

Highways Department

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**Agreement No. HMW  
5/2009 (EP) Traffic  
Improvements to Tuen  
Mun Road Town Centre  
Section**

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Final EM&A Review  
Report

Final



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Certified by Environmental Team Leader  
Coleman Ng  
Ove Arup & Partners Hong Kong Ltd



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Verified by Independent Environmental Checker  
David Yeung  
ENVIRON HK Limited

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## Executive Summary

This is the Final Environmental Monitoring and Audit (EM&A) Review Report for Construction Phase prepared by Ove Arup & Partners Hong Kong Limited (Arup), the designated Environmental Team (ET), for the Project "*Traffic Improvement to Tuen Mun Road Town Centre Section*".

The construction phase of the Project was commenced in August 2010. Substantial completion of the construction work was certified by Highways Department on 19 February 2014.

### Environmental Monitoring Works

#### *Environmental Monitoring Locations*

Environmental monitoring and audit works for the Project was undertaken regularly as stipulated in the EM&A Manual. Six air monitoring locations and six noise monitoring locations were designated for the air and noise monitoring respectively.

#### *Air Quality Monitoring*

24-hour Total Suspended Particulates (TSP) monitoring were conducted at both air monitoring locations (AM1 to AM6) during the construction phase in accordance with the EM&A Manual. All 24-hour TSP measurements were below the Action/Limit Level. No exceedance of Action and Limit level was recorded.

#### *Construction Noise Monitoring*

Construction noise monitoring was conducted at monitoring location N1, N2, N3, N4, N5, and N6 during the construction stage in accordance with the EM&A Manual. A total of 131 Limit Level exceedances were recorded. On-site observations during the noise monitoring revealed that the noise source was mainly the traffic noise along Tuen Mun Road although it was also observed that the Contractor was undertaking the construction works. Together with the on-site observations and interpretation from the monitoring results, construction noise level was considered insignificant and below the noise limit level. It was therefore concluded that the noise exceedance was not related to the construction activities. No further actions were applicable.

Construction works were carried out in the restricted hours during the construction phase. The conditions stipulated in respective Construction Noise Permits (CNPs) of related construction works were followed by the Contractor.

No non-compliance was recorded during the reporting period.

#### *Landscape and Visual*

A total of ninety-eight landscape and visual monitoring audits were carried out during the construction phase. No non-compliance was recorded.

#### *Waste Disposal*

Inert C&D materials with actual amount of 104,596.5 m<sup>3</sup> were generated, of which 100,543 m<sup>3</sup> are disposed of at public fills at Tuen Mun Area 38 in the reporting month. 6,261 kg of paper / cardboard packaging, 9.15 kg plastic and 441,195.3 kg metal have been recycled in this period. 4,729 m<sup>3</sup> general refuse were generated and disposed of at WENT landfill for the Project.

#### *Complaint Log*

Forty-eight complaints in relation to the environmental issues were recorded during the reporting period. All complaints investigation were undertaken and closed.

***Notifications of Summons and Successful Prosecutions***

No summonses or prosecutions related to the environmental issues was recorded against the Project.

# 1 Introduction

## 1.1 Project Background

Ove Arup & Partners Hong Kong Limited (Arup) was appointed by Highways Department (HyD) as the Environmental Team (ET) for *Agreement No. CE22/2005 (HY) Supplementary Agreement 1 Traffic Improvements to Tuen Mun Road Town Centre Section* (the Project) under Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section. Environmental parameters including air quality, noise and landscape and visual are required for baseline monitoring prior to the commencement of the Project. The Project was commenced in August 2010 and substantially completed on 19 Feb 2014.

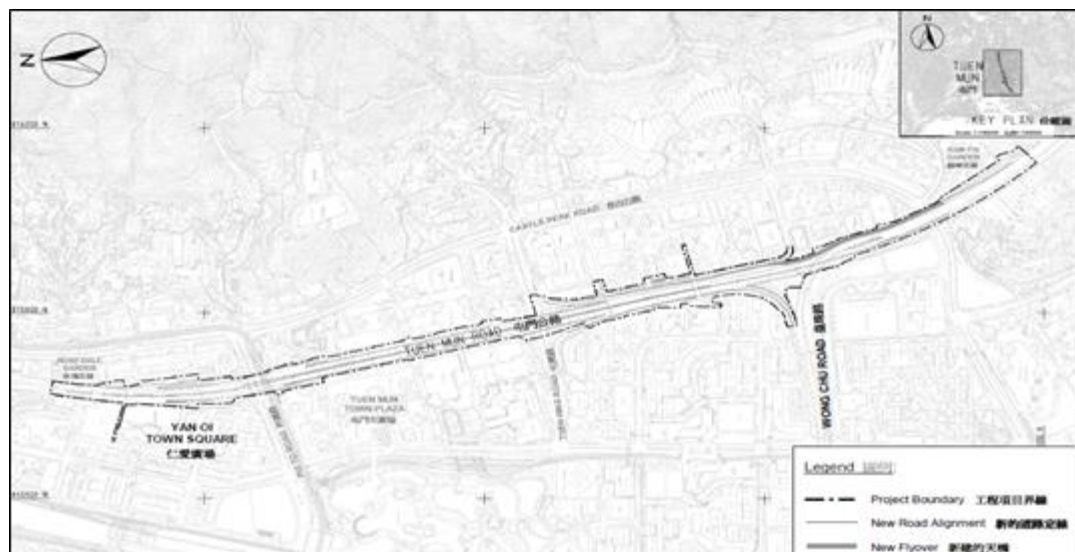
The Project involves widening the following sections of TMR from dual-two carriageway to dual-three carriageway:

- Wong Chu Road Section, (from Wong Chu Road Interchange to Tuen Hing Road); and
- Tuen Mun Town Plaza Section, (from Yan Oi Town Square to Tuen Hing Road).

The Project is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). Environmental Monitoring and Audit (EM&A) work is required in accordance with the conditions stipulated in the Environmental Permit (EP) (EP-342/2009/C) and the EM&A Manual of the Project.

The location of the works area is indicated in **Figure 1.1**.

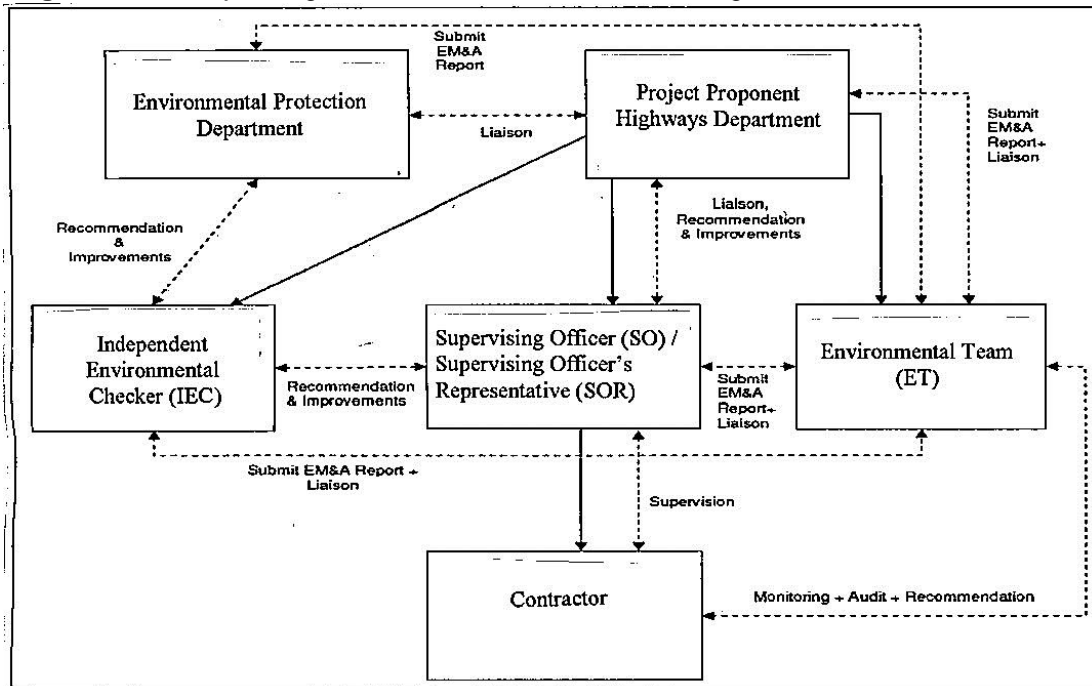
**Figure 1.1** Site plan of the Project



## 1.2 Project Organisation

The project organisation structure in relation to the environmental management is shown in **Figure 1.2**. Contacts of key environmental staff of the Project are shown in **Table 1.1**.

**Figure 1.2** Project Organisation – Environmental Management



**Table 1.1** Contacts of key environmental staff

Organization	Name	Telephone
<b>Environmental Protection Department (EPD)</b>		
Environmental Protection Officer (Strategic Assessment)22	Thomas To	2835 1103
<b>Project Proponent</b>		
Highways Department: Senior Engineer	Peter Law	2762 3539
<b>Supervising Officer / Supervising Officer's Representative</b>		
AECOM Asia Co. Ltd.: Chief Resident Engineer	Patrick Lee	2969 9200
<b>Independent Environmental Checker (IEC)</b>		
ENVIRON Hong Kong Limited: Independent Environmental Checker	David Yeung	3465 2818
<b>Environmental Team (ET)</b>		
Ove Arup & Partners Hong Kong Ltd: Environmental Team Leader	Coleman Ng	2268 3097
<b>Contractor</b>		
China Harbour Engineering Company Limited		
Site Agent	W.S. Ng	2403 0529
Environmental Officer	Marko Chan	2403 0527

**1.3 Project Area, Sensitive Receivers and Environmental Monitoring Locations**

The location of the sensitive receivers and monitoring stations are shown in **Figure 1.2**, while **Table 1.2** shows the detailed correspondences of the monitoring stations. Except for the dust monitoring location at Tung Wah Group of Hospitals and the noise monitoring location at Kam Fai Garden recommended in the approved EM&A Manual, the access of the monitoring locations and installation of the monitoring equipment were rejected by the premises owners/management offices. A proposal for alternative dust and noise monitoring locations was submitted and approved by EPD in 2010. Relevant details can be found in **Appendices F and G**.

**Table 1.2** Summary of impact air quality and noise monitoring stations

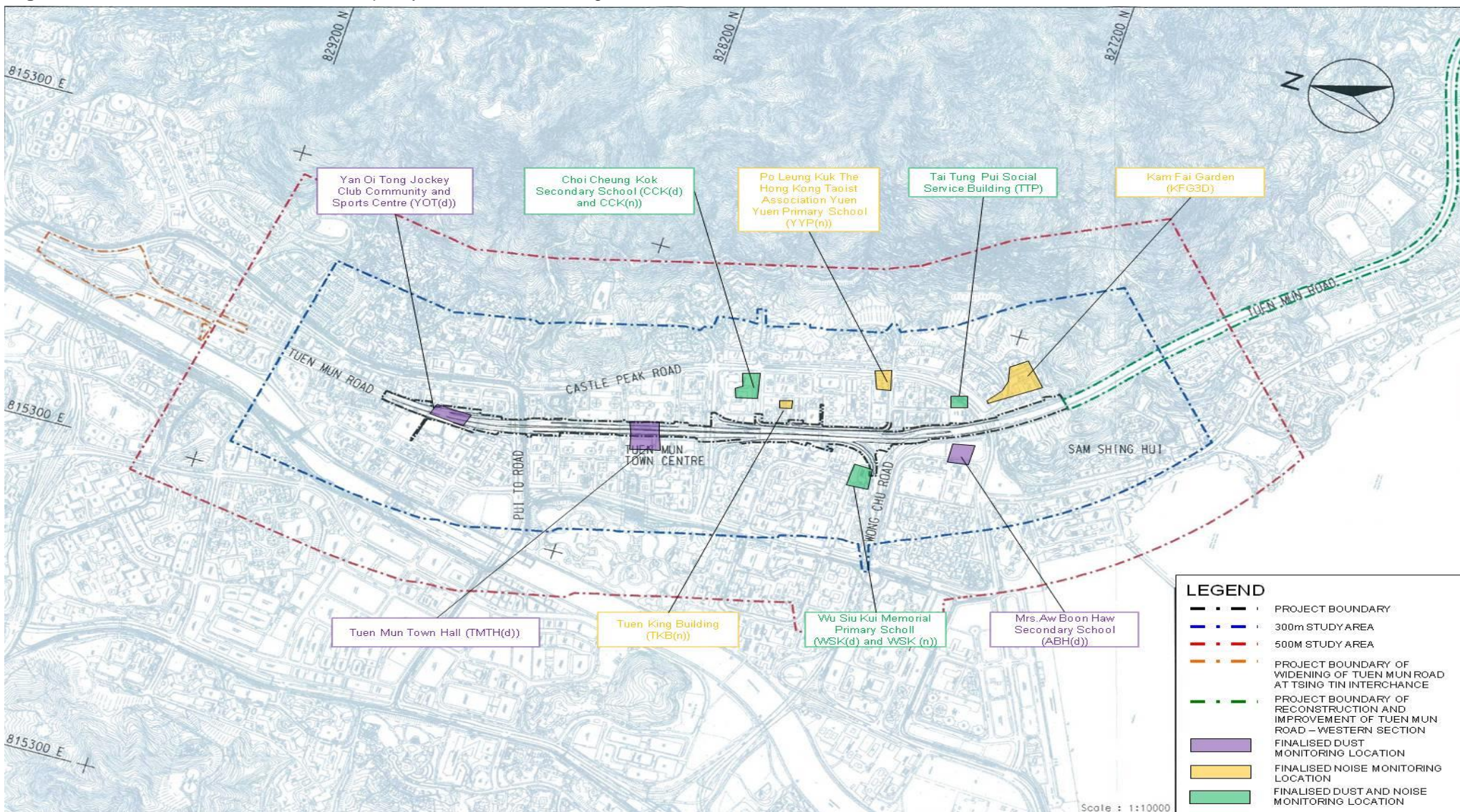
ID	Premise
<b>Air</b>	
AM1	Chung Sing Benevolent Society Mrs. Aw Boon Haw Secondary School
AM2	Tung Wah Group of Hospitals Tai Tung Pui Social Service Building
AM3	Shun Tak Fraternal Association Wu Siu Kui Memorial Primary School
AM4	The Chinese Manufacturers' Association Of Hong Kong Choi Cheung Kok Secondary School
AM5	Tuen Mun Town Hall
AM6	Yan Oi Tong Jockey Club Community and Sports Centre
<b>Noise</b>	
N1	Kam Fai Garden
N2	Tung Wah Group of Hospitals Tai Tung Pui Social Service Building
N3	Po Leung Kuk The Hong Kong Taoist Association Yuen Yuen Primary School
N4	Shun Tak Fraternal Association Wu Siu Kui Memorial Primary School
N5	Tuen King Building
N6	The Chinese Manufacturers' Association of Hong Kong Choi Cheung Kok Secondary School

In addition to the six noise monitoring stations, the Highways Department also carried out noise monitoring at two additional stations N7 (Tuen Mun Town Hall) and N8 (Yan Oi Tong Jockey Club Community and Sports Centre) proactively. Details of the additional noise monitoring stations can be found in **Appendix H**.





