637	0.39976	0.24446	0.63971	0.07918
7	0.01690	0.01432	0.00000	0.13309	0.09173	0.34923	0.16061	0.02173	0.08433	0.03170	0.03138	0.08513	0.17317	0.32637	0.39976	0.24446	0.63971	0.07918
8	0.01674	0.01432	0.00000	0.13309	0.09173	0.34923	0.16061	0.02173	0.08433	0.03170	0.03138	0.08513	0.17317	0.32637	0.39976	0.24446	0.63971	0.07918
9	0.01658	0.01432	0.00000	0.12698	0.08803	0.32637	0.15112	0.02140	0.08047	0.03074	0.03058	0.08095	0.15643	0.30465	0.37289	0.23094	0.60431	0.07548
10	0.01642	0.01432	0.00000	0.12118	0.08465	0.30610	0.14227	0.02108	0.07677	0.02993	0.02961	0.07725	0.14243	0.28550	0.34939	0.21887	0.57277	0.07210
11	0.01609	0.01416	0.00000	0.11571	0.08159	0.28872	0.13454	0.02060	0.07339	0.02897	0.02881	0.07403	0.13116	0.26908	0.32911	0.20841	0.54573	0.06904
12	0.01529	0.01336	0.00000	0.11088	0.07886	0.27359	0.12778	0.01979	0.07017	0.02816	0.02784	0.07113	0.12183	0.25492	0.31173	0.19940	0.52207	0.06614
13	0.01448	0.01271	0.00000	0.10638	0.07644	0.26023	0.12167	0.01899	0.06727	0.02720	0.02704	0.06856	0.11394	0.24253	0.29644	0.19135	0.50131	0.06341
14	0.01368	0.01207	0.00000	0.10219	0.07435	0.24848	0.11619	0.01819	0.06470	0.02639	0.02623	0.06630	0.10734	0.23142	0.28308	0.18427	0.48280	0.06083
15	0.01304	0.01143	0.00000	0.09817	0.07242	0.23786	0.11137	0.01754	0.06212	0.02575	0.02543	0.06421	0.10155	0.22161	0.27101	0.17783	0.46623	0.05858
16	0.01239	0.01078	0.00000	0.09463	0.07049	0.22837	0.10686	0.01690	0.05987	0.02494	0.02478	0.06244	0.09656	0.21276	0.26023	0.17220	0.45110	0.05633
17	0.01191	0.01030	0.00000	0.09125	0.06888	0.21984	0.10284	0.01625	0.05778	0.02430	0.02398	0.06067	0.09222	0.20487	0.25041	0.16689	0.43742	0.05440
18	0.01127	0.00982	0.00000	0.08803	0.06727	0.21195	0.09914	0.01561	0.05568	0.02350	0.02334	0.05906	0.08835	0.19763	0.24156	0.16206	0.42503	0.05246
19	0.01078	0.00933	0.00000	0.08497	0.06598	0.20487	0.09560	0.01513	0.05391	0.02285	0.02269	0.05761	0.08481	0.19087	0.23352	0.15772	0.41344	0.05053
20	0.01030	0.00885	0.00000	0.08224	0.06453	0.19827	0.09254	0.01465	0.05214	0.02221	0.02205	0.05633	0.08159	0.18475	0.22611	0.15369	0.40282	0.04892
21	0.00982	0.00853	0.00000	0.07966	0.06325	0.19216	0.08964	0.01416	0.05053	0.02173	0.02157	0.05504	0.07886	0.17928	0.21919	0.14983	0.39300	0.04731
22	0.00950	0.00805	0.00000	0.07725	0.06212	0.18652	0.08690	0.01368	0.04892	0.02108	0.02092	0.05391	0.07628	0.17397	0.21276	0.14629	0.38383	0.04587
23	0.00901	0.00772	0.00000	0.07483	0.06099	0.18137	0.08449	0.01320	0.04748	0.02044	0.02044	0.05295	0.07387	0.16914	0.20696	0.14307	0.37530	0.04442
24	0.00869	0.00740	0.00000	0.07274	0.05987	0.17655	0.08208	0.01271	0.04619	0.01996	0.01979	0.05182	0.07178	0.16464	0.20149	0.14001	0.36725	0.04313
25	0.00837	0.00708	0.00000	0.07065	0.05890	0.17204	0.07998	0.01239	0.04490	0.01947	0.01931	0.05102	0.06968	0.16045	0.19634	0.13712	0.35969	0.04184
26	0.00805	0.00676	0.00000	0.06872	0.05794	0.16769	0.07789	0.01191	0.04361	0.01899	0.01883	0.05005	0.06791	0.15659	0.19151	0.13438	0.35261	0.04072
27	0.00772	0.00660	0.00000	0.06695	0.05697	0.16383	0.07596	0.01159	0.04249	0.01851	0.01835	0.04925	0.06614	0.15289	0.18701	0.13181	0.34585	0.03959
28	0.00740	0.00628	0.00000	0.06518	0.05617	0.15997	0.07419	0.01127	0.04136	0.01802	0.01786	0.04844	0.06470	0.14935	0.18282	0.12939	0.33957	0.03846
29	0.00708	0.00595	0.00000	0.06357	0.05536	0.15659	0.07258	0.01094	0.04039	0.01754	0.01738	0.04780	0.06325	0.14613	0.17880	0.12714	0.33362	0.03750
30	0.00676	0.00579	0.00000	0.06212	0.05456	0.15321	0.07097	0.01062	0.03943	0.01722	0.01706	0.04715	0.06180	0.14307	0.17494	0.12489	0.32782	0.03653
31	0.00660	0.00563	0.00000	0.06067	0.05375	0.14999	0.06952	0.01030	0.03862	0.01674	0.01658	0.04651	0.06051	0.14001	0.17140	0.12279	0.32251	0.03573
32	0.00628	0.00531	0.00000	0.05938	0.05295	0.14709	0.06824	0.00998	0.03766	0.01642	0.01625	0.04587	0.05922	0.13728	0.16802	0.12086	0.31736	0.03492
33	0.00612	0.00515	0.00000	0.05810	0.05230	0.14420	0.06679	0.00966	0.03685	0.01593	0.01593	0.04538	0.05810	0.13470	0.16480	0.11893	0.31237	0.03412
34	0.00595	0.00499	0.00000	0.05697	0.05166	0.14162	0.06566	0.00950	0.03621	0.01561	0.01545	0.04474	0.05713	0.13213	0.16174	0.11716	0.30771	0.03331
35	0.00579	0.00483	0.00000	0.05584	0.05102	0.13905	0.06437	0.00917	0.03557	0.01529	0.01513	0.04426	0.05601	0.12971	0.15884	0.11539	0.30320	0.03267
36	0.00547	0.00467	0.00000	0.05472	0.05037	0.13663	0.06325	0.00901	0.03476	0.01497	0.01481	0.04377	0.05504	0.12746	0.15611	0.11378	0.29886	0.03203
37	0.00531	0.00451	0.00000	0.05375	0.04973	0.13422	0.06228	0.00869	0.03428	0.01465	0.01448	0.04345	0.05423	0.12537	0.15337	0.11217	0.29467	0.03154
38	0.00515	0.00435	0.00000	0.05295	0.04908	0.13213	0.06132	0.00853	0.03364	0.01432	0.01416	0.04297	0.05327	0.12328	0.15080	0.11072	0.29081	0.03090
39	0.00499	0.00418	0.00000	0.05198	0.04860	0.12987	0.06035	0.00837	0.03315	0.01400	0.01384	0.04265	0.05246	0.12134	0.14838	0.10927	0.28695	0.03042
40	0.00483	0.00402	0.00000	0.05118	0.04796	0.12794	0.05938	0.00805	0.03267	0.01368	0.01368	0.04216	0.05166	0.11941	0.14613	0.10783	0.28324	0.02993
41	0.00483	0.00402	0.00000	0.05053	0.04748	0.12601	0.05858	0.00789	0.03219	0.01336	0.01336	0.04184	0.05102	0.11748	0.14388	0.10654	0.27970	0.02945
42	0.00467	0.00386	0.00000	0.04989	0.04699	0.12408	0.05778	0.00772	0.03170	0.01320	0.01304	0.04152	0.05021	0.11587	0.14162	0.10525	0.27632	0.02913
43	0.00451	0.00370	0.00000	0.04925	0.04635	0.12231	0.05697	0.00756	0.03138	0.01287	0.01287	0.04136	0.04957	0.11410	0.13969	0.10396	0.27311	0.02865
44	0.00435	0.00354	0.00000	0.04860	0.04587	0.12070	0.05617	0.00740	0.03090	0.01271	0.01255	0.04104	0.04892	0.11249	0.13760	0.10268	0.26989	0.02832
45	0.00435	0.00354	0.00000	0.04812	0.04538	0.11909	0.05552	0.00724	0.03058	0.01239	0.01239	0.04072	0.04828	0.11104	0.13567	0.10155	0.26683	0.02800
46	0.00418	0.00338	0.00000	0.04748	0.04490	0.11748	0.05488	0.00708	0.03026	0.01223	0.01207	0.04056	0.04780	0.10944	0.13390	0.10042	0.26393	0.02768
47	0.00402	0.00338	0.00000	0.04699	0.04458	0.11587	0.05423	0.00692	0.02993	0.01191	0.01191	0.04039	0.04715	0.10799	0.13213	0.09930	0.26104	0.02736
48	0.00402	0.00322	0.00000	0.04667	0.04410	0.11442	0.05359	0.00676	0.02977	0.01175	0.01159	0.04007	0.04667	0.10670	0.13036	0.09833	0.25830	0.02720
49	0.00386	0.00322	0.00000	0.04619	0.04361	0.11314	0.05295	0.00676	0.02945	0.01159	0.01143	0.03991	0.04603	0.10541	0.12875	0.09720	0.25556	0.02688
50	0.00386	0.00306	0.00000	0.04587	0.04313	0.11169	0.05246	0.00660	0.02929	0.01127	0.01127	0.03975	0.04554	0.10412	0.12714	0.09624	0.25299	0.02672
51	0.00370	0.00306	0.00000	0.04554	0.04281	0.11137	0.05198	0.00644	0.02897	0.01110	0.01110	0.03959	0.04506	0.10380	0.12698	0.09624	0.25283	0.02655
52	0.00370	0.00290	0.00000	0.04522	0.04233	0.11104	0.05134	0.00628	0.02881	0.01094	0.01094	0.03959	0.04458	0.10364	0.12682	0.09608	0.25283	0.02639
53	0.00354	0.00290	0.00000	0.04490	0.04200	0.11072	0.05086	0.00628	0.02865	0.01078	0.01078	0.03943	0.04426	0.10348	0.12682	0.09608	0.25267	0.02623
54	0.00354	0.00290	0.00000	0.04474	0.04152	0.11040	0.05053	0.00612	0.02849	0.01062	0.01046	0.03927	0.04377	0.10332	0.12666	0.09592	0.25267	0.02607
55	0.00338	0.00274	0.00000	0.04442	0.04120	0.11008	0.05005	0.00595	0.02832	0.01046	0.01030	0.03927	0.04329	0.10316	0.12649	0.09592	0.25251	0.02591
56	0.00338	0.00274	0.00000	0.04426	0.04088	0.10976	0.04957	0.00595	0.02816	0.01030	0.01014	0.03911	0.04297	0.10300	0.12633	0.09576	0.25251	0.02591
57	0.00338	0.00274	0.00000	0.04410	0.04056	0.10960	0.04925	0.00579	0.02800	0.01014	0.01014	0.03911	0.04249	0.10284	0.12617	0.09576	0.25251	0.02575
58	0.00322	0.00274	0.00000	0.04394	0.04007	0.10927	0.04876	0.00579	0.02800	0.00998	0.00998	0.03911	0.04216	0.10268	0.12617	0.09560	0.25235	0.02559
59	0.00322	0.00257	0.00000	0.04377	0.03975	0.10911	0.04844	0.00563	0.02784	0.00982	0.00982	0.03911	0.04184	0.10252	0.12601	0.09560	0.25235	0.02559
60	0.00322	0.00257	0.00000	0.04361	0.03943	0.10879	0.04812	0.00563	0.02784	0.00966	0.00966	0.03911	0.04152	0.10252	0.12601	0.09560	0.25218	0.02543
61	0.00322	0.00257	0.00000	0.04345	0.03911	0.10863	0.04780	0.00547	0.02768	0.00966	0.00950	0.03911	0.04120	0.10235	0.12585	0.09543	0.25218	0.02543
62	0.00306	0.00257	0.00000	0.04345	0.03879	0.10847	0.04748	0.00547	0.02768	0.00950	0.00933	0.03911	0.04088	0.10219	0.12569	0.09543	0.25218	0.02543
63	0.00306	0.00241	0.00000	0.04329	0.03846	0.10815	0.04715	0.00531	0.02752	0.00933	0.00933	0.03911	0.04056	0.10219	0.12569	0.09527	0.25202	0.02527
64	0.00306	0.00241	0.00000	0.04313	0.03814	0.10799	0.04683	0.00531	0.02752	0.00917	0.00917	0.03911	0.04023	0.10203	0.12553	0.09527	0.25202	0.02527
65	0.00306	0.00241	0.00000	0.04313	0.03782	0.10783	0.04667	0.00515	0.02736	0.00917	0.00901	0.03927	0.03991	0.10187	0.12553	0.09527	0.25202	0.02527
66	0.00306	0.00241	0.00000	0.04313	0.03782	0.10783	0.04667	0.00515	0.02736	0.00901	0.00885	0.03927	0.03991	0.10187	0.12553	0.09527	0.25202	0.02511
67	0.00306	0.00241	0.00000	0.04313	0.03782	0.10783	0.04667	0.00515	0.02736	0.00885	0.00885	0.03943	0.03991	0.10187	0.12553	0.09527	0.25202	0.02511
68	0.00290	0.00241	0.00000	0.04313	0.03782	0.10783	0.04667	0.00499	0.02720	0.00885	0.00869	0.03943	0.03991	0.10187	0.12553	0.09527	0.25202	0.02511
69	0.00290	0.00241	0.00000	0.04313	0.03782	0.10783	0.04667	0.00499	0.02720	0.00869	0.00869	0.03959	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
70	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00499	0.02720	0.00853	0.00853	0.03975	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
71	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00483	0.02704	0.00853	0.00853	0.03991	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
72	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00483	0.02704	0.00837	0.00837	0.04007	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
73	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00483	0.02704	0.00837	0.00837	0.04023	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
74	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00483	0.02704	0.00821	0.00821	0.04039	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
75	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00483	0.02704	0.00821	0.00821	0.04056	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
76	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02704	0.00821	0.00805	0.04072	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
77	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02704	0.00805	0.00805	0.04104	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
78	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02704	0.00805	0.00789	0.04120	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
79	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02720	0.00789	0.00789	0.04152	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
80	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02720	0.00789	0.00789	0.04168	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
81	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02720	0.00789	0.00772	0.04200	0.03991	0.10187	0.12553	0.09527	0.25202	0.02494
82	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02720	0.00772	0.00772	0.04233	0.03991	0.10187	0.12553	0.09527	0.25202	0.02511
83	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00451	0.02720	0.00772	0.00772	0.04265	0.03991	0.10187	0.12553	0.09527	0.25202	0.02511
84	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00451	0.02736	0.00772	0.00772	0.04297	0.03991	0.10187	0.12553	0.09527	0.25202	0.02511
85	0.00290	0.00225	0.00000	0.04313	0.03782	0.10783	0.04667	0.00451	0.02736	0.00772	0.00756	0.04329	0.03991	0.10187	0.12553	0.09527	0.25202	0.02511
86	0.00306	0.00241	0.00000	0.04313	0.03782	0.10783	0.04667	0.00451	0.02736	0.00756	0.00756	0.04361	0.03991	0.10187	0.12553	0.09527	0.25202	0.02527
87	0.00306	0.00241	0.00000	0.04313	0.03782	0.10783	0.04667	0.00451	0.02752	0.00756	0.00756	0.04394	0.03991	0.10187	0.12553	0.09527	0.25202	0.02527
88	0.00306	0.00241	0.00000	0.04313	0.03782	0.10783	0.04667	0.00451	0.02752	0.00756	0.00756	0.04442	0.03991	0.10187	0.12553	0.09527	0.25202	0.02527
89	0.00306	0.00241	0.00000	0.04313	0.03782	0.10783	0.04667	0.00451	0.02768	0.00756	0.00740	0.04474	0.03991	0.10187	0.12553	0.09527	0.25202	0.02543
90	0.00306	0.00241	0.00000	0.04313	0.03782	0.10783	0.04667	0.00451	0.02768	0.00756	0.00740	0.04522	0.03991	0.10187	0.12553	0.09527	0.25202	0.02543
91	0.00306	0.00241	0.00000	0.04313	0.03782	0.10783	0.04667	0.00451	0.02784	0.00756	0.00740	0.04571	0.03991	0.10187	0.12553	0.09527	0.25202	0.02559
92	0.00322	0.00241	0.00000	0.04313	0.03782	0.10783	0.04667	0.00451	0.02800	0.00740	0.00740	0.04619	0.03991	0.10187	0.12553	0.09527	0.25202	0.02559
93	0.00322	0.00257	0.00000	0.04313	0.03782	0.10783	0.04667	0.00451	0.02800	0.00740	0.00740	0.04667	0.03991	0.10187	0.12553	0.09527	0.25202	0.02575
94	0.00322	0.00257	0.00000	0.04313	0.03782	0.10783	0.04667	0.00451	0.02816	0.00740	0.00740	0.04715	0.03991	0.10187	0.12553	0.09527	0.25202	0.02575
95	0.00338	0.00257	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02832	0.00740	0.00740	0.04764	0.03991	0.10187	0.12553	0.09527	0.25202	0.02591
96	0.00338	0.00257	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02832	0.00740	0.00740	0.04812	0.03991	0.10187	0.12553	0.09527	0.25202	0.02591
97	0.00338	0.00257	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02849	0.00740	0.00740	0.04876	0.03991	0.10187	0.12553	0.09527	0.25202	0.02607
98	0.00354	0.00274	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02865	0.00740	0.00740	0.04941	0.03991	0.10187	0.12553	0.09527	0.25202	0.02623
99	0.00354	0.00274	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02881	0.00740	0.00740	0.05005	0.03991	0.10187	0.12553	0.09527	0.25202	0.02639
100	0.00354	0.00274	0.00000	0.04313	0.03782	0.10783	0.04667	0.00467	0.02897	0.00740	0.00724	0.05069	0.03991	0.10187	0.12553	0.09527	0.25202	0.02639
101	0.00370	0.00290	0.00000	0.04313	0.03782	0.10783	0.04667	0.00483	0.02913	0.00740	0.00740	0.05134	0.03991	0.10187	0.12553	0.09527	0.25202	0.02655
102	0.00370	0.00290	0.00000	0.04313	0.03782	0.10783	0.04667	0.00483	0.02929	0.00740	0.00740	0.05198	0.03991	0.10187	0.12553	0.09527	0.25202	0.02672
103	0.00386	0.00290	0.00000	0.04313	0.03782	0.10783	0.04667	0.00483	0.02961	0.00740	0.00740	0.05279	0.03991	0.10187	0.12553	0.09527	0.25202	0.02688
104	0.00386	0.00306	0.00000	0.04313	0.03782	0.10783	0.04667	0.00483	0.02977	0.00740	0.00740	0.05359	0.03991	0.10187	0.12553	0.09527	0.25202	0.02704
105	0.00402	0.00306	0.00000	0.04313	0.03782	0.10783	0.04667	0.00483	0.02993	0.00740	0.00740	0.05440	0.03991	0.10187	0.12553	0.09527	0.25202	0.02720
106	0.00402	0.00306	0.00000	0.04313	0.03782	0.10783	0.04667	0.00483	0.03026	0.00740	0.00740	0.05520	0.03991	0.10187	0.12553	0.09527	0.25202	0.02736
107	0.00402	0.00306	0.00000	0.04313	0.03782	0.10783	0.04667	0.00499	0.03042	0.00740	0.00740	0.05601	0.03991	0.10187	0.12553	0.09527	0.25202	0.02752
108	0.00402	0.00306	0.00000	0.04313	0.03782	0.10783	0.04667	0.00499	0.03074	0.00740	0.00740	0.05697	0.03991	0.10187	0.12553	0.09527	0.25202	0.02784
109	0.00402	0.00306	0.00000	0.04313	0.03782	0.10783	0.04667	0.00499	0.03090	0.00756	0.00740	0.05810	0.03991	0.10187	0.12553	0.09527	0.25202	0.02800
110	0.00402	0.00306	0.00000	0.04313	0.03782	0.10783	0.04667	0.00499	0.03122	0.00756	0.00740	0.05906	0.03991	0.10187	0.12553	0.09527	0.25202	0.02816
111	0.00402	0.00306	0.00000	0.04313	0.03782	0.10783	0.04667	0.00499	0.03154	0.00756	0.00740	0.06019	0.03991	0.10187	0.12553	0.09527	0.25202	0.02849
112	0.00402	0.00306	0.00000	0.04313	0.03782	0.10783	0.04667	0.00499	0.03187	0.00756	0.00756	0.06132	0.03991	0.10187	0.12553	0.09527	0.25202	0.02865
113	0.00402	0.00306	0.00000	0.04313	0.03782	0.10783	0.04667	0.00499	0.03219	0.00756	0.00756	0.06260	0.03991	0.10187	0.12553	0.09527	0.25202	0.02897
114	0.00402	0.00306	0.00000	0.04313	0.03782	0.10783	0.04667	0.00499	0.03251	0.00756	0.00756	0.06405	0.03991	0.10187	0.12553	0.09527	0.25202	0.02929
115	0.00402	0.00306	0.00000	0.04313	0.03782	0.10783	0.04667	0.00499	0.03283	0.00772	0.00756	0.06550	0.03991	0.10187	0.12553	0.09527	0.25202	0.02961

