

Highways Department

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

Quarterly Environmental
Monitoring and Audit
Summary Report
(November 2012 to
January 2013)

Final



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Executive Summary

This is the tenth quarterly Environmental Monitoring and Audit (EM&A) summary report prepared by Ove Arup & Partners Hong Kong Limited (Arup), the designated Environmental Team (ET), for the Project "Traffic Improvements to Tuen Mun Road Town Centre Section". This report presents the results of EM&A works conducted for the period from 1 November 2012 to 31 January 2013.

Environmental Monitoring Works – Breaches of Action and Limit Levels

Air Quality

All 24-hour TSP measurements during the reporting period were below the Action and Limit Level. No exceedance of Action and Limit Level was found.

Noise

Totally 4 limit level exceedances (0 in Nov 12, 4 in Dec 12 and 0 in Jan 13) of noise monitoring were recorded during the reporting period. Based on the on-site observations and interpretation from the results, noise exceedances were not related to the construction activities. No particular remedial work is required.

Five noise complaints, hence, five Action Level exceedances, were recorded in the reporting period.

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 non-compliance was recorded.

Landscape and Visual Audit

In the reporting period, landscape and visual site audit in accordance with the requirements stipulated in the EM&A manual were conducted. Total 521 trees were felled and the pruning of the transplanted trees was carried out during the reporting period, no substantial change of LR, LCA and VSR was noted.

Waste Disposal

Inert C&D materials with actual amount of 9,129.5 m³ were generated and disposed of at public fills at Tuen Mun Area 38 in the reporting period. 279.875 m³ general refuse were generated and disposed of at WENT landfill during the reporting period.

Environmental Auditing

The environmental site audits were conducted on a weekly basis. No non-conformance to the environmental requirements was identified during the reporting period.

Complaint Log

Five environmental complaints regarding noise issue were recorded during the reporting period. After the investigations, it is concluded that the complaints were attributable to the Contract. The corresponding mitigation measure due to the complaint was recommended to be carried out by the Contractor.

Notifications of Summons and Successful Prosecutions

No summonses or prosecution related to the environmental issues were made against the Project in the reporting period.

1 Project Information

1.1 Project Background and Programme

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. The Project was commenced on August 2010 and to be completed on January 2014. Location of the works area is indicated in **Figure 1.1**.

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);
- 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 rolling construction programme during the reporting period is attached in **Appendix A**. The major construction activities carried out by the Contractor in the reporting period are summarized in **Table 1.1**.

Table 1.1 Construction activities in the reporting period

Locations	Major Works Undertaken
All area	Footbridge construction and demolition, noise barrier construction; piling works, underground utilities and drainage diversion, Erection of noise barrier/ enclosure steelworks

1.2 Project Organization

The Project organization 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 1.2**.

Figure 1.2 Project Organization – Environmental Management

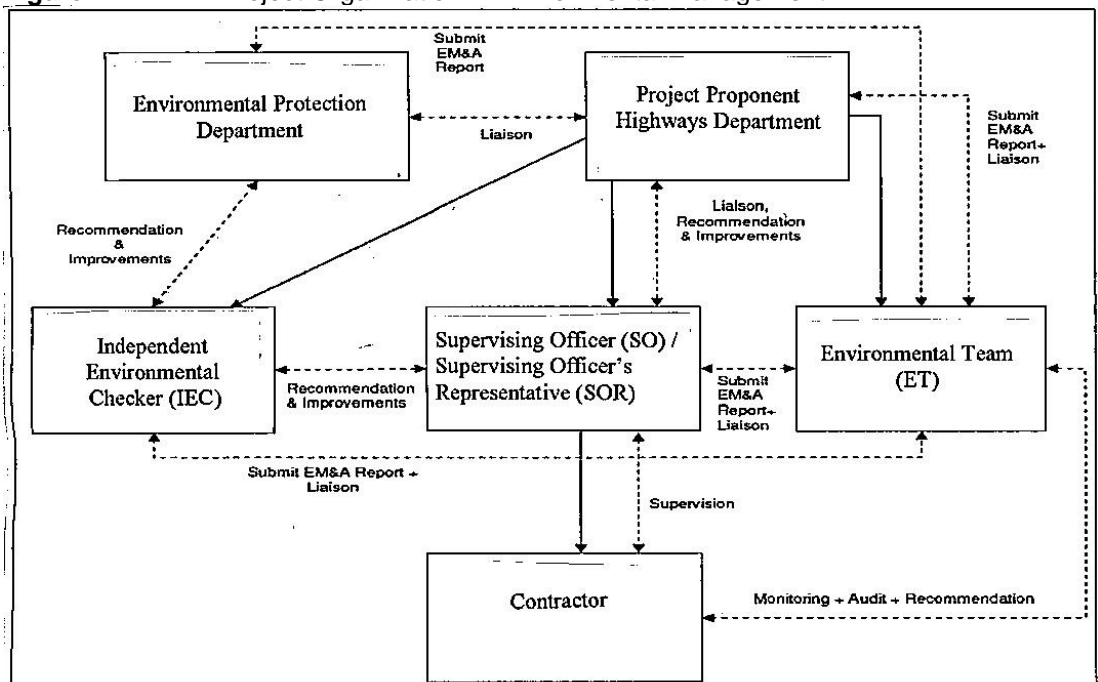


Figure 1.1 Location of works area and air, noise environmental monitoring stations

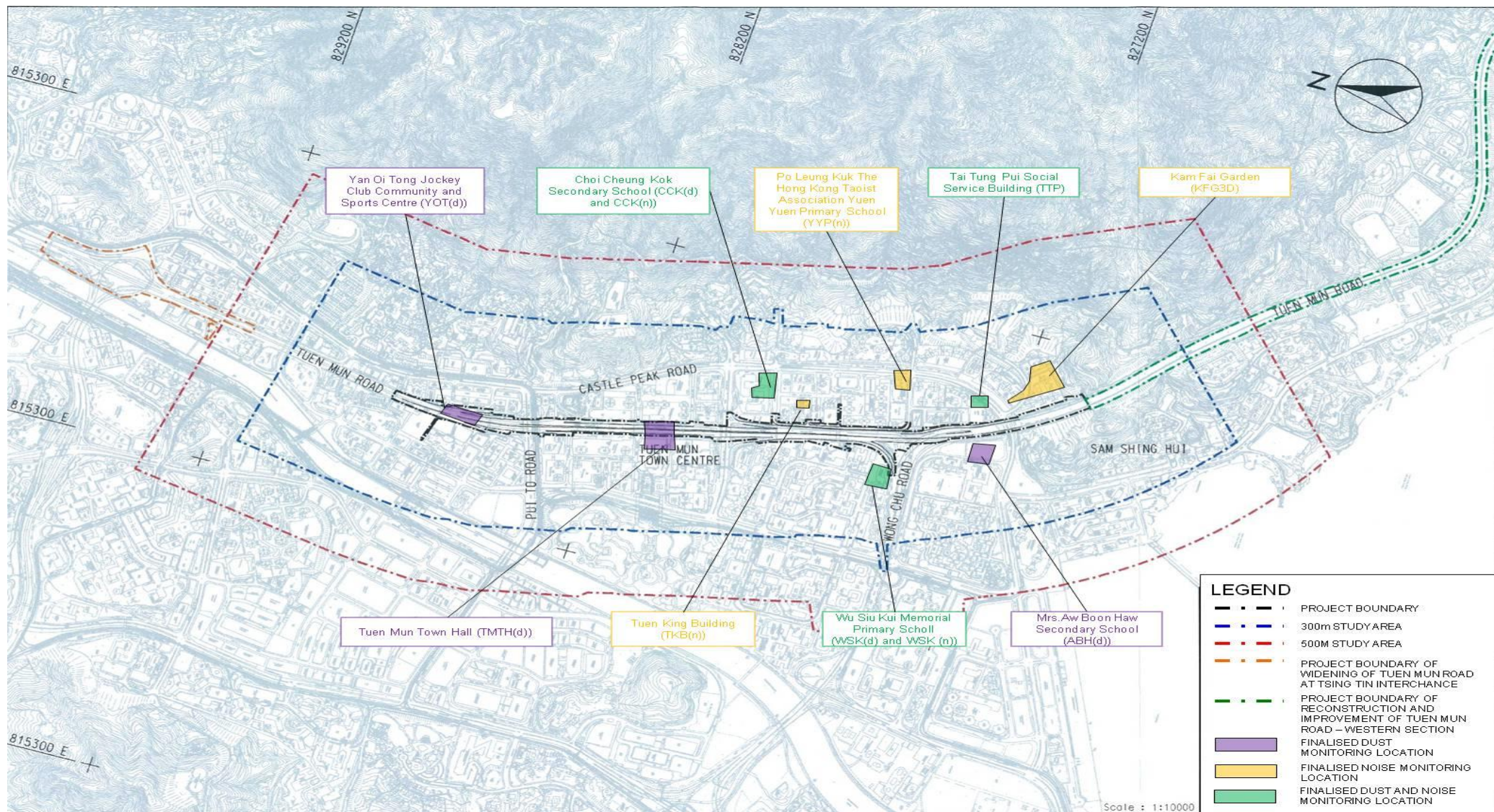


Table 1.2 Contacts of key environmental staff

Organization	Name	Telephone
Environmental Protection Department		
Environmental Protection Officer (Strategic Assessment)22	Thomas To	2835 1103
Project Proponent		
Highways Department: Senior Engineer	Peter Law	2762 3539
Supervising Officer / Supervising Officer's Representative		
AECOM Asia Co. Ltd.: Chief Resident Engineer	Patrick Lee	2969 9200
Independent Environmental Checker		
ENVIRON Hong Kong Limited: Independent Environmental Checker	David Yeung	3743 0717
Environmental Team		
Ove Arup & Partners Hong Kong Ltd: Environmental Team Leader	Coleman Ng	2268 3097
Contractor		
China Harbour Engineering Company Limited		
Site Agent	W.S. Ng	2403 0529
Environmental Officer	Marko Chan	2403 0527

2 EM&A Requirements

2.1 Monitoring Parameters

Air quality monitoring shall be measured in terms of the TSP levels for 24-hour periods. For noise monitoring, construction noise shall be measured in terms of the A-weighted equivalent continuous sound pressure level (L_{eq}). Furthermore, the monitoring of the implementation of the landscape and visual mitigation measures shall be checked to ensure that they are fully required. **Table 2.1 and Figure 1.1** show the names and locations of the monitoring locations. The monitoring parameters, frequency and performance limits are summarised in **Table 2.2**.

Table 2.1 Summary of air and noise monitoring stations

ID	Premise
Air	
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
Noise	
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

Table 2.2 Monitoring parameters, frequency, locations and performance limits

Monitoring	Parameters	Frequency	Location	Action Level	Limit Level
Air	1-hour TSP	3 times every 6 days ^(Note 1)	AM1	290 µg/m ³	500 µg/m ³
			AM2	291 µg/m ³	
			AM3	287 µg/m ³	
			AM4	292 µg/m ³	
			AM5	286 µg/m ³	
			AM6	290 µg/m ³	
	24-hour TSP	Once every 6 days	AM1	146 µg/m ³	260 µg/m ³
			AM2	151 µg/m ³	
			AM3	150 µg/m ³	
			AM4	150 µg/m ³	
			AM5	146 µg/m ³	
			AM6	147 µg/m ³	
Noise	0700 - 1900 hour on normal weekdays - $L_{eq(30min)}$	Once per week	N1, N2 & N5 N3, N4 & N6	When one documented complaint is received	75 dB(A)
	0700 - 2300 hours on holiday; and 1900 - 2300 hours on all other days - $L_{eq(5min)}$ ^(Note 2)	--	N1, N2, N3, N4, N5 & N6		70/65 ^(Note 3)
	2300 - 0700 hours of next day - $L_{eq(5min)}$ ^(Note 2)			--	
	Landscape and Visual	Landscape resources (LR), landscape character area(LCA) and view sensitive receiver (VSR) ^(Note 4)	Twice site audit per month	Entire site area	N/A

Notes:

- 1-hr TSP monitoring would be required in case of receiving complaints
- 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.
- For normal day-time working hours, the noise criteria are 70 dB(A) and 65 dB(A) for normal reaching periods and examination period respectively.
- The details of each LR, LCA and VSR are summarized in **Appendix F**.

2.2 Environmental Quality Performance Limits

All the monitoring results will be checked against the Action and Limit levels described in the Baseline Monitoring Report, of which they are summarised in **Table 2.1**.

2.3 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 air quality, noise, water quality, ecology, waste management as well as landscape and visual are summarised in **Appendix B**.

3 Implementation Status

3.1 Implementation Status of Mitigation Measures

Environmental site inspections were carried out on a weekly basis to monitor environmental issues on the construction sites to ensure that all mitigation measures were implemented timely and properly. Key mitigation measures observed were: vehicles were washed to remove any dusty materials from its body and wheels before leaving a construction site, quiet powered mechanical equipment (QPME) were used as well as sufficient waste disposal points were provided and regular collection for disposal.

Table 3.1 summaries the site inspections in the reporting period and corresponding follow-up status by the Contractor.

Table 3.1 Key findings of weekly environmental site audit in the reporting period

Monitoring Parameter	Location	Inspection Date	Key Observations & Recommendations	Contractor's Follow-Up Status
Air Quality	Pui To Road	1-Nov-12	The Contractor should avoid placing stockpile of sand near roadside whenever possible.	Stockpile has been relocated. Closed on 8 Nov 12.
	Chi Lok Footbridge	8-Nov-12	Stockpiles should be covered with tarpaulin or similar fabric.	Stockpiles have been covered with tarpaulin. Closed on 15 Nov 12.
	On Ting Estate	15-Nov-12	The Contractor was reminded to cover the stockpiles with tarpaulin or similar fabric after daily work.	Tarpaulin sheet has been provided. Closed on 22 Nov 12.
	Yan Oi Footbridge	6-Dec-12	Proper coverage to the adhesive containers should be provided while not in use to minimize the VOC emission.	Tarpaulin cover has been provided. Closed on 12 Dec 12.
	Chi Lok Footbridge	6-Dec-12	The Contractor was reminded to avoid open-batching of cements as far as practicable.	The reminder has been noted. Closed on 12 Dec 12.
	Rosedale Garden	10-Jan-13	The Contractor was reminded to provide water spraying to dusty operation.	The reminder has been noted. Closed on 17 Jan 13.
	Wong Chu Road	10-Jan-13	Water spraying should be provided at unpaved haul road to suppress dust disturbance.	Water spraying has been implemented. Closed on 17 Jan 13.
	NE22	17-Jan-13	The Contractor was reminded to provide water spraying regularly to minimize dust disturbance.	The reminder has been noted. Closed on 24 Jan 13.
Water Quality	Kam Fai Garden	8-Nov-12	The Contractor was reminded to implement wheel washing for vehicle entering or egressing from the site.	The reminder has been noted. Closed on 15 Nov 12.
	S1 Bridge	22-Nov-12	Due to site constraint, it was noted that a wheel washing bay is infeasible to be provided in site access. However, the Contractor should wash the wheels of vehicles on top of a tarpaulin sheet before egressing from site.	Tarpaulin sheet has been provided during wheel washing. Closed on 29 Nov 12.
	Chi Lok Footbridge (near On Ting Estate)	29-Nov-12	Muddy water overflow from the site to road kerb should be rectified as soon as possible.	Sandbag bunding has been provided along road kerb. Closed on 6 Dec 12.
	Chi Lok Footbridge	12-Dec-12	Earth bunds should be provided around the public drainage system to increase retention of waste water generated from demolition of footbridge.	Earth bunds have been provided. Closed on 20 Dec 12.
	All Areas	27-Dec-12	The Contractor was reminded to clear the accumulated rain water in the site after rains.	The reminder has been noted. Closed on 3 Jan 12.

Monitoring Parameter	Location	Inspection Date	Key Observations & Recommendations	Contractor's Follow-Up Status
Water Quality	Tuen Hi Road	17-Jan-13	The muddy trail was observed on the road around the site entrance. The Contractor should keep the road clean and ensure all vehicles have been cleaned before leaving the site.	Tarpaulin sheets have been placed underneath. Closed on 24 Jan 13.
	Parklane Square	24-Jan-13	Stockpiles should be located away from the site boundary as far as practicable.	Stockpiles have been relocated. Closed on 31 Jan 13.
Noise	All Areas	22-Nov-12	The Contractor was reminded to follow the requirement strictly stipulated in the Construction Noise Permit (CNP) in force.	The reminder has been noted. Closed on 29 Nov 12.
	Yan Oi Footbridge	12-Dec-12	The renewed CNP should be posted in the site hoarding.	The reminder has been noted. Closed on 20 Dec 12.
	Tuen Hi Road	17-Jan-13	The Contractor was reminded that all machines engine hood should be covered during machine operation.	The reminder has been noted. Closed on 24 Jan 13.
	Parklane Square	24-Jan-13	Hand-held breaker should be affixed with valid noise label.	Valid noise label has been affixed. Closed on 31 Jan 13.
Waste / Chemical Management	Chi Lok Footbridge	8-Nov-12	Drip tray should be provided for oil drums placing.	Drip tray has been provided. Closed on 15 Nov 12.
	Tsing Hoi Circuit	20-Dec-12	The Contractor was reminded to dispose of the rubble generated from demolition of temporary Chi Lok footbridge.	The reminder has been noted. Closed on 27 Dec 12.
	Kam Fai Garden	27-Dec-12	Drip tray should be provided for oil drums placing	Drip tray has been provided. Closed on 3 Jan 12.
	Yan Oi Footbridge	3-Jan-13	The Contractor should arrange disposal of C&D wastes in a regular basis to avoid accumulation.	C&D waste has been disposed of. Closed on 10 Jan 13.
	Parklane Square	24-Jan-13	Drip trays should be provided for chemical placing.	Drip tray has been provided. Closed on 31 Jan 13.
	Tuen Hi Road (Under TMT Plaza)	31-Jan-13	Disposal of C&D wastes should be arranged to avoid accumulation.	C&D waste has been disposed of. Closed on 7 Feb 13.
	S1 Bridge	31-Jan-13	Chemical spillage was observed. The Contractor should rectify the spilled chemical and treat it as chemical waste as soon as possible.	Chemical spillage has been treated and disposed of. Closed on 7 Feb 13.
Landscape and Visual	Rosedale Garden	31-Jan-13	The Contractor was reminded to provide proper protection (e.g. fencing) to retained trees on site.	The reminder has been noted. Closed on 7 Feb 13.

4 Environmental Monitoring Results

4.1 Air Monitoring Results and Observations

4.1.1 Air Quality Monitoring Results

Monitoring of 24-hour TSP were conducted at monitoring stations AM1, AM2, AM3, AM4, AM5 and AM6 in the reporting period. All monitoring data and graphical presentation of the monitoring results are provided in **Appendix C** and are summarised in **Table 4.1**. Wind data obtained from the Hong Kong Observatory – Tuen Mun anemometer station during the reporting period is presented in **Appendix D**.

Table 4.1 Summary of 24-hour TSP monitoring results in the reporting period

Location	Average 24-hour TSP Concentration, $\mu\text{g}/\text{m}^3$ (Range)			
	Nov 12	Dec 12	Jan 13	Mean
AM1	23 (10 - 30)	21 (11 - 25)	20 (12 - 31)	21 (10 - 31)
AM2	16 (10 - 30)	21 (15 - 32)	22 (10 - 37)	20 (10 - 37)
AM3	22 (19 - 27)	21 (10 - 32)	22 (14 - 31)	22 (10 - 32)
AM4	19 (12 - 26)	17 (11 - 23)	28 (14 - 44)	21 (11 - 44)
AM5	22 (13 - 58)	27 (18 - 33)	20 (9 - 29)	23 (9 - 58)
AM6	20 (14 - 29)	23 (19 - 28)	21 (13 - 33)	21 (13 - 33)

All 24-hour TSP measurements during the reporting period were below the Action/Limit Level. No exceedance of action and limit level was found.

4.1.2 General Observations

Major construction works including site clearance, site hoarding construction, ground investigation and underground utilities diversion were implemented during the reporting period.

4.2 Noise Monitoring Results and Observations

4.2.1 Noise Monitoring Results

Non-restricted Hours

Monitoring of the construction noise level was conducted during non-restricted hours in the reporting period at monitoring locations N1, N2, N3, N4, N5 and N6. All monitoring data and graphical presentation of the monitoring results are provided in **Appendix E** and are summarised in **Table 4.2**.

Table 4.2 Summary of impact noise monitoring in the reporting period

Location	Noise Level, $L_{eq(30min)}$, dB(A) (Range)			
	Nov 12	Dec 12	Jan 13	Mean
N1	73 (73 - 73)	73 (72 - 73)	72 (71 - 73)	73 (71 - 73)
N2	73 (72 - 74)	73 (72 - 73)	72 (71 - 73)	73 (71 - 74)
N3	67 (66 - 68)	67 (66 - 68)	67 (66 - 67)	67 (66 - 68)

Location	Noise Level, $L_{eq(30min)}$, dB(A) (Range)			
	Nov 12	Dec 12	Jan 13	Mean
N4	66 (65 – 66)	66 (65 – 67)	66 (65 – 67)	66 (65 – 67)
N5	69 (69 – 70)	69 (69 – 70)	69 (69 – 70)	69 (69 – 70)
N6	68 (67 – 69)	68 (67 – 69)	68 (68 – 68)	68 (67 – 69)

Restricted Hours

In the reporting period, the construction works and activities such as mobilization of materials and plants etc were carried out during restricted hours. The granted Construction Noise Permits (CNPs) were issued by EPD for the related activities before the works commencement, the Contractor strictly followed the conditions stipulated in the CNPs. There was no non-compliance recorded during the reporting period.