**Figure 1-2** Location of the air quality and noise monitoring stations



## 2 Scope of Construction Works

### 2.1 Construction Activities of the Reporting Period

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The major construction works were commenced in August 2010 and completed on 19 February 2014.

The major components of this Project are listed below:

#### August 2010 to January 2011

- Site clearance;
- Site hoarding construction;
- Tree felling and transplanting;
- Temporary footbridge construction;
- Pilling works;
- Ground investigation; and
- Underground utilities and drainage diversion.

#### February to July 2011

- Site Clearance;
- Site hoarding construction;
- Tree felling and transplanting;
- Footbridge demolition;
- Pilling works;
- Noise barrier foundation works; and
- Underground utilities and drainage diversion.

#### August 2011 to January 2012

- Site Clearance;
- Footbridge construction;
- Noise barrier construction;
- Tree felling and transplanting;
- Temporary footbridge construction;
- Pilling works;
- Ground investigation; and
- Underground utilities and drainage diversion.

#### February to July 2012

- Site Clearance;
- Footbridge construction;
- Noise barrier construction;
- Tree felling and transplanting;
- Temporary footbridge construction;
- Pilling works;



- Ground investigation; and
- Underground utilities and drainage diversion.

#### August 2012 to January 2013

- Site clearance;
- Footbridge construction and demolition;
- Noise barrier construction;
- Pilling works;
- Underground utilities and drainage diversion; and
- Erection of noise barrier/ enclosure steelworks

#### February to July 2013

- Footbridge construction;
- Noise barrier construction;
- Underground utilities and drainage diversion; and
- Erection of noise barrier/ enclosure steelworks

#### August 2013 to January 2014

- Noise barrier construction; and
- Road resurfacing.

#### February 2014

- Road resurfacing.

## 3 Summary of EM&A Requirements

### 3.1 Monitoring Locations

In accordance with the EM&A Manual, six air quality monitoring locations and six noise monitoring locations are required for baseline and impact monitoring.

Locations of air quality and noise monitoring stations are shown in **Figure 1.2** and summarized in **Table 1.2**.

### 3.2 Monitoring Parameters and Frequency

In accordance with the EM&A Manual, air quality monitoring was measured in terms of the TSP levels for 24-hour. 1-hour TSP levels shall be required to monitor in case of complaints received. For noise monitoring, construction noise was measured in terms of the A-weighted equivalent continuous sound pressure level ( $L_{eq}$ ).  $L_{10}$  and  $L_{90}$  shall also be recorded as supplementary reference information for data auditing. Furthermore, the monitoring of the implementation of the landscape and visual mitigation measures was also undertaken. The monitoring parameters, frequency, locations (**Figure 1.2**) and performance limits are summarised in **Table 3.1**.

**Table 3.1** Monitoring parameters, frequency, locations and performance limits

Monitoring	Parameters	Frequency	Location	Action Level	Limit Level
Air	1-hr TSP	3 times every 6 days (only required in case of complaints)	AM1, AM2, AM3, AM4, AM5, AM6,	290 µg/m <sup>3</sup> for AM1; 291 µg/m <sup>3</sup> for AM2, 287 µg/m <sup>3</sup> for AM3, 292 µg/m <sup>3</sup> for AM4, 286 µg/m <sup>3</sup> for AM5, 290 µg/m <sup>3</sup> for AM6	500 µg/m <sup>3</sup>
	24-hr TSP	Once every 6 days		146 µg/m <sup>3</sup> for AM1; 151 µg/m <sup>3</sup> for AM2, 150 µg/m <sup>3</sup> for AM3, 150 µg/m <sup>3</sup> for AM4, 146 µg/m <sup>3</sup> for AM5, 147 µg/m <sup>3</sup> for AM6	260 µg/m <sup>3</sup>
Noise (Note 2)	0700 - 1900 hours on normal weekdays - L <sub>eq</sub> (30min)	Once per week	N1, N2, N5,	When one documented complaint is received	75 dB(A)
	0700 - 2300 hours on holiday; and 1900 – 2300 hours on all other days				-
	2300 – 0700 hours of next day				-
	0700 - 1900 hours on normal weekdays	Once per week	N3, N4, N6	-	70/65 dB(A) (Note 1)
	0700 - 2300 hours on holiday; and 1900 – 2300 hours on all other days				-
	2300 – 0700 hours of next day				-
Landscape	LR1 - Tsing Sin Playground; LR2 - Roadside Planting along Tuen Mun Road Adjacent to Kam Fai Garden; LR3 - Street trees along Castle Peak Road – Castle Peak Bay LR4 - Street trees along Tuen Mun Road west of Chi Lok Fa Yuen and east of On Ting Estate LR5 - Street trees along Tuen Mun Road west of Waldorf Garden and CMA Choi Cheung Kok Prevocational School LR6 - Street trees along Tuen Mun Road near	Twice site audits per month	Entire site area	N/A	N/A

Monitoring	Parameters	Frequency	Location	Action Level	Limit Level
	Tuen Mun Town Plaza LR7 - Street trees along Tuen Mun Road east of Yan Oi Tong LR8 - Trees at roadside planting areas near Yan Oi Tong Circuit LR9 - Trees at planting area near Tuen Mun Town Plaza LR10 - Trees at planting area near New Town Mansion LR11 - Trees at planting area near On Ting Estate LR12 - Tsing Hoi Playground LZ1 - Tuen Mun Residential Urban Landscape LZ2 - Tuen Mun Mixed Modern Comprehensive Urban Development Landscape LZ3 - Tuen Mun 'Hui' Urban Landscape C/R1 - Tuen Mun Town Plaza, Waldorf Garden C/R2 - Tuen Cultural Centre, Tuen Mun Town Plaza C/R3 - Chelsea Height GIC1 - Tuen Mun Church and Tuen Mun Tseng Choi Street Joint-user Complex GIC2 - Sin Hing Tong Temple GIC3 - Semple Memorial Secondary School and Chung Shing Benevolent Society Mrs. Aw Boon Haw Secondary School GIC4 - Car park (Open) GIC5 - Yan Oi Tong Community & Sports Centre GIC6 - Tuen Mun Government Secondary School, Choi Cheung Kok Secondary School GIC7 - Madam Lau Wong Fat Primary School, Lui Cheung				

Monitoring	Parameters	Frequency	Location	Action Level	Limit Level
	Kwong College, Leung Kau Kui College, Lui Cheung Kwong Primary School, Wu Siu Kui Primary School GIC8 - Sam Shing Temple O1 - San Hui Playground O2 - Tsing Sin Playground O3 - Siu Lun Sports Ground O4 - Hoi Sin Playground R1 - Residential Area of Tuen Mun San Hui R2 - Residential Area along Yan Oi Tong Circuit R3 - On Ting Estate and Siu On Court R4 - Residential Area along Tsing Hoi Circuit R5 - Handsome Court, Alpine Garden, Hoi Tak Garden and Harvest Garden, Kam Fai Garden R6 - Siu Lun Court R7 - Goodview Garden and Tsui Ning Garden R8 - Sam Shing Estate R9 - Hanford Garden T1 - Tuen Mun Road – Vehicular and Pedestrian				

**Notes:**

- For normal day-time working hours, the noise criteria are 70 dB(A) and 65 dB(A) for normal teaching periods and examination period respectively.
- If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.

### **3.3 Environmental Quality Performance Limits (Action and Limit Levels)**

The environmental quality performance limits, i.e. Action and Limit Levels (A/L Levels) were derived from the baseline monitoring results and reported in Baseline Monitoring Report <sup>[2]</sup>. All the monitoring results were checked against the A/L Levels. A/L Levels are summarised in **Table 3.1**.

### **3.4 Environmental Mitigation Measures**

The environmental mitigation measures stipulated in the Project EIA Report and the EM&A Manual <sup>[1]</sup> for the Contractor to follow. Major mitigation measures during the construction phase in relation to the air quality, construction noise as well as landscape and visual are summarised in **Appendix A**.

### **3.5 Event and Action Plan**

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The Event Action Plans for air quality and construction noise are appended in **Appendix B**.

## **4 Environmental Monitoring Results**

The latest available environmental monitoring results (i.e. until 24 Sep 2014) have been incorporated for the Report.

### **4.1 Air Quality Monitoring Results and Observations**

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#### **4.1.1 Weather Condition**

No adverse weather conditions, in particular adverse wind speed & wind direction and fog & rain that may significantly affect or invalidate the collected monitoring data, were recorded during the monitoring dates.

#### **4.1.2 24-hour TSP Monitoring Results**

Monitoring of and 24-hour TSP were conducted at monitoring stations AM1, AM2 AM3, AM4, AM5 and AM6 during the construction phase. Graphical presentation of and 24-hour TSP monitoring results are shown in **Appendix C**.

#### **4.1.3 General Observations**

It was observed from the graphs that the all monitoring results of 6 monitoring stations were below the Action Limit and no exceedence was found during the construction period. Based on the field observations, no abnormal construction activities were observed. In addition, dust control measures including water spraying and covering the exposed soil were well implemented.

#### **4.1.4 Exceedance for Air Quality Monitoring**

All measured 24-hours TSP were below the Action and Limit Level. No exceedance of Action and Limit level was recorded.

### **4.2 Noise Monitoring Results and Observations**

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#### **4.2.1 Weather Condition**

No adverse weather conditions, in particular adverse wind speed and rain that may significantly affect or invalidate the collected monitoring data, were recorded during the monitoring periods.

#### **4.2.2 Noise Monitoring Results**

##### **4.2.2.1 Non-restricted Hours**

Monitoring of the construction noise level was conducted at the monitoring locations N1, N2, N3, N4, N5 and N6 during non-restricted hours. Graphical presentations of the monitoring results are shown in **Appendix D**. Construction noise level monitoring has also been carried out at two additional monitoring locations N7 and N8. The relevant monitoring results are shown in **Appendix H**.

##### **4.2.2.2 Restricted Hours**

The construction works and activities such as road resurfacing, noise barrier panel installation, road marking and sign gantry installation etc were carried out during some restricted hours. Relevant Construction Noise Permits (CNPs) were granted by EPD before the works commencement, the Contractor strictly followed the conditions stipulated in the CNPs. There was no non-compliance recorded.

#### **4.2.3 General Observations**

Based on the field observations, no particular abnormal construction activities were observed. Traffic noise along Tuen Mun Road had been noticed.



#### 4.2.4 Exceedance of Limit Levels for Construction Noise

A total one hundred thirty five Limit Level exceedances was recorded during non-restricted hours and are summarized in **Table 4.1**. Based on the field observations, it was revealed that these exceedances were mainly caused by traffic noise along Tuen Mun Road. It was therefore concluded that the noise exceedances were not related to construction activities of the Project. Construction works were carried out during the restricted hours, the conditions stipulated in CNPs of related construction works were strictly followed by the Contractor. No further action was applicable.

No non-compliance was recorded in restricted hours during the reporting period.

**Table 4.1** Summary of exceedance of the construction noise monitoring during non-restricted hours

Time period	No. of Measurements	Limit Level dB(A)	No. of exceedances at monitoring station					
			N1	N2	N3	N4	N5	N6
Aug 10 – Jan 11	27	N1, N2, N5: 75 N3, N4, N6: 70/65 (Note 1)	20	22	0	0	0	0
Feb 11 – Jul 11	22		12	16	0	0	0	3
Aug 11 – Jan 12	26		9	11	0	0	0	1
Feb 12 – Jul 12	26		8	7	4	1	0	2
Aug 12 – Jan 13	27		2	2	2	1	0	1
Feb 13 – Jul 13	26		1	1	2	0	0	1
Aug 13 – Jan 14	26		0	0	1	0	0	2
Feb 14 – Sep 14	30		0	0	0	0	0	3
<b>Total No.</b>	<b>210</b>	<b>N/A</b>	<b>52</b>	<b>59</b>	<b>9</b>	<b>2</b>	<b>0</b>	<b>13</b>

Notes:

- For normal day-time working hours, the noise criteria are 70 dB(A) and 65 dB(A) for normal teaching periods and examination periods respectively.

### 4.3 Landscape and Visual Monitoring Results

#### 4.3.1 Landscape and Visual Monitoring Audit Results

A total of ninety-eight monthly landscape and visual monitoring audits was conducted during the construction phase. The design, implementation and maintenance of landscape and mitigation measures as stipulated in the EM&A Manual were inspected. No non-compliance was recorded during the reporting period.

#### 4.4 Waste Management

Disposal of waste material during construction phase complied with the corresponding waste disposal requirements. The total amounts of different types of waste generated by the activities of the Project in the reporting period are summarized in **Table 4.2**.

**Table 4.2** Total amounts of waste generated during the reporting period

Waste Type	Amount	Disposal Locations
Inert C&D Materials	0 m <sup>3</sup>	Broken concrete
	2,691 m <sup>3</sup>	Reused in the Contract
	1,362.5 m <sup>3</sup>	Reused in other Projects
	100,543 m <sup>3</sup>	Disposal of at public fill at Tuen Mun Area 38
Chemical Waste	0 kg	N/A
Paper / cardboard packaging	6,261 kg	Recycler
Plastic	9.15 kg	

Metal	441,195.3 kg	
General Refuse	4,729 m <sup>3</sup>	Disposal of at WENT landfill

## 5 Implementation Status of Environmental Mitigation Measures

The Contractor had implemented various environmental mitigation measures as stipulated in EIA Report and EM&A Manual. Major mitigation measures during the reporting period in relation to the air quality, construction noise as well as landscape & visual are summarised in **Appendix E**.

## 6 Summary of the Non-compliance, Complaint, Notification of Summons and Successful Prosecutions

### 6.1 Summary of Non-compliance

No non-compliance of the air quality, noise as well as landscape and visual was recorded.

### 6.2 Review of the Reasons for and the Implications of Exceedances

There was no non-compliance was recorded. Therefore, review of the non-compliance was not required.

### 6.3 Summary of Action Taken

There was no non-compliance was recorded. Therefore, no further action was required.

### 6.4 Compliant Record

There were forty-eight complaints regarding noise, air quality and water quality recorded from August 2010 to September 2014. All complaints investigation were undertaken and closed

The summary of complaint is presented in **Table 6.1**.

**Table 6.1:** Summary of complaints for the Project

Reporting Period	Complaint Statistics		Area of Concern	Validity to the Project	Status
	Number	Cumulative			
02/08/10 – 31/10/10	0	0	-	-	-
01/11/10 – 30/11/10	1	1	Noise	Yes (Ref.: C001)	Closed on 30 Nov 10.
01/12/10 – 31/01/11	0	1	-	-	-
01/02/11 – 28/02/11	1	2	Noise	Yes (Ref.: C002)	Closed on 2 Mar 11.
01/03/11 – 31/03/11	0	2	-	-	-
01/04/11 – 30/04/11	2	4	Water	Yes (Ref.: C003)	Closed on 16 Apr 11.
			Noise	Yes (Ref.: C004)	Closed on 16 May 11.
01/05/11 – 31/05/11	1	5	Water	Yes (Ref.: C005)	Closed on 10 Jun 11.
01/06/11 – 30/06/11	1	6	Air	Yes (Ref.: C006)	Closed on 23 Jun 11.

