Highways Department

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

Quarterly Environmental Monitoring and Audit Summary Report (February to April 2011)

Final

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Executive Summary

This is the third 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 February to 30 April 2011.

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 19 limit level exceedances (4 in February, 8 in March and 7 in April 2011) of noise monitoring were recorded during the reporting period. Based on the on-site observations and interpretation from the results, noise exceedance was not related to the construction activities. No particular remedial work is required.

However, two noise complaints (February and April 2011 respectively), hence, two Action Level exceedence, 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 478 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 10,936.96 m^3 were generated and disposed of at public fills at Tuen Mun Area 38 in the reporting period. 188.385 m^3 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

Three environmental complaints (1 in February and 2 in April 2011) regarding the construction noise and water quality were recorded in the reporting period. After the investigation, it is concluded that all complaints were attributable to the Contract. The corresponding mitigation measure due to the complaint was recommended to carry out by the Contractor. Nevertheless, the Contractor was reminded to implement proper mitigation measure as stipulated in EM&A Manual to minimize any noise and water quality implication.

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/A) 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	Site clearance, site hoarding construction, tree felling and transplanting, ground investigation, temporary footbridge construction; pilling works, underground utilities and drainage diversion

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

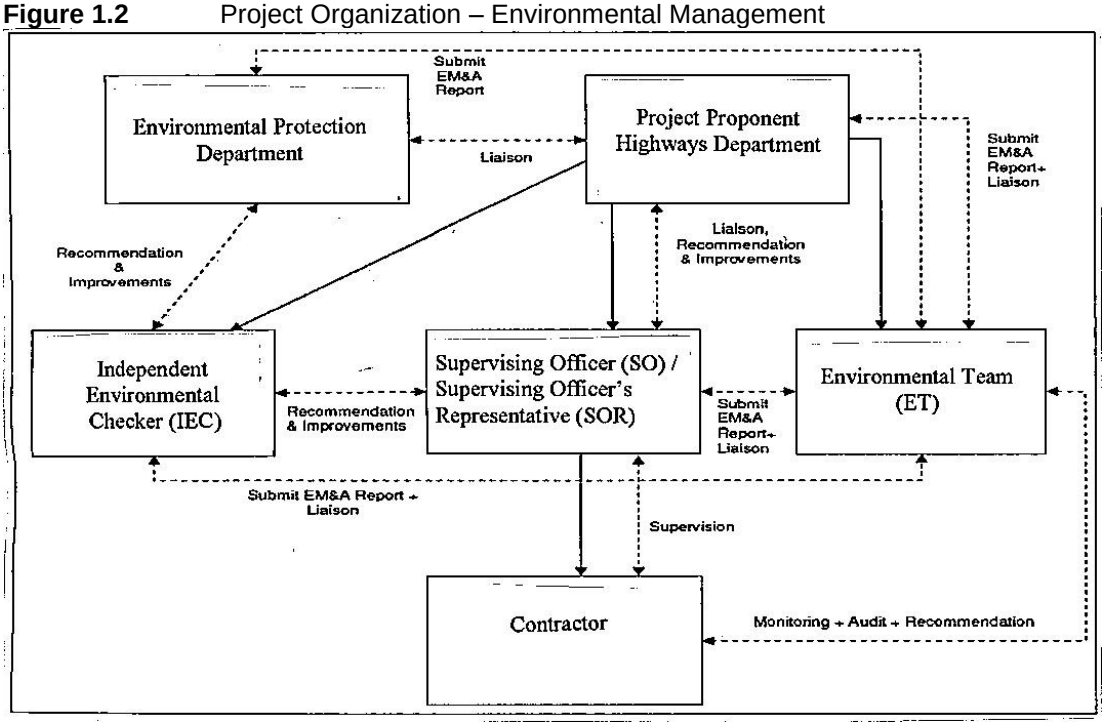


Figure 1.1 Location of works area and air, noise environmental monitoring stations

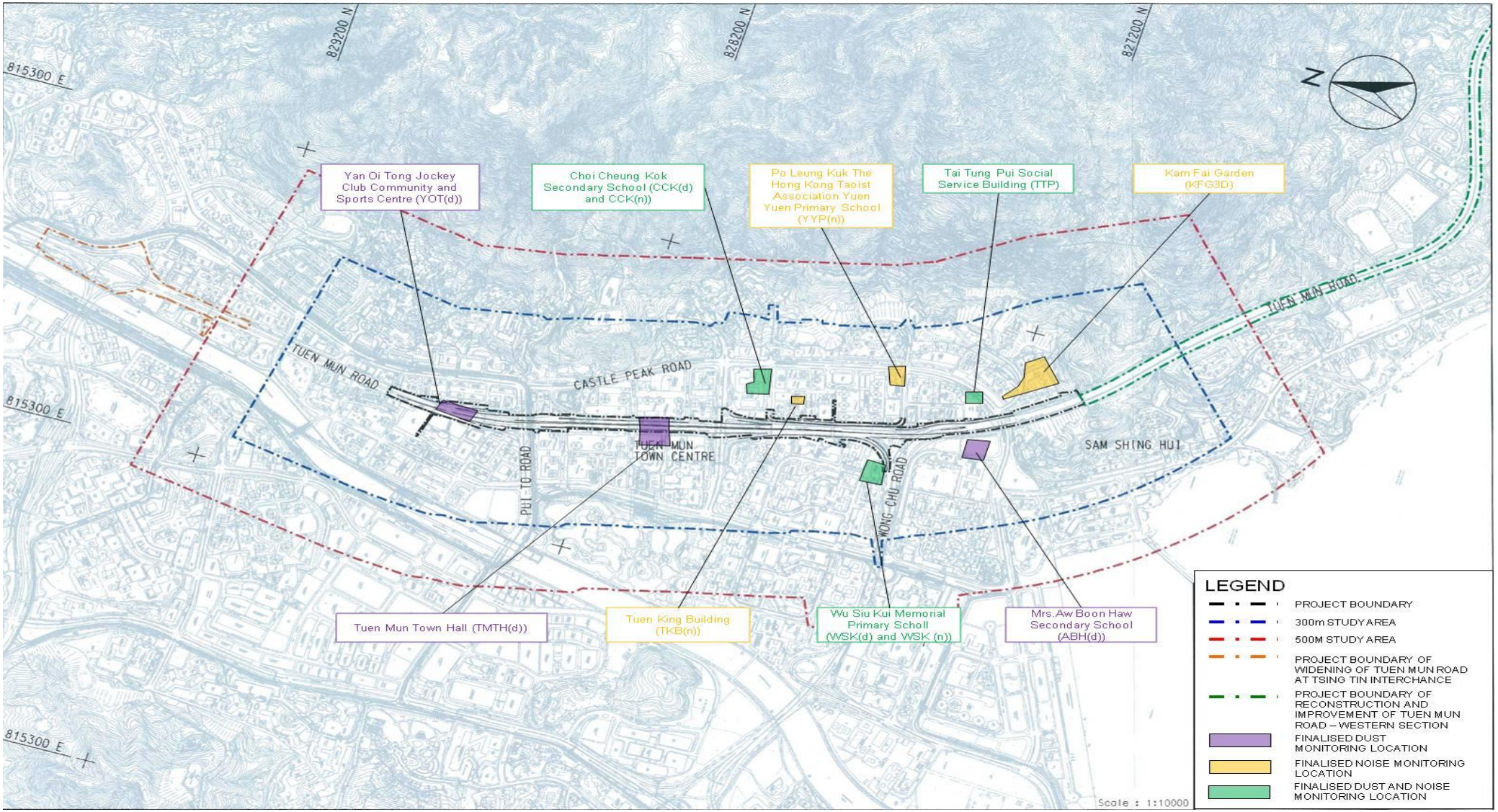


Table 1.2 Contacts of key environmental staff

Organization	Name	Telephone
Environmental Protection Department		
Environmental Protection Officer (Strategic Assessment)22	Thomas To	2835 1103
Project Proponent		
Highways Department: Senior Engineer	Kenneth Chan	2762 3422
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/m³	500 μg/m³
			AM2	291 μg/m³	
			AM3	287 μg/m³	
			AM4	292 μg/m³	
			AM5	286 μg/m³	
			AM6	290 μg/m³	
	24-hour TSP	Once every 6 days	AM1	146 μg/m³	260 μg/m³
			AM2	151 μg/m³	
			AM3	150 μg/m³	
			AM4	150 μg/m³	
			AM5	146 μg/m³	
			AM6	147 μg/m³	
Noise	0700 - 1900 hour on normal weekdays - $L_{eq(30min)}$	Once per week	N1, N2 & N5	When one documented complaint is received	75 dB(A)
			N3, N4 & N6		70/65 (Note 3)
	0700 - 2300 hours on holiday; and 1900 – 2300 hours on all other days - $L_{eq(5min)}$ (Note 2)	--	N1, N2, N3, N4, N5 & N6		--
	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	N/A

Notes:
1. 1-hr TSP monitoring would be required in case of receiving complaints
2. If works are to be carried out during restricted hours, the conditions stipulated in the Construction Noise Permit (CNP) issued by the Noise Control Authority have to be followed.
3. 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.
4. 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	**Tsing Hoi Circuit**	2 Feb 11	The Contractor should provide the tarpaulin covering for the stockpiles to avoid dust disturbance.	Tarpaulin covering had been provided. Closed on 10 Feb 11.
	Yan Ching Street	17 Feb 11	Tarpaulin covering of the cement bags (>20bags) was observed. However, the Contractor was reminded to cover the cement bags entirely to avoid dust disturbance.	The reminder had been noted by Contractor. Closed on 24 Feb 11.
		10 Mar 11	Dark smoke emission from the generator was observed. The Contractor should maintain the machine condition to avoid dark smoke emission.	Dark smoke emission was not observed. Closed on 15 Mar 11.
	Pui To Road	24 Mar 11	The exposed soil should be covered entirely by tarpaulin to avoid dust disturbance.	Tarpaulin covering had been provided. Closed on 31 Mar 11.
	Tsing Hoi Circuit	31 Mar 11	The Contractor should provide the tarpaulin barrier during excavation operation to minimize dust disturbance to public.	Tarpaulin barrier had been provided. Closed on 7 Apr 11.
	Yan Oi Tong Street, Tuen Hi Road	20 Apr 11	The Contractor was reminded to increase water spray frequency to minimise dust impact.	Contractor had been noted. Closed on 28 Apr 11.
Water Quality	**Tuen Hi Road**	2 Feb 11	Water leakage from water tank barrier was observed. The Contractor should fix the leakage as soon as possible and clean up the overflowing area.	Water leakage had been fixed. Closed on 10 Feb 11.
		28 Apr 11	The damaged sandbags along the site boundary should be replaced to avoid the sand dropping to public area.	Damaged sandbags had been replaced. Closed on 5 May 11.
	Yan Oi Tong Circuit	10 Feb 11	The Contractor should increase the height of tarpaulin barrier to avoid any silt/mud spillage to public area during the drilling operation. In addition, the height of the sand bag bunding should also be increased.	The height of barrier had been increased. Closed on 17 Feb 11.
		17 Feb 11	The Contractor was reminded to remove the stagnant water in the air compressor drip tray as soon as possible after rainy day.	The reminder had been noted by Contractor. Closed on 24 Feb 11.
	Rosedale Garden	14 Apr 11	Accumulated debris and silt in the U-channel should be removed as soon as possible.	Debris had been removed. Closed on 20 Apr 11.
	Tuen Fat Road	31 Mar 11	The Contractor should replace the damaged sandbags and increase the bunding height to avoid surface runoff overflowing.	Sandbags bunding had been replaced. Closed on 7 Apr 11.

Monitoring Parameter	Location	Inspection Date	Key Observations & Recommendations	Contractor's Follow-Up Status
Water Quality	**Yan Ching Street**	10 Feb 11	Accumulated silt and sand in the storm water channel was observed. The Contractor should clean the channel as soon as possible.	The storm water channel had been cleaned. Closed on 17 Feb 11.
	Yan Ching Street	10 Mar 11	The Contractor was reminded to increase the height of sandbags bunding along the site boundary to avoid any surface runoff overflowing to public area.	The reminder had been noted by Contractor. Closed on 15 Mar 11.
			Stagnant water was observed in the generator drip tray. The Contractor should remove the stagnant water as soon as possible.	Stagnant water had been removed. Closed on 15 Mar 11.
		15 Mar 11	The Contractor should provide sandbags to completely block the unused u-channel to avoid muddy waster accumulation. In addition, the Contractor should provide regularly cleaning of the channel to avoid any silt or sand accumulation	Sandbags bunding had been provided. Closed on 24 Mar 11.
		20 Apr 11	The contractor was reminded to re-installed damaged fabric hoarding and seal gaps between fabrics.	Contractor had been noted. Closed on 28 Apr 11.
	Yan Ching Street, Tuen Hi Road	14 Apr 11	The contractor should provide adequate sandbags bunding along water barrier to avoid surface runoff overflowing to public area at both locations. Damaged sandbags along site boundary at Tuen Hi Road should be replaced as soon as possible.	Sandbags bunding had been provided. Closed on 20 Apr 11.
	Rosedale Garden	14 Apr 11	Accumulated debris and silt in the U-channel should be removed as soon as possible.	Debris had been removed. Closed on 20 Apr 11.
	Tsing Hoi Circuit	20 Apr 11	The contractor was reminded to follow approved/agreed drainage plan to avoid waste (including surface runoff) leaving the site without treatment.	Contractor had been noted. Closed on 28 Apr 11.
	Yan Oi Tong Street	20 Apr 11	The contractor was reminded to liaise with SOR to ascertain the purpose of a section which currently without hoarding. If the section was used for site entrance/exit wheel washing facility should be provided. Hoarding should be provided otherwise	Contractor had been noted. Closed on 28 Apr 11.
	Tsing Hoi Play-ground	28 Apr 11	The contractor should provide the bunding along site boundary (TMR side) to avoid any soil/rock dropping to TMR.	Bunding had been provided. Closed on 5 May 11.
	Tsing Sin Play-ground	10 Feb 11	The stagnant water in storm water channel should be removed as soon as possible to avoid accumulation.	Stagnant water had been removed. Closed on 24 Feb 11.
			The Contractor was reminded to replace the damaged sand bags as soon as possible to avoid any silt/sand overflowing to public area.	The reminder had been noted by Contractor. Closed on 17 Feb 11.
		17 Feb 11	Stagnant water in the u-channel should be removed regularly to avoid accumulation, especially after rainy days. The Contractor should enhance the cleaning frequency.	Stagnant water had been removed. Closed on 24 Feb 11.