4.2.2 Exceedance of Limit and Action Levels for Construction Noise

Totally 4 limit level exceedances (0 in Nov 12, 4 in Dec 12 and 0 in Jan 13) were recorded for noise measurement during non-restricted hours in the reporting period and are summarized in **Table 4.3**.

Table 4.3 Summary of exceedance of Limit Levels for construction noise in the reporting period

Location (Note 1)	No. of exceedance of Limit Level			
	Nov 12	Dec 12	Jan 13	Total
N3	0	2	0	2
N4	0	1	0	1
N6	0	1	0	1

Notes:

- No Limit Level exceedance was recorded at monitoring location N1, N2 and N5 during the reporting period.

Based on the field observations, it was revealed that the exceedances were mainly caused by traffic vehicles along Tuen Mun Road. It was therefore concluded that the noise exceedances were not related to the construction activities. The details of the limit level exceedances had been presented in the corresponding monthly EM&A report (Nov 2012 to Jan 2013).

Five noise complaints, hence, five Action Level exceedences, were recorded in the reporting period.

Summary of above exceedance investigation of the Project is provided in the following **Section 6.2**.

4.2.3 General Observations

The construction site had been under normal operation during the noise monitoring period and no unusual operation was observed. Traffic noise had been noticed at the monitoring location during the noise monitoring period.

4.3 Landscape and Visual Monitoring Audit Results

In the reporting period, landscape and visual site audit in accordance with the requirements stipulated in the EIA Report was conducted during the routine monthly site audit. The details of each LR, LCA and VSR are summarized in **Appendix F**. The implementation and maintenance of landscape and visual mitigation measures, listed in EIA Report, were checked during the site audit. During the reporting period, no substantial change of LR,

LCA and VSR was noted, no non-compliance has been triggered, total 521 trees were felled and the pruning of the transplanted trees was carried out in accordance with the Specification for Tree Protection and Transplanting Works in Landscape Plan. The summary reports are presented in the corresponding monthly EM&A report (Nov 2012 to Jan 2013).

5 Waste Disposal

The amounts of different types of waste generated by the activities of the Project in the reporting period are shown in **Table 5.1**. It is anticipated that the amount of different types of waste will be increased in the forth-coming month due to the increasing of the scale of construction works, attention should be paid and the mitigation measures recommended in the EIA Report should be implemented and maintained. No liquid waste was generated in the reporting period.

Table 5.1 Amounts of waste generated in reporting period

Waste Type	Amount				Disposal Locations
	Nov 12	Dec 12	Jan 13	Total	
Inert C&D Materials	0 m ³	0 m ³	0 m ³	0 m ³	Broken concrete (Note 1)
	351.000 m ³	219.375 m ³	0 m ³	570.375 m ³	Reused in the Contract
	0 m ³	0 m ³	0 m ³	0 m ³	Reused in other Projects
	3,885.375 m ³	2,179.125 m ³	3,065 m ³	9129.5 m ³	Disposal of at public fill at Tuen Mun Area 38
Chemical Waste	0 kg	0 kg	0 kg	0 kg	N/A
Paper / cardboard packaging	0 kg	0 kg	259 kg	259 kg	Recycler
Plastic	7 kg	0 kg	0 kg	7 kg	
Metal	0 kg	0 kg	111 kg	111 kg	
General Refuse	117.000 m ³	82.875 m ³	80 m ³	279.875 m ³	Disposal of at WENT landfill

Notes:

1. Broken concrete for recycling into aggregates.

6 Environmental Performance

6.1 Non-Compliance Record

There was no non-compliance received in the reporting period.

6.2 Review of Reasons of Non-Compliance

Totally 4 limit level exceedances (0 in Nov 12, 4 in Dec 12 and 0 in Jan 13) of noise monitoring were recorded from the monitoring data at locations N3, N4 and N6 during the reporting period, which triggered the Event and Action Plan for remedial action. Based on the on-site observations and interpretation from the results, it was revealed that the exceedances were mainly caused by traffic noise along Tuen Mun Road and was not related to the construction activities. No particular remedial work is required.

6.3 Notification of Summons and Successful Prosecution

No summons or prosecutions related to environmental issues were received or made against the Project in the reporting period.

6.4 Complaint Record

Five environmental complaints regarding noise issue were recorded during the reporting period.

The **first** complaint was received by ICC on 26 Oct 12 regarding noise nuisance of night works on Tuen Mun Road (Under Yan Oi Footbridge).

As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out in Tuen Mun Road (Under Yan Oi Footbridge). The noise nuisance was mainly caused by road resurfacing works. On Friday night, 1 unit of road marking material boiler enclosed with movable acoustic enclosures, 1 unit of asphalt paver (QPME), 1 unit of roller (QPME), 1 unit of super silenced generator and 1 unit of dump trucks have been deployed. The asphalt paver and road roller were equipped with sound baffles and silencers during operation.

The relevant construction noise permit (CNP) no. GW-RW0673-12 was obtained for the road paving works in the designated area prior to commencement. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior to the work commencement. No abnormal activities were observed during the complaint period. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.

In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.

1. Well maintain the machines condition to minimize noise nuisance;
2. Relocate operating machinery as far as possible from nearby sensitive receivers;
3. Machines that may be in intermittent use should be shut down between work periods or should be throttled down; and
4. Improve the working practices to minimize the noise nuisance during the working activities as far as possible.

The **second** complaint was received by ICC on 30 Oct 12 regarding noise nuisance of night works on Tuen Mun Road (Near Tuen Mun Town Hall).

As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out in Tuen Mun Road (Near Tuen Mun Town Hall) The noise nuisance was mainly caused by installation of noise barrier column. On Tuesday midnight, 1 unit of crane, 1 unit of hand-held grinder, 1 unit of tractor, 1 unit of standard generator and 1 unit of dump trucks have been deployed.

The relevant construction noise permit (CNP) no. GW-RW0673-12 was obtained for the installation works in the designated area prior to commencement. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior to the work commencement. In addition, road closure could only be permitted by police force after 00:00am. No abnormal activities were observed during the complaint period. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.

In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.

1. Well maintain the machines condition to minimize noise nuisance;
2. Relocate operating machinery as far as possible from nearby sensitive receivers;
3. Machines that may be in intermittent use should be shut down between work periods or should be throttled down; and

Improve the working practices to minimize the noise nuisance during the working activities as far as possible.

The **third** complaint was received by ICC on 15 Nov 12 regarding noise nuisance of night works on Tuen Mun Road (Under TMT Plaza).

As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out in Tuen Mun Road (Under TMT Plaza). The noise nuisance was mainly caused by loading and unloading from dump truck. On Thursday night, 1 unit of dump truck with grab has been deployed.

The relevant construction noise permit (CNP) no. GW-RW0673-12 was obtained for the loading and unloading works in the designated area prior to commencement. Portable acoustic screen has been deployed for the construction works. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior to the work commencement. No abnormal activities were observed during the complaint period. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.

In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance

1. Well maintain the machines condition to minimize noise nuisance;
2. Improve the working practices to minimize the noise nuisance during the working activities as far as possible.

The **fourth** complaint was received by ICC on on 5 Dec 12 regarding noise nuisance of night works on Tuen Mun Road (Under TMT Plaza).

As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out in Tuen Mun Road (Under TMT Plaza). The noise nuisance was mainly caused by steel work installation of noise barrier and voice of workers. On Friday night, 1 unit of lorry with crane, 1 unit of mobile crane, 1 unit of tractor, 1 unit of hand-held grinder, 1 unit of hand-held driver and 1 unit of hand-held drill have been deployed.

The relevant construction noise permit (CNP) no. GW-RW0870-12 was obtained for the barrier installation work in the designated area prior to commencement. Portable acoustic screen has been deployed for the construction works. A non-metallic tip has been installed for the hammering works. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior to the work commencement. No abnormal activities were observed during the complaint period. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.

In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.

1. Well maintain the machines condition to minimize noise nuisance;
2. Relocate operating machinery as far as possible from nearby sensitive receivers;
3. Idle equipments should be either turned off or throttled down; and
4. Improve the working practices to minimize the noise nuisance during the working activities as far as possible.

The **fifth** complaint was received by ICC on 9 Dec 12 regarding noise nuisance of demolition works of temporary Chi Lok footbridge.

As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out Tuen Mun Road (Temporary Chi Lok footbridge). The noise nuisance was mainly caused by demolition work of temporary Chi Lok footbridge. On Sunday night, 1

unit of lorry with crane, 1 unit of mobile crane, 1 unit of tractor, 1 unit of generator have been deployed.

The relevant construction noise permit (CNP) no. GW-RW0909-12 was obtained for the demolition work in the designated area prior to commencement. Portable acoustic screen has been deployed for the construction works. A non-metallic tip has been installed for the hammering works. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior to the work commencement. No abnormal activities were observed during the complaint period. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.

In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.

1. Provide movable noise barrier for demolition work as far as practicable;
2. Well maintain the machines condition to minimize noise nuisance;
3. Relocate operating machinery as far as possible from nearby sensitive receivers;
4. Idle equipments should be either turned off or throttled down; and
5. Improve the working practices to minimize the noise nuisance during the working activities as far as possible.

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

Table 6.1 Summary of complaints for the contract

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.
	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.

Reporting Period	Complaint Statistics		Area of Concern	Validity to the Project	Status
	Number	Cumulative			
	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 – 30/06/12	0	26	-	-	-
01/07/12 – 31/07/12	0	26	-	-	-
01/08/12 – 31/08/12	0	26	-	-	-
01/09/12 – 30/09/12	0	26	-	-	-
01/10/12 – 31/10/12	0	26	-	-	-
01/11/12 – 30/11/12	1	27	Noise	Yes (Ref.: C027)	Closed on 8 Nov 12.

Reporting Period	Complaint Statistics		Area of Concern	Validity to the Project	Status
	Number	Cumulative			
	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	-	-	-

7 Conclusions and Recommendations

7.1 Conclusions

The construction phase of the Project was commenced on 2 August 2010. The EM&A programme has been implemented since then, including air quality, noise, landscape and visual and environmental site audits.

No Action and Limit Level exceedance was recorded for impact air quality monitoring in the reporting period.

Totally 4 limit level exceedances (0 in Nov 12, 4 in Dec 12 and 0 in Jan 13) of noise monitoring were recorded during the reporting period. Based on the field observations and interpretation of the results, the noise exceedance the exceedances were mainly caused by traffic vehicles along Tuen Mun Road. It was concluded that the exceedance were not project related and no particular remedial work is required. Five noise complaints, hence, five Action Level exceedences, were recorded in the reporting period.

Five environmental complaints regarding noise issue were recorded during the reporting period. After the investigations, it is concluded that the complaints were attributable to the Contract. The corresponding mitigation measure due to the complaint was recommended to be carried out by the Contractor.

No summons or prosecution related to environmental issues was received in the reporting period.

In accordance with the requirements stipulated in the EM&A manual, landscape and visual site audit was conducted regularly during the reporting period. Total 521 trees were felled and the pruning of the transplanted trees was carried out. No substantial change of LR, LCA and VSR was noted.

Weekly environmental site audit was carried out during the reporting period. The major environmental concerns were related to air quality, noise, water quality, waste management and tree maintenance.

7.2 Recommendations

Impact monitoring will be continued to carry out in the following month and followed by the requirement stipulated in the EM&A manual. Attention will be paid to environmental issues identified in EIA Report and weekly site audit. Mitigation measures recommended in EIA Report and Implementation Schedule of Mitigation Measure will be fully implemented.

Construction noise is one of the key environmental issues especially in restricted hours. The conditions stipulated in CNPs should be strictly followed when the construction works were carried out during the restricted hours.

Construction dust is another key environmental issue. The implemented construction dust mitigation measures including covering of exposed slope / soil with tarpaulin sheet etc., should be maintained and improved as necessary. Adequate water spraying should be provided for the unpaved area to minimize dust disturbance.

Water quality impact is also key environmental issue. The drainage system should be well maintained. The solid and liquid waste management should be strictly followed in accordance with the requirements described in the EIA report.

The retained trees should be protected and fenced properly. The Contractor was reminded to avoid trunks damage during construction works and, take the proper remedial measures immediately when damage was observed.

Moreover, the corresponding mitigation measures due to the complaints were recommended to carry out by the Contractor and are presented in Section 6.4. The Contractor was reminded to implement proper mitigation measure to minimize any environmental nuisance.

8 Reference

- [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)
- [3] Ove Arup & Partners Hong Kong Limited. Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section – Monthly Environmental Monitoring and Audit Report – November 2012 (Final)
- [4] Ove Arup & Partners Hong Kong Limited. Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section – Monthly Environmental Monitoring and Audit Report – December 2012 (Final)
- [5] Ove Arup & Partners Hong Kong Limited. Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section – Monthly Environmental Monitoring and Audit Report – January 2013 (Final)

Appendix A

**Construction
Programme**

Design and Build of Traffic Improvement to Tuen Mun Road Town Centre Section

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Late Start	Late Finish	2013				
								Jan	Feb	Mar	Apr	May
								36	37	38	39	40
Preliminaries and General Requirements												
Preliminaries and General Requirements												
Project Completion												
Contract Key Dates												
KD1210	Completion of Section IIIH of Works	0	0		24-Feb-13*		24-Feb-13					◆ Completion of Section IIIH of Works
Project General Submission												
General Submission												
Trail Green Panel												
Trail Green Panel												
GS1580	Site trial for green wall panel	365	1	05-Mar-11 A	20-Jan-13	02-May-13	02-May-13					■ Site trial for green wall panel
GS1600	Site trial for green roof panel	365	1	05-Mar-11 A	20-Jan-13	02-May-13	02-May-13					■ Site trial for green roof panel
Procurement												
Material Procurement and Fabrication												
Material Procurement and Fabrication												
Procurement and Fabrication												
MP1140	Noise Barrier/Enclosure steel structure for Scheme E Area	189	122	31-Oct-12 A	22-Jun-13	31-Oct-12	29-May-13					■
MP1160	Noise Barrier/Enclosure wall panel for Scheme B Area	140	120	28-Sep-12 A	21-Jun-13	28-Sep-12	09-Nov-13					■
MP1210	Noise Barrier/Enclosure roof panel for Scheme B Area	237	232	28-Sep-12 A	04-Nov-13	28-Sep-12	09-Nov-13					■
MP1130	Noise Barrier/Enclosure steel structure for Scheme D Area	289	258	31-May-12 A	03-Dec-13	31-May-12	23-Aug-13					■
MP1120	Noise Barrier/Enclosure steel structure for Scheme C Area	176	176	23-Dec-12 A	27-Aug-13	24-Dec-12	28-Sep-13					■
MP1150	Noise Barrier/Enclosure wall panel for Scheme A Area	251	251	21-Jan-13	25-Nov-13	04-Mar-13	09-Nov-13					■
MP1240	Noise Barrier/Enclosure roof panel for Scheme E Area	236	236	09-Feb-13	27-Nov-13	16-Jan-13	02-Nov-13					■
MP1190	Noise Barrier/Enclosure wall panel for Scheme E Area	145	145	11-Apr-13	03-Oct-13	01-Apr-13	26-Sep-13					■
MP1170	Noise Barrier/Enclosure wall panel for Scheme C Area	192	192	02-Mar-13	24-Oct-13	17-Oct-13	09-Nov-13					■
MP1220	Noise Barrier/Enclosure roof panel for Scheme C Area	205	205	02-Mar-13	09-Nov-13	17-Oct-13	24-Oct-13					■
Section 1 of Works												
Establishment Works in Portion 1												
Establishment Works in Portion 1												
Establishment Works												
SEC11090	Establishment Works	365	253	30-Sep-12 A	29-Sep-13	28-Feb-13	07-Nov-13					■
Section II of Works												
Scheme A (CH29405 - CH29050)												
Stage 1 Kowloon Bound Road Verge & T1												
NB Structural Steel Post/Column Erection												

■ Remaining Level of Effort ■ Critical R...
■ Actual Work ◆ Milestone
■ Remaining Work

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Design and Build of Traffic Improvement to Tuen Mun Road Town Centre Section

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Late Start	Late Finish	2013					
								Jan	Feb	Mar	Apr	May	
								36	37	38	39	40	
RA1110	Erect NE01 S/B steel column	25	2	22-Sep-12 A	21-Feb-13	17-Jul-13	19-Jul-13						Erect NE01 S/B steel column
Stage 2 Both bound Road Verge near Yan Ching Bridge													
NB Structural Steel Post/Column Erection													
RA1210	Erect NE05 N/B & S/B steel columns	44	4	25-Oct-12 A	24-Jan-13	26-Apr-13	30-Apr-13						Erect NE05 N/B & S/B steel columns
RA1200	Erect NE04 N/B & S/B steel columns	30	6	04-Dec-12 A	26-Jan-13	11-Mar-13	18-Mar-13						Erect NE04 N/B & S/B steel columns
Drainage Works													
RA1450	Construct drainage S/B verge CH29050 to CH29200	75	75	21-Jan-13	25-Apr-13	10-Jun-13	06-Sep-13						Cons
Roadworks													
RA1460	Roadworks N/B & S/B verge CH29050 to CH29200 (L=150m.)	50	50	02-Mar-13	04-May-13	19-Jul-13	14-Sep-13						R
Stage 3 Central Median Area													
Pile Cap / Footing													
RA1376	Construct pad footing NE04 FT6 to FT9	67	0	20-Nov-12 A	05-Jan-13 A	05-Jan-13	05-Jan-13						Construct pad footing NE04 FT6 to FT9
RA1374	Construct pile cap NE02 PC9 to PC14	100	43	03-Jul-12 A	20-Mar-13	30-May-13	22-Jul-13						Construct pile cap NE02 PC9 to PC14
Concrete Column at Central Barrier													
RA1400	Construct concrete column for NE04	44	44	21-Jan-13	15-Mar-13	05-Jan-13	01-Mar-13						Construct concrete column for NE04
RA1410	Construct concrete column for NE05	75	0	13-Jul-12 A	13-Jan-13 A	23-Apr-13	23-Apr-13						Construct concrete column for NE05
RA1390	Construct concrete column for NE02	69	44	02-Dec-12 A	16-Apr-13	30-May-13	23-Jul-13						Construct concrete column for NE02
RA1380	Construct concrete column for NE01	81	0	20-Oct-12 A	13-Jan-13 A	19-Jul-13	19-Jul-13						Construct concrete column for NE01
NB Structural Steel Truss Erection													
RA1760	Erect NE04 central truss	14	14	15-Mar-13	01-Apr-13	01-Mar-13	18-Mar-13						Erect NE04 central truss
RA1770	Erect NE05 central truss	18	7	13-Jan-13 A	28-Jan-13	23-Apr-13	30-Apr-13						Erect NE05 central truss
RA1490	Erect NE01 central truss	24	0	19-Jan-13 A	19-Jan-13 A	19-Jul-13	19-Jul-13						Erect NE01 central truss
RA1750	Erect NE02 central truss	19	19	16-Apr-13	09-May-13	23-Jul-13	14-Aug-13						Erect NE02 central truss
Drainage Works													
RA1470	Construct drainage central barrier CH29050 to CH29400	58	58	09-Mar-13	23-May-13	21-Jun-13	29-Aug-13						Construct drainage central barrier CH29050 to CH29400
Roadworks													
RA1480	Roadworks central barrier CH29050 to CH29400	58	58	26-Mar-13	08-Jun-13	09-Jul-13	14-Sep-13						Roadworks central barrier CH29050 to CH29400
Stage 3-1 NE02 Kowloon Bound Verge (After remove Temp. Bridge)													
Pile Cap / Footing													
RA1070	Construct pile cap NE02 PC1 to PC7	56	24	21-Oct-11 A	26-Feb-13	20-Jun-13	19-Jul-13						Construct pile cap NE02 PC1 to PC7
NB Structural Steel Post/Column Erection													
RA1120	Erect NE02 S/B steel column	22	22	26-Feb-13	23-Mar-13	19-Jul-13	14-Aug-13						Erect NE02 S/B steel column
Stage 4 Steel Frame & Panel													
Main Span Erection at YL/B & KL/B of TMR													
RA1495	Erection NE03 roof beam	13	0	17-Nov-12 A	11-Dec-12 A	04-Mar-13	04-Mar-13						Erection NE03 roof beam
RA1497	Erection NE04 N/B roof beam	15	15	02-Apr-13	23-Apr-13	18-Mar-13	04-Apr-13						Erection NE04 N/B roof beam
RA1500	Erection NE05 N/B roof beam	22	9	15-Jan-13 A	16-Apr-13	02-May-13	11-May-13						Erection NE05 N/B roof beam
RA1502	Erection NE05 S/B roof beam	22	9	15-Jan-13 A	26-Apr-13	25-Jun-13	06-Jul-13						Erection NE05 S/B roof beam

█ Remaining Level of Effort █ Critical R...
█ Actual Work ◆ ◆ Milestone
█ Remaining Work