Reporting Period	Complaint Statistics		Area of Concern	Validity to the Project	Status
	Number	Cumulative			
	1	7	Noise	Yes (Ref.: C007)	Closed on 24 Jun 11.
	1	8	Water	Yes (Ref.: C008)	Closed on 4 Jul 11.
	1	9	Air	Yes (Ref.: C009)	Closed on 14 Jul 11.
01/07/11 – 31/07/11	1	10	Noise	Yes (Ref.: C010)	Closed on 4 Aug 11.
	1	11	Water	Yes (Ref.: C011)	Closed on 4 Aug 11.
01/08/11 – 31/08/11	0	11	-	-	-
01/09/11 – 30/09/11	1	12	Noise	Yes (Ref.: C012)	Closed on 29 Sep 11.
	1	13	Water	Yes (Ref.: C013)	Closed on 14 Oct 11.
	1	14	Water	Yes (Ref.: C014)	Closed on 14 Oct 11.
01/10/11 – 31/10/11	1	15	Water	Yes (Ref.: C015)	Closed on 28 Oct 11.
01/11/11 – 30/11/11	1	16	Noise	Yes (Ref.: C016)	Closed on 24 Nov 11.
	1	17	Noise	Yes (Ref.: C017)	Closed on 30 Nov 11.
01/12/11 – 31/12/11	0	17	-	-	-
01/01/12 – 31/01/12	1	18	Water	Yes (Ref.: C018)	Closed on 6 Feb 12.
	1	19	Water	Yes (Ref.: C019)	Closed on 6 Feb 12.
01/02/12 – 29/02/12	0	19	-	-	-
01/03/12 – 31/03/12	1	20	Water	Yes (Ref.: C020)	Closed on 22 Mar 12.
	1	21	Noise	Yes (Ref.: C021)	Closed on 28 Mar 12.
	1	22	Noise	Yes (Ref.: C022)	Closed on 5 Apr 12.
	1	23	Water	Yes (Ref.: C023)	Closed on 5 Apr 12.
01/04/12 – 30/04/12	0	23	-	-	-
01/05/12 – 31/05/12	1	24	Water	Yes (Ref.: C024)	Closed on 24 May 12.
	1	25	Noise	Yes (Ref.: C025)	Closed on 7 Jun 12.
	1	26	Noise	Yes (Ref.: C026)	Closed on 7 Jun 12.
01/06/12 – 31/10/12	0	26	-	-	-

Reporting Period	Complaint Statistics		Area of Concern	Validity to the Project	Status
	Number	Cumulative			
01/11/12 – 30/11/12	1	27	Noise	Yes (Ref.: C027)	Closed on 8 Nov 12.
	1	28	Noise	Yes (Ref.: C028)	Closed on 8 Nov 12.
01/12/12 – 31/12/12	1	29	Noise	Yes (Ref.: C029)	Closed on 31 Dec 12.
	1	30	Noise	Yes (Ref.: C030)	Closed on 31 Dec 12.
	1	31	Noise	Yes (Ref.: C031)	Closed on 31 Dec 12.
01/01/13 – 31/01/13	0	31	-	-	-
01/02/13 – 28/02/13	1	32	Noise	Yes (Ref.: C032)	Closed on 15 Feb 13.
	1	33	Noise	Yes (Ref.: C033)	Closed on 15 Feb 13.
	1	34	Noise	Yes (Ref.: C034)	Closed on 15 Feb 13.
	1	35	Noise	Yes (Ref.: C035)	Closed on 15 Feb 13.
01/03/13 – 31/03/13	0	35	-	-	-
01/04/13 – 30/04/13	1	36	Noise	Yes (Ref.: C036)	Closed on 9 May 13.
01/05/13 – 31/05/13	0	36	-	-	-
01/06/13 – 30/06/13	1	37	Noise	Yes (Ref.: C037)	Closed on 11 July 13.
01/07/13 – 31/07/13	1	38	Noise	Yes (Ref.: C038)	Closed on 25 July 13.
01/08/13 – 31/08/13	1	39	Noise	Yes (Ref.: C039)	Closed on 29 Aug 13.
01/09/13 – 30/09/13	1	40	Noise	Yes (Ref.: C040)	Closed on 26 Sep 13.
	1	41	Noise	Yes (Ref.: C041)	Closed on 26 Sep 13.
01/10/13 – 30/11/13	0	41	-	-	-
01/12/13 – 31/12/13	1	42	Air	Yes (Ref.: C042)	Closed on 10 Jan 14.
01/01/14 – 28/02/14	0	42	-	-	-
01/03/14 – 31/03/14	1	43	Noise	Yes (Ref.: C043)	Closed on 20 Mar 14.
	1	44	Noise	Yes (Ref.: C044)	Closed on 20 Mar 14.
01/04/14 – 30/04/14	1	45	Noise	Yes (Ref.: C045)	Closed on 11 Apr 14.
	1	46	Noise	Yes (Ref.: C046)	Closed on 17 Apr 14.

Reporting Period	Complaint Statistics		Area of Concern	Validity to the Project	Status
	Number	Cumulative			
	1	47	Noise	Yes (Ref.: C047)	Closed on 17 Apr 14.
	1	48	Noise	Yes (Ref.: C048)	Closed on 30 Apr 14.
01/05/14 – 29/09/14	0	48	-	-	-

### 6.5 Notification of Summons and Successful Prosecution

No summonses or prosecutions related to environmental issues was recorded against the Project.

## 7 Comparison of EM&A Data with the EIA Predication

### 7.1 Comparison of the EM&A Data with the EIA Predication

There was no air quality predication in the EIA Report. Therefore, no comparison was conducted for air monitoring results (i.e. 24-hour TSP).

The noise monitoring data collected were generally in line with the predication of the EIA Report.

The total amounts of inert C&D waste disposal were more than the predication stipulated of the EIA Report.

### 7.2 Review of Monitoring Methodology and EM&A Programme

The environmental monitoring methodology and procedures were regularly reviewed by the ET. No modification to the existing monitoring methodologies was recommended.

Implementation of EM&A programme and effectiveness and efficiency of the mitigation measures were considered satisfactory.

## 8 Conclusions and Recommendations

The construction phase of the Project was commenced on August 2010 and substantial completed on 19 February 2014. The EM&A programme including air quality, noise, landscape & visual and environmental site inspection had been implemented.

No exceedance of Action and Limit Level for 24-hour TSP monitoring was recorded.

A total one hundred thirty five Limit Level exceedances of noise monitoring during non-restricted hours was recorded. The noise exceedances were mainly caused by traffic noise along Tuen Mun Road. It was therefore concluded that the noise exceedances were not related to the Project. No further action was required.

A total of ninety-eight landscape and visual monitoring audits were carried out during the construction phase. No non-compliance was recorded.

Forty-eight complaints regarding noise, air quality and water quality were recorded. All complaints investigation were undertaken and closed

No non-compliance of the landscape and visual monitoring was recorded.

No summonses or prosecutions related to environmental issues was recorded.

The environmental monitoring results indicated that the construction activities complied with the relevant environmental requirements. The mitigation measures stipulated in the EIA were effectively implemented by the Contractor. Environmental performance of the Contractor during the reporting period was generally satisfactory.

As a whole, EM&A programme had been well conducted and no particular recommendation was advised for improvement of the EM&A programme.

## 9 References

- [1] AECOM Asia Co. Ltd. December 2008. Agreement No. CE 22/2005 (HY) Supplementary No. 1 Traffic Improvements to Tuen Mun Road Town Centre Section – Environmental Monitoring & Audit Manual.
- [2] Ove Arup & Partners Hong Kong Limited. July 2010. Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section – Baseline Monitoring Report (Revision\_4).

Appendix A

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**Environmental  
Mitigation Measures**

## **Environmental Mitigation Measures**

The environmental mitigation measures carried out were basically followed the requirements described in the EIA report. Major mitigation measures during the construction phase in relation to the air quality, construction noise as well as landscape and visual are summarised as follows:

### **Air Quality (Dust) related**

- Skip hoist for material transport should be totally enclosed by impervious sheeting;
- Every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site;
- The area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores;
- Where a site boundary adjoins a road, streets or other accessible to the public, hording of not less than 2.4m high from ground level should be provided along the entire length except for a site entrance or exit;
- Every stack of more than 20 bags of cement should be covered entirely by impervious sheeting places in an area sheltered on the top and the 3 sides;
- All dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet;
- The height from which excavated materials are dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading;
- The load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle; and
- Instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.

### **Construction Noise related**

- Use of quiet powered mechanical equipment
- Provision of movable noise barrier in the vicinity of the following NSRs,
  - FEC (Far East Consortium Tuen Mun Central Building)
  - FM (Forward Mansion)
  - HTB (Hing Tai Building)
  - TMTP1 (Tuen Mun Town Plaza)
  - WG2 (Waldorf Garden)
  - CMA (CMA Choi Cheung Kok Secondary School)
  - LWF (Yan Oi Tong Madam Lau Wong Fat Primary School)
  - TMF (Tuen Mun Fa Yuen)
  - LCK (Lui Cheung Kwong Lutheran College)
  - CLFY1 (Chi Lok Fa Yuen)
  - TFH (On Ting Estate (Ting Fuk House))
  - LCKP (Lui Cheung Kwong Lutheran Primary School)
  - TTP (Tung Wah Group of Hospitals Tai Tung Pui Social Service Building)



- CSBS (CSBS Mrs. Aw Boon Haw Secondary School)
- KFG3D (Kam Fai Garden)
- Road marking - Adoption of quiet PMEs and movable noise barrier during normal teaching period and examination period.
- Construction of noise barrier - Adoption of quiet PMEs and movable noise barrier during examination period, piling operation for construction of noise barrier would also be ceased during examination period.
- Good Site Practice:
  - Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program.
  - Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program.
  - Mobile plant, if any, should be sited as far away from NSRs as possible.
  - Machines and plant (such as trucks) that may be in intermittent use should be shut down between works periods or should be throttled down to a minimum.
  - Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs.
  - Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.
  - Scheduling the noisy work to be conducted in non-school hours or long holiday such as summer vacation as possible.
- Liaise with all the relevant schools to check out their examination periods and activities in the beginning of the work programme in order to make good planning and arrangement of works and provide sufficient mitigation plans to alleviate noise impacts.

#### **Landscape and Visual related**

- Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical.
- Existing trees to be retained on site should be carefully protected during construction.
- Trees unavoidably affected by the works should be transplanted where practical.
- Compensatory tree planting should be provided to compensate for felled trees.
- Control of night-time lighting.
- Erection of decorative screen hoarding compatible with the surrounding setting.

Appendix B

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**Event Action Plans**

The action required to be taken by different parties in case of occurrence of exceedance of A/L Levels are summarised in the Event and Action Plan in **Tables A to B**.

**Table A** Event and Action Plan for Construction Noise

Event	Action			
	ET	IEC	ER	Contractor
Action Level being exceeded	<ol style="list-style-type: none"> <li>1. Notify ER, IEC and Contractor;</li> <li>2. Carry out investigation;</li> <li>3. Report the results of investigation to the IEC, ER and Contractor;</li> <li>4. Discuss with the IEC and Contractor on remedial measures required;</li> <li>5. Increase monitoring frequency to check mitigation effectiveness.</li> </ol>	<ol style="list-style-type: none"> <li>1. Review the investigation results submitted by the ET;</li> <li>2. Review the proposed remedial measures by the Contractor and advise the ER accordingly;</li> <li>3. Advise the ER on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise the implementation of remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to ET and ER;</li> <li>2. Implement noise mitigation proposals.</li> </ol>
Limit Level being exceeded	<ol style="list-style-type: none"> <li>1. Inform IEC, ER, Contractor and EPD;</li> <li>2. Repeat measurements to confirm findings;</li> <li>3. Increase monitoring frequency;</li> <li>4. Identify source and investigate the cause of exceedance;</li> <li>5. Carry out analysis of Contractor's working procedures;</li> <li>6. Discuss with the IEC, Contractor and ER on remedial measures required;</li> <li>7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results;</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss amongst ER, ET, and Contractor on the potential remedial actions;</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of failure in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise the implementation of remedial measures;</li> <li>5. If exceedance continues, consider stopping the Contractor to continue working on that portion of work which causes the exceedance until the exceedance is abated.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Submit proposals for remedial actions to ET and ER within 3 working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Submit further proposal if problem still not under control;</li> <li>5. Stop the relevant portion of works as instructed by the ER until the exceedance is abated.</li> </ol>

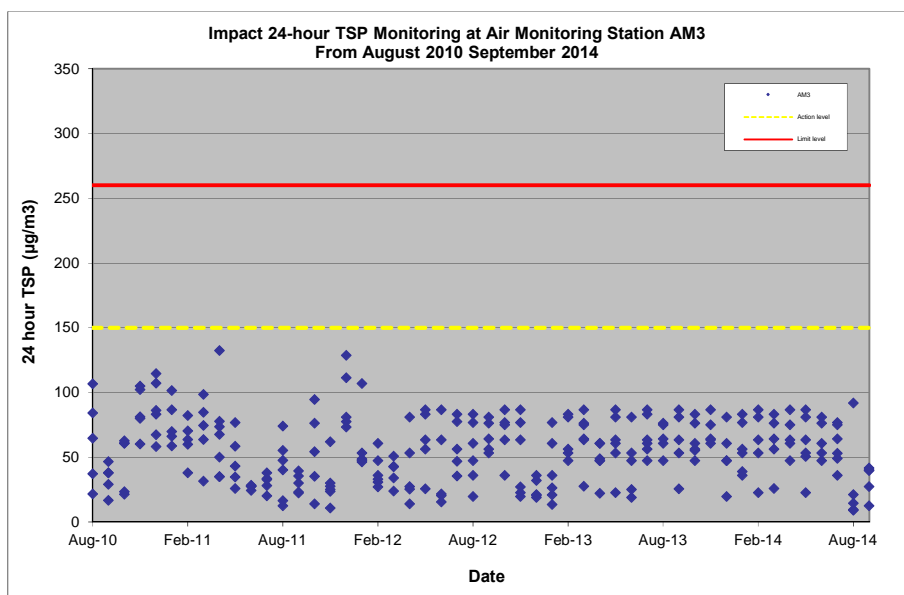
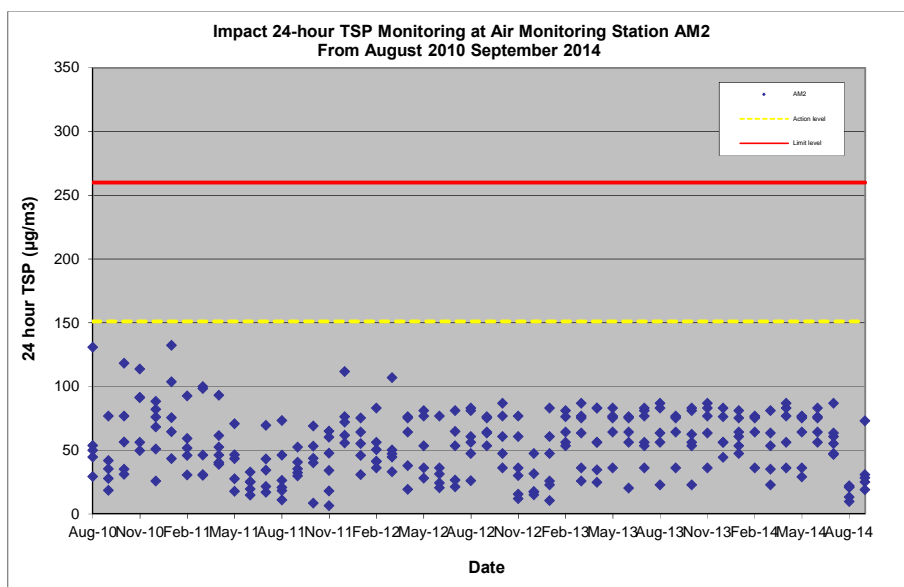
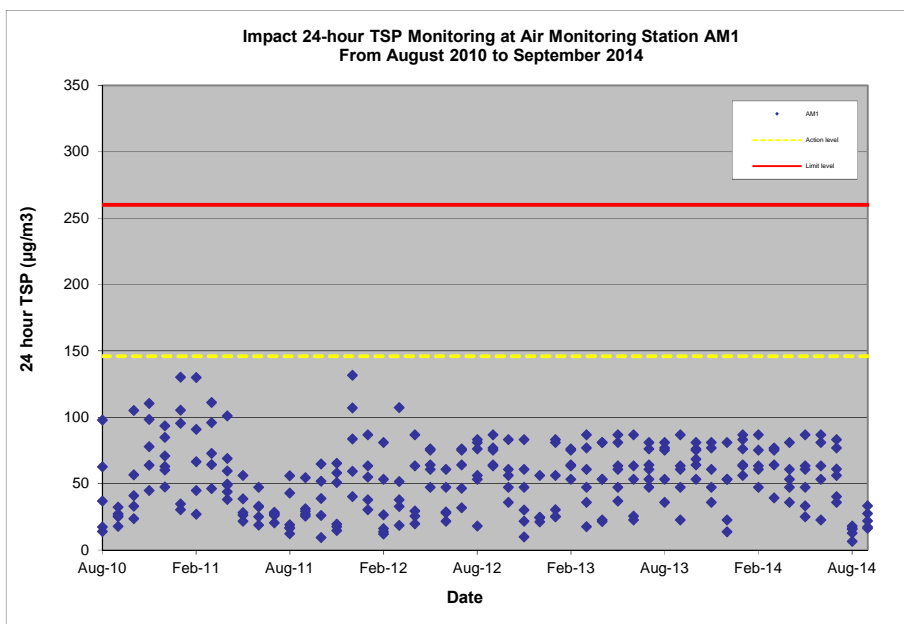
**Table B** Event and Action Plan for Air Quality