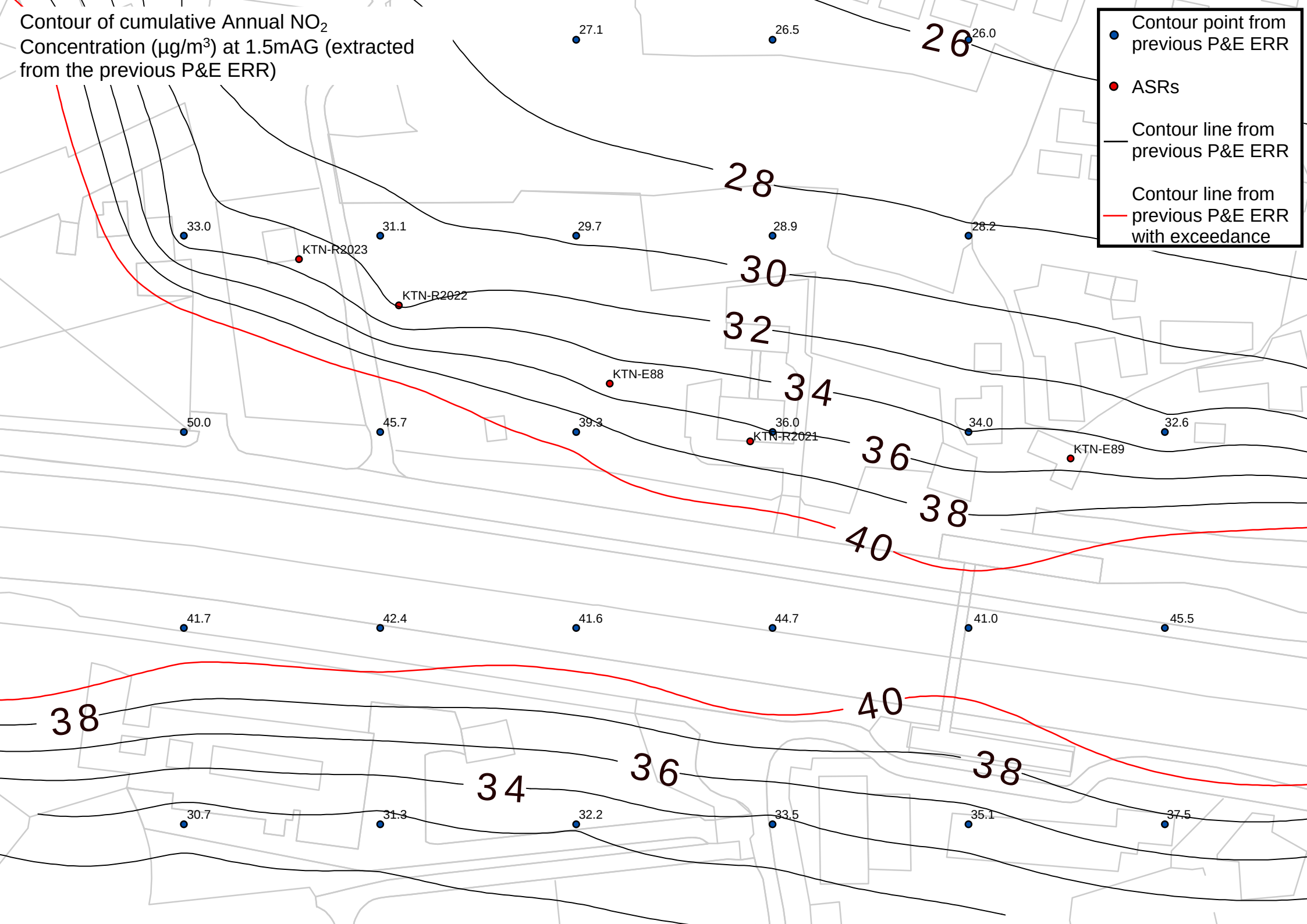
Starting Emission Factor (gram/trip) - FSP (Year 2029)