Monitoring Parameter	Location	Inspection Date	Key Observations & Recommendations	Contractor's Follow-Up Status
Noise	**Tsing Hoi Circuit**	20 Apr 11	The contractor was reminded not to use hand-held breaker without noise label.	Contractor had been noted. Closed on 28 Apr 11.
	Yan Ching Street	20 Apr 11	The contractor was reminded to add noise blanket to avoid noise compliant from a nearby home for elderly.	Contractor had been noted. Closed on 28 Apr 11.
Landscape and Visual	**Yan Oi Tong Circuit**	24 Feb 11	The Contractor should provide the fence for the retained trees protection. Construction equipments/machines should not be placed within the fencing area.	Fencing had been provided. Closed on 3 Mar 11.
	Rosedale Garden	14 Apr 11	Fencing should be provided for the retained trees protection.	Fencing had been provided. Closed on 20 Apr and 5 May 11 respectively.
	Yan Oi Tong Circuit	28 Apr 11		
	On Ting Estate	15 Mar 11	The construction materials should not be placed too close to the retained trees	Construction materials had been removed. Closed on 24 Mar 11.
Waste / Chemical Management	**Yan Oi Tong Circuit**	2 Feb 11	The Contractor should provide the drip tray for chemicals (i.e. paints and thinners) placing.	Chemicals had been removed. Closed on 10 Feb 11.
	Pui To Road	17 Feb 11	The construction waste and debris should be removed regularly to avoid accumulation.	The construction waste and debris had been removed. Closed on 24 Feb 11.
	Tsing Sin Play-ground	17 Feb 11	The waste cement bags and empty chemical containers should be removed regularly to avoid accumulation.	The waste cement bags and empty chemical containers had been removed. Closed on 24 Feb 11.
	Tuen Hi Road	15 Mar 11	The waste cement bags should be removed regularly to avoid accumulation.	Waste cement bags had been removed. Closed on 24 Mar 11.
		7 Apr 11	The debris and construction waste should be removed regularly to avoid accumulation.	Debris and construction waste had been removed. Closed on 14 Apr 11.
			The muddy surface between Tuen Mun Road and Tuen Hi Road should be cleaned.	Muddy surface had been cleaned. Closed on 14 Apr 11.
	Tsing Hoi Circuit	24 Mar 11	The waste batteries should be collected and treated as chemical waste.	Waste batteries had been removed. Closed on 31 Mar 11.

Monitoring Parameter	Location	Inspection Date	Key Observations & Recommendations	Contractor's Follow-Up Status
Waste / Chemical Management	**Yan Ching Circuit**	24 Mar 11	Accumulated mud and silt was observed in the generator drip tray. The Contractor should remove the mud & silt as soon as possible.	Drip tray had been cleaned. Closed on 31 Mar 11.
	Rosedale Garden	24 Mar 11	The Contractor was reminded to remove the broken trunks as soon as possible.	The reminder had been noted by Contractor. Closed on 31 Mar 11.
	Yan Ching Street	7 Apr 11	The contractor should remove the accumulated silt and mud outside the bunding area as well as the stagnant water as soon as possible.	Accumulated silt and mud as well as stagnant water had been removed. Closed on 14 Apr 11.
Waste / Chemical Management	**Yan Oi Tong Street**	20 Apr 11	The Contractor was reminded to conduct proper waste (metal, paper and plastic) segregation.	Contractor had been noted. Closed on 28 Apr 11.

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 1-hour TSP Concentration, μg/m³ (Range)			
	Feb 11	Mar 11	Apr 11	Mean
AM1	72 (27 – 130)	78 (46 – 111)	59 (38 – 101)	68 (27 – 130)
AM2	56 (31 – 93)	61 (30 – 100)	53 (39 – 93)	56 (30 – 100)
AM3	63 (32 – 82)	71 (32 – 99)	67 (35 – 133)	67 (32 – 133)
AM4	69 (37 – 101)	78 (63 – 122)	53 (26 – 78)	65 (26 – 122)
AM5	58 (37 – 94)	82 (56 – 143)	58 (26 – 94)	65 (26 – 143)
AM6	60 (35 – 73)	64 (41 – 94)	54 (42 – 83)	59 (35 – 94)

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, rround 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)			
	Feb 11	Mar 11	Apr 11	Mean
N1	76 (74 – 77)	77 (74 – 78)	76 (73 – 78)	76 (73 – 78)
N2	76 (74 – 77)	77 (75 – 78)	76 (73 – 78)	76 (73 – 78)
N3	67 (66 – 68)	68 (67 – 69)	67 (66 – 69)	67 (66 – 69)
N4	66 (65 – 67)	66 (65 – 67)	66 (65 – 67)	66 (65 – 67)
N5	69 (67 – 71)	71 (70 – 71)	71 (70 – 72)	70 (67 – 72)
N6	69 (68 – 69)	69 (68 – 70)	69 (68 – 70)	69 (68 – 70)

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 19 limit level exceedances (4 in February, 8 in March and 7 in April 2011) 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			
	Feb 11	Mar 11	Apr 11	Total
N1	2	4	3	9
N2	2	4	4	10

Notes:
1. No Limit Level exceedance was recorded at monitoring location N3, N4, N5 and N6 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 exceedance was not related to the construction activities. The details of the limit level exceedances had been presented in the corresponding monthly EM&A report (February to April 2011).

Two environmental complaints (February and April 2011 respectively) regarding noise nuisance was recorded in the reporting period. Therefore, two Action Level exceedance of construction noise was recorded in the reporting period.

Summary of above exceedance investigation of the Project is provided in the following Section 6.4 and **Appendix G**.

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 478 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 (February to April 2011).

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				
	Feb 11	Mar 11	Apr 11	Total	Disposal Locations
Inert C&D Materials	0 m^3	0 m^3	0 m^3	0 m^3	Broken concrete (Note 1)
	53.625 m^3	0 m^3	0 m^3	53.625 m^3	Reused in the Contract
	0 m^3	0 m^3	0 m^3	0 m^3	Reused in other Projects
	1,769.625 m^3	2,676.375 m^3	6,490.960 m^3	10,936.96 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	0 kg	0 kg	Recycler
Plastic	0 kg	0 kg	0 kg	0 kg	
Metal	102.11kg	0 kg	2,720.00 kg	2,822.11 kg	
General Refuse	39.0 m^3	102.375 m^3	47.010 m^3	188.385 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 19 limit level exceedances (4 in February, 8 in March and 7 in April 2011) of noise monitoring were recorded from the monitoring data at locations N1 and N2 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

Three environmental complaints (1 in February and 2 in April 2011) regarding the construction noise and water quality were recorded during the reporting period.

The **first** complaint was received by the ICC and ET on 19 and 24 February 2011 respectively regarding the noise generated from the operation of the construction site in the vicinity of Tuen Mun Town Plaza (Phase II).

As confirmed by the Contractor and Supervising Officer's Representative, pilling works and loading test were carried out during the complaint period (i.e. afternoon period) in the vicinity of Tuen Mun Town Plaza (Phase II) and are summarized as follow:

- **Yan Ching Bridge (approx. 70m from complaint location)**
  - Piling works
- **Pui To Road (in front of the complaint location)**
  - Static pile loading test
- **Tuen Hi Road and Tuen Fat Road (approx. 90m from complaint location)**
  - Piling works

Based on the site inspection on 24 Feb 11, the static pile loading test was still being conducted but no noise generating activities was observed. The sites at Tuen Hi Road and Tuen Fat Road are located the cover road of Tuen Mun Town Plaza (Phase I) and they are quite far away from the complaint location. Therefore, the noise nuisance generated from these sites is considered unlikely.

At Yan Ching Bridge, one air compressor, one mobile crane and one pilling machine were deployed for the pilling works. The noise nuisance was mainly generated from the pilling works. It is therefore concluded that the complaint was work-related under the Project.

The closest noise monitoring location (N6) of the complaint at The Chinese Manufacturers' Association Of Hong Kong Choi Cheung Kok Secondary School. The monitoring results on 7, 18 and 24 Feb 11, the daytime (0700 – 1900 hours) (Leq30min) were in range of 68 to 69dB(A) which were complied with the limit level of this Project. One additional noise monitoring was carried out on 23 Feb 11 (i.e. a day immediately after the complaint was received), the daytime noise monitoring result (Leq30min) was 69dB(A). Based on the ET's on-site observations during the noise monitoring, no abnormal construction activities was observed. All monitoring results including the additional noise monitoring were in compliance with the limit level of 75dB(A).

Nevertheless, it is recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.

1. Minimize the no. of machines used for the work as far as possible;
2. Employ the QPME units as far as possible;
3. Well-maintain the machines condition to minimize noise nuisance;
4. Machines that may be in intermittent use should be shut down between work periods or should be throttled down;
5. Relocate operating machinery as far as possible from nearby sensitive receivers;

6. Provide temporary / mobile noise barrier for the noisy construction activities;
7. Improve the working practices, minimize the noise nuisance during the working activities as far as possible; and
8. Enhance the workers awareness by regular training to minimize noise nuisance during the working activities.

The **second** complaint regarding three complainants expressed that muddy water spillage from the construction site in the vicinity of Tuen Mun Town Plaza (near Tuen Hi Road) was observed. The complaints were received by the ICC on 1, 3 and 4 Apr 11 respectively. ET received the complaints on 4 Apr 11.

As confirmed by the Contractor and Supervising Officer's Representative, muddy water was overflowed to Tuen Mun Road (Yuen Long bound) in the vicinity of Tuen Mun Town Plaza (near Tuen Hi Road) on 1 Apr 11 evening time.

Based on the information provided by the Contractor and Supervising Officer's Representative, the overflow of muddy spillage was anticipated to be from the broken hose to direct the pump to the wastewater treatment facility. Immediate actions were taken by the Contractor for ceasing the pump and cleaning of muddy spillage. It is therefore concluded that the complaint was work-related under the Project.

The site inspection was carried on 7 and 14 Apr 11, the damaged hose had been replaced and the condition was satisfactory. No abnormal operation was observed.

Nevertheless, it is recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.

1. Inspect the conditions of the hoses and connections daily;
2. Well-maintain the hoses and connections condition and replace the old/damaged hoses and connections if necessary;
3. Relocate the hoses as far as possible from the machines and construction materials to minimize the possibility of damage;
4. Stock the spare pumps, hoses and connections on-site for immediate action in case of spillage occurs;
5. Provide adequate bunding along the site boundary to minimize the possibility of the muddy water overflowing to public area in case of spillage occurs; and
6. Enhance the workers awareness by regular training to handle the muddy water spillage incident.

The **third** complaint regarding four complainants expressed that noise nuisance was generated during the restricted hours (night time and Sunday) in the vicinity of Chi Lok Fa Yuen, Tuen Mun Fa Yuen, Waldorf Garden and Tuen Mun Park Lane Square.

The complaints were received by the ICC on 18 Apr (1 complaint from Chi Lok Fa Yuen), 21 Apr (1 complaint from Tuen Mun Fa Yuen) and 28 Apr 11 (2 complaints from Waldorf Garden and Tuen Mun Park Lane Square respectively) respectively. ET received the complaints on 4 May 11.

As confirmed by the Contractor and Supervising Officer's Representative, the loading and unloading works at central median was carried out on TMR during the complaint period in the vicinity of Chi Lok Fa Yuen, Tuen Mun Fa Yuen, Waldorf Garden and Tuen Mun Park Lane Square.

Totally 3 units of power mechanical equipments had been used including lorry, dump truck and excavator. The relevant construction noise permit (CNP) no. GW-RW0640-10 was obtained for the above works prior commencement. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior the work commencement.

Based on the above-mentioned information provided by the Contractor, it is anticipated that the noise nuisance was mainly due to the machines operation. Therefore, it is concluded that the complaint was work-related under the Project.

In accordance with the Action/Event Plan, additional noise monitoring during the restricted hours was undertaken on 6 May 11 at the monitoring location N5 (Tuen King Building) and N6 (The Chinese Manufacturers' Association of Hong Kong Choi Cheung Kok Secondary School), where the loading and unloading works was carried out on TMR during restricted hours (night time) in the vicinity of these two monitoring locations.

Comparison is made between the monitoring results against the corresponding baseline noise level. Based on the interpretation from the results, the construction noise at both locations is 54dB(A) which below the night time noise limit level (55dB(A)).

Nevertheless, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance.

1. Minimize the no. of machines used for the work as far as possible;
2. Well-maintain the machines condition to minimize noise nuisance;
3. Relocate operating machinery as far as possible from nearby sensitive receivers;
4. Machines that may be in intermittent use should be shut down between work periods or should be throttled down;
5. Optimize the working programme to minimize the restricted hours work activities as far as possible;
6. Improve the working practices to minimize the noise nuisance during the working activities as far as possible;
7. Provide temporary / mobile noise barrier for the noisy activities as far as possible; and
8. Enhance the workers awareness by regular training to minimize noise nuisance during the restricted hours.

The recommendations that advised by ET had been noted by the Contractor and would be implemented as far as possible. The updated statistical summary of complaint is presented in **Table 6.1**. The updated complaint logs (C002 to C004) of the Project in the reporting period are shown in **Appendix G**.

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 – 31/11/10	1	1	Noise	Yes	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

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 19 limit level exceedances (4 in February, 8 in March and 7 in April 2011) 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. Two noise complaints (February and April 2011 respectively), hence, two Action Level exceedence, were recorded in the reporting period.

Three environmental complaints (1 in February and 2 in April 2011) regarding the construction noise and water quality were recorded in the reporting period. After the investigations, it is concluded that the complaint was attributable to the Contract. The corresponding mitigation measure due to the complaint was recommended to carry out by the Contractor. Nevertheless, the Contractor was reminded to implement proper mitigation measure as stipulated in EM&A Manual to minimize any noise and water quality implication.