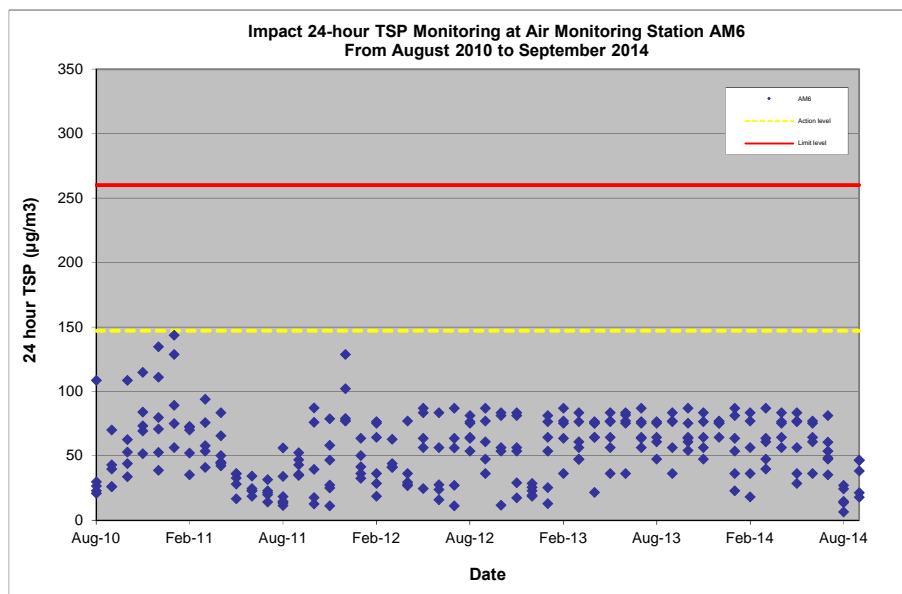
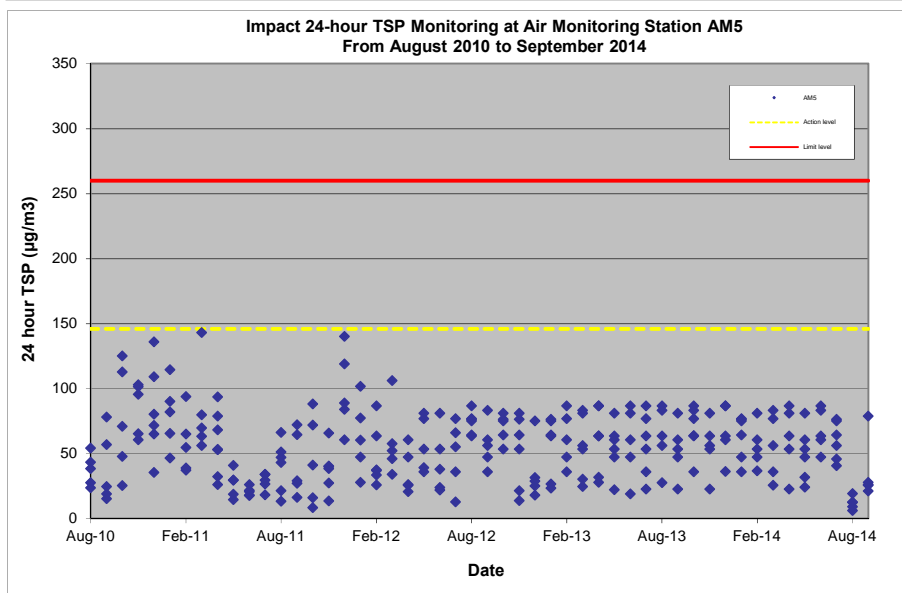
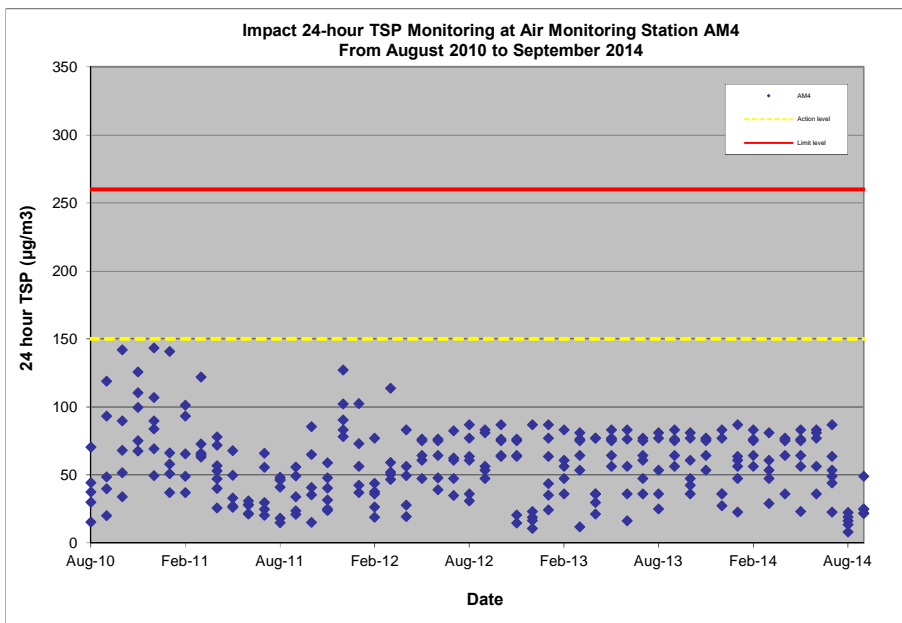
Event	Action			
	ET	IEC	ER	Contractor
Action level being exceeded by one sampling	<ol style="list-style-type: none"> <li>1. Identify source and investigate the causes of exceedance;</li> <li>2. Inform Contractor, IEC and ER;</li> <li>3. Repeat measurement to confirm finding.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method.</li> </ol>	<ol style="list-style-type: none"> <li>1. Notify Contractor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Rectify any unacceptable practice;</li> <li>2. Amend working methods if appropriate.</li> </ol>
Action level being exceeded by two or more consecutive sampling	<ol style="list-style-type: none"> <li>1. Identify source and investigate the causes of exceedance;</li> <li>2. Inform Contractor, IEC and ER;</li> <li>3. Increase monitoring frequency to daily;</li> <li>4. Discuss with IEC and Contractor on remedial actions required;</li> <li>5. Assess the effectiveness of Contractor's remedial actions;</li> <li>6. If exceedance continues, arrange meeting with IEC and ER;</li> <li>7. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the ER on the effectiveness of the proposed remedial measures;</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise implementation of remedial measures;</li> <li>5. Conduct meeting with ET and IEC if exceedance continues.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET and IEC on proper remedial actions;</li> <li>2. Submit proposals for remedial actions to ER and IEC within three working days of notification;</li> <li>3. Implement the agreed proposals;</li> <li>4. Amend proposal if appropriate.</li> </ol>
Limit level being exceeded by one sampling	<ol style="list-style-type: none"> <li>1. Identify source and investigate the causes of exceedance;</li> <li>2. Inform Contractor, IEC, ER, and EPD;</li> <li>3. Repeat measurement to confirm finding;</li> <li>4. 5. Assess effectiveness of Contractor's remedial actions and keep EPD, IEC and ER informed of the results.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check monitoring data submitted by ET;</li> <li>2. Check Contractor's working method;</li> <li>3. Discuss with ET and Contractor on possible remedial measures;</li> <li>4. Advise the ER on the effectiveness of the proposed remedial measures.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance in writing;</li> <li>2. Notify Contractor;</li> <li>3. In consolidation with the IEC, agree with the Contractor on the remedial measures to be implemented;</li> <li>4. Supervise implementation of remedial measures;</li> <li>5. Conduct meeting with ET and IEC if exceedance continues.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance;</li> <li>2. Discuss with ET and IEC on proper remedial actions;</li> <li>3. Submit proposals for remedial actions to ER and IEC within three working days of notification;</li> <li>4. Implement the agreed proposals</li> </ol>

Appendix C

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**Impact Air Monitoring  
Results**



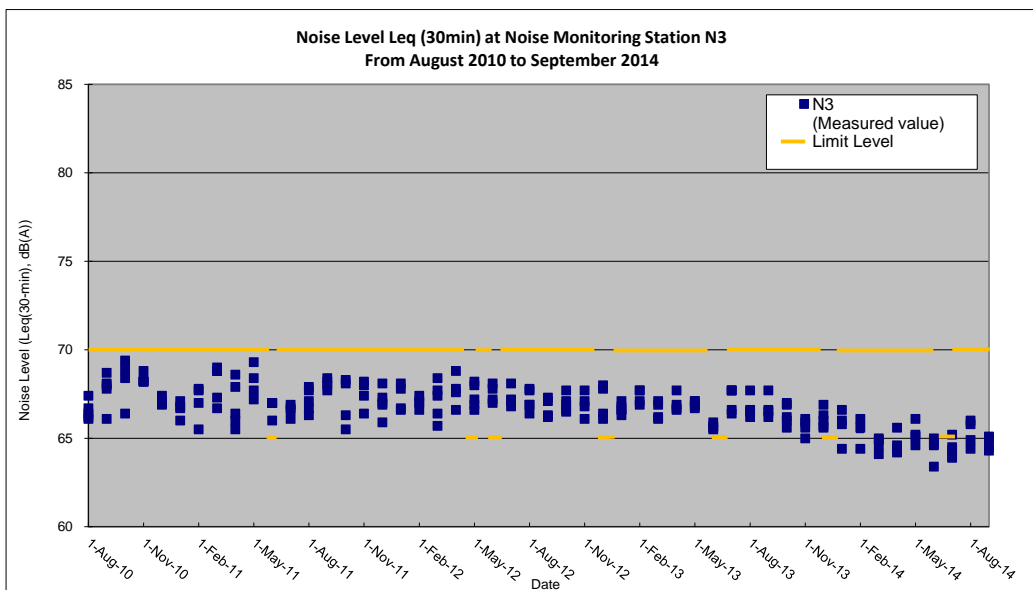
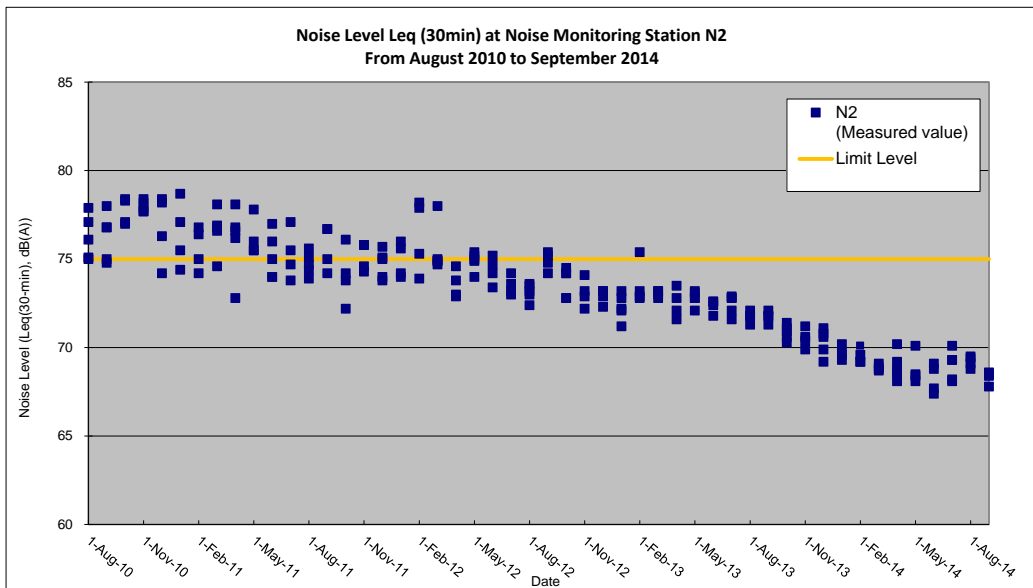
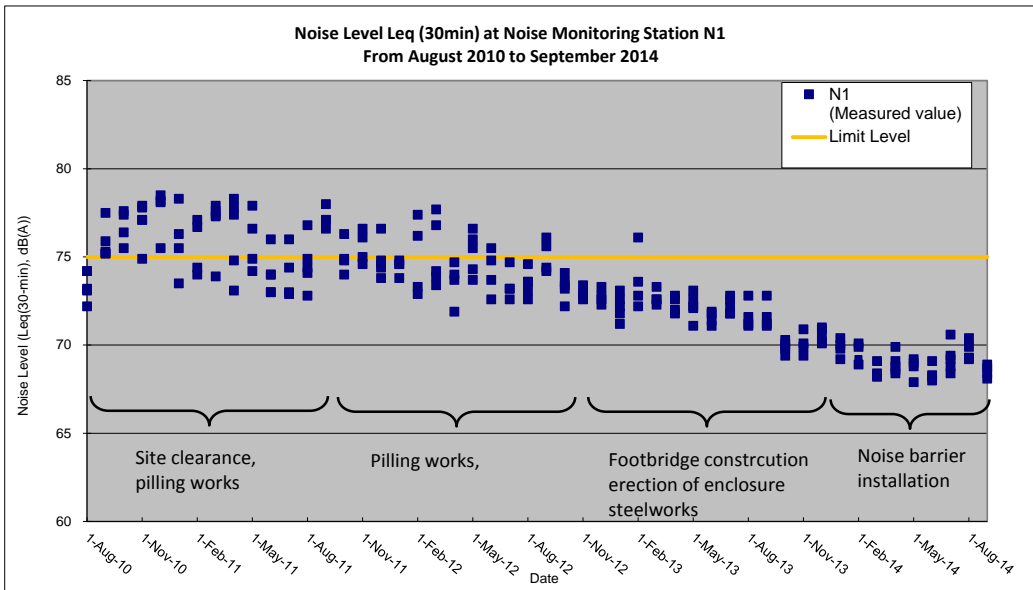