Time (min)	16 - Motorcycles (MC)	01 - Private Cars (PC)	02 - Taxi	11 - Non-franchised Bus<=6.4t	12 - Non-franchised Bus 6.4-15t	13 - Non-franchised Bus 15t-24t	18 - Non-franchised Bus >24t	9 - Private Light Bus <=3.5t	10 - Private Light Bus >3.5t	03 - Light Goods Vehicles<=2.5t	04 - Lt Goods Vehicles 2.5-3.5t	05 - Light Goods Vehicles>3.5t	06 - Heavy Goods Vehicles<=15t	07 - Heavy Goods Vehicles 15t-24t	17 - Heavy Goods Vehicles >24t	14 - Franchised Bus (SD)	15 - Franchised Bus (DD)	8 - Public Light Buses
5	0.00200	0.00040	0.00000	0.00000	0.00000	0.00000	0.00000	0.00010	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
10	0.00220	0.00070	0.00000	0.00000	0.00000	0.00000	0.00000	0.00020	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
20	0.00260	0.00140	0.00000	0.00000	0.00000	0.00000	0.00000	0.00050	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
30	0.00300	0.00210	0.00000	0.00000	0.00000	0.00000	0.00000	0.00070	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
40	0.00340	0.00270	0.00000	0.00000	0.00000	0.00000	0.00000	0.00090	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
50	0.00380	0.00330	0.00000	0.00000	0.00000	0.00000	0.00000	0.00110	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
60	0.00420	0.00390	0.00000	0.00000	0.00000	0.00000	0.00000	0.00120	0.00000	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
120	0.00630	0.00650	0.00000	0.00000	0.00000	0.00000	0.00000	0.00190	0.00000	0.00020	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
180	0.00700	0.00720	0.00000	0.00000	0.00000	0.00000	0.00000	0.00210	0.00000	0.00020	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
240	0.00770	0.00790	0.00000	0.00000	0.00000	0.00000	0.00000	0.00220	0.00000	0.00020	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
300	0.00830	0.00850	0.00000	0.00000	0.00000	0.00000	0.00000	0.00240	0.00000	0.00030	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
360	0.00890	0.00910	0.00000	0.00000	0.00000	0.00000	0.00000	0.00250	0.00000	0.00030	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
420	0.00940	0.00950	0.00000	0.00000	0.00000	0.00000	0.00000	0.00260	0.00000	0.00030	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
480	0.00980	0.00980	0.00000	0.00000	0.00000	0.00000	0.00000	0.00270	0.00000	0.00030	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
540	0.01020	0.01010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00280	0.00000	0.00030	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
600	0.01060	0.01030	0.00000	0.00000	0.00000	0.00000	0.00000	0.00280	0.00000	0.00040	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
660	0.01090	0.01030	0.00000	0.00000	0.00000	0.00000	0.00000	0.00290	0.00000	0.00040	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
720	0.01110	0.01030	0.00000	0.00000	0.00000	0.00000	0.00000	0.00290	0.00000	0.00040	0.00010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