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 478 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 complaint 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 – February 2011 (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 – March 2011 (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 – April 2011 (Final)

Appendix A

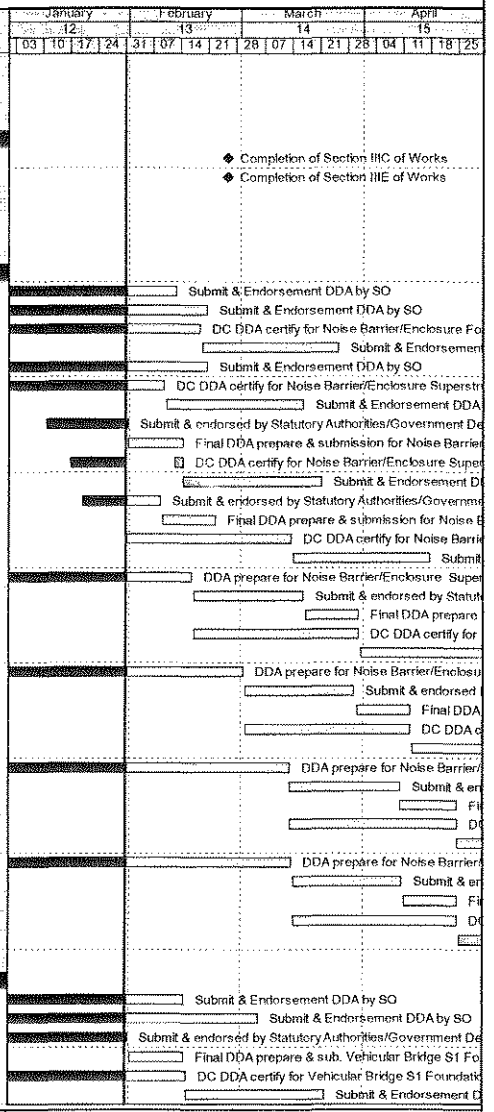
Construction Programme

HY/2009/03

07-Feb-11

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

Activity ID	Activity Name	Original Duration	Remaining Duration	Early Start	Early Finish	Late Start	Late Finish
Preliminaries and General Requirements							
Preliminaries and General Requirements							
Project Completion							
Contract Key Dates							
KD1160	Completion of Section IIIC of Works	0	0		25-Feb-11		25-Feb-11
KD1180	Completion of Section IIIE of Works	0	0		25-Feb-11		25-Feb-11
Design of Permanent Works							
Design of Permanent Works							
Pakage of Noise Barrier / Enclosure							
Detailed Design Approval (DDA)							
DDANB1190	Submit & Endorsement DDA by SO	35	13	31-Jan-11	12-Feb-11	17-Feb-11	02-Mar-11
DDANB1230	Submit & Endorsement DDA by SO	35	21	31-Jan-11	20-Feb-11	18-Feb-11	11-Mar-11
DDANB1260	DC DDA certify for Noise Barrier/Enclosure Foundation Package 7 (NE22, NE23, NE24 & NE27)	42	19	31-Jan-11	18-Feb-11	21-Jul-11	09-Aug-11
DDANB1270	Submit & Endorsement DDA by SO	35	35	19-Feb-11	25-Mar-11	09-Aug-11	13-Sep-11
DDANB1310	Submit & Endorsement DDA by SO	35	21	31-Jan-11	20-Feb-11	29-Aug-11	19-Sep-11
DDANB1340	DC DDA certify for Noise Barrier/Enclosure Superstructure Package 2 (NE3, NE4, NE5 & NE11)	42	10	31-Jan-11	09-Feb-11	27-Apr-11	07-May-11
DDANB1350	Submit & Endorsement DDA by SO	35	35	10-Feb-11	16-Mar-11	07-May-11	11-Jun-11
DDANB1370	Submit & endorsed by Statutory Authorities/Government Departments	28	1	31-Jan-11	31-Jan-11	06-Feb-11	06-Feb-11
DDANB1375	Final DDA prepare & submission for Noise Barrier/Enclosure Superstructure Package 3 (NE1, NE2, NE6, NE7 & NE26)	14	14	31-Jan-11	14-Feb-11	06-Feb-11	20-Feb-11
DDANB1380	DC DDA certify for Noise Barrier/Enclosure Superstructure Package 3 (NE1, NE2, NE6, NE7 & NE26)	42	2	12-Feb-11	14-Feb-11	18-Feb-11	20-Feb-11
DDANB1390	Submit & Endorsement DDA by SO	35	35	14-Feb-11	21-Mar-11	20-Feb-11	27-Mar-11
DDANB1410	Submit & endorsed by Statutory Authorities/Government Departments	28	9	31-Jan-11	08-Feb-11	09-Apr-11	18-Apr-11
DDANB1415	Final DDA prepare & submission for Noise Barrier/Enclosure Superstructure Package 4 (NE17, NE18, NE20 & NE21)	14	14	09-Feb-11	22-Feb-11	07-May-11	21-May-11
DDANB1420	DC DDA certify for Noise Barrier/Enclosure Superstructure Package 4 (NE17, NE18, NE20 & NE21)	42	42	31-Jan-11	13-Mar-11	09-Apr-11	21-May-11
DDANB1430	Submit & Endorsement DDA by SO	35	35	14-Mar-11	17-Apr-11	21-May-11	25-Jun-11
DDANB1440	DDA prepare for Noise Barrier/Enclosure Superstructure Package 5 (NE12, NE13, NE14, NE15 & NE16)	74	17	31-Jan-11	16-Feb-11	21-Mar-11	07-Apr-11
DDANB1450	Submit & endorsed by Statutory Authorities/Government Departments	28	28	17-Feb-11	16-Mar-11	28-May-11	25-Jun-11
DDANB1455	Final DDA prepare & submission for Noise Barrier/Enclosure Superstructure Package 5 (NE12, NE13, NE14, NE15 & NE16)	14	14	17-Mar-11	30-Mar-11	25-Jun-11	09-Jul-11
DDANB1460	DC DDA certify for Noise Barrier/Enclosure Superstructure Package 5 (NE12, NE13, NE14, NE15 & NE16)	42	42	17-Feb-11	30-Mar-11	28-May-11	09-Jul-11
DDANB1470	Submit & Endorsement DDA by SO	35	35	31-Mar-11	04-May-11	09-Jul-11	13-Aug-11
DDANB1480	DDA prepare for Noise Barrier/Enclosure Superstructure Package 6 (NE22, NE23, NE24 & NE27)	46	30	31-Jan-11	01-Mar-11	08-Mar-11	07-Apr-11
DDANB1490	Submit & endorsed by Statutory Authorities/Government Departments	28	28	02-Mar-11	29-Mar-11	31-Aug-11	28-Sep-11
DDANB1495	Final DDA prepare & submission for Noise Barrier/Enclosure Superstructure Package 6 (NE22, NE23, NE24 & NE27)	14	14	30-Mar-11	12-Apr-11	28-Sep-11	12-Oct-11
DDANB1500	DC DDA certify for Noise Barrier/Enclosure Superstructure Package 6 (NE22, NE23, NE24 & NE27)	42	42	02-Mar-11	12-Apr-11	31-Aug-11	12-Oct-11
DDANB1510	Submit & Endorsement DDA by SO	35	35	13-Apr-11	17-May-11	12-Oct-11	16-Nov-11
DDANB1520	DDA prepare for Noise Barrier/Enclosure Vertical & Roof Green Panel and Irrigation System	90	42	31-Jan-11	13-Mar-11	13-Jan-12	24-Feb-12
DDANB1530	Submit & endorsed by Statutory Authorities/Government Departments	28	28	13-Mar-11	10-Apr-11	24-Feb-12	23-Mar-12
DDANB1535	Final DDA prepare & sub. Noise Barrier/Enclosure Vertical&Roof Green Panel and Irrigation System	14	14	10-Apr-11	24-Apr-11	23-Mar-12	06-Apr-12
DDANB1540	DC DDA certify for Noise Barrier/Enclosure Vertical & Roof Green Panel and Irrigation System	42	42	13-Mar-11	24-Apr-11	24-Feb-12	06-Apr-12
DDANB1550	Submit & Endorsement DDA by SO	35	35	24-Apr-11	29-May-11	06-Apr-12	11-May-12
DDANB1720	DDA prepare for Noise Barrier/Enclosure Architectural Works	90	42	31-Jan-11	13-Mar-11	27-Jun-11	07-Aug-11
DDANB1730	Submit & endorsed by Statutory Authorities/Government Departments	28	28	14-Mar-11	10-Apr-11	08-Aug-11	04-Sep-11
DDANB1735	Final DDA prepare & sub. Noise Barrier/Enclosure Architectural Works	14	14	11-Apr-11	24-Apr-11	05-Sep-11	18-Sep-11
DDANB1740	DC DDA certify for Noise Barrier/Enclosure Architectural Works	42	42	14-Mar-11	24-Apr-11	08-Aug-11	18-Sep-11
DDANB1750	Submit & Endorsement DDA by SO	35	35	25-Apr-11	29-May-11	19-Sep-11	23-Oct-11
Package of Vehicular Bridge S1							
Detailed Design Approval (DDA)							
DDAS11030	Submit & Endorsement DDA by SO	35	15	31-Jan-11	14-Feb-11	07-Mar-11	22-Mar-11
DDAS11070	Submit & Endorsement DDA by SO	35	34	31-Jan-11	05-Mar-11	21-Feb-11	27-Mar-11
DDAS11090	Submit & endorsed by Statutory Authorities/Government Departments	28	1	31-Jan-11	31-Jan-11	02-Feb-11	03-Feb-11
DDAS11095	Final DDA prepare & sub. Vehicular Bridge S1 Foundation (N. abutment to Pier 2)	14	14	01-Feb-11	14-Feb-11	03-Feb-11	17-Feb-11
DDAS11100	DC DDA certify for Vehicular Bridge S1 Foundation (N. abutment to Pier 2)	42	15	31-Jan-11	15-Feb-11	02-Feb-11	17-Feb-11
DDAS11110	Submit & Endorsement DDA by SO	35	35	15-Feb-11	22-Mar-11	17-Feb-11	24-Mar-11



Remaining Level of Effort | Actual Work

Actual Level of Effort | Remaining ...

3 Months Rolling Programme (cutoff: 31-01-11)

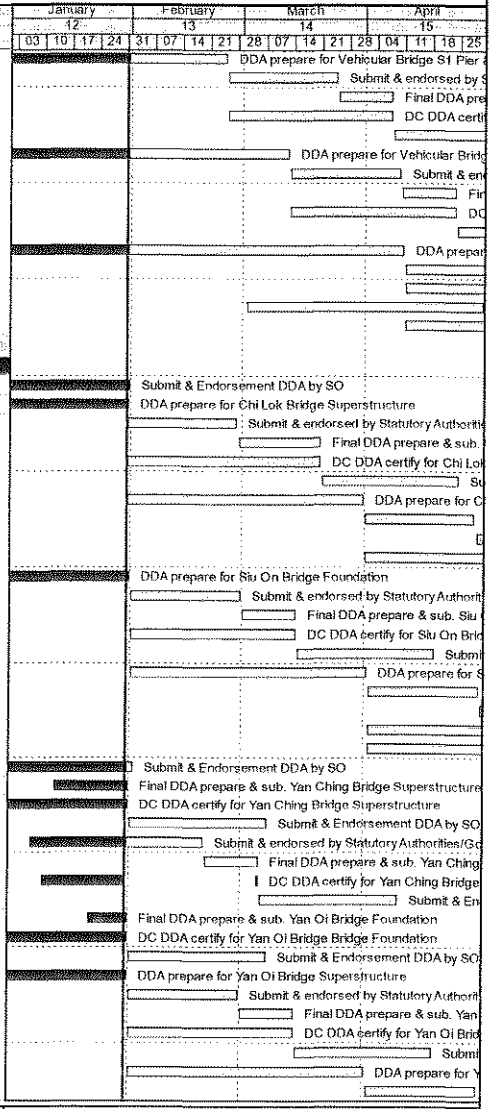
Date	Revision	Checked	Approved
23-Dec...	1012	Tim	
07-Feb...	1101	Tim	