Appendix D

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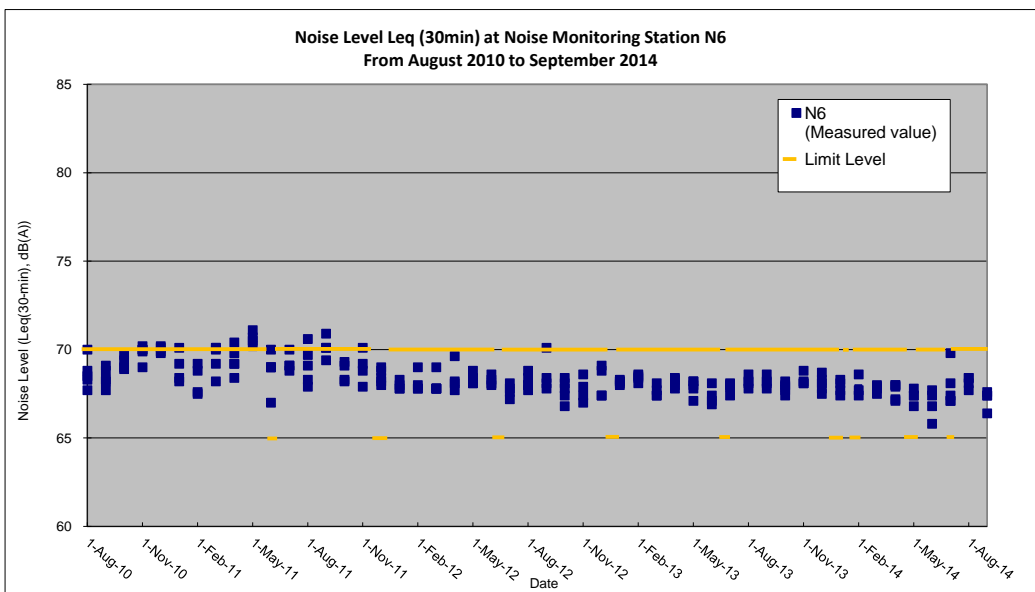
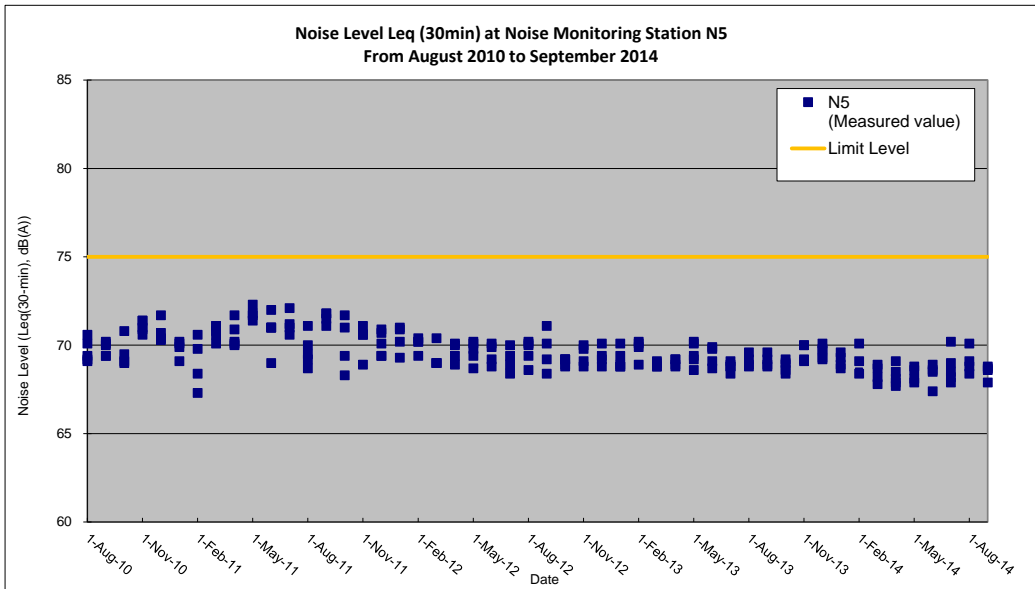
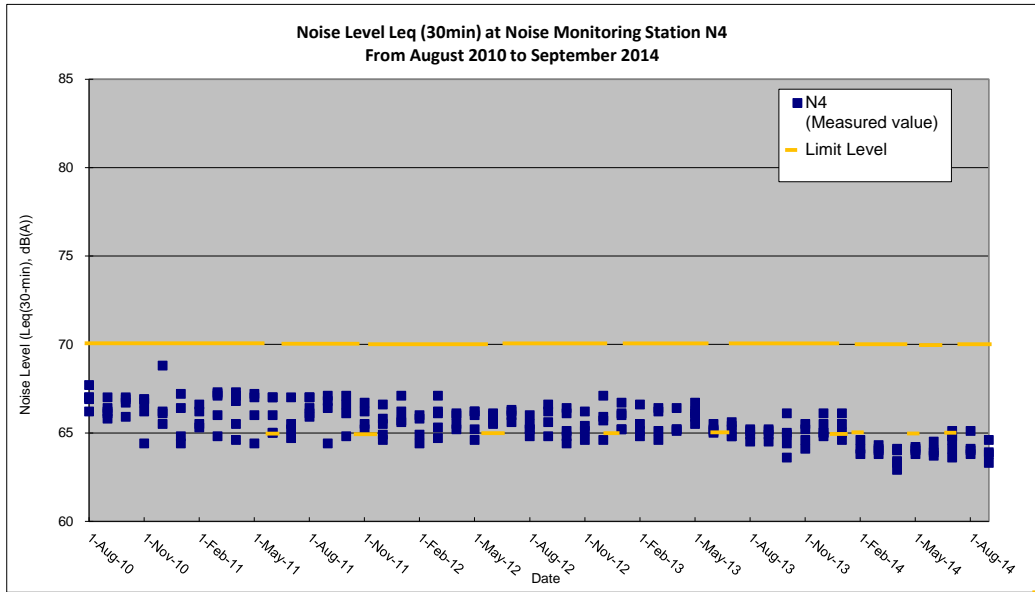
**Impact Noise  
Monitoring Results**





**Note:**

- (1) No adverse weather conditions were recorded during the monitoring dates.
- (2) The construction activities of the reporting period can be referred at Section 2.1 in the report.



**Note:**

- (1) No adverse weather conditions were recorded during the monitoring dates.
- (2) The construction activities of the reporting period can be referred at Section 2.1 in the report.

Appendix E

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**Summary of  
Environmental  
Mitigation  
Implementation  
Schedule**

**Summary of Implementation Schedule of Mitigation Measures**

EIA Ref #	EM&A Ref#	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
<b>Noise Control</b>				
3.8.1	2.8.1	<p>Good site practice and management can significantly reduce the noise impact of construction site activities on nearby NSRs</p> <ul style="list-style-type: none"> <li>• only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works;</li> <li>• machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum;</li> <li>• plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs;</li> <li>• mobile plant should be sited as far away from NSRs as possible; and</li> <li>• material stockpiles and other structures should be effectively utilized, where practicable, to screen noise from on-site construction activities.</li> </ul>	Works Sites / During Construction Phase	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>
3.8.4	2.8.3	Use of quieter mechanical equipment	Works Sites / During Construction Phase	✓
3.8.9	2.8.4	<p>Provision of movable noise barrier in the vicinity of the following NSRs</p> <ul style="list-style-type: none"> <li>• FEC (Far East Consortium Tuen Mun Central Building)</li> <li>• FM (Forward Mansion)</li> <li>• HTB (Hing Tai Building)</li> <li>• TMTP1 (Tuen Mun Town Plaza)</li> <li>• WG2 (Waldorf Garden)</li> <li>• CMA (CMA Choi Cheung Kok Secondary School)</li> <li>• LWF (Yan Oi Tong Madam Lau Wong Fat Primary School)</li> <li>• TMF (Tuen Mun Fa Yuen)</li> <li>• LCK (Lui Cheung Kwong Lutheran College)</li> <li>• CLFY1 (Chi Lok Fa Yuen)</li> </ul>	Works Sites from the listed NSRs / During Construction Phase	N/O

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref#	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
		<ul style="list-style-type: none"> <li>• TFH (On Ting Estate (Ting Fuk House))</li> <li>• LCKP (Lui Cheung Kwong Lutheran Primary School)</li> <li>• TTP (Tung Wah Group of Hospitals Tai Tung Pui Social Service Building)</li> <li>• CSBS (CSBS Mrs. Aw Boon Haw Secondary School)</li> <li>• KFG3D (Kam Fai Garden)</li> </ul>		
3.8.12	2.8.5	<p>Site clearance and the following activities not to be undertaken in the vicinity of the NSR LCK so as to reduce construction noise impact during normal teaching hours.</p> <ul style="list-style-type: none"> <li>• truck would not operate concurrently with other PMEs during tree transplanting and noise barrier foundation work.</li> <li>• tree transplanting would not be undertaken concurrently with bulk excavation and utilities diversion.</li> <li>• construction of storm water drain would not be undertaken concurrently with noise barrier/enclosure foundation.</li> <li>• construction of sub-base and road base would not be undertaken concurrently with noise barrier/enclosure installation.</li> <li>• road surfacing, construction of road kerbs, central dividers, parapets, and installation of crash cushion and sign gantry would not be undertaken concurrently.</li> <li>• installation of gantry and directional lighting, and street lighting would not be undertaken concurrently.</li> </ul>	Work site in the vicinity of Lui Cheung Kwong Lutheran College (LCK) / Stage 2 (Ch. 28050 – 28200 of TMR) during Construction Phase	✓

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref#	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
3.8.13	2.8.6	Liaise with all the relevant schools to check out their examination periods and activities in the beginning of the work programme in order to make good planning and arrangement of works and provide sufficient mitigation plans to alleviate noise impacts.	CMA Choi Cheung Kok Secondary School (CMA), Yan Oi Tong Madam Lau Wong Fat Primary School (LWF), Lui Cheung Kwong Lutheran College (LCK), Lui Cheung Kwong Lutheran Primary School (LCKP) and CSBS Mrs. Aw Boon Haw Secondary School (CSBS) / During Construction Phase	✓

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
		<b><i>Air Quality Control</i></b>		
4.8.1	3.11.2	<p>Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation.</p> <ul style="list-style-type: none"> <li>• skip hoist for material transport should be totally enclosed by impervious sheeting</li> <li>• every vehicle should be washed to remove any dusty materials from its body and wheels before leaving a construction site</li> <li>• the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores</li> <li>• where a site boundary adjoins a road, streets or other accessible to the public, hording of not less than 2.4m high from ground level should be provided along the entire length except for a</li> </ul>	Works Sites / During Construction Phase	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
		site entrance or exit <ul style="list-style-type: none"> <li>every stack of more than 20 bags of cement should be covered entirely by impervious sheeting places in an area sheltered on the top and the 3 sides</li> <li>all dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet</li> <li>the height from which excavated materials are dropped should be controlled to a minimum practical height to limit fugitive dust generation from unloading</li> <li>the load of dusty materials carried by vehicle leaving a construction site should be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle</li> <li>instigation of an environmental monitoring and auditing program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise.</li> </ul>		✓ ✓ ✓ ✓ ✓

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
		<b>Water Quality Control</b>		
5.8.2	4.3.2	Construction run-off and Drainage <ul style="list-style-type: none"> <li>Silt removal facilities such as silt traps or sedimentation facilities should be provided to remove silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of silt removal facilities should be based on the guidelines provided in ProPECC PN 1/94. All drainage facilities and erosion and sediment control structures should be inspected monthly and maintained to ensure proper and efficient operation at all times and particularly during rainstorms.</li> <li>Careful programming of the works to minimise surface excavations for the road improvement works during the wet season. If excavation of soil cannot be avoided during the wet season, exposed slope surfaces should be covered by a tarpaulin or other means. Other measures that need to be implemented before, during, and after rainstorms are summarized in ProPECC PN 1/94.</li> <li>Exposed soil surfaces should be protected by paving or fill material as soon as possible to</li> </ul>	Works Sites / During Construction Phase	✓ ✓ ✓

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
		<p>reduce the potential of soil erosion.</p> <ul style="list-style-type: none"> <li>Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. These materials should not be placed near water courses.</li> </ul>		✓
5.8.3 - 5.8.4	4.3.3	<p>General Construction Activities</p> <ul style="list-style-type: none"> <li>Debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering the nearby local stormwater drainage system.</li> <li>Stockpiles of cement and other construction materials should be kept covered when not being used.</li> <li>Oils and fuels should only be used and stored in designated areas which have pollution prevention facilities. All fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event</li> </ul>	Works Sites / During Construction Phase	✓  ✓  ✓
5.8.5	4.3.4	<p>Sewage from Construction Workforce</p> <ul style="list-style-type: none"> <li>Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site. A licensed contractor would be responsible for appropriate disposal and maintenance of these facilities</li> </ul>	Works Sites / During Construction Phase	✓

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance



EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
<b>Waste Management</b>				
6.6.1	5.2.2	<p><i>Good Site Practices</i></p> <ul style="list-style-type: none"> <li>• Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.</li> <li>• Training of site personnel in proper waste management and chemical waste handling procedures.</li> <li>• Provision of sufficient waste disposal points and regular collection for disposal.</li> <li>• Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.</li> <li>• Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> <li>• A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).</li> </ul>	Works Sites / During Construction Phase	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>
6.6.5	5.2.6	<p><i>Chemical Wastes</i></p> <ul style="list-style-type: none"> <li>• After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.</li> <li>• Spent chemicals should be collected by a licensed collector for disposal at the CWTC or other licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.</li> </ul>	Works Sites / During Construction Phase	<p>✓</p> <p>✓</p>
6.6.6	5.2.7	<p><i>General Refuse</i></p> <ul style="list-style-type: none"> <li>• General refuse should be stored in enclosed bins or compaction units separate from C&amp;D material.</li> <li>• A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&amp;D material.</li> <li>• An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material.</li> </ul>	Works Sites / During Construction Phase	<p>✓</p> <p>✓</p> <p>✓</p>