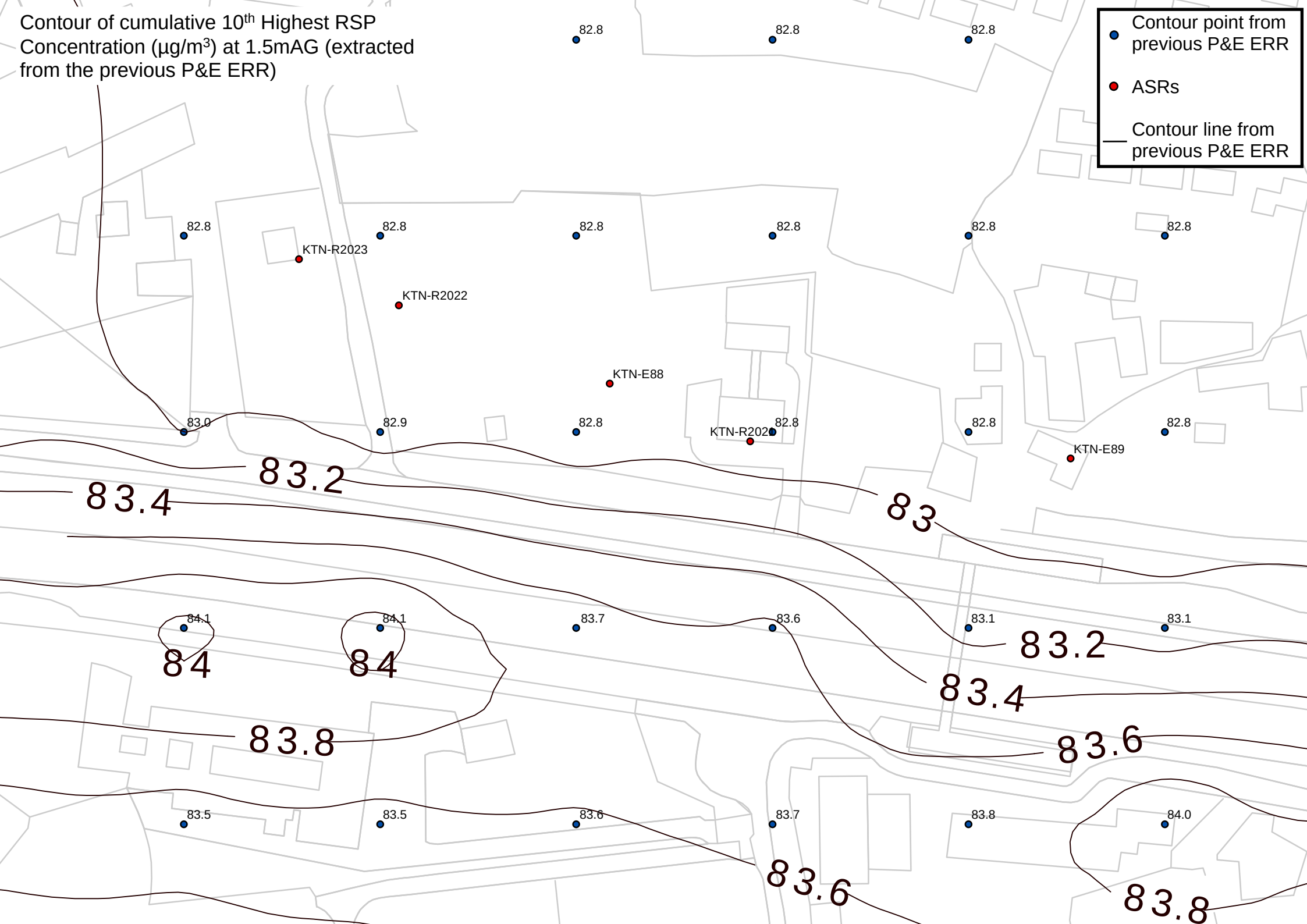
Appendix 3.5
Contours of Cumulative Result Extracted from the Approved Environmental Review Report