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Design and Build of Traffic Improvement to Tuen Mun Road Town Centre Section

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Late Start	Late Finish	2013					
								Jan	Feb	Mar	Apr	May	
								36	37	38	39	40	
RA1520	Erection NE01 S/B roof beam	25	25	22-Feb-13	22-Mar-13	19-Jul-13	17-Aug-13						
Wall and Roof Panel Installation													
RA1505	Install translucent roof panel NE03	16	16	21-Jan-13	08-Feb-13	04-Mar-13	22-Mar-13						
RA1545	Install green and transparent wall panel NE03	26	26	21-Jan-13	23-Feb-13	22-Mar-13	26-Apr-13						
RA1507	Install translucent roof panel NE04 N/B & S/B	31	31	02-Apr-13	13-May-13	22-Mar-13	02-May-13						
RA1530	Install roof cladding & translucent roof panel NE01 S/B	52	52	27-Mar-13	01-Jun-13	19-Jul-13	17-Sep-13						
Construction of Temporary Yan Oi Bridge													
Remove Temporary Bridge													
TB1070	Remove temporary bridge	60	5	26-Nov-12 A	25-Jan-13	24-May-13	30-May-13						
Construction of New Yan Oi Bridge													
Pile Cap													
YO1060	Construct pile cap PC6 & PC7 (change to pad footing)	33	33	25-Jan-13	09-Mar-13	07-Aug-13	14-Sep-13						
Column, Pier Head and Staircase													
YO1185	Construct N/B column and column head	45	23	16-Dec-11 A	19-Feb-13	02-May-13	30-May-13						
YO1187	Construct N/B staircase	45	45	09-Mar-13	07-May-13	16-Sep-13	09-Nov-13						
Lift Installation													
YO1140	Lift installation	30	2	14-Jul-12 A	21-Feb-13	08-Nov-13	09-Nov-13						
E&M and Finishing Works													
YO1120	Finishing works	75	8	20-Oct-12 A	28-Feb-13	01-Nov-13	09-Nov-13						
YO1130	E&M installation	75	4	20-Oct-12 A	23-Feb-13	06-Nov-13	09-Nov-13						
Completion of New Yan Oi Bridge													
YO1150	Completion of new Yan Oi bridge	0	0		28-Feb-13		09-Nov-13						
Scheme B (CH29050 - CH28520)													
Stage 1 Both Bound Road Verge													
Utilities Diversion													
RB2124	Diversion existing PCCW 24 ways, HGC, 11kv & sewer	55	39	06-Nov-12 A	09-Mar-13	24-Dec-12	09-Feb-13						
Pile Cap / Footing													
RB10875	Construct pad footing for NE06 FT4 to FT7	67	67	09-Mar-13	03-Jun-13	14-Feb-13	08-May-13						
NB Structural Steel Post/Column Erection													
RB1870	Erect NE06 N/B steel column	20	1	16-Sep-12 A	21-Jan-13	21-May-13	22-May-13						
RB1335	Erect NE06 S/B steel column	20	17	13-Jan-13 A	24-Jun-13	02-Jul-13	22-Jul-13						
Drainage Works													
RB1380	Construct drainage N/B verge CH28600 to CH28950 (L=350m.)	117	23	31-Aug-12 A	20-Feb-13	26-Apr-13	25-May-13						
Roadworks													
RB1400	Roadworks N/B verge CH28600 to CH28950 (L=350m.)	88	88	21-Jan-13	11-May-13	26-Apr-13	10-Aug-13						
Stage 2 Central Median													
Roadworks													
RB1650	Roadworks central barrier CH28500 to CH29000 (L=500m.)	83	42	31-Aug-12 A	13-Mar-13	22-Jun-13	10-Aug-13						

█ Remaining Level of Effort █ Critical R...
█ Actual Work ◆ ◆ Milestone
█ Remaining Work

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Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Late Start	Late Finish	2013				
								Jan	Feb	Mar	Apr	May
								36	37	38	39	40
Stage 3 Steel Frame & Panel												
Main Span Erection at YL/B & KL/B of TMR												
RB1665	Erection NE06 & 07 N/B roof beam	24	2	05-Jan-13 A	23-Jan-13	22-May-13	24-May-13					
RB1676	Erection NE12 to 14 S/B roof beam	20	1	12-Dec-12 A	21-Jan-13	19-Jun-13	20-Jun-13					
RB2160	Erection NE12 to 14 N/B roof beam	20	1	14-Dec-12 A	22-Jan-13	19-Jun-13	20-Jun-13					
RB1670	Erection NE06 & 07 S/B roof beam	24	19	03-Jan-13 A	06-Aug-13	22-Jul-13	13-Aug-13					
Wall and Roof Panel Installation												
RB1692	Install roof cladding & translucent roof panel NE08 S/B	38	0	28-Sep-12 A	20-Dec-12 A	10-Nov-13	10-Nov-13					
RB2170	Install green and transparent wall panel NE08	10	4	29-Oct-12 A	24-Jan-13	06-Nov-13	09-Nov-13					
RB1712	Planting for green roof NE08	14	0	13-Dec-12 A	04-Jan-13 A	10-Nov-13	10-Nov-13					
RB1694	Install translucent roof panel NE10 to 14 S/B	67	67	21-Jan-13	16-Apr-13	21-Aug-13	09-Nov-13					
RB1702	Install roof cladding & translucent roof panel NE10 to 14 N/B	74	74	22-Jan-13	26-Apr-13	18-Jul-13	16-Oct-13					
RB2180	Install green and transparent wall panel NE10 to 14	132	119	16-Nov-12 A	21-Jun-13	20-Jun-13	09-Nov-13					
Scheme C (CH28520 - CH28200)												
Stage 1 NE15 East Side, Tsing Hoi Circuit Re-alignment & S/B Foundation												
Foundation Works												
RC1735	Water diversion along Tsing Hoi Circuit (by others)	49	14	12-Apr-12 A	06-Feb-13	10-Dec-12	28-Dec-12					
Pile Cap / Footing												
RC1080	Construct pat footing NE16 FT27 to FT34 (with retaining FR91)	133	50	12-May-11 A	16-Apr-13	02-Feb-13	10-Apr-13					
RC1757	Construct pile cap NE17 PC7 to PC8	33	5	08-Dec-12 A	25-Jan-13	08-May-13	13-May-13					
RC1755	Construct pile cap NE16 PC35	17	17	21-Jan-13	08-Feb-13	14-Jan-13	02-Feb-13					
RC1320	Construct pile cap NE16 PC10	17	0	24-Sep-12 A	12-Jan-13 A	01-Apr-13	01-Apr-13					
NB Structural Steel Post/Column Erection												
RC1120	Erection part of NE16 S/B steel column (PC10, FT11 to FT15)	18	10	23-Dec-12 A	31-Jan-13	22-Mar-13	03-Apr-13					
RC1130	Erection part of NE16 N/B steel column (FT27 to FT34 & PC35)	25	17	30-Dec-12 A	04-Mar-13	03-Apr-13	27-Apr-13					
RC1110	Erection NE15 steel column (east side)	16	16	08-Feb-13	01-Mar-13	01-Apr-13	23-Apr-13					
RC1550	Erection part of NE16 S/B steel column (FT1 to FT7 & PC8 to PC9)	25	16	23-Dec-12 A	20-Mar-13	24-Apr-13	13-May-13					
RC1700	Erection NE17 S/B steel column	23	23	21-Mar-13	20-Apr-13	14-May-13	10-Jun-13					
Drainage Works												
RC1165	Construct drainage N/B verge CH28400 to CH28500	67	67	16-Apr-13	08-Jul-13	04-May-13	24-Jul-13					
RC1140	Construct drainage T5 alignment	75	75	21-Jan-13	25-Apr-13	15-Apr-13	15-Jul-13					
RC1170	Construct drainage S/B verge CH28400 to CH28500	67	67	21-Jan-13	16-Apr-13	04-May-13	24-Jul-13					
Roadworks												
RC1150	Roadworks T5 alignment	60	60	09-Mar-13	24-May-13	31-May-13	10-Aug-13					
RC1180	Roadworks S/B verge CH28400 to CH28500	50	50	02-Mar-13	04-May-13	13-Jun-13	10-Aug-13					
Stage 2 NE15 West Side												
Pile Cap / Footing												

- Remaining Level of Effort
- Critical R...
- Actual Work
- Remaining Work
- ◆ Milestone

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Design and Build of Traffic Improvement to Tuen Mun Road Town Centre Section

Activity ID	Activity Name	Original Duration	Remaining Duration	Start	Finish	Late Start	Late Finish	2013				
								Jan	Feb	Mar	Apr	May
								36	37	38	39	40
RC1295	Construct pile cap NE15 PC7 to PC12	100	0	18-Aug-12 A	20-Dec-12 A	13-Mar-13	13-Mar-13	Construct pile cap NE15 PC7 to PC12				
NB Structural Steel Post/Column Erection												
RC1160	Erection NE15 steel column (west side)	16	16	21-Jan-13	07-Feb-13	13-Mar-13	30-Mar-13	Erection NE15 steel column (west side)				
Roadworks												
RC1790	Roadworks T5 alignment (Remaining)	60	60	21-Jan-13	03-Apr-13	31-May-13	10-Aug-13	Roadworks T5				
Stage 3 Central Median & N/B Foundation												
Utilities Diversion												
RC1730	Temporary slew existing 132kv cable (132KV-6) for NE16 PC22	30	6	24-Apr-12 A	26-Jan-13	10-Jan-13	17-Jan-13	Temporary slew existing 132kv cable (132KV-				
Pile Cap / Footing												
RC1845	Construct pat footing NE16 FT23 to FT26 & NE17 FT9 to FT14	167	48	30-Oct-12 A	21-Mar-13	15-Dec-12	18-Feb-13	Construct pat footing				
RC1350	Construct pile cap NE16 PC36	17	17	16-Apr-13	07-May-13	10-Apr-13	29-Apr-13	Construct pile cap NE16 PC22				
RC1560	Construct pile cap NE16 PC22	17	0	18-Oct-12 A	09-Jan-13 A	17-Jan-13	17-Jan-13	Construct pile cap NE16 PC22				
RC1370	Construct pat footing NE16 FT37 to FT41 & NE17 FT15 to FT20	92	80	10-Dec-12 A	02-May-13	29-Nov-12	08-Mar-13	Construct pat footing				
Concrete Column at Central Barrier												
RC1410	Construct concrete column for NE16	156	61	16-Sep-12 A	10-Apr-13	04-Jan-13	20-Mar-13	Construct concrete column for NE16				
RC1415	Construct concrete column for NE17	69	69	21-Mar-13	18-Jun-13	18-Feb-13	14-May-13	Construct concrete column for NE17				
NB Structural Steel Post/Column Erection												
RC1690	Erection NE16 N/B steel column	18	11	30-Dec-12 A	21-May-13	30-Apr-13	13-May-13	Erection NE16 N/B steel column				
NB Structural Steel Truss Erection												
RC1440	Erect NE16 central truss	29	29	10-Apr-13	15-May-13	20-Mar-13	27-Apr-13	Erect NE16 central truss				
Roadworks												
RC1685	Roadworks central barrier CH28150 to CH28500	117	117	21-Mar-13	13-Aug-13	19-Mar-13	10-Aug-13	Roadworks central barrier CH28150 to CH28500				
Stage 4 Steel Frame & Panel												
NB Structural Steel Post/Column Erection												
RC1445	Erection NE15 roof beam	16	16	02-Mar-13	20-Mar-13	31-Aug-13	19-Sep-13	Erection NE15 roof beam				
Wall and Roof Panel Installation												
RC1465	Install roof translucent roof panel NE15	21	21	02-Mar-13	26-Mar-13	17-Oct-13	09-Nov-13	Install roof translucent roof panel NE15				
RC1495	Install green and transparent wall panel NE15	42	42	21-Mar-13	14-May-13	19-Sep-13	09-Nov-13	Install green and transparent wall panel NE15				
Construction of Temporary Chi Lok Bridge												
Remove Temporary Bridge												
TB2050	Remove temporary bridge	60	0	07-Nov-12 A	05-Jan-13 A	08-Jan-13	08-Jan-13	Remove temporary bridge				
Construction of New Siu On Bridge												
Column, Pier Head and Staircase												
SO1310	Construct N/B staircase and lift structure	45	0	04-Jul-12 A	26-Dec-12 A	30-Oct-13	30-Oct-13	Construct N/B staircase and lift structure				
Lift Installation												
SO1130	Lift installation	45	5	01-Sep-12 A	31-Jan-13	05-Nov-13	09-Nov-13	Lift installation				
E&M and Finishing Works												
SO1110	Finishing works	90	54	16-Oct-12 A	27-Mar-13	05-Sep-13	09-Nov-13	Finishing works				

█ Remaining Level of Effort
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								Jan	Feb	Mar	Apr	May
								36	37	38	39	40
SO1120	E&M installation	90	54	10-Dec-12 A	27-Mar-13	05-Sep-13	09-Nov-13					
Completion of New Siu On Bridge												
SO1140	Completion of new Siu On bridge	0	0		27-Mar-13		09-Nov-13					◆ Completion of new
TCSS and Fire Fighting System												
TCSS and Fire Fighting System												
TCSS and Fire Fighting System												
TCSS1000	Section 2 TCSS installation	692	280	11-Mar-11 A	31-Dec-13	11-Mar-11	09-Nov-13					
TCSS1010	Section 2 Street lighting & Fire Fighting system installation	692	280	11-Mar-11 A	31-Dec-13	11-Mar-11	09-Nov-13					
Section III of Works												
Scheme D (CH28200 - CH27785)												
Stage 1 N/B Foundation												
Pile Cap / Footing												
RD1710	Construct pile cap and wall NE26 PC1 to PC10	77	51	08-Mar-12 A	23-Mar-13	28-Nov-12	29-Jan-13					Construct pile cap at
NB Structural Steel Post/Column Erection												
RD1380	Erect NE26 S/B steel column	29	29	23-Mar-13	02-May-13	03-Jun-13	09-Jul-13					Er
Roadworks												
RD1310	Roadworks N/B verge CH27950 to CH28150	50	5	30-Jan-12 A	25-Jan-13	22-Jan-13	28-Jan-13					Roadworks N/B verge CH27950 to CH28150
Stage 2 S/B Foundation												
NB Structural Steel Post/Column Erection												
RD1090	Erect NE26 steel columnn (PC11 to PC13)	9	9	21-Jan-13	30-Jan-13	27-Jun-13	09-Jul-13					Erect NE26 steel columnn (PC11 to PC13)
Stage 3 Central Median Foundation												
Pile Cap / Footing												
RD1475	Construct pile cap & pad footing NE20 PC1, FT2 to FT7	117	17	19-Sep-12 A	18-Feb-13	28-Jan-13	20-Feb-13					Construct pile cap & pad footing N
RD1450	Construct pad footing NE18 FT10 to FT15	100	100	26-Jan-13	01-Jun-13	27-Sep-12	28-Jan-13					
Concrete Column at Central Barrier												
RD1502	Construct concrete column for NE20	81	81	18-Feb-13	30-May-13	18-Mar-13	28-Jun-13					
NB Structural Steel Post/Column Erection												
RD1490	Erect NE24 steel column	36	36	21-Jan-13	06-Mar-13	09-Aug-13	21-Sep-13					Erect NE24 steel column
NB Structural Steel Truss Erection												
RD1660	Erect NE26 central truss	28	28	21-Jan-13	25-Feb-13	04-Jun-13	09-Jul-13					Erect NE26 central truss
Roadworks												
RD1860	Roadworks along central median CH27800 to CH28250	113	113	08-Mar-13	26-Jul-13	23-Mar-13	10-Aug-13					
Stage 4 NE18, NE21 & NE23 Foundation												
Pile Cap / Footing												
RD3040	Construct pad footing NE18 FT1 to FT9	133	70	03-Dec-12 A	08-May-13	28-Dec-12	25-Mar-13					
RD3070	Construct pad footing NE23 FT1 to FT12	200	71	16-Jun-12 A	07-Jun-13	21-May-13	14-Aug-13					
Stage 5 NE20 & NE22 Foundation												

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								Jan	Feb	Mar	Apr	May
								36	37	38	39	40
Drainage Works												
RD1870	Construct drainage for Wong Chu road	93	93	21-Jan-13	20-May-13	21-Mar-13	17-Jul-13					
Roadworks												
RD1100	Roadworks for re-align Wong Chu Road	70	70	18-Mar-13	14-Jun-13	20-May-13	10-Aug-13					
Stage 6 Steel Frame & Panel												
Wall and Roof Panel Installation												
RD3130	Install absorptive & transparent wall panel NE25	26	1	19-Nov-12 A	21-Jan-13	02-Nov-13	02-Nov-13					
RD1605	Install roof cladding & translucent roof panel NE22	29	17	16-Nov-12 A	16-Aug-13	21-Oct-13	09-Nov-13					
RD3120	Install absorptive & transparent wall panel NE24	35	35	07-Mar-13	20-Apr-13	21-Sep-13	02-Nov-13					
RD3090	Install green and transparent wall panel NE22	24	14	16-Nov-12 A	13-Aug-13	24-Oct-13	09-Nov-13					
Construction of Vehicular Bridge S1												
Temporary Traffic Arrangement												
S1B1510	Submit and approve TTA for Modification of existing Wong Chu Road flyover	120	82	13-Dec-12 A	11-Apr-13	29-Nov-12	18-Feb-13					
Pile Cap												
S1B4100	Construct South Abutment	60	15	03-Oct-12 A	06-Feb-13	11-Dec-12	31-Dec-12					
S1B4110	Construct North Abutment	60	24	04-Sep-12 A	09-Mar-13	31-Dec-12	29-Jan-13					
Pier and Pier Head												
S1B5030	Construct Column & Column Head for Pier 7	35	0	18-Oct-12 A	24-Dec-12 A	22-Jan-13	22-Jan-13					
S1B5050	Construct Column & Column Head for Pier 9	35	0	14-Dec-12 A	14-Jan-13 A	05-Feb-13	05-Feb-13					
S1B5080	Construct Column & Column Head for Pier 2	35	35	21-Jan-13	05-Mar-13	09-Feb-13	26-Mar-13					
S1B5090	Construct Column & Column Head for Pier 1	35	0	06-Dec-12 A	22-Dec-12 A	13-Apr-13	13-Apr-13					
Bridge S1 Deck Construction												
S1B1060	Falseworks for Bridge Deck Pier 7 to Pier 3	40	0	25-Jul-12 A	04-Jan-13 A	22-Jan-13	22-Jan-13					
S1B1440	Deck Construction Pier 7 to Pier 3	60	18	29-Aug-12 A	09-Feb-13	22-Jan-13	15-Feb-13					
S1B1442	Falseworks for Bridge Deck Pier 7 to South Abutment	50	50	04-Feb-13	11-Apr-13	12-Dec-12	15-Feb-13					
S1B1444	Deck Construction Pier 7 to South Abutment	45	45	11-Apr-13	05-Jun-13	15-Feb-13	13-Apr-13					
S1B1450	Falseworks for Bridge Deck Pier 3 to North Abutment	30	30	09-Feb-13	19-Mar-13	05-Mar-13	13-Apr-13					
Parapet Type A & B Installation												
S1B1070	Construct parapet Pier 7 to Pier 3	60	60	14-Feb-13	29-Apr-13	27-May-13	07-Aug-13					
Modification of Existing Wong Chu Road Flyover												
S1B1090	Modification of existing Wong Chu Road flyover	120	120	12-Apr-13	03-Sep-13	19-Feb-13	17-Jul-13					
Scheme E (CH27785 - CH27000)												
Stage 2 NE27 Central Median Foundation												
Concrete Column at Central Barrier												
RE1100	Erect NE27 N/B steel column	45	0	01-Jan-13 A	08-Jan-13 A	10-May-13	10-May-13					
Roadworks												
RE1200	Existing N/B road reconstruction ML CH27550 to CH27750	67	16	25-Jun-12 A	07-Feb-13	16-Oct-13	02-Nov-13					