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
6.6.2	5.2.3	<p><i>Waste Reduction Measures</i></p> <p>Good management and control can prevent the generation of a significant amount of waste. Waste reduction is best achieved at the planning and design stage, as well as by ensuring the implementation of good site practices. Recommendations to achieve waste reduction include:</p> <ul style="list-style-type: none"> <li>• Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.</li> <li>• Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force.</li> <li>• Any unused chemicals or those with remaining functional capacity shall be recycled.</li> <li>• Use of reusable non-timber formwork to reduce the amount of C&amp;D material.</li> <li>• Prior to disposal of C&amp;D waste, it is recommended that wood, steel and other metals shall be separated for re-use and / or recycling to minimise the quantity of waste to be disposed of to landfill.</li> <li>• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.</li> <li>• Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.</li> </ul>	Works Sites / During Construction Phase	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>
6.6.4	5.2.5	<p><i>Construction and Demolition (C&amp;D) Material</i></p> <ul style="list-style-type: none"> <li>• The excavated fill material shall be re-used on-site as backfill material as far as possible.</li> <li>• The surplus excavated material should be disposed of at the designated public fill reception facility, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses.</li> <li>• C&amp;D waste would require disposal to the designated landfill site.</li> <li>• In order to monitor the disposal of C&amp;D materials at the public fill reception facility and landfill and to control fly-tipping, a trip-ticket system should be included. One may make reference to ETWB TCW No. 31/2004 for details.</li> </ul>	Works Sites / During Construction Phase	<p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p> <p style="text-align: center;">✓</p>

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
		<b>Ecology</b>		
7.9.2	6.2.2	Construction activities should be confined to developed areas of low ecological value, and there should be no direct impact on other habitats within the Study Area.	Works Sites / During Construction Phase	✓
7.9.3	6.2.3	Noise mitigation measures, including installation of noise-emitting construction plant away from egret, careful scheduling of noisy works with high disturbance impact to avoid breeding season of ardeid species (i.e. mid March to August) to prevent impacts on nesting activities of Little Egret, operation of well-maintained machinery, careful programming of works and use of noise reduction facilities could be implemented to mitigate noise impacts arising from construction activities such as road widening and road paving. Temporary noise barrier should also be used to reduce the level of noise during construction. Noise impact would be minimised during operation phase as permanent noise barrier has been proposed to be constructed. The use of low noise road surfacing could also reduce the level of noise during operation.	Works Sites / During Construction Phase	✓
7.9.4	6.2.4	In order to minimise the impact of construction dust to the vegetation and associated wildlife within and around the proposed Works Area, the following mitigation measures should be implemented: <ul style="list-style-type: none"> <li>regular watering</li> <li>complete coverage of dusty material storage piles</li> <li>the use of minimum practical height for dropping excavated material</li> </ul>	Works Sites / During Construction Phase	✓ ✓ ✓
7.9.6	6.2.6	To minimise the indirect impacts to the nearby Tuen Mun River Channel, the following mitigation measures should be implemented: <ul style="list-style-type: none"> <li>Site runoff could be directed towards regularly cleaned and maintained sand traps, silt traps and where appropriate</li> <li>Oil/grease separators to minimise risk of sedimentation and pollution to the river channel.</li> <li>Debris and rubbish generated on-site should be collected, handled and disposed properly.</li> </ul>	Works Sites / During Construction Phase	✓ N/O ✓

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
7.9.5	6.2.5	Standard good site practice measures should be implemented and should include: <ul style="list-style-type: none"> <li>• Placement of equipment in designated Works Areas within the existing disturbed land.</li> <li>• Construction activities should be restricted to the proposed Works Area.</li> <li>• The proposed Works Area should be reinstated immediately after completion of the works.</li> <li>• Open burning on proposed works site is illegal, and will be strictly enforced.</li> <li>• Waste skips should be provided to collect general refuse and construction wastes, which should be disposed regularly and properly off-site.</li> <li>• Soil contaminated by fuel leaked from construction plants should be removed and treated.</li> </ul>	Works Sites / During Construction Phase	✓ ✓ ✓ ✓ ✓ N/O
7.9.7	6.2.7	To minimise the chance of bird collision during operation phase, falcon sticker, tinted materials, embedded opaque stripes and superimposed patterns of thin opaque stripes are methods that could be used during the design of noise barrier.	Works Sites / During Operation Phase	N/O
7.9.8	6.2.8	Compensatory planting is recommended as the current roadside plantation must be removed to give way to the works. Species of choice should be composed of similar native species and the felling and planting ratio should be no less than 1:1 in terms of quantity.	Works Sites / During Operation Phase	N/O

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
<b><i>Landscape and Visual</i></b>				
Table 8.8	7.3.1	CM1 Topsoil, where identified, should be stripped and stored for re-use in the construction of the soft landscape works, where practical.	Works Sites / During Construction Phase	✓
Table 8.8	7.3.1	CM2 Existing trees to be retained on site should be carefully protected during construction.		✓
Table 8.8	7.3.1	CM3 Trees unavoidably affected by the works should be transplanted where practical.		✓
Table 8.8	7.3.1	CM4 Compensatory tree planting should be provided to compensate for felled trees.		✓
Table 8.8	7.3.1	CM5 Control of night-time lighting.		✓
Table 8.8	7.3.1	CM6 Erection of decorative screen hoarding compatible with the surrounding setting.		✓

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *
		<b>Land Contamination</b>		
9.8.3	8.2.2	<p>To minimize construction workers' potential contact with the contaminated materials</p> <ul style="list-style-type: none"> <li>• The use of bulk earth-moving excavator equipment would minimise construction workers' potential contact with the contaminated materials;</li> <li>• Exposure to any contaminated materials can be minimised by the wearing of appropriate clothing and personal protective equipment such as gloves (when interacting directly with suspected contaminated material), providing adequate hygiene and washing facilities and preventing smoking and eating during such activities;</li> <li>• Stockpiling of contaminated soil should be avoided as far as possible. If this cannot be avoided, the stockpile of contaminated materials should be segregated from the uncontaminated ones. Moreover, the contaminated materials should be properly covered with waterproof material (e.g. tarpaulin sheet) to avoid leaching of contaminants, especially during rainy season.</li> <li>• Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or contaminated wastewater run-off, and truck bodies and tailgates should be sealed to prevent any leakage during transport or during wet conditions;</li> <li>• Only licensed waste haulers should be used to collect and transport any contaminated material to an appropriate disposal site and procedures should be developed to ensure that illegal disposal of waste does not occur;</li> <li>• Necessary waste disposal permits should be obtained, as required, from the appropriate authorities, in accordance with the Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 35), as required;</li> <li>• Records of the quantities of wastes generated and disposed of should be maintained; Adequate washing facilities should be provided on site; and</li> <li>• In accordance with good construction practice, silt traps should be used to reduce the impact to drainage caused by suspended solids arising from disturbed ground, or any construction materials such as cement and gravel. Groundwater should be disposed of in accordance with the Water Pollution Control Ordinance (Cap 358).</li> </ul>	Excavation zones / During excavation	N/O

# All recommendations and requirements resulted during the course of EIA Process, including ACE and / or accepted public comment to the proposed project.

Notes (\*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

Appendix F

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**Alternative Monitoring  
Locations Proposal**

**Ove Arup & Partners**  
奧雅納工程顧問

Our ref 211710/L007/CN/cn

Date 1 June 2010

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**By Hand**

Chief Engineer/ Major Works 2-2  
Major Works Project Management Office  
Highways Department  
3/F., Homantin Government Offices  
88 Chung Hau Street, Homantin, Kowloon

Attention : Dr. Sam C.K. WONG

ARUP

Dear Dr. Wong

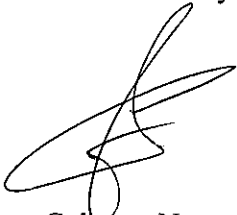
**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section  
Revised Proposal of Alternative Monitoring Locations**

I refer to the memo (ref.: (58) in Ax(5) to EP2/G/A/61on 6 May 2010)) and e-mails on 28 May and 1 June 2010 regarding the EPD comments of proposed alternative monitoring locations, the proposal has been revised and enclosed for your agreement.

By copy of this letter, would IEC please endorse the proposal before a submission is made to EPD.

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

Yours sincerely



Coleman Ng  
Environmental Team Leader

Encl.

cc: The Supervising Officer's Representative – Mr. Patrick Lee (AECOM)  
IEC – Mr. David Yeung (ENVIRON)

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## Proposal for Alternative Monitoring Locations

### 1. Background

Traffic Improvements to Tuen Mun Road Town Centre Section (the Project) is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance. In accordance with the EIA report and the EM&A Manual of the Project, dust and noise monitoring at some selected locations are required during the baseline and construction monitoring phases.

The dust and noise monitoring locations have been selected and described in Tables 2.1 and 3.1 of the EM&A Manual. A series of liaison work has been conducted to contact the premises owners and/or management offices of the selected locations in order to determine whether an access would be given for installation of monitoring equipment, findings however suggest that alternative monitoring locations for some selected locations are required. This Proposal presents the findings and recommendations.

### 2. Selected Monitoring Locations in EIA Report

Based on the EM&A Manual of the Project, there are six nos. of dust and noise monitoring locations respectively. A letter was dispatched to all the premises owners or management office of the locations on 10 February 2010 in order to apply an access for installation of monitoring equipment at their premises during baseline and impact monitoring periods. The liaison works included site visit and/or telephone conversation. Due to the lacking of reply at some locations, a reminder letter was subsequently dispatched to them for reiteration of the application. **Table 1** summarises the liaison findings and recommendations.

**Table 1** Liaison findings of the selected monitoring locations shown in the EIA Report

Aspect	Station	Location	Liaison Findings	Recommendation
Dust	FEC	Far East Consortium Tuen Mun Central Building	<ul style="list-style-type: none"> <li>• Site inspection revealed that the podium and roof are privately owned.</li> <li>• Owner of the podium was reluctant to communicate.</li> <li>• No reply was received from the owners of the roof.</li> <li>• A reminder was sent to them on 18 Mar 2010 and still no further response was received.</li> </ul>	To be replaced by alternative monitoring location <sup>(1)</sup>
	TMTF	Tuen Mun Town Plaza	<ul style="list-style-type: none"> <li>• No reply was received from the Management Office or Incorporation of the Owner Committee of the location.</li> </ul>	To be replaced by alternative monitoring location <sup>(1)</sup>
	WG	Waldorf Garden	<ul style="list-style-type: none"> <li>• No reply was received from the Management Office or Incorporation of the Owner Committee of the premises.</li> </ul>	To be replaced by alternative monitoring location <sup>(1)</sup>
	CLFY	Chi Lok Fa Yuen	<ul style="list-style-type: none"> <li>• The Management Office of the premises confirmed that the application was rejected.</li> </ul>	To be replaced by alternative monitoring location <sup>(1)</sup>
	TTP	Tung Wah Group of Hospitals Tai Tung Pui Social Service Building	<ul style="list-style-type: none"> <li>• The premises owner confirmed that the application was granted.</li> </ul>	Adopted as a dust monitoring location
	KFG	Kam Fai Garden	<ul style="list-style-type: none"> <li>• The Incorporation of Owner Committee confirmed that the application was rejected.</li> </ul>	To be replaced by dust alternative monitoring location <sup>(1)</sup>
Noise	FEC	Far East	<ul style="list-style-type: none"> <li>• Site inspection revealed that the podium and</li> </ul>	To be replaced by

Aspect	Station	Location	Liaison Findings	Recommendation
		Consortium Tuen Mun Central Building	<ul style="list-style-type: none"> <li>roof are privately owned.</li> <li>Owner of the podium was reluctant to communicate.</li> <li>No reply was received from the owners of the roof.</li> <li>A reminder was sent to them on 18 Mar 2010 and still no further response was received.</li> </ul>	alternative monitoring location <sup>(1)</sup>
	TMTP1	Tuen Mun Town Plaza	<ul style="list-style-type: none"> <li>Upon the application letter was dispatched to the Management Office on 10 Feb 2010, a site inspection was conducted on 23 Feb 2010, subsequent telephone conversations with the Management Office were undertaken on 24 Feb, 1 Mar and 22 Mar 2010 on clarification of the monitoring arrangement. No reply was received, so it was therefore decided that a reminder letter was not followed up.</li> </ul>	To be replaced by alternative monitoring location <sup>(1)</sup>
	WG2	Waldorf Garden	<ul style="list-style-type: none"> <li>Upon the application letter was dispatched to the Management Office on Feb 2010, telephone conversations with the Management Office on clarification of monitoring arrangement. No reply was received, so it was therefore decided that a reminder letter was not followed up.</li> </ul>	To be replaced by alternative monitoring location <sup>(1)</sup>
	CLFY1	Chi Lok Fa Yuen	<ul style="list-style-type: none"> <li>The Management Office of the location confirmed that the application was rejected.</li> </ul>	To be replaced by alternative monitoring location <sup>(1)</sup>
	TTP	Tung Wah Group of Hospitals Tai Tung Pui Social Service Building	<ul style="list-style-type: none"> <li>The premises owner confirmed that the application was granted.</li> </ul>	Adopted as a noise monitoring location
	KFG3D	Kam Fai Garden	<ul style="list-style-type: none"> <li>The Incorporation of Owner Committee confirmed that the application in relation to noise monitoring was granted.</li> </ul>	Adopted as a noise monitoring location.

Note:

- (1) In addition to the liaison findings, the recommendation is also based on the current project programme. Further waiting would subsequently affect commencement date of the construction work of the Project.

Based on the liaison results described above, it is suggested that alternative monitoring locations should be identified to replace the selected dust monitoring locations of FEC, TMTP, WG, CLFY and KFG as well as noise monitoring locations of FEC, TMTP1, WG2 and CLFY1.

### 3. Proposed Alternative Monitoring Locations

A total of 24 alternative monitoring locations have been identified. Similar liaison works with the premise owners and/or management offices of the locations have also been conducted. **Appendix 1** summarises the findings and **Table 2** summarises the premises owners or management offices who has agreed to grant the access for the installation of the monitoring equipment.

**Table 2** Summary of alternative locations

Location	Liaison Findings	Recommendation
Chung Sing Benevolent Society Mrs. Aw Boon Haw Secondary School	<ul style="list-style-type: none"> <li>The school confirmed that the application in relation to dust and noise monitoring was granted</li> </ul>	Consider as an alternative dust monitoring location of Kam Fai Garden
The Chinese Manufacturers' Association Of Hong Kong Choi Cheung Kok Secondary School	<ul style="list-style-type: none"> <li>The school confirmed that the application in relation to dust and noise monitoring was granted</li> </ul>	Consider as an alternative noise location of Far East Consortium Tuen Mun Central Building and an alternative dust monitoring location of Waldorf Garden or Chi Lok Fa Yuen
Tuen King Building	<ul style="list-style-type: none"> <li>The Incorporation of Owner Committee confirmed that the application of noise monitoring was granted</li> </ul>	Consider as an alternative noise monitoring location of Waldorf Garden
Yan Oi Tong Jockey Club Community and Sports Centre <sup>(1)</sup>	<ul style="list-style-type: none"> <li>The Centre confirmed that the application in relation to dust and noise monitoring was granted</li> </ul>	Consider as an alternative dust monitoring location of Far East Consortium Tuen Mun Central Building
Tuen Mun Town Hall <sup>(2)</sup>	<ul style="list-style-type: none"> <li>The town hall confirmed that the application in relation to dust and noise monitoring was granted</li> </ul>	Consider as an alternative dust monitoring location of Tuen Mun Town Plaza or Waldorf Garden
Po Leung Kuk The Hong Kong Taoist Association Yuen Yuen Primary School	<ul style="list-style-type: none"> <li>The school confirmed that the application in relation to dust and noise monitoring was granted</li> </ul>	Consider as an alternative noise monitoring location of Chi Lok Fa Yuen
Shun Tak Fraternal Association Wu Siu Kui Memorial Primary School	<ul style="list-style-type: none"> <li>The school confirmed that the application in relation to dust and noise monitoring was granted</li> </ul>	Consider as an alternative dust monitoring location of Chi Lok Fa Yuen and an alternative noise monitoring location of Tuen Mun Town Plaza

Notes:

(1) The Centre contains mixed use of a kindergarten, offices and clinics.