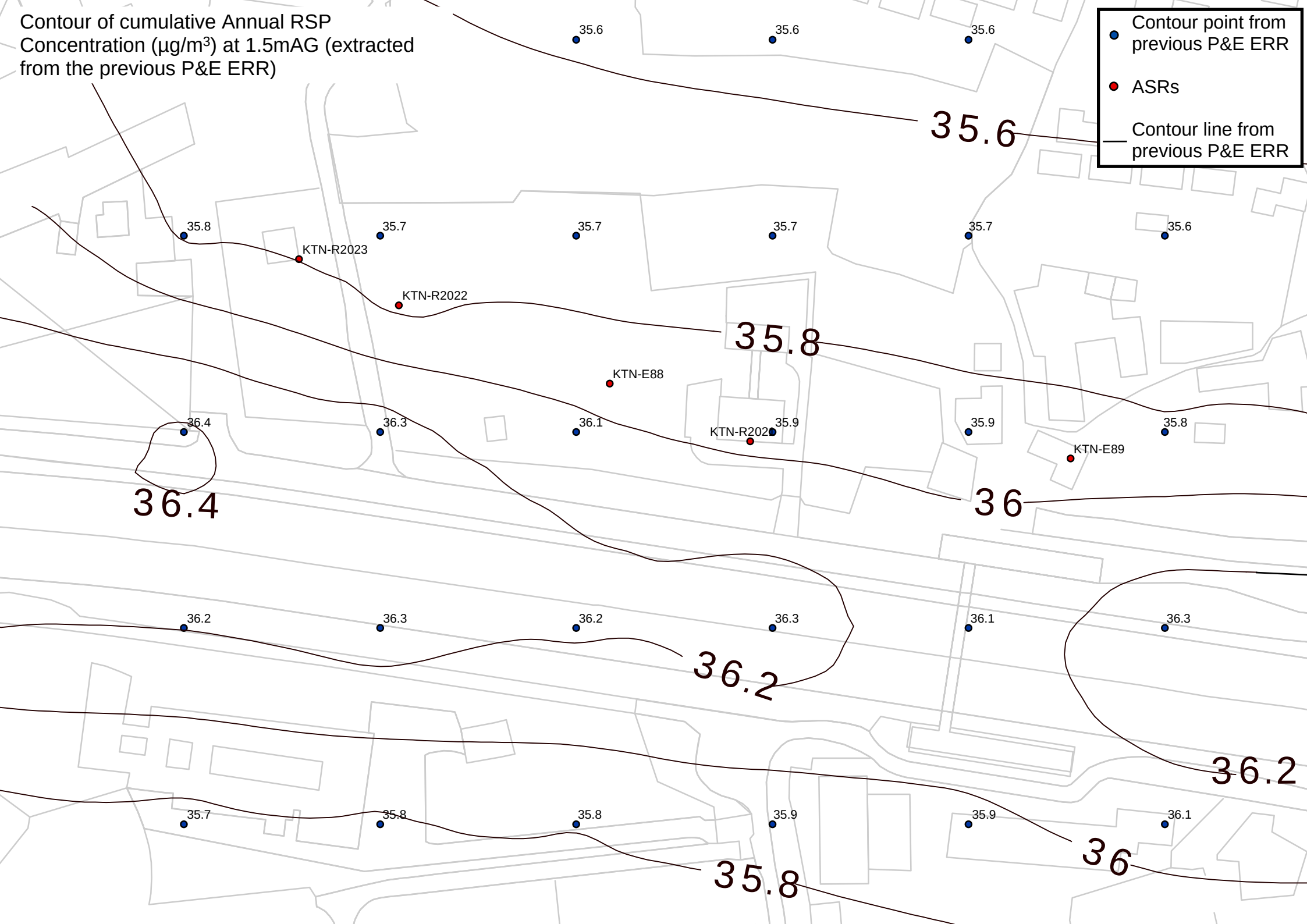
[BLANK]