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								Jan	Feb	Mar	Apr	May
								36	37	38	39	40
Stage 3 NE27 S/B Foundation												
Pile Cap / Footing												
RE1040	Construct pad footing and pile cap NE27 PC1 to FT15	116	22	08-Oct-12 A	20-Feb-13	27-Dec-12	23-Jan-13					
NB Structural Steel Post/Column Erection												
RE1060	Erect NE27 S/B steel column	45	45	20-Feb-13	17-Apr-13	20-Feb-13	18-Apr-13					
Drainage Works												
RE1070	Construct drainage S/B verge CH27550 to CH27750	67	67	20-Feb-13	14-May-13	23-Jan-13	18-Apr-13					
Roadworks												
RE1202	Roadworks S/B verge CH27550 to CH27750	50	50	01-Apr-13	04-Jun-13	07-Mar-13	10-May-13					
Stage 4 Steel Frame & Panel												
Temporary Traffic Arrangement												
RE1020	Submit and approve TTA for RE Stage 3	120	120	05-Feb-13	04-Jun-13	10-Jan-13	10-May-13					
Construction of Reinforced Earth Wall 6SW-A/FR10												
REW 6SW-A/FR10												
REW1010	Construct RE wall 6SW-A/FR10 (7 bays)	95	1	05-Mar-12 A	21-Jan-13	24-Dec-12	27-Dec-12					
TCSS and Fire Fighting System												
TCSS and Fire Fighting System												
TCSS and Fire Fighting System												
TCSS1030	Section 3 Street lighting & Fire Fighting system installation	644	225	13-Jan-11 A	25-Oct-13	13-Jan-11	09-Nov-13					
TCSS1020	Section 3 TCSS installation	644	225	13-Jan-11 A	25-Oct-13	13-Jan-11	09-Nov-13					
Section IIIC of Works												
Landscaping Works in Portion 4												
Landscaping Works												
Landscaping Works												
3C1100	Compensatory planting works at Location No.33 (3 nos. tree pot)	12	12	21-Jan-13	05-Feb-13	24-Oct-13	08-Nov-13					
3C1150	Compensatory planting works at Location No.34C (5 nos.)	18	18	21-Jan-13	13-Feb-13	16-Oct-13	08-Nov-13					
Section IIIG of Works												
Landscaping Works in Portion 4												
Landscaping Works												
Landscaping Works												
3G1090	Compensatory planting works at Location No.13 (10 nos.)	18	18	21-Jan-13	13-Feb-13	15-Apr-13	08-May-13					
3G1010	Compensatory planting works at Location No.2 (3 nos.)	12	12	06-Feb-13	21-Feb-13	01-May-13	16-May-13					
3G1040	Compensatory planting works at Location No.6 (2 nos. tree pot)	12	12	14-Feb-13	01-Mar-13	09-May-13	24-May-13					
3G1050	Compensatory planting works at Location No.8 (2 nos. tree pot)	12	12	22-Feb-13	11-Mar-13	17-May-13	03-Jun-13					
3G1060	Compensatory planting works at Location No.9 (2 nos. tree pot)	12	12	04-Mar-13	19-Mar-13	27-May-13	11-Jun-13					
3G1070	Compensatory planting works at Location No.10 (9 nos.)	18	18	12-Mar-13	04-Apr-13	04-Jun-13	27-Jun-13					

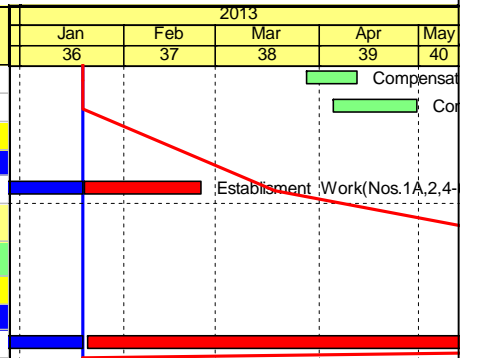
█ Remaining Level of Effort █ Critical R...
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								Jan	Feb	Mar	Apr	May
3G1140	Compensatory planting works at Location No.17 (3 nos.)	12	12	28-Mar-13	12-Apr-13	20-Jun-13	05-Jul-13	36	37	38	39	40
3G1160	Compensatory planting works at Location No.18A (9 nos.)	18	18	05-Apr-13	30-Apr-13	28-Jun-13	23-Jul-13					
Establishment Works												
Establishment Works												
3G1360	Establishment Work(Nos.1A,2,4-6,8-10,12,13,13A-B,14-18,18A-C,20,20A, 21,22,24,;	365	36	25-Feb-12 A	24-Feb-13	20-Jan-13	24-Feb-13					
Section IV of Works												
Preservation and Protection of Trees												
Preservation and Protection of Existing Trees												
Preservation and Protection of Existing Trees												
S4-1000	Preservation and protection of trees	982	238	26-Feb-10 A	09-Nov-13	21-Jan-13	09-Nov-13					



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Appendix B

**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, noise, water quality, ecology, waste management 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

Mitigation measures are implemented in three levels, namely Level 1, which involves adoption of quiet PME; Level 2, which involves provision of movable noise barrier; and Level 3, which involves scheduling of construction activities.

Level 1 – Adoption of Quiet PME

- Quieter PME to be used in the assessment are given in **Table A**.

Table A Listing of Quiet PME items

Powered Mechanical Equipment (PME)	Identification Code / BS5228	Maximum SWL, dB(A)
Excavator	C8/33	102
Crane	C7/114	101
Truck	C3/59	105
Concrete Truck	C6/35	100
Poker Vibrator	CNP 173	102
Asphalt Paver	C8/24	101
Roller, vibratory	C3/115	102

Level 2 – Use of Movable Noise Barrier

- Use of movable noise barrier (3m high or above) is proposed to be provided for the PMEs operated in the vicinity of the NSRs given in **Table B** during the construction phase.

Table B NSRs – with movable noise barrier

NSR	Description
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

Remark: NSR with asterisk means educational institution.

Level 3 – Scheduling of Construction Activities

- It is proposed that site clearance and the following activities not to be undertaken in the vicinity of the NSR LCK at stage 2 (Ch. 28050 – 28200 of TMR) so as to reduce construction noise impact during normal teaching hours.
 - Truck would not operate concurrently with other PMEs during tree transplanting and noise barrier foundation work.
 - Tree Transplanting would not be undertaken concurrently with Bulk Excavation and Utilities Diversion.
 - Construction of Storm Water Drain would not be undertaken concurrently with Noise Barrier/Enclosure Foundation.
 - Construction of Sub-base and Road Base would not be undertaken concurrently with Noise Barrier/Enclosure Installation.
 - Road Surfacing, Construction of Road kerbs, Central Dividers, Parapets, and Installation of Crash Cushion and Sign Gantry would not be undertaken concurrently.
 - Installation of Gantry and Directional Lighting, and Street Lighting would not be undertaken concurrently.
- In order to avoid or reduce the construction noise problems at the schools during examination, the Contractor of the Project is suggested to liaison with all the relevant schools (CMA, LWF, LCK, LCKP and CSBS) to check out their examination periods and

activities at the beginning of the work programme. Thus, the Contractor can make good planning and arrangement of works and provide sufficient mitigation plans to alleviate the noise impacts.

- Good Site Practice:
 - Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction program.
 - 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.
 - Mobile plant should be sited as far away from NSRs as possible.
 - Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.

Water Quality related

Construction Runoff and Drainage

The site practices outlined in ProPECC PN 1/94 "Construction Site Drainage" should be followed as far as practicable in order to minimise surface runoff and the chance of erosion, and also to retain and reduce any suspended solids prior to discharge. These practices include the following items:

- Before commencing any site formation work, all sewer and drainage connections should be sealed to prevent debris, soil, sand etc. from entering public sewers/drains.
- 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.
- 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.
- Exposed soil surfaces should be protected by paving or fill material as soon as possible to reduce the potential of soil erosion.
- 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.

General Construction Activities

Debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering the nearby local stormwater drainage system. Stockpiles of cement and other construction materials should be kept covered when not being used.

- 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.

Sewage Effluents

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.

Waste Management related

Good Site Practices

Adverse impacts related to waste management are not expected to arise, provided that good site practices are adhered to. Recommendations for good site practices during the construction activities include:

- 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;
- Training of site personnel in proper waste management and chemical handling procedures;
- Provision of sufficient waste disposal points and regular collection for disposal;
- Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers;
- Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and
- A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).

Waste Reduction Measures

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:

- 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;
- Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce;
- Any unused chemicals or those with remaining functional capacity shall be recycled;
- Use of reusable non-timber formwork to reduce the amount of C&D material;
- Prior to disposal of C&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;
- Proper storage and site practices to minimise the potential for damage or contamination of construction materials; and
- Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.

In addition to the above measures, specific mitigation measures are recommended below for the identified waste arising to minimise environmental impacts during handling, transportation and disposal of these wastes.

Construction and Demolition Material

In order to minimise the impact resulting from collection and transportation of inert C&D material for off-site disposal, it is recommended that the excavated fill material shall be re-used on-site as backfill material as far as possible. 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. C&D waste would require disposal to the designated landfill site. In order to monitor the disposal of C&D materials at the public fill reception facility and landfill and to control fly-tipping, a trip-ticket system should be included (see ETWB TCW No. 31/2004 for details).

Chemical Wastes

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. 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.

General Refuse

General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material.

Ecology related

Following EIAO-TM Annex 16 guidelines, mitigation measures are discussed in this section to avoid, minimise and compensate for identified ecological impacts.

Avoid

Construction activities should be confined to developed areas of low ecological value. There should be no direct impact on other habitats within the Study Area.

Minimise

Noise mitigation measures, including installation of noise-emitting construction plant away from egretry, 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, 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. These measures could minimise disturbance to habitats within and adjacent to the proposed Works Area.

In order to minimise the impact of construction dust to the vegetation and associated wildlife within and around the proposed Works Area, practical measures such as regular watering, complete coverage of dusty material storage piles, and the use of minimum practical height for dropping excavated material should be implemented.

Standard good site practice measures should be implemented and should include:

- Placement of equipment in designated Works Areas within the existing disturbed land.
- Construction activities should be restricted to the proposed Works Area.
- The proposed Works Area should be reinstated immediately after completion of the works.
- Open burning on proposed works site is illegal, and will be strictly enforced.

- Waste skips should be provided to collect general refuse and construction wastes, which should be disposed regularly and properly off-site.
- Soil contaminated by fuel leaked from construction plants should be removed and treated.

Mitigation measures should be implemented to prevent and minimise the indirect impacts to the nearby Tuen Mun River Channel by controlling construction site runoff and drainage from the proposed Works Area. Site runoff could be directed towards regularly cleaned and maintained sand traps, silt traps and where appropriate, oil/grease separators to minimise risk of sedimentation and pollution to the river channel. Debris and rubbish generated on-site should be collected, handled and disposed properly.

In order to prevent and 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.

Compensate

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 quality and quantity.

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.

Summary of Implementation Schedule of Mitigation Measures

EIA Ref #	EM&A Ref#	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				Nov 12	Dec 12	Jan 13
Noise Control						
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"> only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction works; machines and plant that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; plant known to emit noise strongly in one direction should, where possible, be orientated to direct noise away from the NSRs; mobile plant should be sited as far away from NSRs as possible; and material stockpiles and other structures should be effectively utilized, where practicable, to screen noise from on-site construction activities. 	Works Sites / During Construction Phase	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	Obs ✓ ✓ ✓ ✓
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"> 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) 	Works Sites from the listed NSRs / During Construction Phase	N/O	N/O	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 *		
				Nov 12	Dec 12	Jan 13
		<ul style="list-style-type: none"> • 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) 				
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"> • truck would not operate concurrently with other PMEs during tree transplanting and noise barrier foundation work. • tree transplanting would not be undertaken concurrently with bulk excavation and utilities diversion. • construction of storm water drain would not be undertaken concurrently with noise barrier/enclosure foundation. • construction of sub-base and road base would not be undertaken concurrently with noise barrier/enclosure installation. • road surfacing, construction of road kerbs, central dividers, parapets, and installation of crash cushion and sign gantry would not be undertaken concurrently. • installation of gantry and directional lighting, and street lighting would not be undertaken concurrently. 	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 *		
				Nov 12	Dec 12	Jan 13
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 *		
				Nov 12	Dec 12	Jan 13
		<i>Air Quality Control</i>				
4.8.1	3.11.2	Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation. <ul style="list-style-type: none"> • 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 	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 *		
				Nov 12	Dec 12	Jan 13
		<ul style="list-style-type: none"> 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 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. 		✓	✓	✓
				✓	✓	✓
				Obs	✓	✓
				Obs	Rdr	Obs
				✓	✓	✓
				✓	✓	✓
				✓	✓	✓

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EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				Nov 12	Dec 12	Jan 13
		Water Quality Control				
5.8.2	4.3.2	Construction run-off and Drainage <ul style="list-style-type: none"> 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 	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 *		
				Nov 12	Dec 12	Jan 13
		<p>all times and particularly during rainstorms.</p> <ul style="list-style-type: none"> 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. Exposed soil surfaces should be protected by paving or fill material as soon as possible to reduce the potential of soil erosion. 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. 		✓	✓	✓
5.8.3 - 5.8.4	4.3.3	<p>General Construction Activities</p> <ul style="list-style-type: none"> Debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering the nearby local stormwater drainage system. Stockpiles of cement and other construction materials should be kept covered when not being used. 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 	Works Sites / During Construction Phase	✓	✓	✓
				Obs	Obs	✓
				✓	✓	✓
5.8.5	4.3.4	<p>Sewage from Construction Workforce</p> <ul style="list-style-type: none"> 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 	Works Sites / During Construction Phase	✓	✓	✓

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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 *		
				Nov 12	Dec 12	Jan 13
		Waste Management				
6.6.1	5.2.2	<p><i>Good Site Practices</i></p> <ul style="list-style-type: none"> 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. Training of site personnel in proper waste management and chemical waste handling procedures. Provision of sufficient waste disposal points and regular collection for disposal. Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers. Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors. A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites). 	Works Sites / During Construction Phase	✓	✓	✓
6.6.5	5.2.6	<p><i>Chemical Wastes</i></p> <ul style="list-style-type: none"> 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. 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. 	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 *		
				Nov 12	Dec 12	Jan 13
6.6.6	5.2.7	<p><i>General Refuse</i></p> <ul style="list-style-type: none"> General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. 	Works Sites / During Construction Phase	✓	✓	✓
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"> 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. 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. Any unused chemicals or those with remaining functional capacity shall be recycled. Use of reusable non-timber formwork to reduce the amount of C&D material. Prior to disposal of C&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. Proper storage and site practices to minimise the potential for damage or contamination of construction materials. Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. 	Works Sites / During Construction Phase	✓	✓	✓
				✓	✓	✓
				✓	✓	✓
				✓	✓	✓
				✓	Obs	Obs
				✓	✓	✓
				✓	✓	✓

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 *		
				Nov 12	Dec 12	Jan 13
6.6.4	5.2.5	<p><i>Construction and Demolition (C&D) Material</i></p> <ul style="list-style-type: none"> The excavated fill material shall be re-used on-site as backfill material as far as possible. 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. C&D waste would require disposal to the designated landfill site. In order to monitor the disposal of C&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. 	Works Sites / During Construction Phase	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓

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EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				Nov 12	Dec 12	Jan 13
		Ecology				
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"> regular watering complete coverage of dusty material storage piles the use of minimum practical height for dropping excavated material 	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"> Site runoff could be directed towards regularly cleaned and maintained sand traps, silt traps and where appropriate Oil/grease separators to minimise risk of sedimentation and pollution to the river channel. Debris and rubbish generated on-site should be collected, handled and disposed properly. 	Works Sites / During Construction Phase	✓ N/O ✓	✓ N/O ✓	✓ 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 *		
				Nov 12	Dec 12	Jan 13
7.9.5	6.2.5	Standard good site practice measures should be implemented and should include: <ul style="list-style-type: none"> • Placement of equipment in designated Works Areas within the existing disturbed land. • Construction activities should be restricted to the proposed Works Area. • The proposed Works Area should be reinstated immediately after completion of the works. • Open burning on proposed works site is illegal, and will be strictly enforced. • Waste skips should be provided to collect general refuse and construction wastes, which should be disposed regularly and properly off-site. • Soil contaminated by fuel leaked from construction plants should be removed and treated. 	Works Sites / During Construction Phase	✓ ✓ ✓ ✓ ✓ N/O	✓ ✓ ✓ ✓ ✓ N/O	✓ ✓ ✓ ✓ ✓ 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	N/O	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	N/O	N/O

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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 *		
				Nov 12	Dec 12	Jan 13
<i>Landscape and Visual</i>						
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.		✓	✓	Rdr
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.		✓	✓	✓

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EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				Nov 12	Dec 12	Jan 13
		<i>Land Contamination</i>				
9.8.3	8.2.2	<p>To minimize construction workers' potential contact with the contaminated materials</p> <ul style="list-style-type: none"> The use of bulk earth-moving excavator equipment would minimise construction workers' potential contact with the contaminated materials; 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; 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. 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; 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; 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; Records of the quantities of wastes generated and disposed of should be maintained; Adequate washing facilities should be provided on site; and 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, 	Excavation zones / During excavation	N/O	N/O	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 *		
				Nov 12	Dec 12	Jan 13
		or any construction materials such as cement and gravel. Groundwater should be disposed of in accordance with the Water Pollution Control Ordinance (Cap 358).				

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Appendix C

**Impact Air Monitoring
Results**

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section
Impact Air Quality Monitoring Result at Mrs Aw Boon Haw Secondary School (AM1) - 24 hour TSP**

Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow Rate (m ³ /min)	Elapse Time		Sampling Time	Total vol. (m ³)	(ug/m ³) AM1
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
130867	Nov-12	1-Nov-12	AM1	Fine	Normal Operation	761.0	760.0	24.0	25.0	40.0	40.0	2.8311	2.8480	0.0169	1.1896	1.1858	1.1877	13393.30	13417.30	1440.00	1710.29	9.9
130873	Nov-12	7-Nov-12	AM1	Fine	Normal Operation	758.0	756.0	25.0	22.0	40.0	40.0	2.8204	2.8720	0.0516	1.1838	1.1897	1.1868	13417.30	13441.30	1440.00	1708.92	30.2
130879	Nov-12	13-Nov-12	AM1	Fine	Normal Operation	762.0	762.0	22.0	23.0	40.0	40.0	2.8295	2.8667	0.0372	1.1960	1.1933	1.1947	13441.30	13465.30	1440.00	1720.30	21.6
130885	Nov-12	19-Nov-12	AM1	Fine	Normal Operation	756.0	759.0	24.0	24.0	40.0	40.0	2.8213	2.8684	0.0471	1.2529	1.2557	1.2543	13465.30	13489.30	1440.00	1806.19	26.1
130891	Nov-12	24-Nov-12	AM1	Fine	Normal Operation	765.0	765.0	20.0	20.0	40.0	40.0	2.8303	2.8723	0.0420	1.2707	1.2707	1.2707	13489.30	13513.30	1440.00	1829.81	23.0
130897	Nov-12	30-Nov-12	AM1	Fine	Normal Operation	761.0	761.0	23.0	23.0	40.0	40.0	2.8343	2.8881	0.0538	1.2598	1.2598	1.2598	13513.30	13537.30	1440.00	1814.11	29.7
130903	Dec-12	5-Dec-12	AM1	Fine	Normal Operation	763.0	762.0	19.0	22.0	40.0	40.0	2.8233	2.8438	0.0205	1.2711	1.2631	1.2671	13537.30	13561.30	1440.00	1824.62	11.2
130909	Dec-12	11-Dec-12	AM1	Fine	Normal Operation	765.0	764.0	15.0	17.0	40.0	40.0	2.8339	2.8729	0.0390	1.2828	1.2770	1.2799	13561.30	13585.30	1440.00	1843.06	21.2
130915	Dec-12	17-Dec-12	AM1	Fine	Normal Operation	767.0	768.0	17.0	16.0	40.0	40.0	2.8328	2.8776	0.0448	1.2797	1.2831	1.2814	13585.30	13609.30	1440.00	1845.22	24.3
130921	Dec-12	22-Dec-12	AM1	Fine	Normal Operation	764.0	765.0	15.0	15.0	40.0	40.0	2.8217	2.8672	0.0455	1.2819	1.2828	1.2824	13609.30	13633.30	1440.00	1846.58	24.6
130927	Dec-12	27-Dec-12	AM1	Fine	Normal Operation	766.0	765.0	17.0	17.0	40.0	40.0	2.8208	2.8662	0.0454	1.2788	1.2779	1.2784	13633.30	13657.30	1440.00	1840.82	24.7
130935	Jan-13	2-Jan-13	AM1	Fine	Normal Operation	765.0	768.0	19.0	22.0	40.0	40.0	2.8183	2.8647	0.0464	1.2730	1.2686	1.2708	13657.30	13681.30	1440.00	1829.95	25.4
130941	Jan-13	8-Jan-13	AM1	Fine	Normal Operation	766.0	766.0	15.0	17.0	40.0	40.0	2.8086	2.8304	0.0218	1.2837	1.2788	1.2813	13681.30	13705.30	1440.00	1845.00	11.8
130947	Jan-13	14-Jan-13	AM1	Fine	Normal Operation	761.0	758.0	17.0	16.0	40.0	40.0	2.813	2.8368	0.0238	1.2648	1.2645	1.2647	13705.30	13729.30	1440.00	1821.10	13.1
130953	Jan-13	19-Jan-13	AM1	Fine	Normal Operation	761.0	760.0	17.0	15.0	40.0	40.0	2.8095	2.8552	0.0457	1.2648	1.2685	1.2667	13729.30	13753.30	1440.00	1823.98	25.1
130959	Jan-13	25-Jan-13	AM1	Fine	Normal Operation	764.0	764.0	17.0	17.0	40.0	40.0	2.821	2.8767	0.0557	1.2674	1.2674	1.2674	13753.30	13777.30	1440.00	1825.06	30.5
130965	Jan-13	31-Jan-13	AM1	Fine	Normal Operation	765.0	766.0	17.0	17.0	40.0	40.0	2.8092	2.8308	0.0216	1.2683	1.2691	1.2687	13777.30	13801.30	1440.00	1826.93	11.8

Average (ug/m³)	21.4
Max (ug/m³)	30.5
Min (ug/m³)	9.9

Action Level (ug/m³)	146
Limit Level (ug/m³)	260

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section
Impact Air Quality Monitoring Result at Tai Tung Pui Social Service Building (AM2) - 24 hour TSP**

Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow Rate (m ³ /min)	Elapse Time		Sampling Time	Total vol. (m ³)	(ug/m ³) AM2
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
130868	Nov-12	1-Nov-12	AM2	Fine	Normal Operation	761.0	760.0	24.0	25.0	40.0	40.0	2.8178	2.8379	0.0201	1.1638	1.1603	1.1621	7547.10	7571.10	1440.00	1673.35	12.0
130874	Nov-12	7-Nov-12	AM2	Fine	Normal Operation	758.0	756.0	25.0	22.0	40.0	40.0	2.8232	2.8733	0.0501	1.1584	1.1639	1.1612	7571.10	7595.10	1440.00	1672.06	30.0
130880	Nov-12	13-Nov-12	AM2	Fine	Normal Operation	762.0	762.0	22.0	23.0	40.0	40.0	2.838	2.8641	0.0261	1.1698	1.1673	1.1686	7595.10	7619.10	1440.00	1682.71	15.5
130886	Nov-12	19-Nov-12	AM2	Fine	Normal Operation	756.0	759.0	24.0	24.0	40.0	40.0	2.8261	2.8573	0.0312	1.3352	1.3383	1.3368	7619.10	7643.10	1440.00	1924.92	16.2
130892	Nov-12	24-Nov-12	AM2	Fine	Normal Operation	765.0	765.0	20.0	20.0	40.0	40.0	2.8252	2.8533	0.0281	1.3550	1.3550	1.3550	7643.10	7667.10	1440.00	1951.20	14.4
130898	Nov-12	30-Nov-12	AM2	Fine	Normal Operation	761.0	761.0	23.0	23.0	40.0	40.0	2.8435	2.8637	0.0202	1.3429	1.3429	1.3429	7667.10	7691.10	1440.00	1933.78	10.4
130904	Dec-12	5-Dec-12	AM2	Fine	Normal Operation	763.0	762.0	19.0	22.0	40.0	40.0	2.8292	2.8755	0.0463	1.3555	1.3466	1.3511	7691.10	7715.10	1440.00	1945.51	23.8
130910	Dec-12	11-Dec-12	AM2	Fine	Normal Operation	765.0	764.0	15.0	17.0	40.0	40.0	2.8251	2.8871	0.0620	1.3685	1.3621	1.3653	7715.10	7739.10	1440.00	1966.03	31.5
130916	Dec-12	17-Dec-12	AM2	Fine	Normal Operation	767.0	768.0	17.0	16.0	40.0	40.0	2.8341	2.8686	0.0345	1.3651	1.3688	1.3670	7739.10	7763.10	1440.00	1968.41	17.5
130922	Dec-12	22-Dec-12	AM2	Fine	Normal Operation	764.0	765.0	15.0	15.0	40.0	40.0	2.8222	2.8520	0.0298	1.3675	1.3685	1.3680	7763.10	7787.10	1440.00	1969.92	15.1
130928	Dec-12	27-Dec-12	AM2	Fine	Normal Operation	766.0	765.0	17.0	17.0	40.0	40.0	2.8186	2.8527	0.0341	1.3641	1.3631	1.3636	7787.10	7811.10	1440.00	1963.58	17.4
130936	Jan-13	2-Jan-13	AM2	Fine	Normal Operation	765.0	768.0	19.0	22.0	40.0	40.0	2.8171	2.8374	0.0203	1.3576	1.3527	1.3552	7811.10	7835.10	1440.00	1951.42	10.4
130942	Jan-13	8-Jan-13	AM2	Fine	Normal Operation	766.0	766.0	15.0	17.0	40.0	40.0	2.8045	2.8464	0.0419	1.3695	1.3641	1.3668	7835.10	7859.10	1440.00	1968.19	21.3
130948	Jan-13	14-Jan-13	AM2	Fine	Normal Operation	761.0	758.0	17.0	16.0	40.0	40.0	2.8126	2.8792	0.0666	1.2686	1.2682	1.2684	7859.10	7883.10	1440.00	1826.50	36.5
130954	Jan-13	19-Jan-13	AM2	Fine	Normal Operation	761.0	760.0	17.0	15.0	40.0	40.0	2.8098	2.8517	0.0419	1.2686	1.2730	1.2708	7883.10	7907.10	1440.00	1829.95	22.9
130960	Jan-13	25-Jan-13	AM2	Fine	Normal Operation	764.0	764.0	17.0	17.0	40.0	40.0	2.8067	2.8539	0.0472	1.2717	1.2717	1.2717	7907.10	7931.10	1440.00	1831.25	25.8
130966	Jan-13	31-Jan-13	AM2	Fine	Normal Operation	765.0	766.0	17.0	17.0	40.0	40.0	2.7974	2.8255	0.0281	1.2727	1.2738	1.2733	7931.10	7955.10	1440.00	1833.48	15.3

Average (ug/m ³)	19.8
Max (ug/m ³)	36.5
Min (ug/m ³)	10.4

Action Level (ug/m ³)	151
Limit Level (ug/m ³)	260

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section
Impact Air Quality Monitoring Result at Wu Siu Kui Primary School (AM3) - 24 hour TSP**

Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow Rate (m ³ /min)	Elapse Time		Sampling Time	Total vol. (m ³)	(ug/m ³) AM3
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
130869	Nov-12	1-Nov-12	AM3	Fine	Normal Operation	761.0	760.0	24.0	25.0	40.0	40.0	2.8172	2.8574	0.0402	1.2243	1.2209	1.2226	11713.39	11737.39	1440.00	1760.54	22.8
130875	Nov-12	7-Nov-12	AM3	Fine	Normal Operation	758.0	756.0	25.0	22.0	40.0	40.0	2.8242	2.8588	0.0346	1.2190	1.2244	1.2217	11737.39	11761.39	1440.00	1759.25	19.7
130881	Nov-12	13-Nov-12	AM3	Fine	Normal Operation	762.0	762.0	22.0	23.0	40.0	40.0	2.8279	2.8760	0.0481	1.2302	1.2277	1.2290	11761.39	11785.39	1440.00	1769.69	27.2
130887	Nov-12	19-Nov-12	AM3	Fine	Normal Operation	756.0	759.0	24.0	24.0	40.0	40.0	2.8411	2.8789	0.0378	1.3484	1.3513	1.3499	11785.39	11809.39	1440.00	1943.78	19.4
130893	Nov-12	24-Nov-12	AM3	Fine	Normal Operation	765.0	765.0	20.0	20.0	40.0	40.0	2.8351	2.8826	0.0475	1.3669	1.3669	1.3669	11809.39	11833.39	1440.00	1968.34	24.1
130899	Nov-12	30-Nov-12	AM3	Fine	Normal Operation	761.0	761.0	23.0	23.0	40.0	40.0	2.8263	2.8628	0.0365	1.3556	1.3556	1.3556	11833.39	11857.39	1440.00	1952.06	18.7
130905	Dec-12	5-Dec-12	AM3	Fine	Normal Operation	763.0	762.0	19.0	22.0	40.0	40.0	2.82	2.8396	0.0196	1.3674	1.3590	1.3632	11857.39	11881.39	1440.00	1963.01	10.0
130911	Dec-12	11-Dec-12	AM3	Fine	Normal Operation	765.0	764.0	15.0	17.0	40.0	40.0	2.8177	2.8554	0.0377	1.3795	1.3735	1.3765	11881.39	11905.39	1440.00	1982.16	19.0
130917	Dec-12	17-Dec-12	AM3	Fine	Normal Operation	767.0	768.0	17.0	16.0	40.0	40.0	2.8281	2.8704	0.0423	1.3763	1.3797	1.3780	11905.39	11929.39	1440.00	1984.32	21.3
130923	Dec-12	22-Dec-12	AM3	Fine	Normal Operation	764.0	765.0	15.0	15.0	40.0	40.0	2.8223	2.8629	0.0406	1.3785	1.3795	1.3790	11929.39	11953.39	1440.00	1985.76	20.4
130929	Dec-12	27-Dec-12	AM3	Fine	Normal Operation	766.0	765.0	17.0	17.0	40.0	40.0	2.8166	2.8800	0.0634	1.3754	1.3744	1.3749	11953.39	11977.39	1440.00	1979.86	32.0
130937	Jan-13	2-Jan-13	AM3	Fine	Normal Operation	765.0	768.0	19.0	22.0	40.0	40.0	2.8218	2.8486	0.0268	1.3693	1.3647	1.3670	11977.39	12001.39	1440.00	1968.48	13.6
130943	Jan-13	8-Jan-13	AM3	Fine	Normal Operation	766.0	766.0	15.0	17.0	40.0	40.0	2.8049	2.8474	0.0425	1.3804	1.3754	1.3779	12001.39	12025.39	1440.00	1984.18	21.4
130949	Jan-13	14-Jan-13	AM3	Fine	Normal Operation	761.0	758.0	17.0	16.0	40.0	40.0	2.813	2.8671	0.0541	1.2312	1.2307	1.2310	12025.39	12049.39	1440.00	1772.57	30.5
130955	Jan-13	19-Jan-13	AM3	Fine	Normal Operation	761.0	760.0	17.0	15.0	40.0	40.0	2.8157	2.8528	0.0371	1.2312	1.2357	1.2335	12049.39	12073.39	1440.00	1776.17	20.9
130961	Jan-13	25-Jan-13	AM3	Fine	Normal Operation	764.0	764.0	17.0	17.0	40.0	40.0	2.7973	2.8440	0.0467	1.2344	1.2344	1.2344	12073.39	12097.39	1440.00	1777.54	26.3
130967	Jan-13	31-Jan-13	AM3	Fine	Normal Operation	765.0	766.0	17.0	17.0	40.0	40.0	2.8052	2.8426	0.0374	1.2354	1.2365	1.2360	12097.39	12121.39	1440.00	1779.77	21.0

Average (ug/m³)	21.7
Max (ug/m³)	32.0
Min (ug/m³)	10.0

Action Level (ug/m³)	150
Limit Level (ug/m³)	260

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section
Impact Air Quality Monitoring Result at Choi Cheung Kok Secondary School (AM4) - 24 hour TSP**

Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow Rate (m ³ /min)	Elapse Time		Sampling Time	Total vol. (m ³)	(ug/m ³) AM4
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
130870	Nov-12	1-Nov-12	AM4	Fine	Normal Operation	761.0	760.0	24.0	25.0	40.0	40.0	2.8213	2.8462	0.0249	1.1741	1.1707	1.1724	12595.12	12619.12	1440.00	1688.26	14.7
130876	Nov-12	7-Nov-12	AM4	Fine	Normal Operation	758.0	756.0	25.0	22.0	40.0	40.0	2.8269	2.8616	0.0347	1.1689	1.1742	1.1716	12619.12	12643.12	1440.00	1687.03	20.6
130882	Nov-12	13-Nov-12	AM4	Fine	Normal Operation	762.0	762.0	22.0	23.0	40.0	40.0	2.8276	2.8600	0.0324	1.1798	1.1774	1.1786	12643.12	12667.12	1440.00	1697.18	19.1
130888	Nov-12	19-Nov-12	AM4	Fine	Normal Operation	756.0	759.0	24.0	24.0	40.0	40.0	2.8329	2.8553	0.0224	1.3237	1.3266	1.3252	12667.12	12691.12	1440.00	1908.22	11.7
130894	Nov-12	24-Nov-12	AM4	Fine	Normal Operation	765.0	765.0	20.0	20.0	40.0	40.0	2.8313	2.8808	0.0495	1.3420	1.3420	1.3420	12691.12	12715.12	1440.00	1932.48	25.6
130900	Nov-12	30-Nov-12	AM4	Fine	Normal Operation	761.0	761.0	23.0	23.0	40.0	40.0	2.8361	2.8732	0.0371	1.3309	1.3309	1.3309	12715.12	12739.12	1440.00	1916.50	19.4
130906	Dec-12	5-Dec-12	AM4	Fine	Normal Operation	763.0	762.0	19.0	22.0	40.0	40.0	2.8205	2.8502	0.0297	1.3425	1.3342	1.3384	12739.12	12763.12	1440.00	1927.22	15.4
130912	Dec-12	11-Dec-12	AM4	Fine	Normal Operation	765.0	764.0	15.0	17.0	40.0	40.0	2.8294	2.8502	0.0208	1.3545	1.3485	1.3515	12763.12	12787.12	1440.00	1946.16	10.7
130918	Dec-12	17-Dec-12	AM4	Fine	Normal Operation	767.0	768.0	17.0	16.0	40.0	40.0	2.8374	2.8740	0.0366	1.3513	1.3548	1.3531	12787.12	12811.12	1440.00	1948.39	18.8
130924	Dec-12	22-Dec-12	AM4	Fine	Normal Operation	764.0	765.0	15.0	15.0	40.0	40.0	2.8178	2.8499	0.0321	1.3535	1.3545	1.3540	12811.12	12835.12	1440.00	1949.76	16.5
130930	Dec-12	27-Dec-12	AM4	Fine	Normal Operation	766.0	765.0	17.0	17.0	40.0	40.0	2.8156	2.8603	0.0447	1.3504	1.3495	1.3500	12835.12	12859.12	1440.00	1943.93	23.0
130938	Jan-13	2-Jan-13	AM4	Fine	Normal Operation	765.0	768.0	19.0	22.0	40.0	40.0	2.8226	2.8905	0.0679	1.3444	1.3399	1.3422	12859.12	12883.12	1440.00	1932.70	35.1
130944	Jan-13	8-Jan-13	AM4	Fine	Normal Operation	766.0	766.0	15.0	17.0	40.0	40.0	2.8062	2.8330	0.0268	1.3554	1.3504	1.3529	12883.12	12907.12	1440.00	1948.18	13.8
130950	Jan-13	14-Jan-13	AM4	Fine	Normal Operation	761.0	758.0	17.0	16.0	40.0	40.0	2.8069	2.8505	0.0436	1.2707	1.2703	1.2705	12907.12	12931.12	1440.00	1829.52	23.8
130956	Jan-13	19-Jan-13	AM4	Fine	Normal Operation	761.0	760.0	17.0	15.0	40.0	40.0	2.7799	2.8598	0.0799	1.2707	1.2748	1.2728	12931.12	12955.12	1440.00	1832.76	43.6
130962	Jan-13	25-Jan-13	AM4	Fine	Normal Operation	764.0	764.0	17.0	17.0	40.0	40.0	2.7892	2.8340	0.0448	1.2736	1.2736	1.2736	12955.12	12979.12	1440.00	1833.98	24.4
130968	Jan-13	31-Jan-13	AM4	Fine	Normal Operation	765.0	766.0	17.0	17.0	40.0	40.0	2.7926	2.8399	0.0473	1.2745	1.2755	1.2750	12979.12	13003.12	1440.00	1836.00	25.8

Average (ug/m ³)	21.3
Max (ug/m ³)	43.6
Min (ug/m ³)	10.7

Action Level (ug/m ³)	150
Limit Level (ug/m ³)	260

**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section
Impact Air Quality Monitoring Result at Tuen Mun Town Hall (AM5) - 24 hour TSP**

Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow Rate (m ³ /min)	Elapse Time		Sampling Time	Total vol. (m ³)	(ug/m ³) AM5
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
130871	Nov-12	1-Nov-12	AM5	Fine	Normal Operation	761.0	760.0	24.0	25.0	40.0	40.0	2.8265	2.8499	0.0234	1.1822	1.1791	1.1807	12381.27	12405.27	1440.00	1700.14	13.8
130877	Nov-12	7-Nov-12	AM5	Fine	Normal Operation	758.0	756.0	25.0	22.0	40.0	40.0	2.818	2.8542	0.0362	1.1773	1.1823	1.1798	12405.27	12429.27	1440.00	1698.91	21.3
130883	Nov-12	13-Nov-12	AM5	Fine	Normal Operation	762.0	762.0	22.0	23.0	40.0	40.0	2.8184	2.8431	0.0247	1.1877	1.1854	1.1866	12429.27	12453.27	1440.00	1708.63	14.5
130889	Nov-12	19-Nov-12	AM5	Fine	Normal Operation	756.0	759.0	24.0	24.0	40.0	40.0	2.8334	2.8559	0.0225	1.2478	1.2506	1.2492	12453.27	12477.27	1440.00	1798.85	12.5
130895	Nov-12	24-Nov-12	AM5	Fine	Normal Operation	765.0	765.0	20.0	20.0	40.0	40.0	2.8435	2.8693	0.0258	1.2657	1.2657	1.2657	12477.27	12501.27	1440.00	1822.61	14.2
130901	Nov-12	30-Nov-12	AM5	Fine	Normal Operation	761.0	761.0	23.0	23.0	40.0	40.0	2.7564	2.8610	0.1046	1.2548	1.2548	1.2548	12501.27	12525.27	1440.00	1806.91	57.9
130907	Dec-12	5-Dec-12	AM5	Fine	Normal Operation	763.0	762.0	19.0	22.0	40.0	40.0	2.835	2.8942	0.0592	1.2662	1.2581	1.2622	12525.27	12549.27	1440.00	1817.50	32.6
130913	Dec-12	11-Dec-12	AM5	Fine	Normal Operation	765.0	764.0	15.0	17.0	40.0	40.0	2.8387	2.8916	0.0529	1.2780	1.2721	1.2751	12549.27	12573.27	1440.00	1836.07	28.8
130919	Dec-12	17-Dec-12	AM5	Fine	Normal Operation	767.0	768.0	17.0	16.0	40.0	40.0	2.823	2.8690	0.0460	1.2749	1.2782	1.2766	12573.27	12597.27	1440.00	1838.23	25.0
130925	Dec-12	22-Dec-12	AM5	Fine	Normal Operation	764.0	765.0	15.0	15.0	40.0	40.0	2.8186	2.8764	0.0578	1.2770	1.2780	1.2775	12597.27	12621.27	1440.00	1839.60	31.4
130931	Dec-12	27-Dec-12	AM5	Fine	Normal Operation	766.0	765.0	17.0	17.0	40.0	40.0	2.8235	2.8566	0.0331	1.2740	1.2731	1.2736	12621.27	12645.27	1440.00	1833.91	18.0
130939	Jan-13	2-Jan-13	AM5	Fine	Normal Operation	765.0	768.0	19.0	22.0	40.0	40.0	2.8178	2.8344	0.0166	1.2681	1.2637	1.2659	12645.27	12669.27	1440.00	1822.90	9.1
130945	Jan-13	8-Jan-13	AM5	Fine	Normal Operation	766.0	766.0	15.0	17.0	40.0	40.0	2.8184	2.8407	0.0223	1.2789	1.2740	1.2765	12669.27	12693.27	1440.00	1838.09	12.1
130951	Jan-13	14-Jan-13	AM5	Fine	Normal Operation	761.0	758.0	17.0	16.0	40.0	40.0	2.8113	2.8615	0.0502	1.2138	1.2135	1.2137	12693.27	12717.27	1440.00	1747.66	28.7
130957	Jan-13	19-Jan-13	AM5	Fine	Normal Operation	761.0	760.0	17.0	15.0	40.0	40.0	2.8108	2.8516	0.0408	1.2138	1.2175	1.2157	12717.27	12741.27	1440.00	1750.54	23.3
130963	Jan-13	25-Jan-13	AM5	Fine	Normal Operation	764.0	764.0	17.0	17.0	40.0	40.0	2.7973	2.8437	0.0464	1.2164	1.2164	1.2164	12741.27	12765.27	1440.00	1751.62	26.5
130969	Jan-13	31-Jan-13	AM5	Fine	Normal Operation	765.0	766.0	17.0	17.0	40.0	40.0	2.8061	2.8378	0.0317	1.2173	1.2182	1.2178	12765.27	12789.27	1440.00	1753.56	18.1