HY/2009/03

07-Feb-11

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

Activity ID	Activity Name	Original Duration	Remaining Duration	Early Start	Early Finish	Late Start	Late Finish
DDAS11120	DDA prepare for Vehicular Bridge S1 Pier & Deck (S.abutment to Pier 7)	131	25	31-Jan-11	24-Feb-11	29-Jun-11	23-Jul-11
DDAS11130	Submit & endorsed by Statutory Authorities/Government Departments	28	28	25-Feb-11	24-Mar-11	14-Aug-11	11-Sep-11
DDAS11135	Final DDA prepare & sub. Vehicular Bridge S1 Pier & Deck (S.abutment to Pier 7)	14	14	25-Mar-11	07-Apr-11	11-Sep-11	25-Sep-11
DDAS11140	DC DDA certify for Vehicular Bridge S1 Pier & Deck (S.abutment to Pier 7)	42	42	25-Feb-11	07-Apr-11	14-Aug-11	25-Sep-11
DDAS11150	Submit & Endorsement DDA by SO	35	35	08-Apr-11	12-May-11	25-Sep-11	30-Oct-11
DDAS11160	DDA prepare for Vehicular Bridge S1 Pier & Deck (Pier 3 to Pier 7)	114	41	31-Jan-11	12-Mar-11	13-Jun-11	23-Jul-11
DDAS11170	Submit & endorsed by Statutory Authorities/Government Departments	28	28	13-Mar-11	09-Apr-11	14-Aug-11	11-Sep-11
DDAS11175	Final DDA prepare & sub. Vehicular Bridge S1 Pier & Deck (Pier 3 to Pier 7)	14	14	10-Apr-11	23-Apr-11	11-Sep-11	25-Sep-11
DDAS11180	DC DDA certify for Vehicular Bridge S1 Pier & Deck (Pier 3 to Pier 7)	42	42	13-Mar-11	23-Apr-11	14-Aug-11	25-Sep-11
DDAS11190	Submit & Endorsement DDA by SO	35	35	24-Apr-11	28-May-11	25-Sep-11	30-Oct-11
DDAS11200	DDA prepare for Vehicular Bridge S1 Pier & Deck (N. abutment to Pier 3)	77	70	31-Jan-11	10-Apr-11	15-May-11	23-Jul-11
DDAS11210	Submit & endorsed by Statutory Authorities/Government Departments	28	28	11-Apr-11	08-May-11	27-Oct-11	24-Nov-11
DDAS11220	DC DDA certify for Vehicular Bridge S1 Pier & Deck (N. abutment to Pier 3)	42	42	11-Apr-11	22-May-11	27-Oct-11	08-Dec-11
DDAS11240	DDA prepare for Vehicular Bridge S1 Noise Barrier NE19	60	60	02-Mar-11	30-Apr-11	07-Apr-11	06-Jun-11
DDAS11280	DDA prepare for Modification Existing Wong Chu Road	60	60	11-Apr-11	09-Jun-11	24-Jul-11	21-Sep-11
	Package of Footbridge and Associated Lift						
	Detailed Design Approval (DDA)						
DDACL1030	Submit & Endorsement DDA by SO	35	1	31-Jan-11	31-Jan-11	22-Mar-11	23-Mar-11
DDACL1040	DDA prepare for Chi Lok Bridge Superstructure	90	0	31-Jan-11	31-Jan-11	19-May-11	19-May-11
DDACL1050	Submit & endorsed by Statutory Authorities/Government Departments	28	28	31-Jan-11	27-Feb-11	19-May-11	16-Jun-11
DDACL1055	Final DDA prepare & sub. Chi Lok Bridge Superstructure	21	21	28-Feb-11	20-Mar-11	16-Jun-11	07-Jul-11
DDACL1060	DC DDA certify for Chi Lok Bridge Superstructure	49	49	31-Jan-11	20-Mar-11	19-May-11	07-Jul-11
DDACL1070	Submit & Endorsement DDA by SO	35	35	21-Mar-11	24-Apr-11	07-Jul-11	11-Aug-11
DDACL1080	DDA prepare for Chi Lok Bridge Architectural Works	60	60	31-Jan-11	31-Mar-11	08-Jun-11	07-Aug-11
DDACL1090	Submit & endorsed by Statutory Authorities/Government Departments	28	28	01-Apr-11	28-Apr-11	07-Aug-11	04-Sep-11
DDACL1095	Final DDA prepare & sub. Chi Lok Bridge Architectural Works	14	14	29-Apr-11	12-May-11	04-Sep-11	18-Sep-11
DDACL1100	DC DDA certify for Chi Lok Bridge Architectural Works	42	42	01-Apr-11	12-May-11	07-Aug-11	18-Sep-11
DDASO1000	DDA prepare for Siu On Bridge Foundation	60	1	31-Jan-11	31-Jan-11	08-Apr-11	09-Apr-11
DDASO1010	Submit & endorsed by Statutory Authorities/Government Departments	28	28	01-Feb-11	28-Feb-11	12-Jul-11	09-Aug-11
DDASO1015	Final DDA prepare & sub. Siu On Bridge Foundation	14	14	01-Mar-11	14-Mar-11	09-Aug-11	23-Aug-11
DDASO1020	DC DDA certify for Siu On Bridge Bridge Foundation	42	42	01-Feb-11	14-Mar-11	12-Jul-11	23-Aug-11
DDASO1030	Submit & Endorsement DDA by SO	35	35	15-Mar-11	18-Apr-11	23-Aug-11	27-Sep-11
DDASO1040	DDA prepare for Siu On Bridge Superstructure	60	60	01-Feb-11	01-Apr-11	09-Apr-11	08-Jun-11
DDASO1050	Submit & endorsed by Statutory Authorities/Government Departments	28	28	02-Apr-11	29-Apr-11	12-Jun-11	10-Jul-11
DDASO1055	Final DDA prepare & sub. Siu On Bridge Superstructure	14	14	30-Apr-11	13-May-11	10-Jul-11	24-Jul-11
DDASO1060	DC DDA certify for Siu On Bridge Superstructure	42	42	02-Apr-11	13-May-11	12-Jun-11	24-Jul-11
DDASO1080	DDA prepare for Siu On Bridge Architectural Works	60	60	02-Apr-11	31-May-11	08-Jun-11	07-Aug-11
DDAYC1030	Submit & Endorsement DDA by SO	35	2	31-Jan-11	01-Feb-11	06-Feb-11	08-Feb-11
DDAYC1055	Final DDA prepare & sub. Yan Ching Bridge Superstructure	14	1	31-Jan-11	31-Jan-11	13-Feb-11	14-Feb-11
DDAYC1060	DC DDA certify for Yan Ching Bridge Superstructure	42	1	31-Jan-11	31-Jan-11	13-Feb-11	14-Feb-11
DDAYC1070	Submit & Endorsement DDA by SO	35	35	01-Feb-11	07-Mar-11	14-Feb-11	21-Mar-11
DDAYC1090	Submit & endorsed by Statutory Authorities/Government Departments	28	20	31-Jan-11	19-Feb-11	09-Feb-11	01-Mar-11
DDAYC1095	Final DDA prepare & sub. Yan Ching Bridge Architectural Works	14	14	20-Feb-11	05-Mar-11	01-Mar-11	15-Mar-11
DDAYC1100	DC DDA certify for Yan Ching Bridge Architectural Works	42	1	05-Mar-11	05-Mar-11	14-Mar-11	15-Mar-11
DDAYC1110	Submit & Endorsement DDA by SO	35	35	06-Mar-11	09-Apr-11	15-Mar-11	19-Apr-11
DDAYO1015	Final DDA prepare & sub. Yan Oi Bridge Foundation	8	1	31-Jan-11	31-Jan-11	19-Apr-11	20-Apr-11
DDAYO1020	DC DDA certify for Yan Oi Bridge Bridge Foundation	42	1	31-Jan-11	31-Jan-11	19-Apr-11	20-Apr-11
DDAYO1030	Submit & Endorsement DDA by SO	35	35	01-Feb-11	07-Mar-11	20-Apr-11	25-May-11
DDAYO1040	DDA prepare for Yan Oi Bridge Superstructure	60	1	31-Jan-11	31-Jan-11	27-Feb-11	28-Feb-11
DDAYO1050	Submit & endorsed by Statutory Authorities/Government Departments	28	28	01-Feb-11	28-Feb-11	28-Feb-11	28-Mar-11
DDAYO1055	Final DDA prepare & sub. Yan Oi Bridge Superstructure	14	14	01-Mar-11	14-Mar-11	28-Mar-11	11-Apr-11
DDAYO1060	DC DDA certify for Yan Oi Bridge Superstructure	42	42	01-Feb-11	14-Mar-11	28-Feb-11	11-Apr-11
DDAYO1070	Submit & Endorsement DDA by SO	35	35	15-Mar-11	18-Apr-11	11-Apr-11	16-May-11
DDAYO1080	DDA prepare for Yan Oi Bridge Architectural Works	60	60	01-Feb-11	01-Apr-11	19-Jun-11	18-Aug-11
DDAYO1090	Submit & endorsed by Statutory Authorities/Government Departments	28	28	02-Apr-11	29-Apr-11	18-Aug-11	15-Sep-11



Remaining Level of Effort | Actual Work

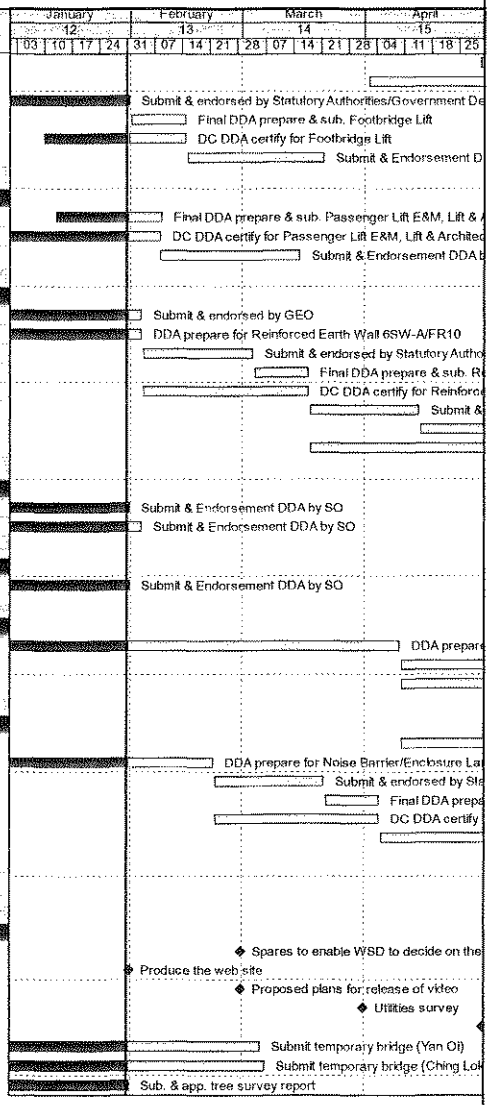
Actual Level of Effort | Remaining ...

3 Months Rolling Programme (cutoff: 31-01-11)

Date	Revision	Checked	Approved
23-Dec...	1012	Tim	
07-Feb...	1101	Tim	

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

Activity ID	Activity Name	Original Duration	Remaining Duration	Early Start	Early Finish	Late Start	Late Finish
DDAYO1095	Final DDA prepare & sub. Yan Oi Bridge Architectural Works	14	14	30-Apr-11	13-May-11	15-Sep-11	29-Sep-11
DDAYO1100	DC DDA certify for Yan Oi Bridge Architectural Works	42	42	02-Apr-11	13-May-11	18-Aug-11	29-Sep-11
DDAZL1010	Submit & endorsed by Statutory Authorities/Government Departments	28	1	31-Jan-11	31-Jan-11	30-Mar-11	31-Mar-11
DDAZL1020	Final DDA prepare & sub. Footbridge Lift	14	14	01-Feb-11	14-Feb-11	31-Mar-11	14-Apr-11
DDAZL1030	DC DDA certify for Footbridge Lift	42	15	31-Jan-11	14-Feb-11	30-Mar-11	14-Apr-11
DDAZL1040	Submit & Endorsement DDA by SO	35	35	15-Feb-11	21-Mar-11	14-Apr-11	19-May-11
	Package of LRT Passenger Lift						
	Detailed Design Approval (DDA)						
DDAPL1055	Final DDA prepare & sub. Passenger Lift E&M, Lift & Architectural Works	23	9	31-Jan-11	08-Feb-11	24-Feb-11	05-Mar-11
DDAPL1060	DC DDA certify for Passenger Lift E&M, Lift & Architectural Works	42	9	31-Jan-11	08-Feb-11	24-Feb-11	04-Mar-11
DDAPL1070	Submit & Endorsement DDA by SO	35	35	08-Feb-11	15-Mar-11	04-Mar-11	08-Apr-11
	Package of Geotechnical Works						
	Detailed Design Approval (DDA)						
DDAGE1030	Submit & endorsed by GEO	28	4	31-Jan-11	03-Feb-11	09-Mar-11	13-Mar-11
DDAGE1100	DDA prepare for Reinforced Earth Wall 6SW-A/FR10	30	4	31-Jan-11	03-Feb-11	28-Mar-11	01-Apr-11
DDAGE1110	Submit & endorsed by Statutory Authorities/Government Departments	28	28	04-Feb-11	03-Mar-11	01-Apr-11	29-Apr-11
DDAGE1115	Final DDA prepare & sub. Reinforced Earth Wall 6SW-A/FR10	14	14	04-Mar-11	17-Mar-11	29-Apr-11	13-May-11
DDAGE1120	DC DDA certify for Reinforced Earth Wall 6SW-A/FR10	42	42	04-Feb-11	17-Mar-11	13-May-11	24-Jun-11
DDAGE1130	Submit & endorsed by GEO	28	28	18-Mar-11	14-Apr-11	24-Jun-11	22-Jul-11
DDAGE1140	Submit & Endorsement DDA by SO	35	35	15-Apr-11	19-May-11	22-Jul-11	26-Aug-11
DDAGE1150	DDA prepare for Slope Works	60	60	18-Mar-11	16-May-11	13-May-11	12-Jul-11
	Package of Drainage Works						
	Detailed Design Approval (DDA)						
DDADG1070	Submit & Endorsement DDA by SO	35	1	31-Jan-11	31-Jan-11	24-Aug-11	25-Aug-11
DDADG1110	Submit & Endorsement DDA by SO	35	4	31-Jan-11	03-Feb-11	17-Feb-11	21-Feb-11
	Package of Provisional Works for TCSS Installation						
	Detailed Design Approval (DDA)						
DDATS1030	Submit & Endorsement DDA by SO	35	1	31-Jan-11	31-Jan-11	27-Mar-11	28-Mar-11
	Package of At-Grade Irrigation System						
	Detailed Design Approval (DDA)						
DDAIS1000	DDA prepare for At-grade Irrigation Systems	120	69	31-Jan-11	09-Apr-11	31-Jan-14	10-Apr-14
DDAIS1010	Submit & endorsed by Statutory Authorities/Government Departments	28	28	10-Apr-11	07-May-11	09-Jun-14	07-Jul-14
DDAIS1020	DC DDA certify for At-grade Irrigation Systems	42	42	10-Apr-11	22-May-11	09-Jun-14	21-Jul-14
	Package of Landscaping Works						
	Detailed Design Approval (DDA)						
DDALW1000	DDA prepare for At-grade Landscape Works	60	60	10-Apr-11	08-Jun-11	10-Apr-14	09-Jun-14
DDALW1040	DDA prepare for Noise Barrier/Enclosure Landscape Works	120	22	31-Jan-11	21-Feb-11	13-Mar-12	03-Apr-12
DDALW1050	Submit & endorsed by Statutory Authorities/Government Departments	28	28	22-Feb-11	21-Mar-11	04-Apr-12	01-May-12
DDALW1055	Final DDA prepare & sub. Noise Barrier/Enclosure Landscape Works	14	14	22-Mar-11	04-Apr-11	02-May-12	15-May-12
DDALW1060	DC DDA certify for Noise Barrier/Enclosure Landscape Works	42	42	22-Feb-11	04-Apr-11	04-Apr-12	15-May-12
DDALW1070	Submit & Endorsement DDA by SO	35	35	05-Apr-11	09-May-11	16-May-12	19-Jun-12
	Project General Submission						
	General Submission						
	Initial Submission						
	Submission						
GS1010	Spares to enable WSD to decide on the quantities and type	0	0		28-Feb-11		28-Feb-11
GS1140	Produce the web site	0	0		31-Jan-11		31-Jan-11
GS1170	Proposed plans for release of video	0	0		28-Feb-11		28-Feb-11
GS1230	Utilities survey	0	0		31-Mar-11		31-Mar-11
GS1350	Weather protection scheme	0	0		30-Apr-11		30-Apr-11
GS1510	Submit temporary bridge (Yan Oi)	204	34	31-Jan-11	05-Mar-11	19-Feb-11	25-Mar-11
GS1515	Submit temporary bridge (Ching Lok)	217	35	31-Jan-11	06-Mar-11	01-Feb-11	08-Mar-11
GS1540	Sub. & app. tree survey report	14	1	31-Jan-11	31-Jan-11	25-Aug-14	25-Aug-14



Remaining Level of Effort | Actual Work

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3 Months Rolling Programme (cutoff: 31-01-11)

Date	Revision	Checked	Approved
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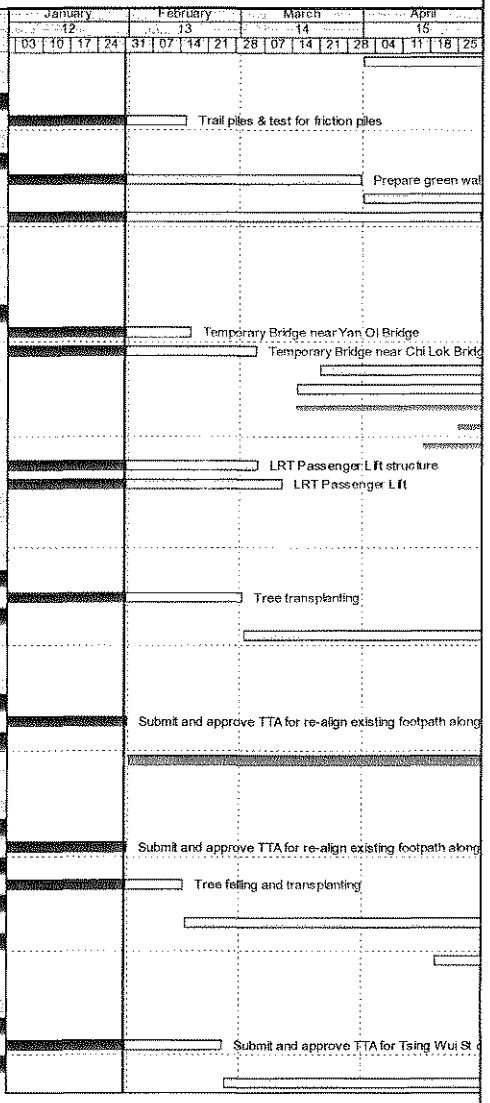
07-Feb...	1101	Tim	

HY/2009/03

07-Feb-11?