Contour of cumulative 19th Highest NO2 Concentration (µg/m3) at 1.5mAG (extracted from the previous P&E ERR)
Contour point from previous P&E ERR
ASRs
Contour line from previous P&E ERR
120.9
118.6
116.8
120
144.3
138.4
130.0
128.1
127.2
125.7
KTN-R2023
130
KTN-R2022
140
KTN-E88
172.8
172.4
161.5
155.1
148.3
146.7
KTN-R2021
KTN-E89
150
160
170
170
158.6
165.9
167.8
174.12
181.8
182.4
160
180
150
133.3
137.0
138.5
141.7
151.2
162.9
140


Contour of cumulative Annual NO_2 Concentration (µg/m^3) at 1.5mAG (extracted from the previous P&E ERR)
Contour point from previous P&E ERR
ASRs
Contour line from previous P&E ERR
Contour line from previous P&E ERR with exceedance
26
28
30
32
34
36
38
40
27.1
26.5
26.0
33.0
31.1
29.7
28.9
28.2
KTN-R2023
KTN-R2022
KTN-E88
KTN-R2021
KTN-E89
50.0
45.7
39.3
36.0
34.0
32.6
41.7
42.4
41.6
44.7
41.0
45.5
30.7
31.3
32.2
33.5
35.1
37.5

Contour of cumulative 10th Highest RSP Concentration (µg/m3) at 1.5mAG (extracted from the previous P&E ERR)




Contour of cumulative Annual RSP Concentration (µg/m³) at 1.5mAG (extracted from the previous P&E ERR)
Contour point from previous P&E ERR
ASRs
Contour line from previous P&E ERR
35.6
35.8
36.4
36
36.2
35.8
36
36.2
35.8
KTN-R2023
KTN-R2022
KTN-E88
KTN-R2021
KTN-E89

Appendix 3.6
Detailed Air Quality Assessment Results

[BLANK]

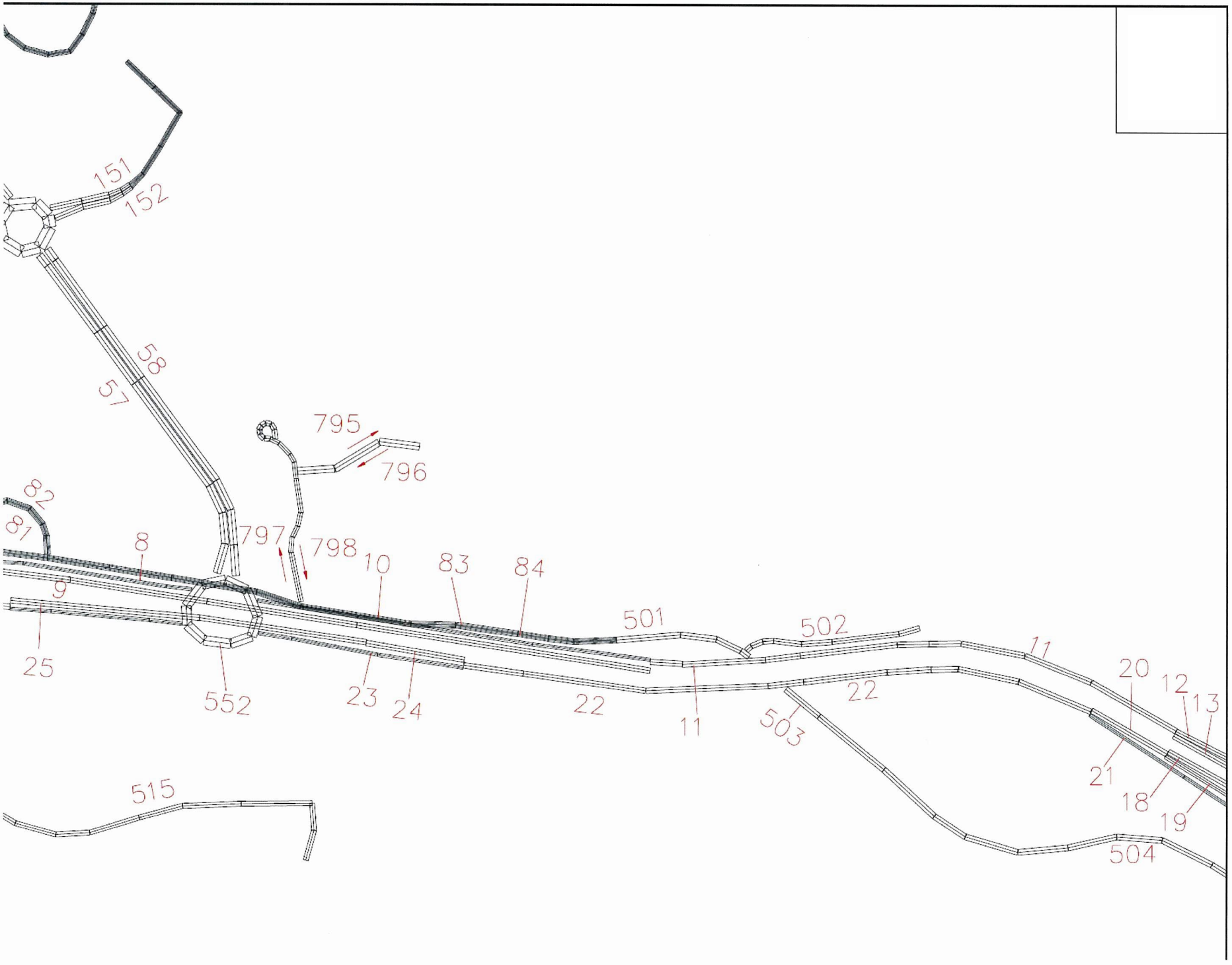
Detailed Assessment Results

ASRs and Assessment Height (mAG)		Site	Cumulative NO_2 Concentrations in $\mu g/m^3$		Cumulative RSP Concentrations in $\mu g/m^3$		Cumulative FSP Concentrations in $\mu g/m^3$	
			19^{th} highest 1-hour Ave.	Annual Ave.	10^{th} highest 24-hour Ave.	Annual Ave.	10^{th} highest 24-hour Ave.	Annual Ave.
AQOs			200	40	100	50	75	35
KTN-E88	1.5	Sports Ground near Enchi Lodge	152.7	35.0	82.9	35.9	62.2	25.8
KTN-E89	1.5	Temporary Structure near Castle Peak Road	155.4	35.4	82.9	35.9	62.2	25.8
KTN-R2021	1.5	Planned Residential Building	160.8	36.8	82.9	36.0	62.2	25.9
KTN-R2022	1.5	Planned Residential Building	140.7	31.4	82.9	35.7	62.2	25.7
KTN-R2023	1.5	Residential Building, 5 Yin Kong Road	146.6	33.2	82.9	35.8	62.2	25.7