Average (ug/m³)	22.8
Max (ug/m³)	57.9
Min (ug/m³)	9.1

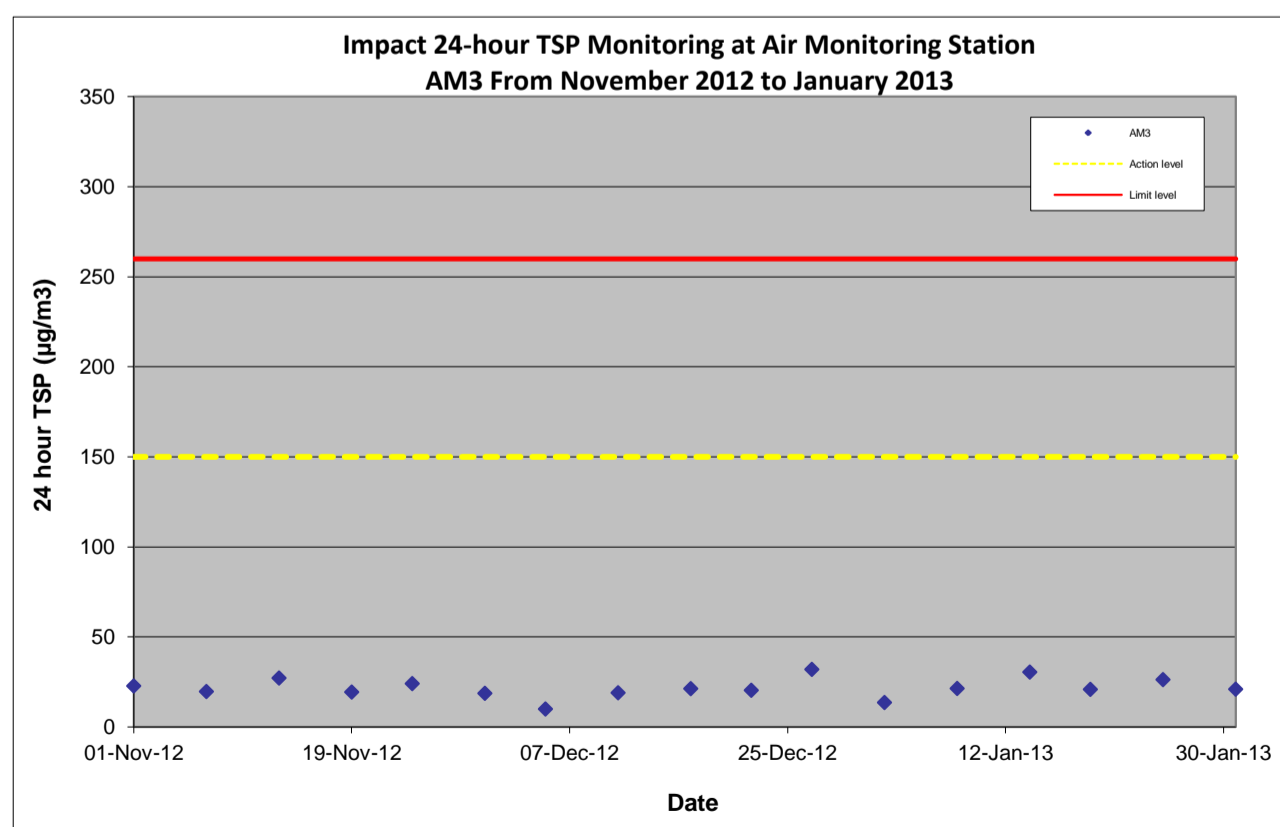
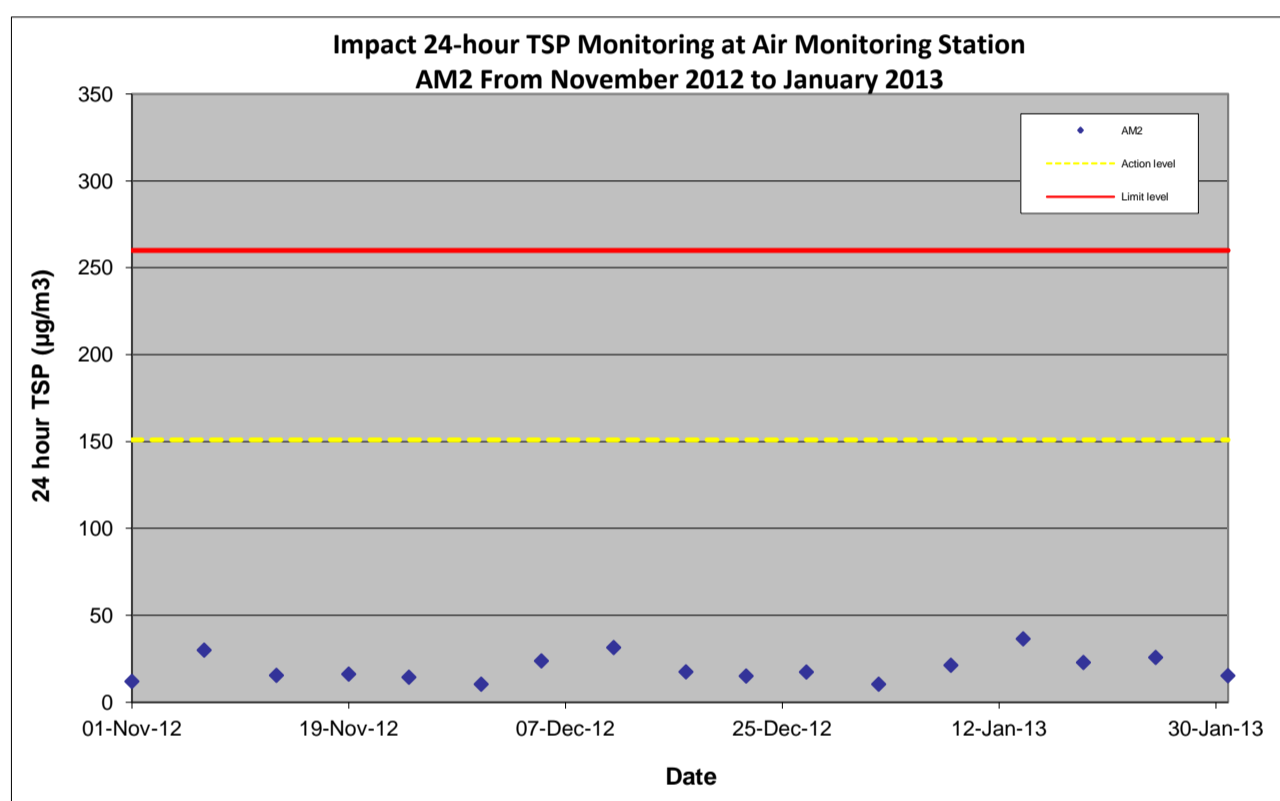
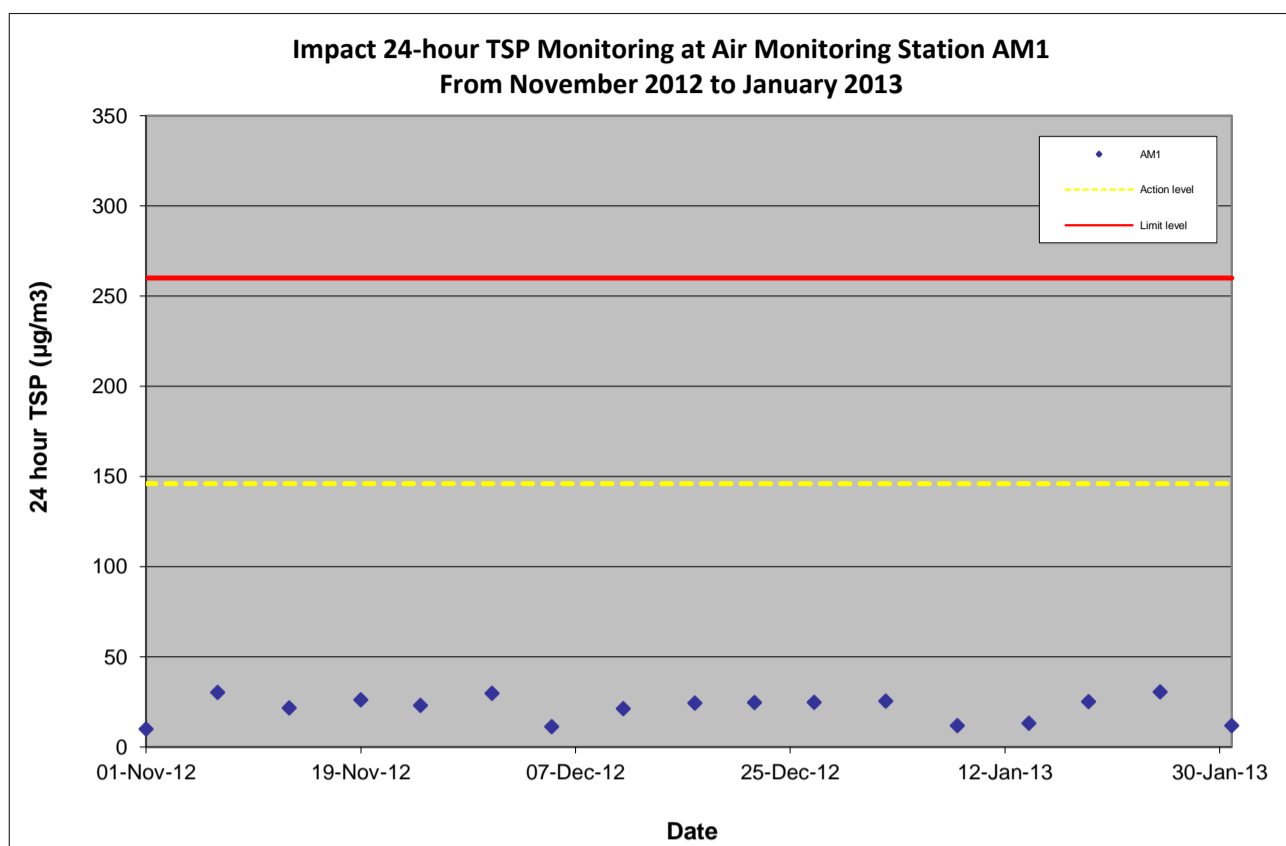
Action Level (ug/m³)	146
Limit Level (ug/m³)	260

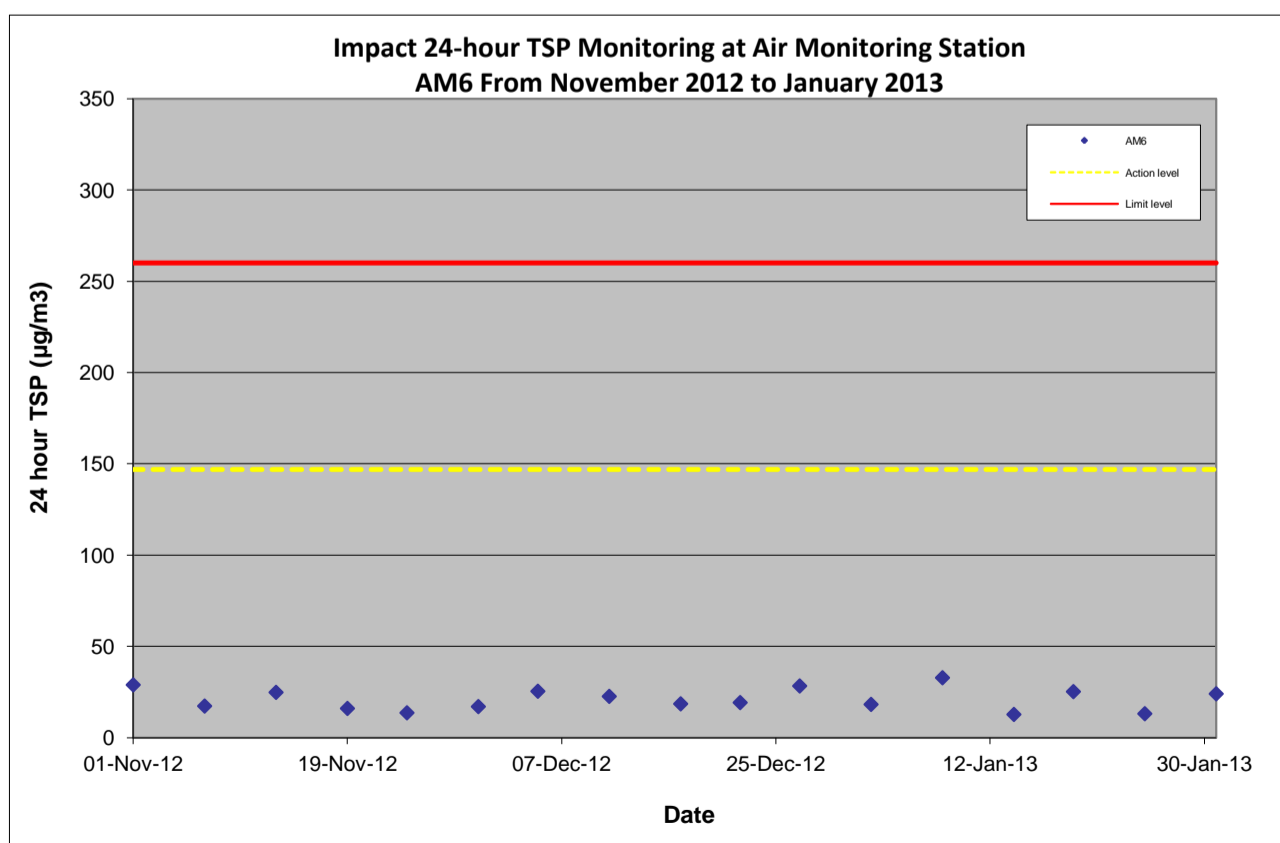
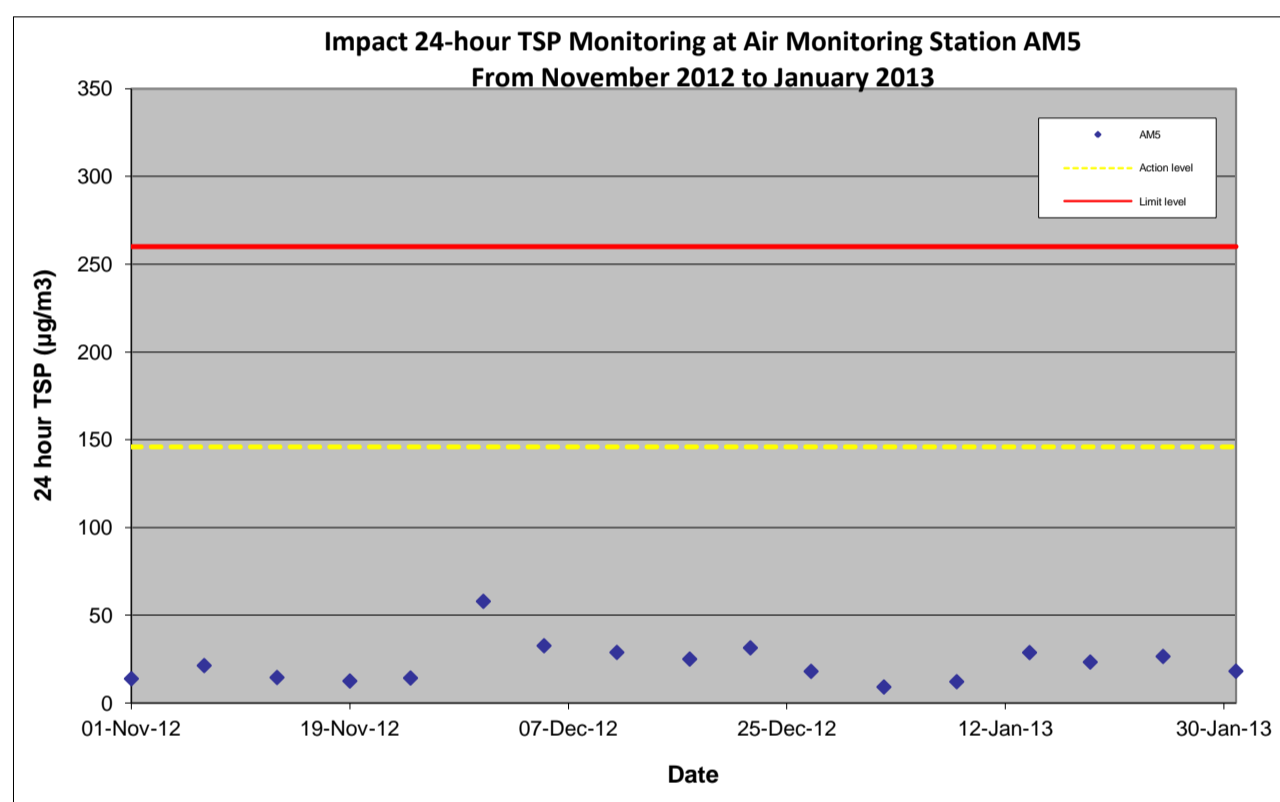
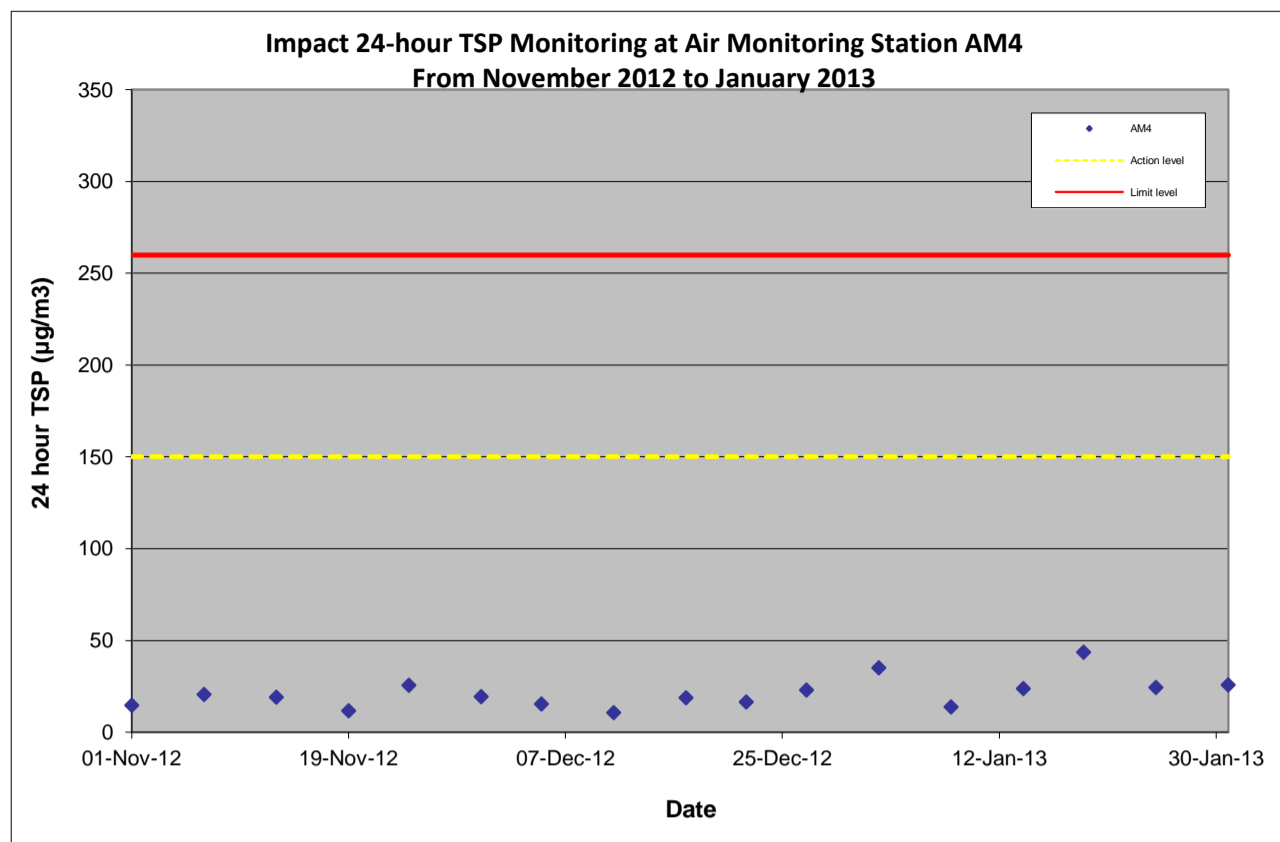
**Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section
Impact Air Quality Monitoring Result at Yan Oi Tong Community and Sports Centre (AM6) - 24 hour TSP**

Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m ³ /min)		Average Flow Rate (m ³ /min)	Elapse Time		Sampling Time (mins.)	Total vol. (m ³)	(ug/m ³) AM6
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
130872	Nov-12	1-Nov-12	AM6	Fine	Normal Operation	761.0	760.0	24.0	25.0	40.0	40.0	2.8209	2.8711	0.0502	1.2087	1.2052	1.2070	8714.80	8738.80	1440.00	1738.01	28.9
130878	Nov-12	7-Nov-12	AM6	Fine	Normal Operation	758.0	756.0	25.0	22.0	40.0	40.0	2.8244	2.8545	0.0301	1.2032	1.2088	1.2060	8738.80	8762.80	1440.00	1736.64	17.3
130884	Nov-12	13-Nov-12	AM6	Fine	Normal Operation	762.0	762.0	22.0	23.0	40.0	40.0	2.8224	2.8657	0.0433	1.2149	1.2123	1.2136	8762.80	8786.80	1440.00	1747.58	24.8
130890	Nov-12	19-Nov-12	AM6	Fine	Normal Operation	756.0	759.0	24.0	24.0	40.0	40.0	2.83	2.8533	0.0233	1.0098	1.0126	1.0112	8786.80	8810.80	1440.00	1456.13	16.0
130896	Nov-12	24-Nov-12	AM6	Fine	Normal Operation	765.0	765.0	20.0	20.0	40.0	40.0	2.8363	2.8564	0.0201	1.0279	1.0279	1.0279	8810.80	8834.80	1440.00	1480.18	13.6
130902	Nov-12	30-Nov-12	AM6	Fine	Normal Operation	761.0	761.0	23.0	23.0	40.0	40.0	2.8345	2.8594	0.0249	1.0169	1.0169	1.0169	8834.80	8858.80	1440.00	1464.34	17.0
130908	Dec-12	5-Dec-12	AM6	Fine	Normal Operation	763.0	762.0	19.0	22.0	40.0	40.0	2.8385	2.8759	0.0374	1.0284	1.0202	1.0243	8858.80	8882.80	1440.00	1474.99	25.4
130914	Dec-12	11-Dec-12	AM6	Fine	Normal Operation	765.0	764.0	15.0	17.0	40.0	40.0	2.8292	2.8629	0.0337	1.0402	1.0343	1.0373	8882.80	8906.80	1440.00	1493.64	22.6
130920	Dec-12	17-Dec-12	AM6	Fine	Normal Operation	767.0	768.0	17.0	16.0	40.0	40.0	2.8056	2.8332	0.0276	1.0371	1.0405	1.0388	8906.80	8930.80	1440.00	1495.87	18.5
130926	Dec-12	22-Dec-12	AM6	Fine	Normal Operation	764.0	765.0	15.0	15.0	40.0	40.0	2.8252	2.8539	0.0287	1.0393	1.0402	1.0398	8930.80	8954.80	1440.00	1497.24	19.2
130932	Dec-12	27-Dec-12	AM6	Fine	Normal Operation	766.0	765.0	17.0	17.0	40.0	40.0	2.8221	2.8643	0.0422	1.0362	1.0353	1.0358	8954.80	8978.80	1440.00	1491.48	28.3
130940	Jan-13	2-Jan-13	AM6	Fine	Normal Operation	765.0	768.0	19.0	22.0	40.0	40.0	2.8082	2.8351	0.0269	1.0303	1.0258	1.0281	8978.80	9002.80	1440.00	1480.39	18.2
130946	Jan-13	8-Jan-13	AM6	Fine	Normal Operation	766.0	766.0	15.0	17.0	40.0	40.0	2.828	2.8770	0.0490	1.0412	1.0362	1.0387	9002.80	9026.80	1440.00	1495.73	32.8
130952	Jan-13	14-Jan-13	AM6	Fine	Normal Operation	761.0	758.0	17.0	16.0	40.0	40.0	2.8048	2.8261	0.0213	1.1631	1.1628	1.1630	9026.80	9050.80	1440.00	1674.65	12.7
130958	Jan-13	19-Jan-13	AM6	Fine	Normal Operation	761.0	760.0	17.0	15.0	40.0	40.0	2.8143	2.8566	0.0423	1.1631	1.1670	1.1651	9050.80	9074.80	1440.00	1677.67	25.2
130964	Jan-13	25-Jan-13	AM6	Fine	Normal Operation	764.0	764.0	17.0	17.0	40.0	40.0	2.8038	2.8258	0.0220	1.1659	1.1659	1.1659	9074.80	9098.80	1440.00	1678.90	13.1
130970	Jan-13	31-Jan-13	AM6	Fine	Normal Operation	765.0	766.0	17.0	17.0	40.0	40.0	2.8043	2.8447	0.0404	1.1668	1.1677	1.1673	9098.80	9122.80	1440.00	1680.84	24.0

Average (ug/m ³)	21.0
Max (ug/m ³)	32.8
Min (ug/m ³)	12.7

Action Level (ug/m ³)	147
Limit Level (ug/m ³)	260





Appendix D

Wind Data

Wind Monitoring Data - November 2012

Date	Wind Direction (degree)	Wind Speed (km/h)
1-Nov-12	20	28
7-Nov-12	90	36.8
13-Nov-12	20	10.6
19-Nov-12	80	29
24-Nov-12	20	30.3
30-Nov-12	50	23.9

Source extracted from Hong Kong Observatory (HKO)

Wind Monitoring Data - December 2012

Date	Wind Direction (degree)	Wind Speed (km/h)
5-Dec-12	70	32.1
11-Dec-12	20	21.8
17-Dec-12	20	22.3
22-Dec-12	60	33.3
27-Dec-12	20	36

Source extracted from Hong Kong Observatory (HKO)

Wind Monitoring Data - January 2013

Date	Wind Direction (degree)	Wind Speed (km/h)
2-Jan-13	60	23.6
8-Jan-13	20	11.3
14-Jan-13	20	22.5
19-Jan-13	70	28.7
25-Jan-13	60	16.6
31-Jan-13	60	23.8

Source extracted from Hong Kong Observatory (HKO)

Appendix E

**Impact Noise
Monitoring Results**

Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 9 November 2012

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq} ,30min	Limit	L ₁₀ ,5min	L ₉₀ ,5min	L _{Aeq} ,30min	L _{Aeq} ,30min
N1	Kam Fai Garden	9:50-10:20	73	75	75	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35-11:05	73	75	76	71	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:15-11:45	66	70	68	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:30-09:00	65	70	67	63	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	69	75	71	66	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	67	70	69	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 15 November 2012

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq} ,30min	Limit	L ₁₀ ,5min	L ₉₀ ,5min	L _{Aeq} ,30min	L _{Aeq} ,30min
N1	Kam Fai Garden	10:00-10:30	73	75	76	71	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:45-11:15	72	75	75	70	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:30-12:00	67	70	69	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	8:30-9:00	65	70	68	63	67	Measured ≤ Baseline
N5	Tuen King Building	13:20-13:50	69	75	72	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	14:30-15:00	68	70	70	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 21 November 2012

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq} ,30min	Limit	L ₁₀ ,5min	L ₉₀ ,5min	L _{Aeq} ,30min	L _{Aeq} ,30min
N1	Kam Fai Garden	9:55-10:25	73	75	76	72	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:40-11:10	74	75	76	72	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:20-11:50	67	70	69	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	8:40-9:10	66	70	69	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	70	75	72	66	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	67	70	69	65	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 26 November 2012

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq} ,30min	Limit	L ₁₀ ,5min	L ₉₀ ,5min	L _{Aeq} ,30min	L _{Aeq} ,30min
N1	Kam Fai Garden	9:50-10:20	73	75	75	71	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35-11:05	73	75	75	71	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:15-11:45	68	70	69	66	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:30-09:00	65	70	67	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	70	75	72	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	69	70	70	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 6 December 2012

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq,30min}	Limit	L _{10,5min}	L _{90,5min}	L _{Aeq,30min}	L _{Aeq,30min}
N1	Kam Fai Garden	9:50-10:20	73	75	75	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35-11:05	73	75	76	71	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:15-11:45	66	70	68	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:30-09:00	65	70	67	63	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	69	75	71	66	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	67	70	69	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 12 December 2012

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq,30min}	Limit	L _{10,5min}	L _{90,5min}	L _{Aeq,30min}	L _{Aeq,30min}
N1	Kam Fai Garden	10:00-10:30	73	75	76	71	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:45-11:15	72	75	75	70	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:30-12:00	66	65	69	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	8:30-9:00	66	65	68	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:20-13:50	70	75	73	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	14:30-15:00	69	65	72	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level
 (#): Limit Level of 65 dB(A) is adopted for N3, N4 and N6 due to school examination hours

Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 18 December 2012

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq,30min}	Limit	L _{10,5min}	L _{90,5min}	L _{Aeq,30min}	L _{Aeq,30min}
N1	Kam Fai Garden	9:55-10:25	72	75	75	69	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:40-11:10	73	75	75	70	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:20-11:50	68	65	70	66	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	8:40-9:10	67	70	69	65	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	69	75	71	66	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	67	70	69	65	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level
 (#): Limit Level of 65 dB(A) is adopted for N3 due to school examination hours

Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 27 December 2012

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq,30min}	Limit	L _{10,5min}	L _{90,5min}	L _{Aeq,30min}	L _{Aeq,30min}
N1	Kam Fai Garden	9:50-10:20	73	75	75	71	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35-11:05	73	75	75	71	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:15-11:45	68	70	70	66	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:30-09:00	66	70	68	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	69	75	71	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	69	70	71	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 3 January 2013

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq,30min}	Limit	L _{10,5min}	L _{90,5min}	L _{Aeq,30min}	L _{Aeq,30min}
N1	Kam Fai Garden	10:00-10:30	72	75	74	69	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:45-11:15	72	75	75	70	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:30-12:00	67	70	69	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	8:30-9:00	65	70	68	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:20-13:50	69	75	72	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	14:30-15:00	68	70	71	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 7 January 2013

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq,30min}	Limit	L _{10,5min}	L _{90,5min}	L _{Aeq,30min}	L _{Aeq,30min}
N1	Kam Fai Garden	9:50-10:20	73	75	75	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35-11:05	73	75	75	71	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:15-11:45	67	70	70	66	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:30-09:00	66	70	68	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	69	75	72	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	68	70	71	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level
 (#): Limit Level of 65 dB(A) is adopted for N3, N4 and N6 due to school examination hours

Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 15 January 2013

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq,30min}	Limit	L _{10,5min}	L _{90,5min}	L _{Aeq,30min}	L _{Aeq,30min}
N1	Kam Fai Garden	9:50-10:20	71	75	74	69	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35-11:05	72	75	74	70	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:15-11:45	67	70	69	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:30-09:00	65	70	67	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	69	75	71	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	68	70	70	66	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level
 (#): Limit Level of 65 dB(A) is adopted for N3 due to school examination hours

Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 23 January 2013

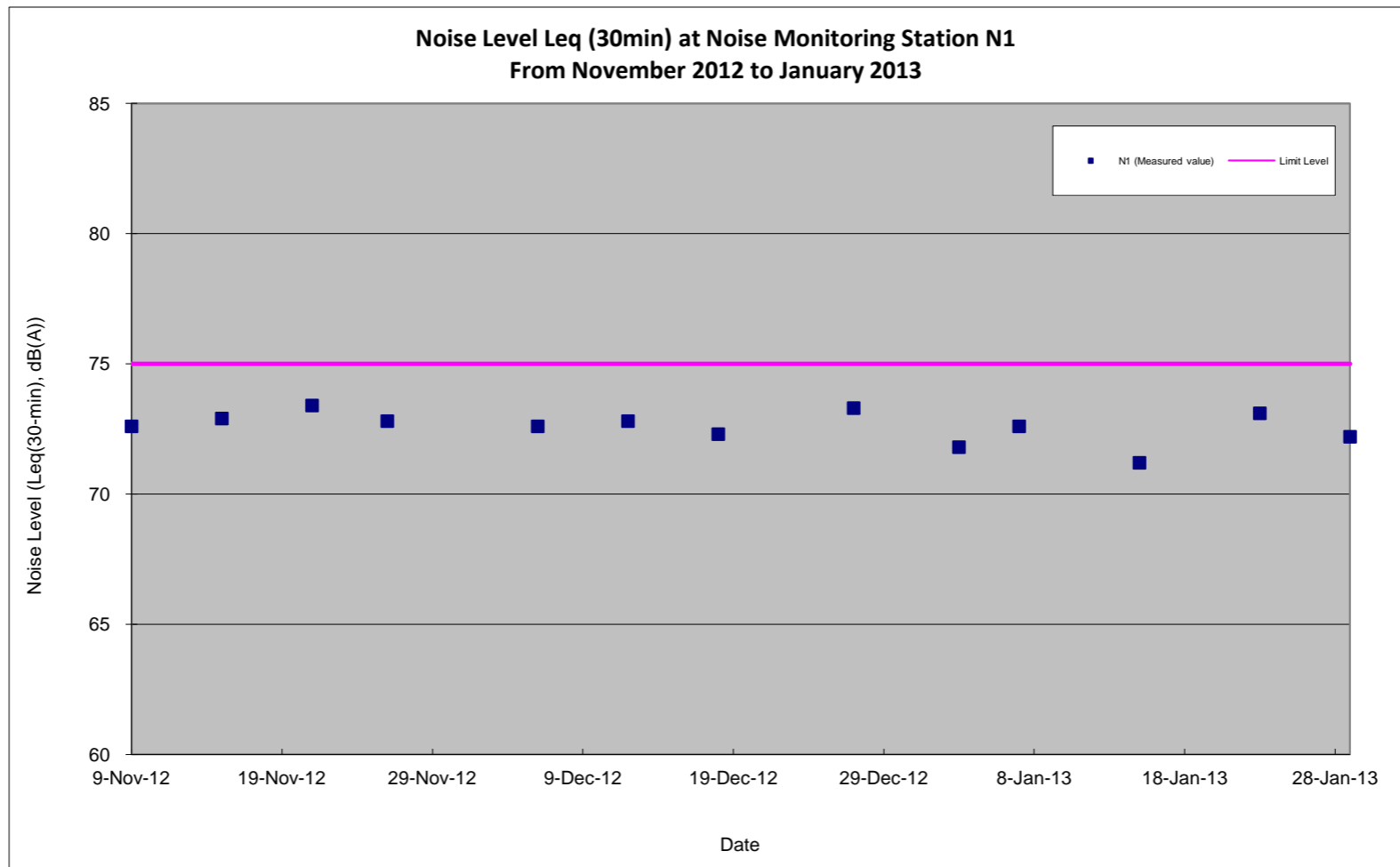
ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq,30min}	Limit	L _{10,5min}	L _{90,5min}	L _{Aeq,30min}	L _{Aeq,30min}
N1	Kam Fai Garden	10:00-10:30	73	75	75	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:45-11:15	73	75	75	70	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:30-12:00	66	70	68	65	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	8:30-9:00	67	70	69	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:20-13:50	70	75	72	67	70	54
N6	Choi Cheung kok Secondary School	14:30-15:00	68	70	70	67	69	Measured ≤ Baseline

Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level

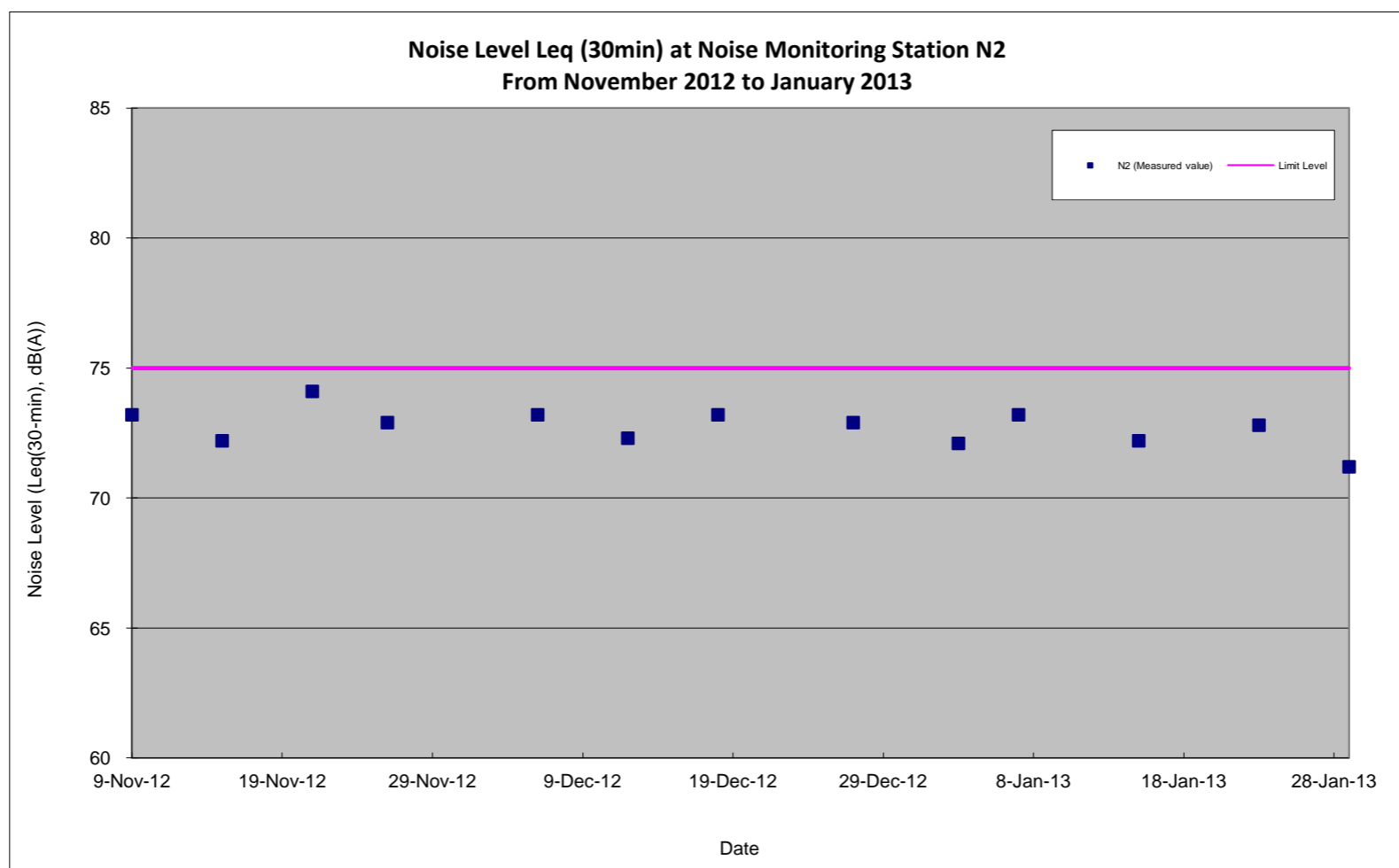
Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 29 January 2013

ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L _{Aeq,30min}	Limit	L _{10,5min}	L _{90,5min}	L _{Aeq,30min}	L _{Aeq,30min}
N1	Kam Fai Garden	9:50-10:20	72	75	75	70	76	Measured ≤ Baseline
N2	Tai Tung Pui Social Service Building	10:35-11:05	71	75	74	68	78	Measured ≤ Baseline
N3	Yuen Yuen Primary School	11:15-11:45	67	70	69	64	69	Measured ≤ Baseline
N4	Wu Siu Kui Primary School	08:30-09:00	66	70	68	64	67	Measured ≤ Baseline
N5	Tuen King Building	13:00-13:30	69	75	71	67	70	Measured ≤ Baseline
N6	Choi Cheung kok Secondary School	13:50-14:20	68	70	70	67	69	Measured ≤ Baseline

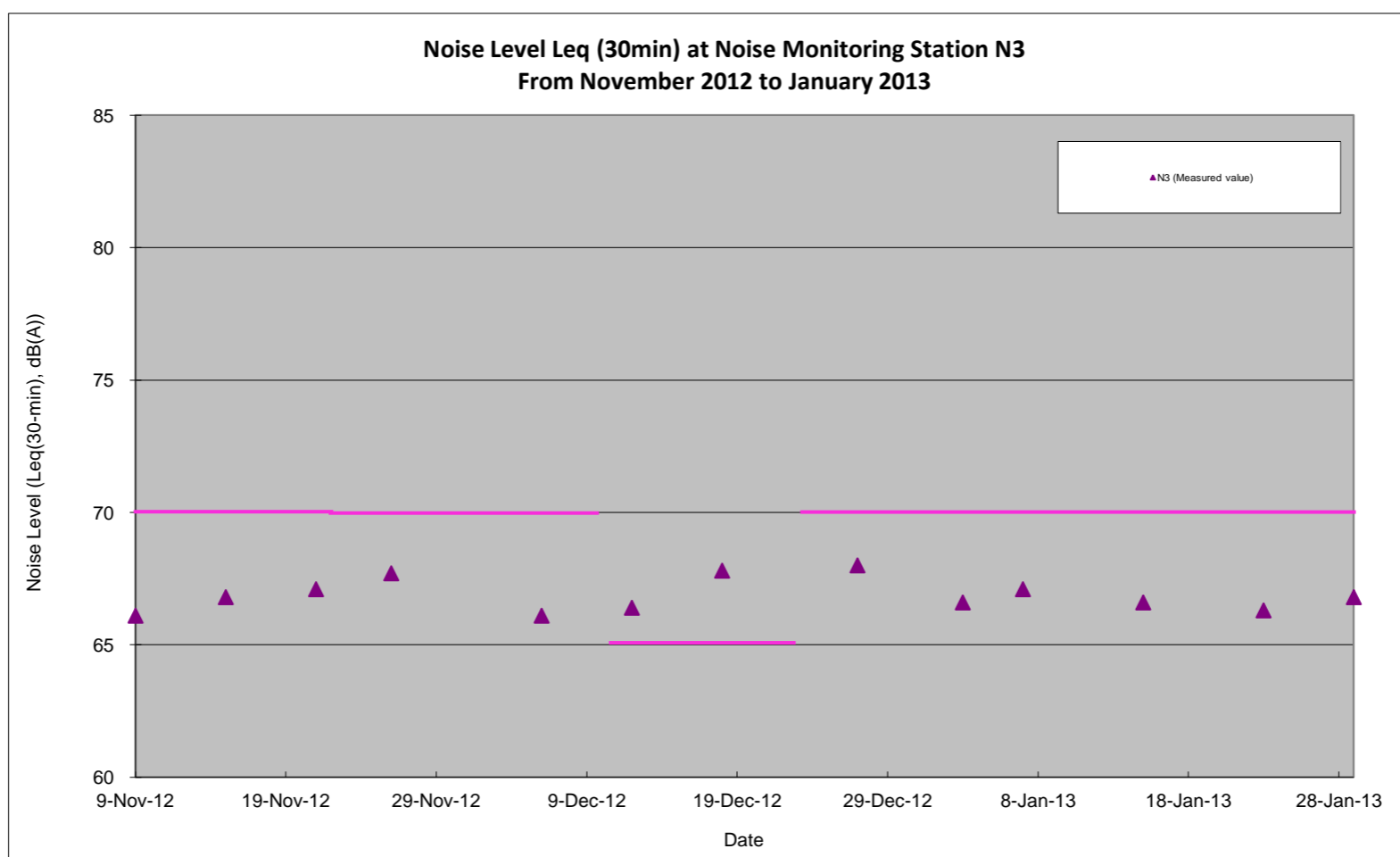
Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level