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

Activity ID	Activity Name	Original Duration	Remaining Duration	Early Start	Early Finish	Late Start	Late Finish
GS1550	Investigation works for vicinity of petrol station	45	45	01-Apr-11	30-May-11	04-Jul-14	25-Aug-14
Trail Piles							
Trail piles for Friction Piles							
GS1560	Trail piles & test for friction piles	55	11	31-Jan-11	15-Feb-11	02-Feb-11	18-Feb-11
Trail Green Panel							
Trail Green Panel							
GS1570	Prepare green wall panel for on site trail	75	49	31-Jan-11	31-Mar-11	15-Feb-12	14-Apr-12
GS1580	Site trail for green wall panel	365	365	01-Apr-11	30-Mar-12	16-Apr-12	15-Apr-13
GS1590	Prepare green roof trail	75	71	31-Jan-11	30-Apr-11	17-Jan-12	14-Apr-12
Procurement							
Material Procurement and Fabrication							
Material Procurement and Fabrication							
Procurement and Fabrication							
MP1000	Temporary Bridge near Yan Oi Bridge	90	12	31-Jan-11	16-Feb-11	19-Feb-11	05-Mar-11
MP1010	Temporary Bridge near Chi Lok Bridge	90	26	31-Jan-11	05-Mar-11	01-Feb-11	07-Mar-11
MP1040	Yan Ching Bridge span	90	90	21-Mar-11	13-Jul-11	23-Mar-11	15-Jul-11
MP1050	Yan Ching Bridge Passenger Lift	90	90	15-Mar-11	07-Jul-11	29-Apr-11	17-Aug-11
MP1100	Noise Barrier/Enclosure steel structure for Scheme A Area	570	570	15-Mar-11	15-Feb-13	04-May-11	15-Feb-13
MP1110	Noise Barrier/Enclosure steel structure for Scheme B Area	534	534	25-Apr-11	06-Feb-13	28-Apr-11	09-Feb-13
MP1130	Noise Barrier/Enclosure steel structure for Scheme D Area	613	613	16-Apr-11	11-May-13	28-May-11	13-May-13
MP1250	LRT Passenger Lift structure	90	27	31-Jan-11	05-Mar-11	13-Apr-11	16-May-11
MP1260	LRT Passenger Lift	90	32	31-Jan-11	11-Mar-11	13-May-11	22-Jun-11
Section 1 of Works							
Tuen Hing Road /Castle Peak Road							
Improvement Works at Tuen Hing Road / Castle Peak Road							
Tree Felling and Transplanting							
SEC11100	Tree transplanting	90	23	31-Jan-11	01-Mar-11	21-Jun-11	18-Jul-11
Drainage Works							
SEC11420	Construct drainage near Tuen Mun Woman Heath Centre	60	60	02-Mar-11	16-May-11	19-Jul-11	27-Sep-11
Fu Fat Lane / Castle Peak Road							
Improvement Works at Fu Fat Lane / Castle Peak Road							
Temporary Traffic Arrangement							
SEC11270	Submit and approve TTA for re-align existing footpath along Yuen Long bound slow lane	120	1	31-Jan-11	31-Jan-11	01-Feb-11	01-Feb-11
Tree Felling and Transplanting							
SEC11110	Tree felling and transplanting	90	90	01-Feb-11	26-May-11	02-Feb-11	27-May-11
Hoi Wing Road / Castle Peak Road							
Improvement Works at Hoi Wing Road / Castle Peak Road							
Temporary Traffic Arrangement							
SEC11280	Submit and approve TTA for re-align existing footpath along Kowloon bound and new slip road	120	1	31-Jan-11	31-Jan-11	08-Feb-11	08-Feb-11
Tree Felling and Transplanting							
SEC11120	Tree felling and transplanting	60	10	31-Jan-11	14-Feb-11	08-Feb-11	18-Feb-11
Drainage Works							
SEC11460	Construct drainage along Kowloon bound	80	80	15-Feb-11	25-May-11	19-Feb-11	30-May-11
Roadworks							
SEC11210	Relocation existing street lighting and re-align existing footpath along Kowloon bound	70	70	19-Apr-11	13-Jul-11	23-Apr-11	18-Jul-11
Tsing Wui Street							
Construction fo New Carpark at Tsing Wui Street							
Temporary Traffic Arrangement							
SEC11030	Submit and approve TTA for Tsing Wui St car parking	120	25	31-Jan-11	24-Feb-11	30-Apr-11	25-May-11
Roadworks							
SEC11000	Construct new car parking spaces	60	60	25-Feb-11	11-May-11	25-May-11	05-Aug-11



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3 Months Rolling Programme (cutoff: 31-01-11)

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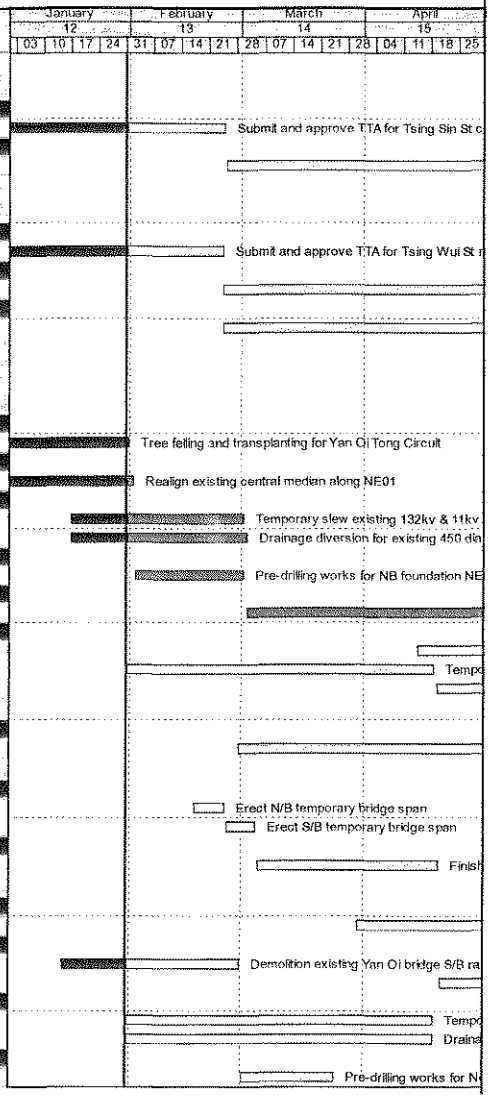
Design and Build of Traffic Improvement to Tuen Mun Road Town Centre Section

Activity ID	Activity Name	Original Duration	Remaining Duration	Early Start	Early Finish	Late Start	Late Finish
Tsing Sin Street							
Construction of New Carpark at Tsing Sin Street							
Temporary Traffic Arrangement							
SEC11040	Submit and approve TTA for Tsing Sin St car parking	120	25	31-Jan-11	24-Feb-11	30-Apr-11	25-May-11
Roadworks							
SEC11010	Construct new car parking spaces	60	60	25-Feb-11	11-May-11	25-May-11	05-Aug-11
Tsing Wui Street (near Kai Hei Land Building)							
Construction of New Carpark at Tsing Wui Street (near Kai Hei Land Bldg)							
Temporary Traffic Arrangement							
SEC11050	Submit and approve TTA for Tsing Wui St near Heiland Bldg car parking	120	25	31-Jan-11	24-Feb-11	25-Mar-11	18-Apr-11
Tree Felling and Transplanting							
SEC11410	Tree felling and transplanting	60	60	24-Feb-11	11-May-11	25-May-11	05-Aug-11
Roadworks							
SEC11020	Construct new car parking spaces	90	90	24-Feb-11	17-Jun-11	18-Apr-11	05-Aug-11
Section II of Works							
Scheme A (CH29405 - CH29050)							
Stage 1							
Tree Felling and Transplanting							
RA1000	Tree felling and transplanting for Yan Oi Tong Circuit	90	1	31-Jan-11	31-Jan-11	21-Feb-11	22-Feb-11
Temporary Traffic Arrangement							
RA1605	Realign existing central median along NE01	45	2	31-Jan-11	01-Feb-11	31-Jan-11	02-Feb-11
Utilities Diversion							
RA1660	Temporary slew existing 132kv & 11kv cable (132KV-1 & 11KV-1) for NE01 & NE02	40	23	31-Jan-11	01-Mar-11	31-Jan-11	02-Mar-11
RA1670	Drainage diversion for existing 450 dia & 525 dia pipe for NE01	45	24	31-Jan-11	02-Mar-11	29-Jan-11	02-Mar-11
Site Investigation/Pre-drilling Works							
RA1010	Pre-drilling works for NB foundation NE01 PC1 to PC8	21	21	02-Feb-11	01-Mar-11	02-Feb-11	02-Mar-11
Foundation Works							
RA1030	Construct Socket H-piles foundation for NE01 PC1 to PC8 (33nos. 610mm)	66	66	02-Mar-11	25-May-11	02-Mar-11	25-May-11
Pile Cap / Footing							
RA1060	Construct part of pile cap NE01 PC1 to PC8	64	64	14-Apr-11	02-Jul-11	31-May-11	16-Aug-11
RA1090	Temporary support and remove existing retaining wall for NE03 FT1 to FT4	60	60	31-Jan-11	18-Apr-11	19-Mar-11	04-Jun-11
RA1100	Construct pad footing NE03 FT1 to FT4	64	64	19-Apr-11	06-Jul-11	04-Jun-11	20-Aug-11
Stage 2							
Utilities Diversion							
RA1690	Relocation existing draw pit (HKT-3) for NE05	60	60	28-Feb-11	14-May-11	13-Aug-11	26-Oct-11
Construction of Temporary Yan Oi Bridge							
Temporary Bridge Structural Steel Frame Erection							
TB1020	Erect N/B temporary bridge span	7	7	17-Feb-11	24-Feb-11	05-Mar-11	14-Mar-11
TB1030	Erect S/B temporary bridge span	7	7	25-Feb-11	04-Mar-11	14-Mar-11	22-Mar-11
E&M and Finishing Works							
TB1040	Finishing & E&M works	35	35	05-Mar-11	19-Apr-11	22-Mar-11	07-May-11
Construction of New Yan Oi Bridge							
Temporary Traffic Arrangement							
YO1160	Submit and approve TTA for Yan Oi Bridge central median	120	120	30-Mar-11	27-Jul-11	15-Apr-11	13-Aug-11
Demolition of Existing Yan Oi Bridge							
TB1005	Demolition existing Yan Oi bridge S/B ramp	31	22	31-Jan-11	28-Feb-11	01-Feb-11	02-Mar-11
TB1050	Demolition existing Yan Oi bridge span and mid column	30	30	20-Apr-11	26-May-11	07-May-11	13-Jun-11
Utilities Diversion							
YO1190	Temporary slew existing 132kv & 11kv cable (132KV-1 & 11KV-2)	60	60	31-Jan-11	18-Apr-11	09-Mar-11	25-May-11
YO1200	Drainage diversion for existing 450 dia & 525 dia pipe	60	60	31-Jan-11	18-Apr-11	09-Mar-11	25-May-11
Site Investigation/Pre-drilling Works							
YO1000	Pre-drilling works for New Yan Oi bridge S/B PC1 to PC3	21	21	01-Mar-11	24-Mar-11	28-Apr-11	25-May-11



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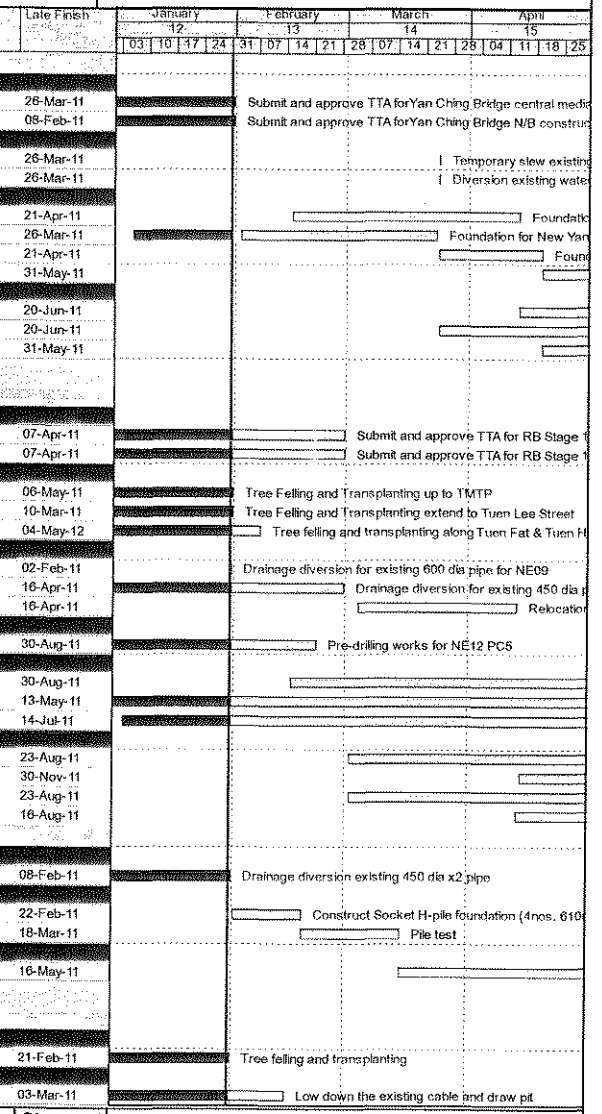
Design and Build of Traffic Improvement to Tuen Mun Road Town Centre Section