[BLANK]

Appendix 4.1
Details of Road Traffic Forecast at Year 2044
(for Localised Assessment)

[BLANK]


151
152
58
57
795
796
82
81
797
798
8
10
83
84
9
501
502
11
20
12
13
25
552
23
24
22
11
503
22
21
18
19
504
515

2044 Traffic Flows and Breakdown by 2 Vehicle Classes

Link No.	Total Vehicle	Total Vehicle	Heavy Vehicle%	Heavy Vehicle%	Speed Limit
	AM	PM	AM	PM	
8	498	264	8.0%	13.6%	50
9	4406	3926	33.4%	36.9%	100
10	1278	951	19.9%	21.4%	50
11	5684	4878	30.4%	33.9%	100
12	1443	1191	27.5%	36.9%	50
13	4241	3687	31.3%	32.9%	100
18	4262	3974	30.1%	29.0%	100
19	765	637	28.3%	22.4%	50
20	5027	4611	29.8%	28.0%	100
21	916	975	31.4%	31.6%	50
22	5942	5587	30.1%	28.7%	100
23	1349	1176	23.0%	17.3%	50
24	4593	4410	32.1%	31.7%	100
25	586	394	12.4%	12.9%	50
57	1847	1440	18.9%	16.6%	50
58	1864	1345	17.5%	19.0%	50
81	303	313	27.0%	22.8%	50
82	447	300	18.5%	23.2%	50
83	453	323	24.5%	32.3%	50
84	327	336	36.8%	30.3%	50
151	98	97	13.3%	14.3%	50
152	144	74	13.8%	13.6%	50
501	781	659	29.7%	31.3%	50
502	164	120	29.4%	23.5%	50
503	773	668	32.7%	31.5%	50
504	1030	884	28.6%	27.1%	50
515	734	476	15.7%	15.8%	50
552	1855	1392	18.2%	17.8%	50
795	36	34	40.6%	20.2%	50
796	30	44	29.2%	29.2%	50
797	36	34	40.6%	20.2%	50
798	30	44	29.2%	29.2%	50

Tong, Ka Ling Angela

From: Chun Wing YAU <chunwingyau@td.gov.hk>
Sent: Thursday, August 13, 2015 11:07 AM
To: Kwok, Shi Chung Colin
Cc: Tony KT YAU; Winnie WS WONG; Tony KK WU
Subject: TPD's Reply: [Confidential] CE13_2014_Technical Note - Traffic Modelling Methodology and Assumptions for TIA

Dear Colin,

As the previous comment of our Transport Planning Division have been addressed, we have no further comment on the traffic modelling methodology and assumptions.

We would like to provide comment on the traffic forecast being prepared.

Thank you.

Regards,
YAU Chun Wing
E/TP4, TPD, TD
Tel: 2829 5296

From: "Kwok, Shi Chung Colin" <Colin.Kwok@aecom.com>
To: "'tonyktyau@td.gov.hk'" <tonyktyau@td.gov.hk>, "'sets1.rdo@hyd.gov.hk'" <sets1.rdo@hyd.gov.hk>, "'rycfung@pland.gov.hk'" <rycfung@pland.gov.hk>, "'tonywu@td.gov.hk'" <tonywu@td.gov.hk>, "'wwong@td.gov.hk'" <wwong@td.gov.hk>, Chun Wing YAU <chunwingyau@td.gov.hk>,
Cc: "'mtlaw@cedd.gov.hk'" <mtlaw@cedd.gov.hk>, "'kmmak@cedd.gov.hk'" <kmmak@cedd.gov.hk>, "'wmtang@cedd.gov.hk'" <wmtang@cedd.gov.hk> "Lai, Yee Yan Stephen" <stephen.lai@aecom.com>, "Ching, Chin Fun Stephen" <Stephen.Ching@aecom.com>, "Cheek, Peter Michael" <peter.cheek@aecom.com>, "Mak, Eunice Hoi Cheung" <Eunice.Mak@aecom.com>, "Leung, Ebby" <Ebby.Leung@aecom.com>, "Tam, Ka Wai Janice" <janice.tam@aecom.com>, "Yeung, Ka Wing Eric" <Eric.KW.Yeung@aecom.com>, "Tong, Ka Ling Angela" <angela.tong@aecom.com>, "Ho, Yung Chi Chris" <chris.ho@aecom.com>
Date: 05/08/2015 17:25
Subject: RE: [Confidential] CE13_2014_Technical Note - Traffic Modelling Methodology and Assumptions for TIA

Dear All,

Further to the submission of the Technical Note (TN) for Traffic Modelling Methodology and Assumptions for TIA on 22 July 2015 new /additional comments were received from Transport Planning Division and Traffic Engineering (NTE) of Transport Department on 27 July 2015.

In view of the importance of the comment to the P&E Review Study of this Study, a meeting was held at TPD office on 4 Aug 2015 to discuss the growth rate assumption for car fleet size from 2016 to 2036. It was agreed in the meeting that the new growth rate assumption as advised by TD shall be adopted in this Study.

The TN is revised and attached for download via hyperlink below. Please provide comment, if any, on or before 7 August 2015.

This file will be available for download until 8/12/2015

File	Description	Size
TN Traffic Modelling Approach and Assumptions Final Revision 1.pdf		20,605KB
Download all files (.zip)		

Thanks.

Regards,

Colin Kwok, BSc., MA, MSc, MCILT, MHKIE
Senior Transport Planner, Strategic Planning and Advisory, Transportation
D +852 3922 8573 (Hong Kong)
Colin.Kwok@aecom.com

AECOM
12/F, Tower 2, Grand Central Plaza, 138 Shatin Rural Committee Road, Shatin, New Territories, Hong Kong
T: +852 3922 9766 (Hong Kong) F +852 3922 9797 (Hong Kong)

From: Ho, Yung Chi Chris
Sent: Wednesday, July 22, 2015 3:59 PM
To: 'tonyktyau@td.gov.hk'; 'sets1.rdo@hyd.gov.hk'; 'rycfung@pland.gov.hk'; 'tonywu@td.gov.hk'; 'wwong@td.gov.hk' 'kyteng@td.gov.hk'
Cc: 'mtlaw@cedd.gov.hk'; 'kmmak@cedd.gov.hk'; 'wmtang@cedd.gov.hk'; Lai, Yee Yan Stephen; Ching, Chin Fun Stephen; Cheek, Peter Michael; Mak, Eunice Hoi Cheung; Leung, Ebby; Kwok, Shi Chung Colin; Tam, Ka Wai Janice; Yeung, Ka Wing Eric; Tong, Ka Ling Angela
Subject: RE: [Confidential] CE13_2014_Technical Note - Traffic Modelling Methodology and Assumptions for TIA

Dear Sir/Madam,

Further to our email regarding the submission of the captioned technical notes dated 2 July 2015 and upon receiving subsequent comments, we would like to submit the revised and the final version of the captioned document for your retention and records. The RTC summary table is attached in the last section after the drawings.