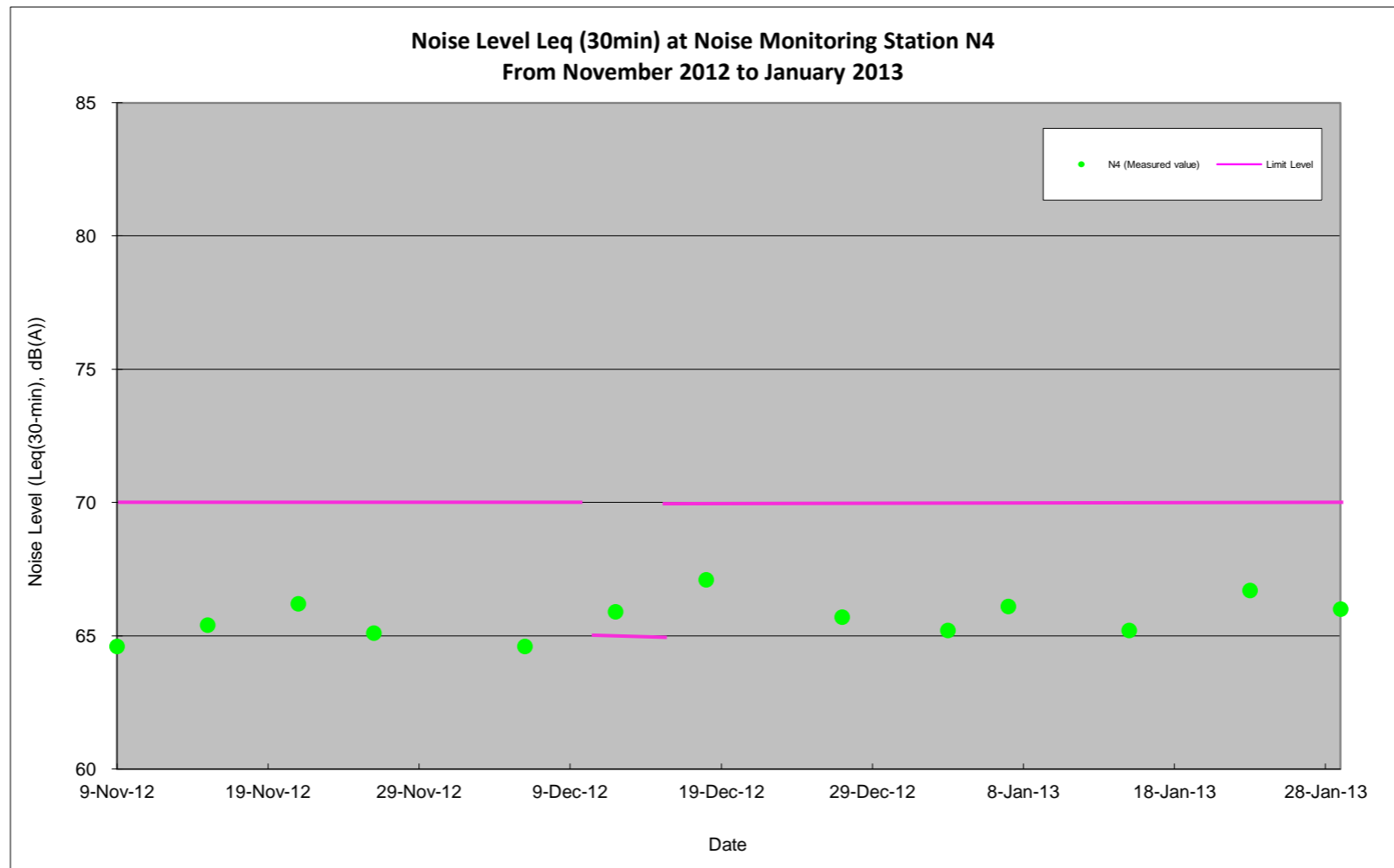
Note: For compliance comparison, please refer to above table and report.



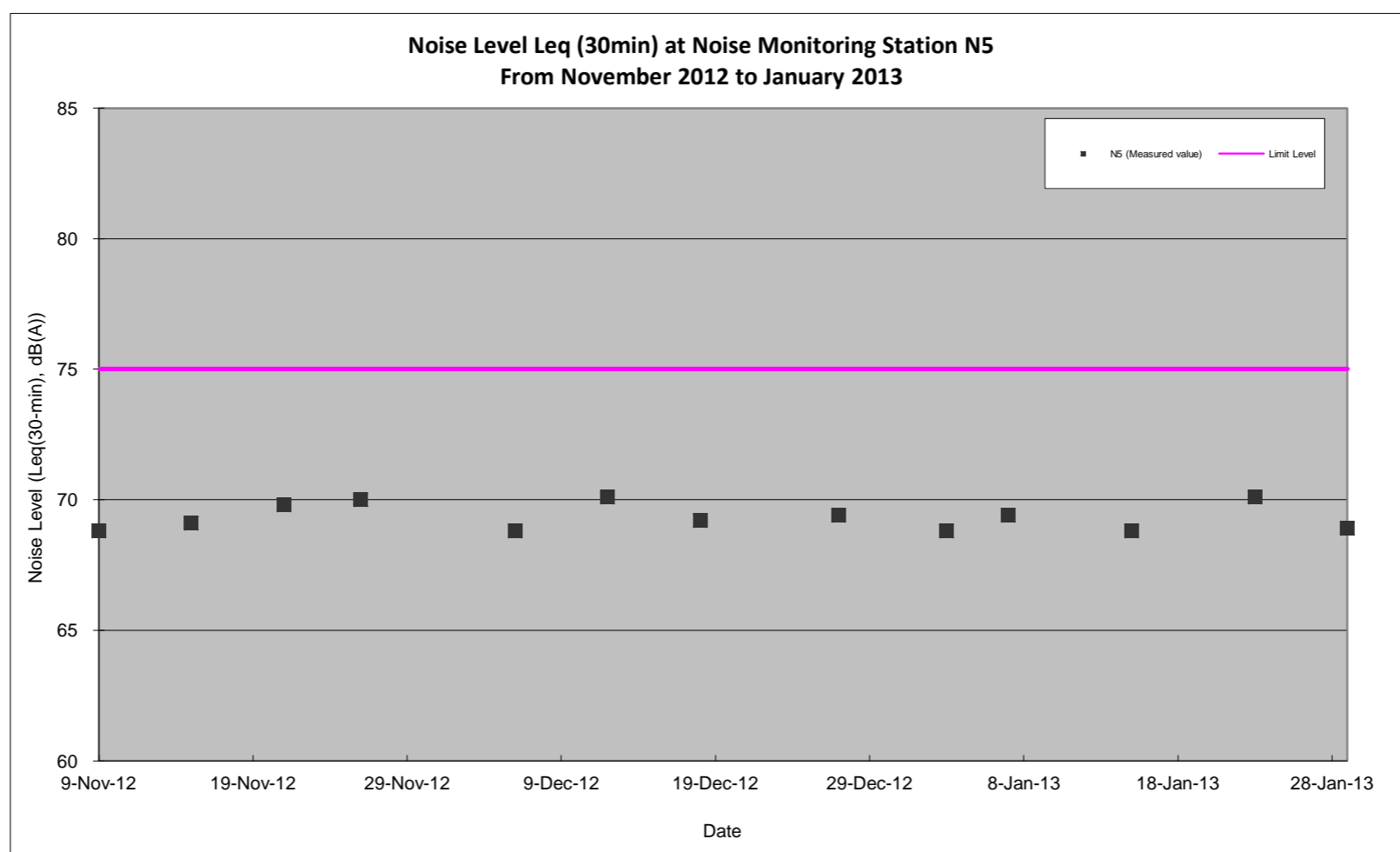
Note: For compliance comparison, please refer to above table and report.



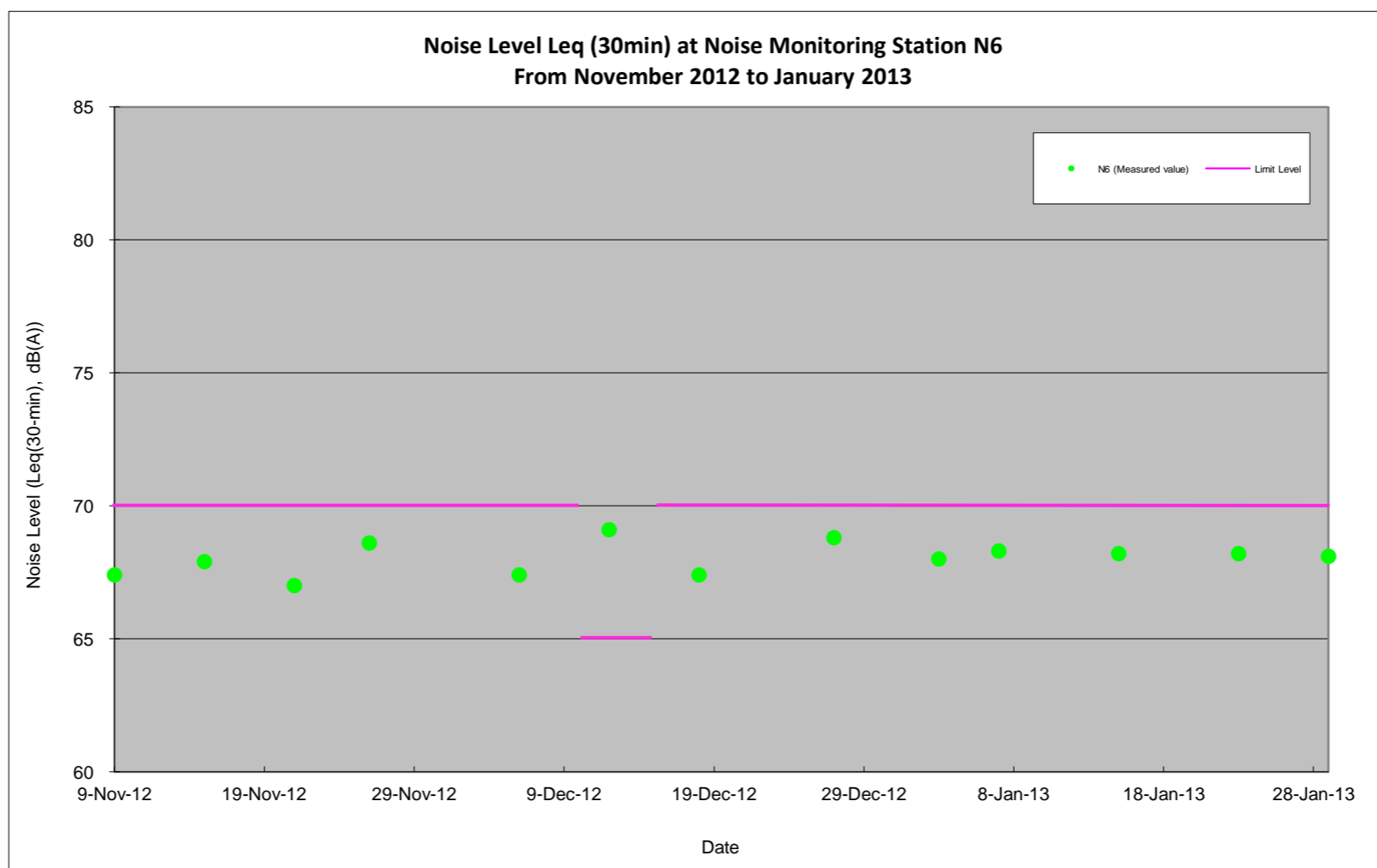
Note: For compliance comparison, please refer to above table and report.



Note: For compliance comparison, please refer to above table and report.



Note: For compliance comparison, please refer to above table and report.



Note: For compliance comparison, please refer to above table and report.

Appendix F

**Details of LR, LCA and
VSR**

Landscape and Visual Impact Monitoring Locations

The landscape and visual conditions of the site and its vicinity shall be reviewed with regards to parameters assessed in the EIA Report, including landscape resources (LR), landscape character area (LCA) and view condition of visual sensitive receiver (VSR). The components of each assessed parameter of LR, LCA and VSR are summarised in **Tables A**.

Table A Parameters of landscape resources, landscape character areas and landscape sensitive receivers assessed during baseline site survey

ID No.	Names
Landscape Resources	
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 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
Landscape Character Areas	
LZ1	Tuen Mun Residential Urban Landscape
LZ2	Tuen Mun Mixed Modern Comprehensive Urban Development Landscape
LZ3	Tuen Mun 'Hui' Urban Landscape
Visual Sensitive Receivers	
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

ID No.	Names
GIC7	Madam Lau Wong Fat Primary School, Lui Cheung 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

Appendix G

Complaint Log

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

ET's Complaint Log Ref. no.	Incoming Complaint Ref no.	Name of Complainant	Date of Complaint receive	Complaint Date/ Period	Complaint Location	Area of Concern	Details of Complaint	Date of Complaint received by ET	ET's Investigation Date	Investigation / Mitigation Measures	Validity to the Project	Status
C027-TCS	A complaint was received by ICC on 26 Oct 12 and the Supervising Officer Representative was informed on 30 Oct 12.	Ms Chan	26 Oct 12	Friday night around 21:30.	Tuen Mun Road (Under Yan Oi Footbridge)	Noise	The complaint was related to noise nuisance of night works on Tuen Mun Road (Under Yan Oi Footbridge)	1 Nov 12	1 Nov ~ 8 Nov 12	<p>As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out in Tuen Mun Road (Under Yan Oi Footbridge). The noise nuisance was mainly caused by road resurfacing works. On Friday night, 1 unit of road marking material boiler enclosed with movable acoustic enclosures, 1 unit of asphalt paver (QPME), 1 unit of roller (QPME), 1 unit of super silenced generator and 1 unit of dump trucks have been deployed. The asphalt paver and road roller were equipped with sound baffles and silencers during operation.</p> <p>The relevant construction noise permit (CNP) no. GW-RW0673-12 was obtained for the road paving works in the designated area prior to commencement. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior to the work commencement. No abnormal activities were observed during the complaint period. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.</p> <p>In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.</p> <ol style="list-style-type: none"> 1. Well maintain the machines condition to minimize noise nuisance; 2. Relocate operating machinery as far as possible from nearby sensitive receivers; 3. Machines that may be in intermittent use should be shut down between work periods or should be throttled down; and 4. Improve the working practices to minimize the noise nuisance during the working activities as far as possible. 	Yes	Closed on 8 Nov 12

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

ET's Complaint Log Ref. no.	Incoming Complaint Ref no.	Name of Complainant	Date of Complaint receive	Complaint Date/ Period	Complaint Location	Area of Concern	Details of Complaint	Date of Complaint received by ET	ET's Investigation Date	Investigation / Mitigation Measures	Validity to the Project	Status
C028-TCS	A complaint was received by ICC on 30 Oct 12 and the Supervising Officer Representative was informed on 31 Oct 12.	Ms Hui	30 Oct 12	Tuesday midnight around 00:00am.	Tuen Mun Road (Near Tuen Mun Town Hall)	Noise	The complaint was related to noise nuisance of night works on Tuen Mun Road (Near Tuen Mun Town Hall)	1 Nov 12	1 Nov ~ 8 Nov 12	<p>As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out in Tuen Mun Road (Near Tuen Mun Town Hall) The noise nuisance was mainly caused by installation of noise barrier panels. On Tuesday midnight, 1 unit of crane, 1 unit of hand-held grinder, 1 unit of tractor, 1 unit of standard generator and 1 unit of dump trucks have been deployed.</p> <p>The relevant construction noise permit (CNP) no. GW-RW0673-12 was obtained for the road resurfacing works in the designated area prior to commencement. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior to the work commencement. In addition, road closure could only be permitted by police force after 00:00am. No abnormal activities were observed during the complaint period. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.</p> <p>In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.</p> <ol style="list-style-type: none"> 1. Well maintain the machines condition to minimize noise nuisance; 2. Relocate operating machinery as far as possible from nearby sensitive receivers; 3. Machines that may be in intermittent use should be shut down between work periods or should be throttled down; and 4. Improve the working practices to minimize the noise nuisance during the working activities as far as possible. 	Yes	Closed on 8 Nov 12

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Complaint Log

ET's Complaint Log Ref. no.	Incoming Complaint Ref no.	Name of Complainant	Date of Complaint receive	Complaint Date/ Period	Complaint Location	Area of Concern	Details of Complaint	Date of Complaint received by ET	ET's Investigation Date	Investigation / Mitigation Measures	Validity to the Project	Status
C029-TCS	A complaint was received by ICC on 15 Nov 12 and the Supervising Officer Representative was informed on 15 Nov 12.	Mr Lai	15 Nov 12	Thursday midnight around 02:30.	Tuen Mun Road (Under TMT Plaza)	Noise	The complaint was related to noise nuisance of night works on Tuen Mun Road (Under TMT Plaza)	20 Dec 12	20 Dec ~ 31 Dec 12	<p>As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out in Tuen Mun Road (Under TMT Plaza). The noise nuisance was mainly caused by loading and unloading from dump truck. On Thursday night, 1 unit of dump truck with grab has been deployed.</p> <p>The relevant construction noise permit (CNP) no. GW-RW0673-12 was obtained for the loading and unloading works in the designated area prior to commencement. Portable acoustic screen has been deployed for the construction works. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior to the work commencement. No abnormal activities were observed during the complaint period. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.</p> <p>In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.</p> <ol style="list-style-type: none"> 1. Well maintain the machines condition to minimize noise nuisance; and 2. Improve the working practices to minimize the noise nuisance during the working activities as far as possible. 	Yes	Closed on 31 Dec 12

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

ET's Complaint Log Ref. no.	Incoming Complaint Ref no.	Name of Complainant	Date of Complaint receive	Complaint Date/ Period	Complaint Location	Area of Concern	Details of Complaint	Date of Complaint received by ET	ET's Investigation Date	Investigation / Mitigation Measures	Validity to the Project	Status
C030-TCS	A complaint was received by ICC on 5 Dec 12 and the Supervising Officer Representative was informed on 7 Dec 12.	Ms. Ku	5 Dec 12	Friday midnight around 03:00.	Tuen Mun Road (Under TMT Plaza)	Noise	The complaint was related to noise nuisance of night works on Tuen Mun Road (Under TMT Plaza)	20 Dec 12	20 Dec ~ 31 Dec 12	<p>As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out in Tuen Mun Road (Under TMT Plaza). The noise nuisance was mainly caused by steel work installation of noise barrier and voice of workers. On Friday night, 1 unit of lorry with crane, 1 unit of mobile crane, 1 unit of tractor, 1 unit of hand-held grinder, 1 unit of hand-held driver and 1 unit of hand-held drill have been deployed.</p> <p>The relevant construction noise permit (CNP) no. GW-RW0870-12 was obtained for the barrier installation work in the designated area prior to commencement. Portable acoustic screen has been deployed for the construction works. A non-metallic tip has been installed for the hammering works. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior to the work commencement. No abnormal activities were observed during the complaint period. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.</p> <p>In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.</p> <ol style="list-style-type: none"> 1. Well maintain the machines condition to minimize noise nuisance; 2. Relocate operating machinery as far as possible from nearby sensitive receivers; 3. Idle equipments should be either turned off or throttled down; and 4. Improve the working practices to minimize the noise nuisance during the working activities as far as possible. 	Yes	Closed on 31 Dec 12

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

ET's Complaint Log Ref. no.	Incoming Complaint Ref no.	Name of Complainant	Date of Complaint receive	Complaint Date/ Period	Complaint Location	Area of Concern	Details of Complaint	Date of Complaint received by ET	ET's Investigation Date	Investigation / Mitigation Measures	Validity to the Project	Status
C031-TCS	A complaint was received by ICC on 9 Dec 12 and the Supervising Officer Representative was informed on 9 Dec 12.	Mr. Wong	9 Dec 12	Sunday from 00:00 to 06:00.	Tuen Mun Road (Temporary Chi Lok footbridge)	Noise	The complaint was related to noise nuisance of demolition works of temporary Chi Lok footbridge	20 Dec 12	20 Dec ~ 31 Dec 12	<p>As confirmed by the Contractor and Supervising Officer's Representative, the related night works was carried out Tuen Mun Road (Temporary Chi Lok footbridge). The noise nuisance was mainly caused by demolition work of temporary Chi Lok footbridge. On Sunday night, 1 unit of lorry with crane, 1 unit of mobile crane, 1 unit of tractor, 1 unit of generator have been deployed.</p> <p>The relevant construction noise permit (CNP) no. GW-RW0909-12 was obtained for the demolition work in the designated area prior to commencement. Portable acoustic screen has been deployed for the construction works. A non-metallic tip has been installed for the hammering works. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior to the work commencement. No abnormal activities were observed during the complaint period. Based on the above-mentioned information, it is concluded that the complaint was work-related under the Project.</p> <p>In order to minimize the potential noise nuisance generated from the road paving works, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.</p> <ol style="list-style-type: none"> 1. Provide movable noise barrier for demolition work as far as practicable; 2. Well maintain the machines condition to minimize noise nuisance; 3. Relocate operating machinery as far as possible from nearby sensitive receivers; 4. Idle equipments should be either turned off or throttled down; and 5. Improve the working practices to minimize the noise nuisance during the working activities as far as possible. 	Yes	Closed on 31 Dec 12