Activity ID	Activity Name	Original Duration	Remaining Duration	Early Start	Early Finish	Late Start	Late Finish
	Construction of New Yan Ching Bridge						
	Temporary Traffic Arrangement						
YC1150	Submit and approve TTA forYan Ching Bridge central median construction	120	1	31-Jan-11	31-Jan-11	25-Mar-11	26-Mar-11
YC1160	Submit and approve TTA forYan Ching Bridge N/B construction	120	1	31-Jan-11	31-Jan-11	07-Feb-11	08-Feb-11
	Utilities Diversion						
YC1220	Temporary slew existing PCCW cable (HKT-2)	0	0	24-Mar-11	24-Mar-11	26-Mar-11	26-Mar-11
YC1230	Diversion existing watermain (WS-2)	0	0	24-Mar-11	24-Mar-11	26-Mar-11	26-Mar-11
	Piling Works						
YC1000	Foundation for New Yan Ching bridge PC1 & PC3 (15nos. pre-bore H-pile)	45	45	15-Feb-11	13-Apr-11	22-Feb-11	21-Apr-11
YC1120	Foundation for New Yan Ching bridge PC2 & PC5 (15nos. pre-bore H-pile)	45	40	02-Feb-11	23-Mar-11	08-Feb-11	26-Mar-11
YC1130	Foundation for New Yan Ching bridge PC4 (6nos. pre-bore H-pile)	18	18	24-Mar-11	19-Apr-11	26-Mar-11	21-Apr-11
YC1140	Pile Test	21	21	19-Apr-11	14-May-11	05-May-11	31-May-11
	Pile Cap						
YC1010	Construct pile cap PC1 & PC3	48	48	13-Apr-11	10-Jun-11	21-Apr-11	20-Jun-11
YC1170	Construct pile cap PC2 & PC5	48	48	24-Mar-11	25-May-11	21-Apr-11	20-Jun-11
YC1180	Construct pile cap PC4	32	32	19-Apr-11	28-May-11	21-Apr-11	31-May-11
	Scheme B (CH29050 - CH28520)						
	Stage 1						
	Temporary Traffic Arrangement						
RB1820	Submit and approve TTA for RB Stage 1 S/B extend to Tuen Lee Street	120	29	31-Jan-11	28-Feb-11	09-Mar-11	07-Apr-11
RB1830	Submit and approve TTA for RB Stage 1 N/B extend to Tuen Lee Street	120	29	31-Jan-11	28-Feb-11	09-Mar-11	07-Apr-11
	Tree Felling and Transplanting						
RB1150	Tree Felling and Transplanting up to TMTP	60	1	31-Jan-11	31-Jan-11	05-May-11	06-May-11
RB1160	Tree Felling and Transplanting extend to Tuen Lee Street	90	1	31-Jan-11	31-Jan-11	09-Mar-11	10-Mar-11
RB2010	Tree felling and transplanting along Tuen Fat & Tuen Hi road	120	4	31-Jan-11	07-Feb-11	28-Apr-12	04-May-12
	Utilities Diversion						
RB1780	Drainage diversion for existing 600 dia pipe for NE09	0	0	31-Jan-11	31-Jan-11	02-Feb-11	02-Feb-11
RB1940	Drainage diversion for existing 450 dia pipe for NE06	60	22	31-Jan-11	28-Feb-11	17-Mar-11	16-Apr-11
RB1960	Relocation existing drawing pit (HKT-6) for NE06	30	30	04-Mar-11	13-Apr-11	08-Mar-11	16-Apr-11
	Site Investigation/Pre-drilling Works						
RB1840	Pre-drilling works for NE12 PC5	30	16	31-Jan-11	21-Feb-11	11-Aug-11	30-Aug-11
	Foundation Works						
RB1180	Construct Socket H-piles foundation for NE08 PC1 to PC5 (32nos. 610mm)	97	97	15-Feb-11	15-Jun-11	06-May-11	30-Aug-11
RB1190	Construct Mini piles foundation for NE09 PC1 to PC10 (74nos. mini pile)	112	78	31-Jan-11	10-May-11	02-Feb-11	13-May-11
RB1200	Construct Mini piles foundation for NE09 PC11 to PC20 (74nos. mini pile)	112	107	31-Jan-11	14-Jun-11	03-Mar-11	14-Jul-11
	Pile Cap / Footing						
RB1270	Construct pad footing for NE10 FT1 to FT8 & NE11 FT1 to FT8	133	133	02-Mar-11	13-Aug-11	10-Mar-11	23-Aug-11
RB1290	Construct pile cap for NE09 PC11 to PC20	167	167	14-Apr-11	02-Nov-11	13-May-11	30-Nov-11
RB1300	Construct pad footing for NE10 FT17 to FT24 & NE11 FT15 to FT22	133	133	02-Mar-11	13-Aug-11	10-Mar-11	23-Aug-11
RB1320	Construct pad footing for NE06 FT13 to FT18	100	100	13-Apr-11	12-Aug-11	16-Apr-11	16-Aug-11
	Relocation of LRT Passenger Lift						
	Utilities Diversion						
LRT1020	Drainage diversion existing 450 dia x2 pipe	80	1	31-Jan-11	31-Jan-11	07-Feb-11	08-Feb-11
	Piling Works						
LRT1090	Construct Socket H-pile foundation (4nos. 610mm)	12	12	01-Feb-11	18-Feb-11	08-Feb-11	22-Feb-11
LRT1100	Pile test	21	21	18-Feb-11	15-Mar-11	22-Feb-11	18-Mar-11
	Pile Cap						
LRT1030	Construction pile cap	45	45	15-Mar-11	12-May-11	18-Mar-11	16-May-11
	Scheme C (CH28520 - CH28200)						
	Stage 1						
	Tree Felling and Transplanting						
RC1050	Tree felling and transplanting	90	1	31-Jan-11	31-Jan-11	19-Feb-11	21-Feb-11
	Utilities Diversion						
RC1530	Low down the existing cable and draw pit	90	10	31-Jan-11	14-Feb-11	21-Feb-11	03-Mar-11



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

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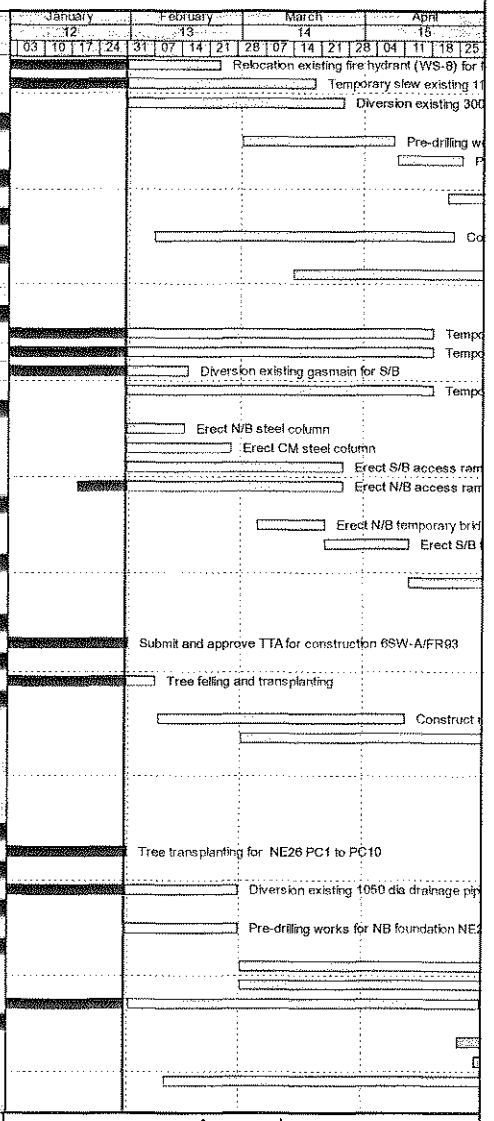
RC1600	Relocation existing fire hydrant (WS-8) for NE16 FT27 to FT34 & PC35	60	18	31-Jan-11	23-Feb-11	09-Jun-11	02-Jul-11
RC1610	Temporary slew existing 11kv & 132kv cable (132KV-4 & 11KV-9) for NE16 FT27 to FT34 & PC35	90	39	31-Jan-11	19-Mar-11	14-May-11	02-Jul-11
RC1620	Diversion existing 300 dia drainage pipe for NE16 FT27 to FT34	45	45	31-Jan-11	26-Mar-11	07-May-11	02-Jul-11
Site Investigation/Pre-drilling Works							
RC1625	Pre-drilling works for NB foundation NE15 PC1 to PC6 & NE16 PC10	30	30	01-Mar-11	08-Apr-11	30-Mar-11	10-May-11
RC1630	Pre-drilling works for NB foundation NE16 PC35	14	14	09-Apr-11	25-Apr-11	02-Jul-11	19-Jul-11
Foundation Works							
RC1200	Construct Socket H-piles foundation for NE15 PC1 to PC6 & NE16 PC10 (28nos. 610mm)	85	85	22-Apr-11	03-Aug-11	10-May-11	20-Aug-11
Drainage Works							
RC1020	Construct drainage along Tsing Hoi Circuit	62	62	07-Feb-11	23-Apr-11	21-Feb-11	10-May-11
Roadworks							
RC1030	Road re-alignment along Tsing Hoi Circuit	70	70	14-Mar-11	09-Jun-11	28-Mar-11	25-Jun-11
Construction of Temporary Chi Lok Bridge							
Utilities Diversion							
TB2060	Temporary slew existing Telecom cable for S/B footing	60	60	31-Jan-11	18-Apr-11	04-Mar-11	19-May-11
TB2100	Temporary slew existing Telecom 11kv & 132kv cable for S/B footing	60	60	31-Jan-11	18-Apr-11	04-Mar-11	19-May-11
TB2110	Diversion existing gasmain for S/B	60	11	31-Jan-11	15-Feb-11	04-Mar-11	17-Mar-11
TB2120	Temporary slew existing Telecom 11kv & 132kv cable for N/B footing	60	60	31-Jan-11	18-Apr-11	23-Feb-11	10-May-11
Quad Shore Installation							
TB2150	Erect N/B steel column	10	10	31-Jan-11	14-Feb-11	23-Feb-11	07-Mar-11
TB2160	Erect CM steel column	21	21	31-Jan-11	28-Feb-11	10-Feb-11	07-Mar-11
TB2170	Erect S/B access ramp	45	45	31-Jan-11	26-Mar-11	04-Mar-11	30-Apr-11
TB2180	Erect N/B access ramp	45	45	31-Jan-11	26-Mar-11	04-Mar-11	30-Apr-11
Temporary Bridge Structural Steel Frame Erection							
TB2020	Erect N/B temporary bridge span	14	14	05-Mar-11	22-Mar-11	07-Mar-11	23-Mar-11
TB2030	Erect S/B temporary bridge span	14	14	22-Mar-11	12-Apr-11	23-Mar-11	13-Apr-11
E&M and Finishing Works							
TB2040	Finishing & E&M works	45	45	12-Apr-11	06-Jun-11	13-Apr-11	07-Jun-11
Construction of Retaining Wall 6SW-A/FR93							
Temporary Traffic Arrangement							
RW1040	Submit and approve TTA for construction 6SW-A/FR93	120	1	31-Jan-11	31-Jan-11	04-Mar-11	05-Mar-11
Tree Felling and Transplanting							
RW1050	Tree felling and transplanting	90	4	31-Jan-11	07-Feb-11	04-Mar-11	09-Mar-11
RW 6SW-A/FR93							
RW1000	Construct retaining wall 6SW-A/FR93 (Base Slab) (3 bays)	50	50	08-Feb-11	11-Apr-11	09-Mar-11	12-May-11
RW1010	Construct retaining wall 6SW-A/FR93 (Wall)	50	50	01-Mar-11	03-May-11	30-Mar-11	03-Jun-11
Section III of Works							
Scheme D (CH28200 - CH27785)							
Stage 1							
Tree Felling and Transplanting							
RD1780	Tree transplanting for NE26 PC1 to PC10	60	1	31-Jan-11	31-Jan-11	02-Apr-11	08-Apr-11
Utilities Diversion							
RD1190	Diversion existing 1050 dia drainage pipe for NE20 PC10 to PC14 & NE25 PC1 to PC7	90	22	31-Jan-11	28-Feb-11	01-Feb-11	02-Mar-11
Site Investigation/Pre-drilling Works							
RD1240	Pre-drilling works for NB foundation NE20 PC10 to PC14 & NE25 PC1 to PC7	22	22	31-Jan-11	28-Feb-11	01-Feb-11	02-Mar-11
Foundation Works							
RD1250	Construct Socket H-piles foundation for NE20 PC10 to PC14 (28nos. 610mm)	85	85	01-Mar-11	14-Jun-11	02-Mar-11	15-Jun-11
RD1260	Construct Mini-piles foundation for NE25 PC1 to PC7 (31nos. mini pile)	94	94	01-Mar-11	25-Jun-11	03-Mar-11	29-Jun-11
RD1670	Construct Socket H-piles foundation for NE26 PC1 to PC10 (46nos. 610mm)	70	70	01-Feb-11	30-Apr-11	08-Apr-11	04-Jul-11
Pile Cap / Footing							
RD1270	Construct pile cap NE20 PC10 to PC14	83	83	25-Apr-11	04-Aug-11	26-Apr-11	05-Aug-11
RD1530	Construct pile cap NE25 PC1 to PC7	117	117	29-Apr-11	16-Sep-11	03-May-11	19-Sep-11
RD1710	Construct pile cap and wall NE26 PC1 to PC10	83	83	10-Feb-11	25-May-11	14-Apr-11	25-Jul-11
Construction of Vehicular Bridge S1							



Remaining Level of Effort | Actual Work

Actual Level of Effort | Remaining ...

3 Months Rolling Programme (cutoff: 31-01-11)

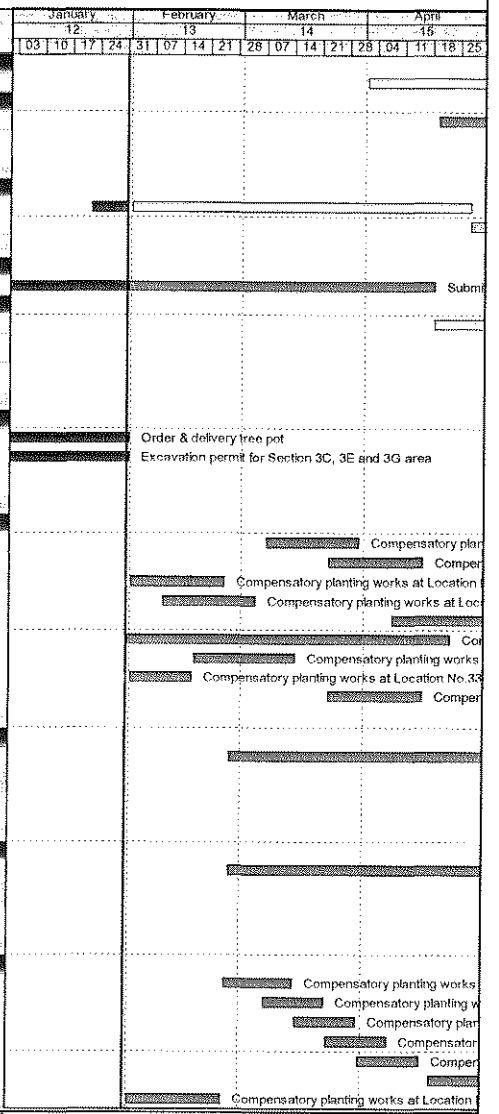
Date	Revision	Checked	Approved
23-Dec...	1012	Tim	
07-Feb...	1101	Tim	

HY/2009/03

07-Feb-11?