(2) The Town Hall contains mixed use of offices and performing arts centre.

**Figure 1** shows all the selected and alternative monitoring locations. Selection criteria of the alternative monitoring have been referenced to the EM&A Manual and listed as follows:

#### Noise Monitoring

- Monitoring at sensitive receivers close to the major site activities which are likely to have noise impacts;
- Monitoring at the noise sensitive receivers as defined in the Technical Memorandum; and
- Assurance of minimal disturbance to the occupants during monitoring.

#### Dust Monitoring

- At the site boundary or such locations close to the major dust emission source;
- Close to the air sensitive receivers;
- Proper position/sitting and orientation of the monitoring equipment; and
- Take into account the prevailing meteorological conditions.

Based on the available alternative monitoring locations and the selection criteria shown above, alternative monitoring locations have been selected and summarised in **Table 3**.

**Table 3** Proposed alternative monitoring locations

Aspect	Selected Location in EIA	Proposed Alternative Location	Station
Dust	Far East Consortium Tuen Mun Central Building (FEC)	Yan Oi Tong Jockey Club Community and Sports Centre	YOT(d)
	Tuen Mun Town Plaza (TMTP)	Tuen Mun Town Hall	TMTH(d)
	Waldorf Garden (WG)	The Chinese Manufacturers' Association Of Hong Kong Choi Cheung Kok Secondary School	CCK(d)
	Chi Lok Fa Yuen (CLFY)	Shun Tak Fraternal Association Wu Siu Kui Memorial Primary School	WSK(d)
	Kam Fai Garden (KFG)	Chung Sing Benevolent Society Mrs. Aw Boon Haw Secondary School	ABH(d)
Noise	Far East Consortium Tuen Mun Central Building (FEC)	The Chinese Manufacturers' Association Of Hong Kong Choi Cheung Kok Secondary School	CCK(n)
	Tuen Mun Town Plaza (TMTP1)	Shun Tak Fraternal Association Wu Siu Kui Memorial Primary School	WSK(n)
	Waldorf Garden (WG2)	Tuen King Building	TKB(n)
	Chi Lok Fa Yuen (CLFY1)	Po Leung Kuk The Hong Kong Taoist Association Yuen Yuen Primary School	YYP(n)

**Figure 2** shows a graphical plot between the selected monitoring locations which rejected the application of granting access for installation of monitoring equipment and the correspondingly proposed alternative monitoring locations.

#### 4. Finalised Environmental Monitoring Locations

Based on the findings and recommendations shown in the previous section, **Table 4** summarises the finalised environmental monitoring locations of the Project and **Figure 3** shows their locations.

**Table 4** Finalised environmental monitoring locations

Aspect	Station	Monitoring Location
Dust	YOT(d)	Yan Oi Tong Jockey Club Community and Sports Centre
	TMTH(d)	Tuen Mun Town Hall
	CCK(d)	The Chinese Manufacturers' Association Of Hong Kong Choi Cheung Kok Secondary School
	WSK(d)	Shun Tak Fraternal Association Wu Siu Kui Memorial Primary School
	TTP	Tung Wah Group of Hospitals Tai Tung Pui Social Service Building
	ABH(d)	Chung Sing Benevolent Society Mrs. Aw Boon Haw Secondary School
Noise	WSK(n)	Shun Tak Fraternal Association Wu Siu Kui Memorial Primary School
	YYP(n)	Po Leung Kuk The Hong Kong Taoist Association Yuen Yuen Primary School
	CCK(n)	The Chinese Manufacturers' Association Of Hong Kong Choi Cheung Kok Secondary School
	TKB(n)	Tuen King Building
	TTP	Tung Wah Group of Hospitals Tai Tung Pui Social Service Building
	KFG3D	Kam Fai Garden

## Appendix 1

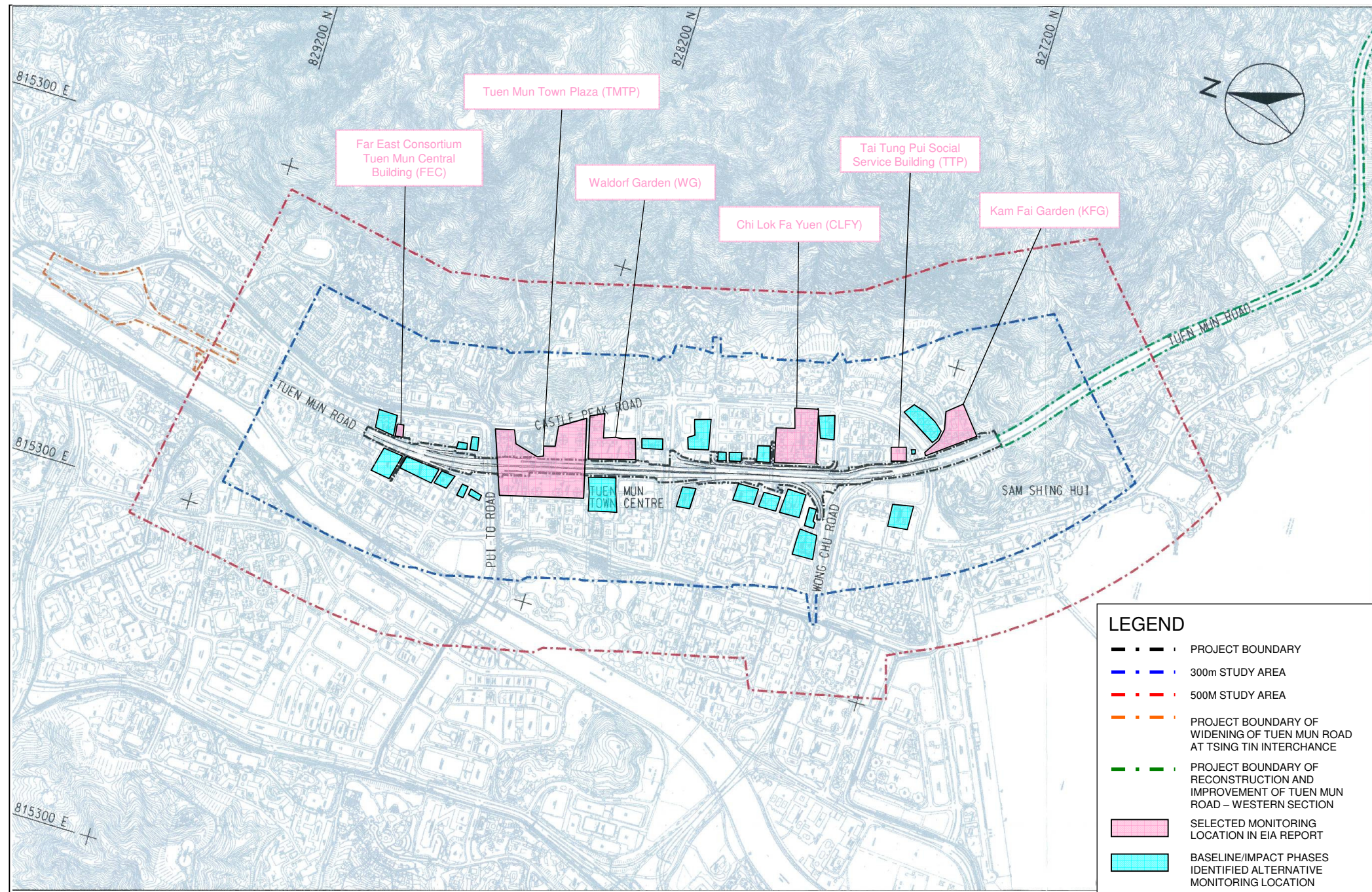
**Table A1:** Liaison findings of the all identified alternative monitoring locations

Location	Liaison Findings	Recommendation
Harvest Garden	<ul style="list-style-type: none"> <li>The Management Office of the location confirmed that the application was rejected.</li> </ul>	No further consideration
Chung Sing Benevolent Society Mrs. Aw Boon Haw Secondary School	<ul style="list-style-type: none"> <li>The school confirmed that the application was granted.</li> </ul>	Consider as an alternative dust monitoring location of Kam Fai Garden
Lui Cheung Kwong Lutheran Primary School	<ul style="list-style-type: none"> <li>Liaison revealed that electricity is not readily available. Implementation of CLP electricity connection may jeopardise the baseline monitoring programme.</li> <li>No reply from the school was received.</li> </ul>	No further consideration
Shun Tak Fraternal Association Leung Kau Kui College	<ul style="list-style-type: none"> <li>The school confirmed that the application was rejected.</li> </ul>	No further consideration
Lui Cheung Kwong Lutheran College	<ul style="list-style-type: none"> <li>Vice Principal verbally rejected the application but no written reply from the school was received.</li> </ul>	No further consideration
Yan Oi Tong Madam Lau Wong Fat Primary School	<ul style="list-style-type: none"> <li>The school will implement green roofing work later. ET's environmental monitoring may be interferenced.</li> <li>Site inspection revealed that the available place for sitting the HVS is the roof, but the place is subject to water proof problem so engineering is not viable at such location.</li> <li>No reply from the school was received.</li> </ul>	No further consideration
The Chinese Manufacturers' Association Of Hong Kong Choi Cheung Kok Secondary School	<ul style="list-style-type: none"> <li>The school confirmed that the application was granted.</li> </ul>	Consider as an alternative location of Waldorf Garden or Chi Lok Fa Yuen
Lai Bo Building	<ul style="list-style-type: none"> <li>Site inspection revealed that there was no suitable place for installation of monitoring equipment.</li> </ul>	No further consideration
Tuen King Building	<ul style="list-style-type: none"> <li>The Incorporation of Owner Committee confirmed that the application of noise monitoring was granted.</li> </ul>	Consider as an alternative noise monitoring location of Chi Lok Fa Yuen
Tuen Mun Fa Yuen	<ul style="list-style-type: none"> <li>No reply from the Incorporation of Owner Committee was received.</li> </ul>	No further consideration
New Town Mansion	<ul style="list-style-type: none"> <li>Site inspection revealed that proper sitting of HVS would require considerable engineering work for electricity provision, implementation of the work may jeopardise the baseline monitoring programme.</li> <li>No reply from the Incorporation of Owner Committee was received.</li> </ul>	No further consideration
Man Shing Building	<ul style="list-style-type: none"> <li>Site inspection revealed that there was no suitable place for installation of the monitoring equipment</li> </ul>	No further consideration
Park Court	<ul style="list-style-type: none"> <li>Site inspection revealed that there is neither management office nor Incorporation of</li> </ul>	No further consideration

Location	Liaison Findings	Recommendation
	<p>Owner Committee of the premises. The inspection also revealed that the podium is not suitable for monitoring but roof is subject to availability.</p> <ul style="list-style-type: none"> <li>• Application letters were dispatched to the owners of the top floor but no reply was received.</li> <li>• A reminder had been sent to them on 22 Mar 2010 and still no further response was received so far.</li> </ul>	
Forward Mansion	<ul style="list-style-type: none"> <li>• No reply from the Incorporation of Owner Committee was received.</li> </ul>	No further consideration
Sun Court	<ul style="list-style-type: none"> <li>• Site inspection revealed that there was no suitable place for installation of monitoring equipment</li> </ul>	No further consideration
Hing Tai Building	<ul style="list-style-type: none"> <li>• Site inspection revealed that there was no suitable place for installation of monitoring equipment</li> </ul>	No further consideration
Rose Dale Garden	<ul style="list-style-type: none"> <li>• Site inspection revealed that there was no suitable place for installation of monitoring equipment</li> </ul>	No further consideration
Tuen Mun San Hui Market	<ul style="list-style-type: none"> <li>• Liaison revealed that electricity is not readily available. Implementation of CLP electricity connection may jeopardise the baseline monitoring programme.</li> <li>• No reply from the premises owner was received.</li> </ul>	No further consideration
Yan Oi Tong Indoor Sports Centre	<ul style="list-style-type: none"> <li>• The sport centre confirmed that the application was granted</li> </ul>	Consider as an alternative monitoring location of Far East Consortium Tuen Mun Central Building
Tuen Mun Town Hall	<ul style="list-style-type: none"> <li>• The town hall confirmed that the application was granted</li> </ul>	Consider as an alternative noise monitoring location of Waldorf Garden or Tuen Mun Town Plaza
Tsing Sin Playground	<ul style="list-style-type: none"> <li>• The premises owner advised that renovation work of the playground is being planned. If both construction works of the Project and playground are concurrently implemented, reliability of ET's monitoring data would be affected.</li> <li>• No reply from the premises owner was received.</li> </ul>	No further consideration
Po Leung Kuk The Hong Kong Taoist Association Yuen Yuen Primary School	<ul style="list-style-type: none"> <li>• The school confirmed that the application was granted.</li> </ul>	Consider as an alternative monitoring location of Chi Lok Fa Yuen
Shun Tak Fraternal Association Wu Siu Kui Memorial Primary School	<ul style="list-style-type: none"> <li>• The school confirmed that the application was granted.</li> </ul>	Consider as an alternative monitoring location of Chi Lok Fa Yuen
Ting Fuk House	<ul style="list-style-type: none"> <li>• Attempts were tried to contact the responsible</li> </ul>	No further consideration

<b>Location</b>	<b>Liaison Findings</b>	<b>Recommendation</b>
	person of the premises but all in vain. <ul style="list-style-type: none"><li>• No reply from the premises representative was received.</li></ul>	