Please download the captioned document through below link.

This file will be available for download until 7/29/2015

File	Description	Size
CE13_2014 - TN Traffic Modelling Approach and Assumptions Final v2.pdf		20,319KB

Thank you!

Regards,
Chris Ho
Tel : 3922 8981

From: Ho, Yung Chi Chris
Sent: Thursday, July 02, 2015 6:41 PM
To: tonyktyau@td.gov.hk; sets1.rdo@hyd.gov.hk; rycfung@pland.gov.hk; tonywu@td.gov.hk; wwong@td.gov.hk; kyteng@td.gov.hk
Cc: mtlaw@cedd.gov.hk; kmmak@cedd.gov.hk; wmtang@cedd.gov.hk; Lai, Yee Yan Stephen; Ching, Chin Fun Stephen; Cheek, Peter Michael; Mak, Eunice Hoi Cheung; Leung, Ebby; Kwok, Shi Chung Colin; Tam, Ka Wai Janice; Yeung, Ka Wing Eric
Subject: [Confidential] CE13_2014_Technical Note - Traffic Modelling Methodology and Assumptions for TIA
Importance: High

[Confidential]

Dear Sir/Madam,

Agreement No. CE 13/2014 (CE)
Development of Kwu Tung North and Fanling North New Development Areas,
Phase 1 - Design and Construction

Appendix 4.2
Computer Plot of Road Scheme

[BLANK]


LEGEND
EXISTING ROADS / OTHER ROADS
NEW ROADS (PRIMARY DISTRIBUTION ROAD)
NEW ROADS (DISTRICT DISTRIBUTION ROAD)
NEW ROADS (LOCAL DISTRIBUTION ROAD)
NEW ROADS (EXPRESSWAY)

Appendix 4.3
Details of Road Traffic Noise Impacts at the Concerned NSRs

[BLANK]

Title: Detailed Calculation of Road Traffic Noise on Direct Mitigation Measures
Scenario: Ying Kong Road / Castle Peak Road (Mitigated Case on Proposed Roads)

Assessment Point			Location	WITHOUT PROJECT	WITH PROJECT								Noise Criteria dB(A)	Exceedance C > Criteria (Y/N)	Check Project Impact Significance		Check Direct Mitigation			Mitigation Measures Required [4,5] (Y/N)
							New Roads[2]													
ID	Floor	Assessment Level (mPD)		Overall Noise Level in 2044 dB(A) [A]	Existing Road in 2044 dB(A)	Other Roads in 2044 dB(A)[1]	PD	DD	LD	EX	TR	New Roads in 2044 dB(A)[3] [B]	Overall Noise Level in 2044 dB(A) [C]			C - A dB(A) [D]	D ≥ 1dB(A)	New Road Contribution dB(A) [E]	New Road Contribution ≥ 1dB(A) E ≥ 1dB(A)	New Road > Criteria B > Criteria	
							dB (A)													
R2021	1	11.9	Enchi Lodge	81.6	51.8	0	47.7	64	0	64.6	0	67.4	67.5	70	N	-14.1	N	15.7	Y	N	N
R2021	2	14.9	Enchi Lodge	82.6	52	0	49.8	63.9	0	66.3	0	68.3	68.4	70	N	-14.2	N	16.4	Y	N	N
R2022	1	11.9	C1-3	75.3	64.6	0	61.2	63.7	37.8	60.9	0	66.9	68.9	70	N	-6.4	N	4.3	Y	N	N
R2022	2	14.9	C1-3	76.8	64.4	0	62.8	63.7	37.8	62.3	0	67.8	69.4	70	N	-7.4	N	5.0	Y	N	N
R2022	3	17.9	C1-3	77.5	64.2	0	64.9	63.7	37.8	64.2	0	69.1	70.3	70	N	-7.2	N	6.1	Y	N	N
R2023	1	11.9	C1-3	79	59.7	0	55.5	60.9	39	64.2	0	66.3	67.2	70	N	-11.8	N	7.5	Y	N	N
R2023	2	14.9	C1-3	80.6	59.8	0	57.6	60.9	39	65.5	0	67.3	68.0	70	N	-12.6	N	8.2	Y	N	N
R2023	3	17.9	C1-3	81.1	59.6	0	60.2	60.9	39	67.1	0	68.7	69.2	70	N	-11.9	N	9.6	Y	N	N
R2024	1	10.6	C1-3	74.1	53.4	0	0	55.1	43.1	63.3	0	63.9	64.3	70	N	-9.8	N	10.9	Y	N	N
R2024	2	13.6	C1-3	75	53.4	0	0	55.1	43	63.6	0	64.2	64.6	70	N	-10.4	N	11.2	Y	N	N
R2024	3	16.6	C1-3	75.4	53.4	0	0	55.1	43	64	0	64.6	64.9	70	N	-10.5	N	11.5	Y	N	N
R2102	1	11.9	C1-4	73.8	55.3	0	58.3	58.1	18.2	62.7	0	65.1	65.5	70	N	-8.3	N	10.2	Y	N	N
R2102	2	14.9	C1-4	74.4	55.3	0	59	58.1	18.4	63	0	65.3	65.8	70	N	-8.6	N	10.5	Y	N	N
R2102	3	17.9	C1-4	74.9	55.3	0	59.8	58.1	18.6	63.2	0	65.7	66.1	70	N	-8.8	N	10.8	Y	N	N
R2103	1	11.9	C1-4	76	55.4	0	51.5	58.9	44.3	65.1	0	66.2	66.6	70	N	-9.4	N	11.2	Y	N	N
R2103	2	14.9	C1-4	76.5	55.5	0	52.1	58.9	44.3	65.4	0	66.5	66.8	70	N	-9.7	N	11.3	Y	N	N
R2103	3	17.9	C1-4	76.9	55.5	0	52.9	59	44.3	65.7	0	66.7	67.0	70	N	-9.9	N	11.5	Y	N	N

Notes:

[1] Other Roads refer to planned road projects carried out by others such as Development of Lok Ma Chau Loop, Liantang / Heung Yuen Wai Boundary Control Point and Associated Works, Widening of Tolo Highway/Fanling Highway etc.

[2] PD - Primary Distributor Road; DD - District Distributor Road; LD - Local Distributor Road; EX - Expressway; TR - Trunk Roads.

[3] New Roads refer to the proposed road networks including planned internal roads within PC/TKL NDA and modification of connecting roads to NDA.

[4] For landuse planned under NDA project, mitigation measures are required to mitigate the noise level to within noise criteria.

[5] For existing and planned NSRs outside and within the non-development area of NDA, Direct Mitigation Measures will be required when "With Project Overall Noise Level exceeds Noise Criteria" AND, either "With Project - Without Project Overall Noise Level ≥ 1 dB(A)" or "New Roads exceeds Noise Criteria" or "New Roads Contribution ≥ 1 dB(A)".

[BLANK]