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

Activity ID	Activity Name	Original Duration	Remaining Duration	Early Start	Early Finish	Late Start	Late Finish
Temporary Traffic Arrangement							
S1B1020	Submit and approve TTA for Pier 3 to Pier 7	120	120	01-Apr-11	30-Jul-11	07-Apr-11	05-Aug-11
Utilities Diversion							
S1B1000	Temporary slew existing 132kv cable (132KV-10) for Pier 10	90	90	19-Apr-11	05-Aug-11	19-Apr-11	05-Aug-11
Scheme E (CH27785 - CH27000)							
Stage 4							
Roadworks							
RE1160	Existing S/B road reconstruction SL CH27550 to CH27750	67	67	01-Feb-11	27-Apr-11	29-Mar-11	23-Jun-11
RE1170	Existing S/B road reconstruction ML CH27550 to CH27750	67	67	27-Apr-11	19-Jul-11	23-Jun-11	09-Sep-11
Constrcution of Reinforced Earth Wall 6SW-A/FR10							
Temporary Traffic Arrangement							
REW1020	Submit and approve TTA RE wall at Castle Peak Road	120	78	31-Jan-11	18-Apr-11	31-Jan-11	18-Apr-11
Tree Felling and Transplanting							
REW1030	Tree felling and tranplanting	90	90	18-Apr-11	05-Aug-11	07-Sep-11	24-Dec-11
Section IIIC of Works							
General Submission							
Landscaping Works							
Landscaping Works							
P4GN1030	Order & delivery tree pot	35	1	31-Jan-11	31-Jan-11	19-Nov-10	19-Nov-10
P4GN1040	Excavation permit for Section 3C, 3E and 3G area	65	1	31-Jan-11	31-Jan-11	19-Nov-10	19-Nov-10
Landscaping Works in Portion 4							
Landscaping Works							
Landscaping Works							
3C1010	Compensatory planting works at Location No.27 (9 nos.)	18	18	07-Mar-11	30-Mar-11	11-Jan-11	03-Feb-11
3C1020	Compensatory planting works at Location No.28 (8 nos.)	18	18	23-Mar-11	15-Apr-11	27-Jan-11	21-Feb-11
3C1030	Compensatory planting works at Location No.29 (8 nos.)	18	18	01-Feb-11	24-Feb-11	08-Dec-10	31-Dec-10
3C1050	Compensatory planting works at Location No.30A (7 nos. tree pot)	18	18	09-Feb-11	04-Mar-11	10-Feb-11	07-Mar-11
3C1070	Compensatory planting works at Location No.31A (1 nos.)	18	18	08-Apr-11	03-May-11	14-Feb-11	09-Mar-11
3C1080	Compensatory planting works at Location No.31B	60	60	31-Jan-11	22-Apr-11	06-Dec-10	25-Feb-11
3C1090	Compensatory planting works at Location No.32 (4 nos.)	18	18	17-Feb-11	14-Mar-11	24-Dec-10	18-Jan-11
3C1100	Compensatory planting works at Location No.33 (3 nos. tree pot)	12	12	01-Feb-11	16-Feb-11	02-Feb-11	17-Feb-11
3C1150	Compensatory planting works at Location No.34C (5 nos.)	18	18	23-Mar-11	15-Apr-11	27-Jan-11	21-Feb-11
Establishment Works							
Establishment Works							
3C1170	Establisment Works (Nos. 26, 27, 28, 29, 30, 30A, 31, 31A, 31B, 32, 33, 33B, 34, 34A, 34B, 34C and 35)	365	365	26-Feb-11	25-Feb-12	26-Feb-11	25-Feb-12
Section IIIE of Works							
Landscaping Works in Portion 4							
Landscaping Works							
Establishment Works							
3E1080	Establisment Works (Nos. 46, 46A, 46B, 47A, 47C, 47D, 47E & 47F)	365	365	26-Feb-11	25-Feb-12	26-Feb-11	25-Feb-12
Section IIIG of Works							
Landscaping Works in Portion 4							
Landscaping Works							
Landscaping Works							
3G1010	Compensatory planting works at Location No.2 (3 nos.)	12	12	25-Feb-11	14-Mar-11	16-Dec-10	31-Dec-10
3G1030	Compensatory planting works at Location No.5 (3 nos. tree pot)	12	12	07-Mar-11	22-Mar-11	24-Dec-10	10-Jan-11
3G1040	Compensatory planting works at Location No.6 (2 nos. tree pot)	12	12	15-Mar-11	30-Mar-11	03-Jan-11	18-Jan-11
3G1050	Compensatory planting works at Location No.8 (2 nos. tree pot)	12	12	23-Mar-11	07-Apr-11	11-Jan-11	26-Jan-11
3G1060	Compensatory planting works at Location No.9 (2 nos. tree pot)	12	12	31-Mar-11	15-Apr-11	19-Jan-11	03-Feb-11
3G1070	Compensatory planting works at Location No.10 (9 nos.)	18	18	18-Apr-11	11-May-11	04-Feb-11	01-Mar-11
3G1090	Compensatory planting works at Location No.13 (10 nos.)	18	18	01-Feb-11	24-Feb-11	22-Nov-10	15-Dec-10



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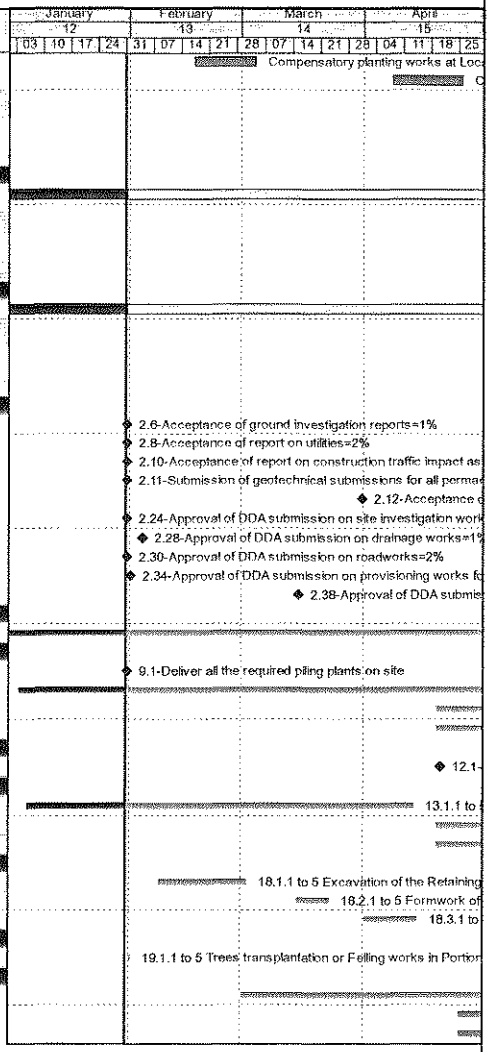
Design and Build of Traffic Improvement to Tuen Mun Road Town Centre Section

Activity ID	Activity Name	Original Duration	Remaining Duration	Early Start	Early Finish	Late Start	Late Finish
3G1100	Compensatory planting works at Location No.13A (4 nos.)	12	12	17-Feb-11	04-Mar-11	08-Dec-10	23-Dec-10
3G1130	Compensatory planting works at Location No.15 (6 nos. tree pot)	12	12	08-Apr-11	25-Apr-11	27-Jan-11	11-Feb-11
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	706	31-Jan-11	22-Jun-13	11-Apr-11	24-Aug-13
Section V of Works							
Structural Condition Survey in Portion 2, 3A and 3B							
Condition Survey of existing structures							
Condition Survey of existing structures							
S5-1010	Testing for existing structures	90	78	31-Jan-11	10-May-11	07-May-12	08-Aug-12
Schedule of Milestones							
Schedule of Milestones							
Schedule of Milestones							
Design of Permanent Works							
CC0200150	2.6-Acceptance of ground investigation reports=1%	0	0		31-Jan-11		24-Dec-10
CC0200170	2.8-Acceptance of report on utilities=2%	0	0		31-Jan-11		24-Dec-10
CC0200190	2.10-Acceptance of report on construction traffic impact assessment=2%	0	0		31-Jan-11		24-Dec-10
CC0200200	2.11-Submission of geotechnical submissions for all permanent geotechnical works=2%	0	0		31-Jan-11		26-Jun-14
CC0200210	2.12-Acceptance of geotechnical submissions for all permanent geotechnical works=1%	0	0		31-Mar-11		25-Aug-14
CC0200330	2.24-Approval of DDA submission on site investigation works=1%	0	0		31-Jan-11		25-Aug-14
CC0200370	2.28-Approval of DDA submission on drainage works=1%	0	0		04-Feb-11		25-Aug-14
CC0200390	2.30-Approval of DDA submission on roadworks=2%	0	0		31-Jan-11		25-Aug-14
CC0200430	2.34-Approval of DDA submission on provisioning works for TCSS installation=1%	0	0		01-Feb-11		25-Aug-14
CC0200470	2.38-Approval of DDA submission on relocation of LRT passenger lift=1%	0	0		15-Mar-11		25-Aug-14
Landscape Softworks in Portion 1							
CC0500100	5.1.1 to 5 Trees transplantation or Felling works in Portion 1	146	101	31-Jan-11	11-May-11	30-Jun-10	05-Aug-11
Noise Barrier and Noise Enclosure in Portion 2							
CC0900100	9.1-Deliver all the required piling plants on site	0	0		31-Jan-11		25-Aug-14
CC0900110	9.2.1 to 20 number of piles of the noise barriers and noise enclosures in Portion 2	724	691	31-Jan-11	21-Dec-12	04-Jan-11	11-Jan-13
CC0900320	9.4.1 to 10 reinforcement of the pile cap	619	619	19-Apr-11	28-Dec-12	05-Jun-11	19-Jan-13
CC0900420	9.5.1 to 10 concreting the pile cap	619	619	19-Apr-11	28-Dec-12	05-Jun-11	19-Jan-13
Reprovision of Yan Oi Bridge							
CC1200100	12.1-On completion of temporary footbridge including foundation works	0	0		20-Apr-11		25-Aug-14
Reprovision of Yan Ching Bridge							
CC1300100	13.1.1 to 5 total number of piles of Yan Ching Bridge	57	73	31-Jan-11	13-Apr-11	06-Jan-11	21-Apr-11
CC1300160	13.3.1 to 5 reinforcement of pile caps of Yan Oi Bridge	37	37	19-Apr-11	25-May-11	21-Apr-11	20-Jun-11
CC1300210	13.4.1 to 10 concreting the pile cap of Yan Ching Bridge	37	37	19-Apr-11	25-May-11	21-Apr-11	20-Jun-11
Retaining Wall at Slope No. 6SW-A/FR93							
CC1800100	18.1.1 to 5 Excavation of the Retaining Wall At Slope No. 6SW-A/FR93	23	23	08-Feb-11	02-Mar-11	09-Mar-11	01-Apr-11
CC1800150	18.2.1 to 5 Formwork of the Retaining Wall At Slope No. 6SW-A/FR93	9	9	15-Mar-11	23-Mar-11	18-Apr-11	27-Apr-11
CC1800200	18.3.1 to 5 Concreting of the Retaining Wall At Slope No. 6SW-A/FR93	14	14	01-Apr-11	14-Apr-11	06-May-11	16-May-11
Landscape Softworks in Portion 2							
CC1900100	19.1.1 to 5 Trees transplantation or Felling works in Portion 2	0	0	01-Feb-11	01-Feb-11	22-Feb-11	10-Mar-11
Noise Barrier and Noise Enclosure in Portion 3A							
CC2400110	24.2.1 to 20 number of piles of the noise barriers and noise enclosures in Portion 3A	676	676	01-Mar-11	05-Jan-13	02-Mar-11	07-Jan-13
CC2400320	24.4.1 to 10 reinforcement of the pile cap	672	672	25-Apr-11	25-Feb-13	26-Apr-11	11-Apr-13
CC2400420	24.5.1 to 10 of concreting the pile cap	672	672	25-Apr-11	25-Feb-13	26-Apr-11	11-Apr-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 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 arised 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 *		
				Feb 11	Mar 11	Apr 11
		Noise Control				
3.8.1	2.8.1	Good site practice and management can significantly reduce the noise impact of construction site activities on nearby NSRs	Works Sites / During Construction Phase			
		• 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.		N/O	N/O	✓
3.8.4	2.8.3	Use of quieter mechanical equipment	Works Sites / During Construction Phase	✓	✓	✓
3.8.9	2.8.4	Provision of movable noise barrier in the vicinity of the following NSRs • FEC (Far East Consortium Tuen Mun Central Building) • FM (Forward Mansion) • HTB (Hing Tai Building) • TMTP1 (Tuen Mun Town Plaza) • WG2 (Waldorf Garden) • CMA (CMA Choi Cheung Kok Secondary School) • LWF (Yan Oi Tong Madam Lau Wong Fat Primary School) • TMF (Tuen Mun Fa Yuen) • LCK (Lui Cheung Kwong Lutheran College)	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 *		
				Feb 11	Mar 11	Apr 11
		• 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	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. • 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	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 *		
				Feb 11	Mar 11	Apr 11
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 *		
				Feb 11	Mar 11	Apr 11
		Air Quality Control				
4.8.1	3.11.2	Implementation of dust suppression measures stipulated in Air Pollution Control (Construction Dust) Regulation.	Works Sites / During Construction Phase			
		• 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		✓	✓	✓

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 *		
				Feb 11	Mar 11	Apr 11
		• 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		✓	✓	Rdr
		• 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		Rdr	✓	✓
		• all dusty materials should be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet		✓	✓	Rdr
		• 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.		✓	✓	✓

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EIA Ref #	EM&A Ref	Environmental Protection Measures / Mitigation Measures	Location / Timing	Status *		
				Feb 11	Mar 11	Apr 11
		Water Quality Control				
5.8.2	4.3.2	Construction run-off and Drainage • 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 *		
				Feb 11	Mar 11	Apr 11
		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.		✓	Obs	✓
5.8.3 - 5.8.4	4.3.3	General Construction Activities	Works Sites / During Construction Phase			
		• Debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering the nearby local stormwater drainage system.		Obs	Obs	Obs
		• 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		Obs	Obs	✓
5.8.5	4.3.4	Sewage from Construction Workforce	Works Sites / During Construction Phase			
		• 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		✓	✓	✓

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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 *		
				Feb 11	Mar 11	Apr 11
		Waste Management				
6.6.1	*5.2.2*	*Good Site Practices*	Works Sites / During Construction Phase			
		• 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.		Obs	Obs	Obs
		• A recording system for the amount of wastes generated, recycled and disposed of (including the disposal sites).		✓	✓	✓
6.6.5	*5.2.6*	*Chemical Wastes*	Works Sites / During Construction Phase			
		• 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.		✓	✓	Obs
		• 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.		✓	✓	✓

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 *		
				Feb 11	Mar 11	Apr 11
6.6.6	*5.2.7*	*General Refuse*	Works Sites / During Construction Phase			
		• General refuse should be stored in enclosed bins or compaction units separate from C&D material.		Rdr	✓	✓
		• 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.		✓	✓	✓
6.6.2	*5.2.3*	*Waste Reduction Measures*	Works Sites / During Construction Phase			
		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, 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.				