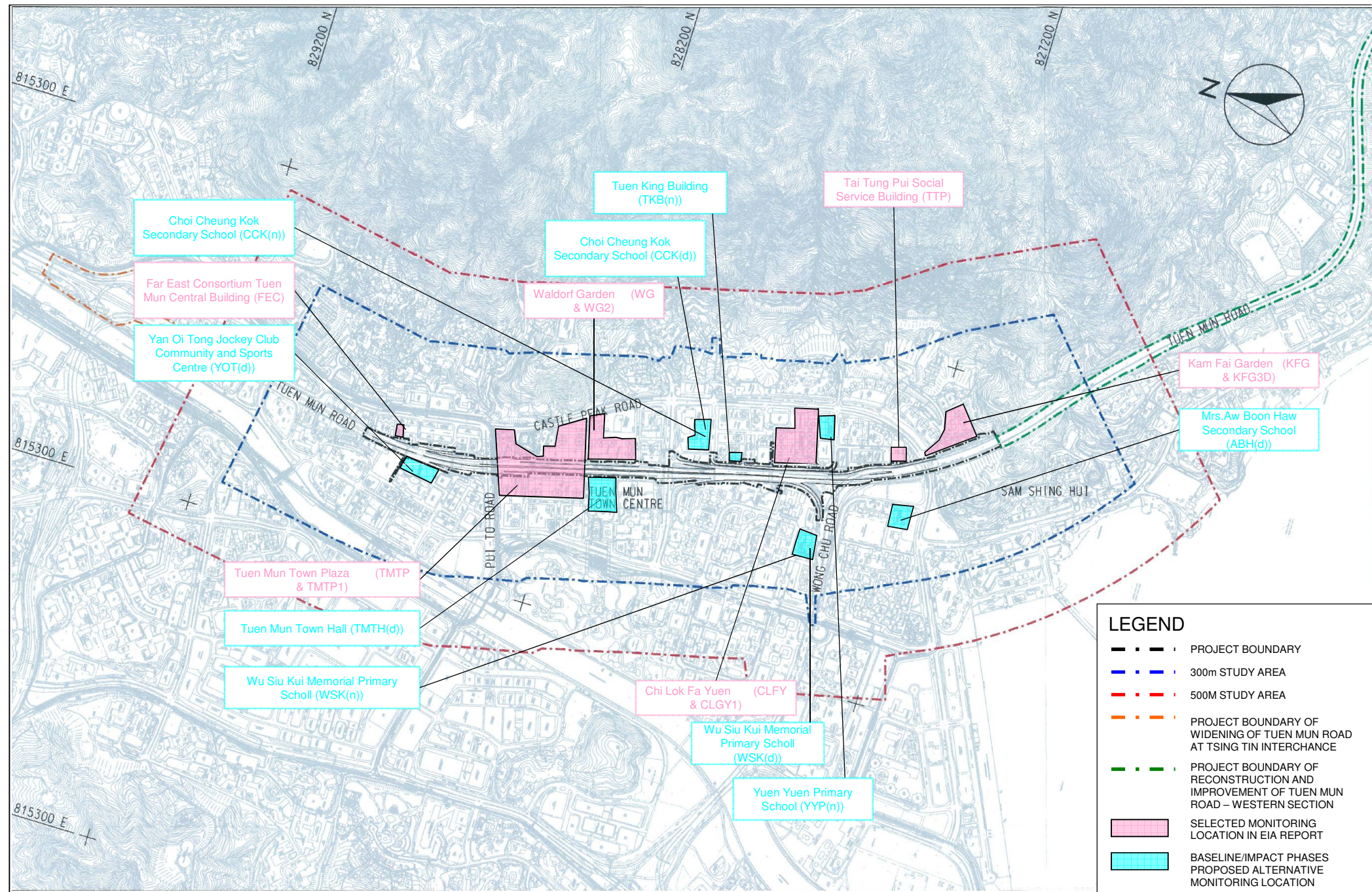




ARUP EIA Selected and Baseline/Impact Phases Identified Alternative Monitoring Locations

Figure 1

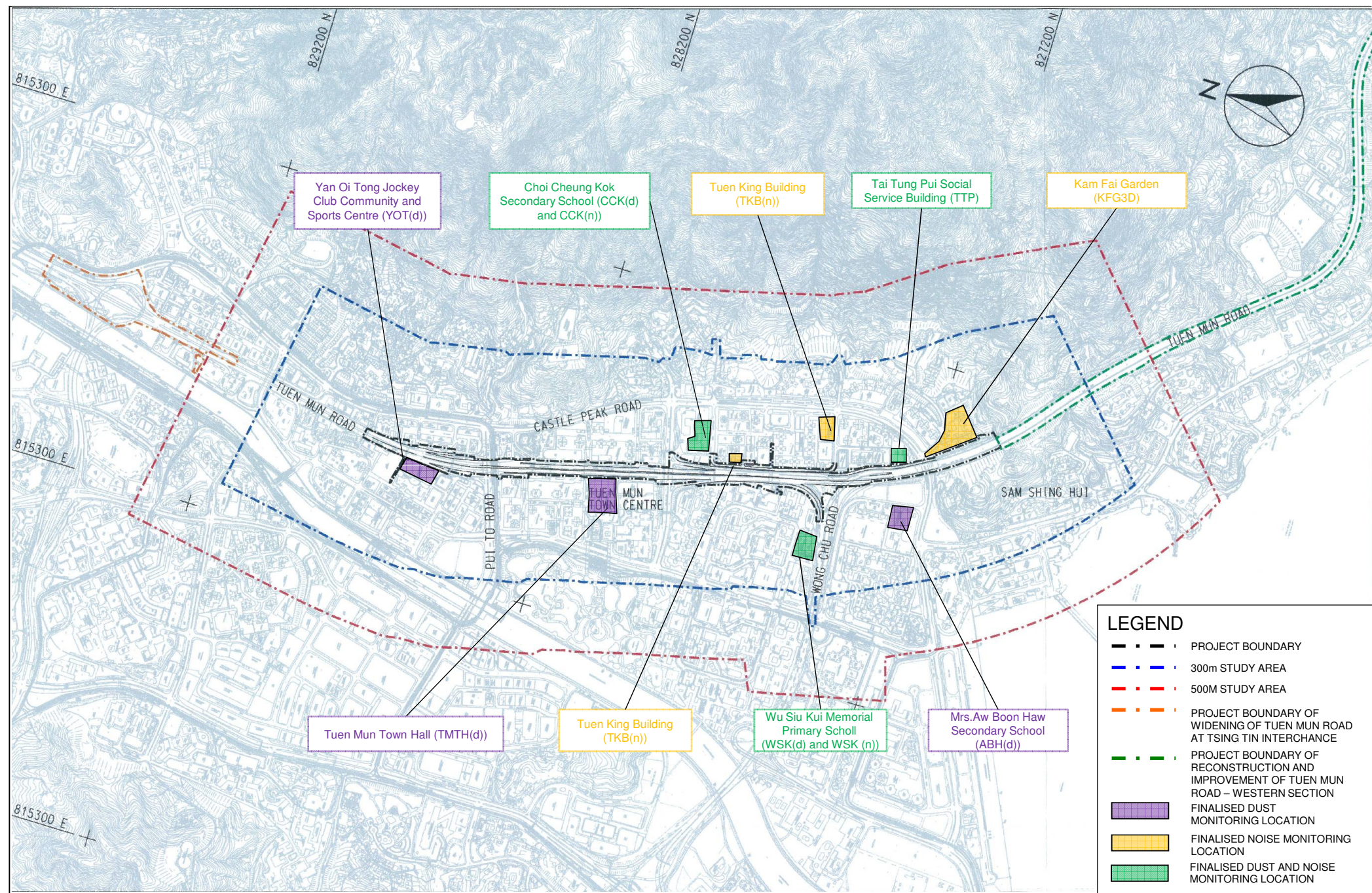




ARUP EIA Selected and Baseline/Impact Phases Proposed Alternative Monitoring Locations

Figure 2





ARUP Finalised Baseline and Impact Phases Environmental Monitoring Locations

Figure 3



Appendix G

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**EPD Approval Letter of  
Alternative Monitoring  
Location**

本署撥號  
OUR REF:  
來函撥號  
YOUR REF:  
電話  
TEL NO.: 2835 1751  
圖文傳真  
FAX NO.: 2591 0558  
電子郵件  
E-MAIL:  
網址  
HOMEPAGE: <http://www.epd.gov.hk>

(6) in Ax(S) to EP2/G/A/61 Pt.3  
**Environmental Protection Department**

**Branch Office**  
28th Floor, Southern Centre,  
130 Hennessey Road,  
Wan Chai, Hong Kong.



環境保護署分處  
香港灣仔  
軒尼詩道  
一百三十號  
修頓中心廿八樓

**By Post & Fax : 27145289**

7 June 2010

Highways Department  
6/F, Homantin Government Offices  
88 Chung Hau Street  
Homantin  
Kowloon  
(Attn.: Mr. Kenneth Chan)

Dear Mr. Chan,

**Traffic Improvements to Tuen Mun Road Town Centre Section**  
**Proposal for Alternative Dust and Noise Monitoring Locations**

We refer to your memo of 1 June 2010 and your email message of 3 June 2010 on the above subject.

We note from you that, except the noise and dust monitoring locations at Tung Wah Group of Hospitals and the noise monitoring location at Kam Fai Garden recommended in the approved EM&A Manual, the access and installation of other recommended monitoring stations were denied by the premises owners/management offices. In view of this, you have proposed alternative monitoring stations based on the requirements set out in S.2.4.3 and S.3.6.4 of the EM&A Manual.

In accordance with Condition 3.2 of EP-342/2009/A, we have no objection to the proposed alternative monitoring stations as shown in Table 3 of the ET's letter of 1 June 2010. Please note that a copy of your proposal will be displayed in the EIAO Register Office for public access.

Yours sincerely,

(Lawrence K.K. NG)  
Senior Environmental Protection Officer  
for Director of Environmental Protection

ID: Tmroadltr6.10

Appendix H

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**Details of Additional  
Noise Monitoring  
Stations**

**Details of additional noise monitoring stations**

The locations of two additional stations are summarized in **Table H1**.

**Table H1** Summary of additional noise monitoring stations

Monitoring Station	Premise
N7	Tuen Mun Town Hall
N8	Yan Oi Tong Jockey Club Community and Sports Centre

A baseline noise monitoring in terms of  $L_{eq}$ ,  $L_{10}$  and  $L_{90}$  at the two stations was conducted from 7 July to 1 August 2010. The baseline noise monitoring results in respect of day-time (0700-1900), evening-time (1900-2300) and night-time (2300-0700) are summarised in **Tables H2** to **H4**.

**Table H2** Baseline noise monitoring results during day-time (0700-1900)

Monitoring Station	$L_{eq}(30min)$ , dB(A) Mean (Range)	$L_{10}(5min)$ , dB(A) Mean (Range)	$L_{90}(5min)$ , dB(A) Mean (Range)
N7	78 (77-79)	80 (79-80)	76 (74-76)
N8	78 (76-78)	79 (79-80)	75 (73-75)

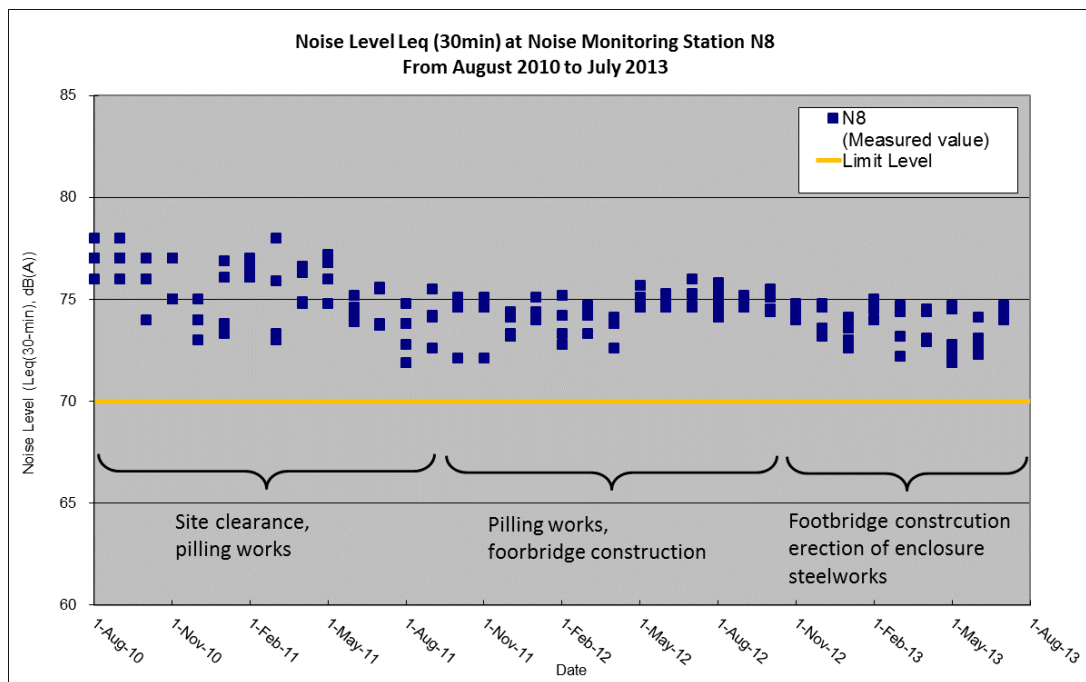
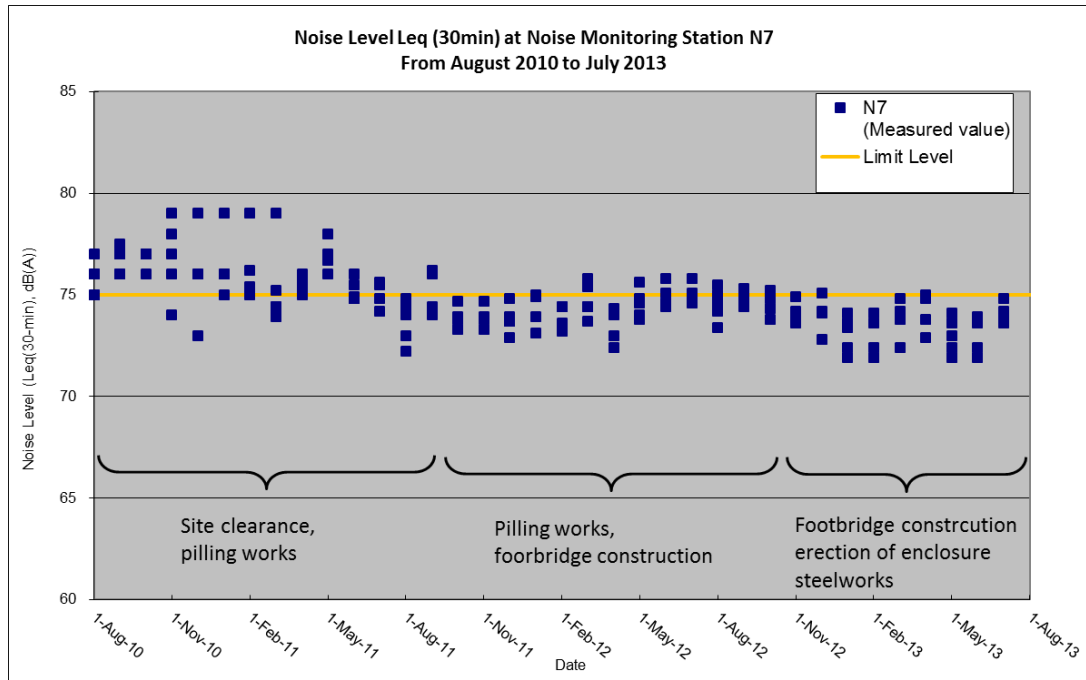
**Table H3** Baseline noise monitoring results during evening-time (1900-2300)

Monitoring Station	$L_{eq}(30min)$ , dB(A) Mean (Range)	$L_{10}(5min)$ , dB(A) Mean (Range)	$L_{90}(5min)$ , dB(A) Mean (Range)
N7	77 (74-77)	77 (77-77)	73 (72-73)
N8	76 (72-76)	78 (75-78)	72 (69-73)

**Table H4** Baseline noise monitoring results during night-time (2300-0700)

Monitoring Station	$L_{eq}(30min)$ , dB(A) Mean (Range)	$L_{10}(5min)$ , dB(A) Mean (Range)	$L_{90}(5min)$ , dB(A) Mean (Range)
N7	72 (70-72)	72 (72-72)	65 (65-65)
N8	71 (69-72)	73 (72-75)	66 (64-68)

Impact noise monitoring at the same locations was then conducted from August 2010 to July 2013 during day-time. Graphical presentations for the monitoring results are shown in the following:



Note:

(1) No adverse weather conditions were recorded during the monitoring dates.