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 *		
				Feb 11	Mar 11	Apr 11
6.6.4	*5.2.5*	*Construction and Demolition (C&D) Material*	Works Sites / During Construction Phase			
		• 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.		✓	✓	✓

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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 *		
				Feb 11	Mar 11	Apr 11
		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 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, careful programming of works and use of noise reduction facilities could be implemented to mitigate noise impacts arised 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:	Works Sites / During Construction Phase	N/O	N/O	✓
		• regular watering		✓	✓	✓
		• complete coverage of dusty material storage piles		✓	✓	✓
		• the use of minimum practical height for dropping excavated material				
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:	Works Sites / During Construction Phase			
		• 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.		N/O	N/O	N/O
		• Debris and rubbish generated on-site should be collected, handled and disposed properly.		✓	✓	✓

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 *		
				Feb 11	Mar 11	Apr 11
7.9.5	6.2.5	Standard good site practice measures should be implemented and should include:	Works Sites / During Construction Phase			
		• 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.		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 *		
				Feb 11	Mar 11	Apr 11
		Landscape and Visual				
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.		Obs	Obs	Obs
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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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 *		
				Feb 11	Mar 11	Apr 11
		Land Contamination				
9.8.3	8.2.2	To minimize construction workers' potential contact with the contaminated materials • 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 *		
				Feb 11	Mar 11	Apr 11
		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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Notes (*): ✓ – Compliance; N/A - Not Applicable; N/O – Not Observed; Rdr – Reminder; Obs – Observation; N/C - Non Compliance

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			
130251	Feb-11	2-Feb-11	AM1	Fine	Normal Operation	765.0	765.0	14.0	15.0	50.0	50.0	2.739	2.9456	0.2066	1.5773	1.5745	1.57	10729.30	10753.30	1440.0	2269.30	91.0
130258	Feb-11	8-Feb-11	AM1	Fine	Normal Operation	756.0	757.0	19.0	19.0	50.0	50.0	2.7419	2.891	0.1491	1.554	1.5551	1.55	10753.30	10777.30	1440.0	2238.55	66.6
130236	Feb-11	14-Feb-11	AM1	Cloudy	Normal Operation	765.0	765.0	10.0	11.0	50.0	50.0	2.7571	3.0541	0.297	1.5886	1.5858	1.59	10777.30	10801.30	1440.0	2285.57	129.9
130264	Feb-11	19-Feb-11	AM1	Cloudy	Normal Operation	762.0	764.0	13.0	13.0	50.0	50.0	2.7536	2.8554	0.1018	1.5769	1.5791	1.58	10801.30	10825.30	1440.0	2272.32	44.8
130273	Feb-11	25-Feb-11	AM1	Fine	Normal Operation	762.0	762.0	18.0	18.0	50.0	50.0	2.7529	2.8136	0.0607	1.5631	1.5631	1.56	10825.30	10849.30	1440.0	2250.86	27.0
130280	Mar-11	3-Mar-11	AM1	Fine	Normal Operation	763.0	764.0	18.0	16.0	50.0	50.0	2.7503	2.9671	0.2168	1.5641	1.5706	1.57	10849.30	10873.30	1440.0	2256.98	96.10
130304	Mar-11	9-Mar-11	AM1	Cloudy	Normal Operation	765.0	765.0	15.0	16.0	50.0	50.0	2.7849	2.9305	0.1456	1.5745	1.5717	1.57	10873.30	10897.30	1440.0	2265.26	64.3
130292	Mar-11	15-Mar-11	AM1	Fine	Normal Operation	762.0	766.0	19.0	15.0	50.0	50.0	2.7106	2.8753	0.1647	1.5603	1.5755	1.57	10897.30	10921.30	1440.0	2257.78	72.9
130298	Mar-11	21-Mar-11	AM1	Fine	Normal Operation	758.0	762.0	22.0	19.0	50.0	50.0	2.7473	2.8510	0.1037	1.5481	1.5603	1.55	10921.30	10945.30	1440.0	2238.05	46.3
130310	Mar-11	26-Mar-11	AM1	Cloudy	Normal Operation	766.0	766.0	17.0	15.0	50.0	50.0	2.7742	3.0260	0.2518	1.570	1.5755	1.57	10945.30	10969.30	1440.0	2264.76	111.2
130320	Apr-11	1-Apr-11	AM1	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.7923	2.9189	0.1266	1.4793	1.4712	1.48	10969.30	10993.30	1440.0	2124.36	59.6
130326	Apr-11	6-Apr-11	AM1	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.7953	2.7653	0.1056	1.7211	1.713	1.72	10993.30	11017.30	1440.0	2472.54	49.6
130332	Apr-11	11-Apr-11	AM1	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.7983	2.6117	0.1462	1.9629	1.9548	1.96	11017.30	11041.30	1440.0	2820.72	69.0
130338	Apr-11	16-Apr-11	AM1	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.8013	2.4581	0.0803	2.2047	2.1966	2.20	11041.30	11065.30	1440.0	3168.90	38.2
130344	Apr-11	20-Apr-11	AM1	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.8043	2.3045	0.2143	2.4465	2.4384	2.44	11065.30	11089.30	1440.0	3517.08	101.1
130350	Apr-11	26-Apr-11	AM1	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.8073	2.1509	0.0921	2.6883	2.6802	2.68	11089.30	11113.30	1440.0	3865.26	43.8
130357	Apr-11	30-Apr-11	AM1	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.8103	1.9973	0.1030	2.9301	2.922	2.93	11113.30	11137.30	1440.0	4213.44	49.0

Average (ug/m^3)	68.3
Max (ug/m^3)	129.9
Min (ug/m^3)	27.0

Action Level (ug/m^3)	146
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 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			
130253	Feb-11	2-Feb-11	AM2	Fine	Normal Operation	765.0	765.0	14.0	15.0	50.0	50.0	2.7508	2.9561	0.2053	1.5424	1.5396	1.54	4883.10	4907.10	1440.0	2219.04	92.5
130259	Feb-11	8-Feb-11	AM2	Fine	Normal Operation	756.0	757.0	19.0	19.0	50.0	50.0	2.7551	2.8219	0.0668	1.5188	1.5199	1.52	4907.10	4931.10	1440.0	2187.86	30.5
130265	Feb-11	14-Feb-11	AM2	Cloudy	Normal Operation	765.0	765.0	10.0	11.0	50.0	50.0	2.7517	2.8676	0.1159	1.554	1.5511	1.55	4931.10	4955.10	1440.0	2235.67	51.8
130270	Feb-11	19-Feb-11	AM2	Cloudy	Normal Operation	762.0	764.0	13.0	13.0	50.0	50.0	2.7516	2.8834	0.1318	1.5421	1.5443	1.54	4955.10	4979.10	1440.0	2222.21	59.3
130275	Feb-11	25-Feb-11	AM2	Fine	Normal Operation	762.0	762.0	18.0	18.0	50.0	50.0	2.7556	2.8564	0.1008	1.528	1.528	1.53	4979.10	5003.10	1440.0	2200.32	45.8
130286	Mar-11	3-Mar-11	AM2	Fine	Normal Operation	763.0	764.0	18.0	16.0	50.0	50.0	2.7554	2.8224	0.0670	1.5291	1.5357	1.53	5003.10	5027.10	1440.0	2206.66	30.4
130305	Mar-11	9-Mar-11	AM2	Cloudy	Normal Operation	765.0	765.0	15.0	16.0	50.0	50.0	2.8030	2.9053	0.1023	1.5396	1.5368	1.54	5027.10	5051.10	1440.0	2215.01	46.2
130293	Mar-11	15-Mar-11	AM2	Fine	Normal Operation	762.0	766.0	19.0	15.0	50.0	50.0	2.7414	2.9587	0.2173	1.5252	1.5407	1.53	5051.10	5075.10	1440.0	2207.45	98.4
130299	Mar-11	21-Mar-11	AM2	Fine	Normal Operation	758.0	762.0	22.0	19.0	50.0	50.0	2.7348	2.8021	0.0673	1.5128	1.5252	1.52	5075.10	5099.10	1440.0	2187.36	30.8
130311	Mar-11	26-Mar-11	AM2	Cloudy	Normal Operation	766.0	766.0	17.0	15.0	50.0	50.0	2.7739	2.9952	0.2213	1.5351	1.5407	1.54	5099.10	5123.10	1440.0	2214.58	99.9
130321	Apr-11	1-Apr-11	AM2	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.7928	2.8933	0.1005	1.5196	1.5115	1.52	5123.10	5147.10	1440.0	2182.39	46.1
130327	Apr-11	6-Apr-11	AM2	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.7958	2.7397	0.1146	1.7614	1.7533	1.76	5147.10	5171.10	1440.0	2530.57	52.4
130333	Apr-11	11-Apr-11	AM2	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.7988	2.5861	0.0846	2.0032	1.9951	2.00	5171.10	5195.10	1440.0	2878.75	38.9
130339	Apr-11	16-Apr-11	AM2	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.8018	2.4325	0.1329	2.245	2.2369	2.24	5195.10	5219.10	1440.0	3226.93	61.5
130345	Apr-11	20-Apr-11	AM2	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.8048	2.2789	0.2031	2.4868	2.4787	2.48	5219.10	5243.10	1440.0	3575.11	93.2
130351	Apr-11	26-Apr-11	AM2	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.8078	2.1253	0.0871	2.7286	2.7205	2.72	5243.10	5267.10	1440.0	3923.29	40.3
130358	Apr-11	30-Apr-11	AM2	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.8108	1.9717	0.0866	2.9704	2.9623	2.97	5267.10	5291.10	1440.0	4271.47	40.1

Average (ug/m^3)	56.4
Max (ug/m^3)	99.9
Min (ug/m^3)	30.4

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			
130246	Feb-11	2-Feb-11	AM3	Fine	Normal Operation	765.0	765.0	14.0	15.0	50.0	50.0	2.7527	2.9388	0.1861	1.5746	1.5715	1.57	9049.39	9073.39	1440.0	2265.19	82.2
130260	Feb-11	8-Feb-11	AM3	Fine	Normal Operation	756.0	757.0	19.0	19.0	50.0	50.0	2.7487	2.8909	0.1422	1.5493	1.5505	1.55	9073.39	9097.39	1440.0	2231.86	63.7
130266	Feb-11	14-Feb-11	AM3	Cloudy	Normal Operation	765.0	765.0	10.0	11.0	50.0	50.0	2.7396	2.8765	0.1369	1.5869	1.5838	1.59	9097.39	9121.39	1440.0	2282.90	60.0
130271	Feb-11	19-Feb-11	AM3	Cloudy	Normal Operation	762.0	764.0	13.0	13.0	50.0	50.0	2.7432	2.8293	0.0861	1.5742	1.5765	1.58	9121.39	9145.39	1440.0	2268.50	38.0
130276	Feb-11	25-Feb-11	AM3	Fine	Normal Operation	762.0	762.0	18.0	18.0	50.0	50.0	2.7310	2.8889	0.1579	1.5591	1.5591	1.56	9145.39	9169.39	1440.0	2245.10	70.3
130282	Mar-11	3-Mar-11	AM3	Fine	Normal Operation	763.0	764.0	18.0	16.0	50.0	50.0	2.7532	2.8964	0.1432	1.5603	1.5674	1.56	9169.39	9193.39	1440.0	2251.94	63.6
130291	Mar-11	9-Mar-11	AM3	Cloudy	Normal Operation	765.0	765.0	15.0	16.0	50.0	50.0	2.7471	2.9700	0.2229	1.5715	1.5685	1.57	9193.39	9217.39	1440.0	2260.80	98.6
130294	Mar-11	15-Mar-11	AM3	Fine	Normal Operation	762.0	766.0	19.0	15.0	50.0	50.0	2.7424	2.9335	0.1911	1.5561	1.5727	1.56	9217.39	9241.39	1440.0	2252.74	84.8
130300	Mar-11	21-Mar-11	AM3	Fine	Normal Operation	758.0	762.0	22.0	19.0	50.0	50.0	2.7467	2.8169	0.0702	1.5429	1.5561	1.55	9241.39	9265.39	1440.0	2231.28	31.5
130306	Mar-11	26-Mar-11	AM3	Cloudy	Normal Operation	766.0	766.0	17.0	15.0	50.0	50.0	2.7855	2.9542	0.1687	1.5667	1.5727	1.57	9265.39	9289.39	1440.0	2260.37	74.6
130322	Apr-11	1-Apr-11	AM3	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.7933	2.8677	0.0749	1.5599	1.5518	1.56	9289.39	9313.39	1440.0	2240.42	35.1
130328	Apr-11	6-Apr-11	AM3	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.7963	2.7141	0.1447	1.8017	1.7936	1.80	9313.39	9337.39	1440.0	2588.60	67.7
130334	Apr-11	11-Apr-11	AM3	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.7993	2.5605	0.1069	2.0435	2.0354	2.04	9337.39	9361.39	1440.0	2936.78	50.2
130340	Apr-11	16-Apr-11	AM3	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.8023	2.4069	0.1644	2.2853	2.2772	2.28	9361.39	9385.39	1440.0	3284.96	77.8
130346	Apr-11	20-Apr-11	AM3	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.8053	2.2533	0.0745	2.5271	2.519	2.52	9385.39	9409.39	1440.0	3633.14	35.0
130352	Apr-11	26-Apr-11	AM3	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.8083	2.0997	0.1555	2.7689	2.7608	2.76	9409.39	9433.39	1440.0	3981.32	73.6
130316	Apr-11	30-Apr-11	AM3	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.8113	1.9461	0.2801	3.0107	3.0026	3.01	9433.39	9457.39	1440.0	4329.50	132.5

Average (ug/m^3)	67.0
Max (ug/m^3)	132.5
Min (ug/m^3)	31.5

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 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			
130255	Feb-11	2-Feb-11	AM4	Fine	Normal Operation	765.0	765.0	14.0	15.0	50.0	50.0	2.7461	2.9607	0.2146	1.4729	1.4701	1.47	9931.12	9955.12	1440.0	2118.96	101.3
130261	Feb-11	8-Feb-11	AM4	Fine	Normal Operation	756.0	757.0	19.0	19.0	50.0	50.0	2.7605	2.8628	0.1023	1.4495	1.4506	1.45	9955.12	9979.12	1440.0	2088.07	49.0
130254	Feb-11	14-Feb-11	AM4	Cloudy	Normal Operation	765.0	765.0	10.0	11.0	50.0	50.0	2.7632	2.9623	0.1991	1.4843	1.4815	1.48	9979.12	10003.12	1440.0	2135.38	93.2
130267	Feb-11	19-Feb-11	AM4	Cloudy	Normal Operation	762.0	764.0	13.0	13.0	50.0	50.0	2.743	2.8218	0.0788	1.4726	1.4748	1.47	10003.12	10027.12	1440.0	2122.13	37.1
130277	Feb-11	25-Feb-11	AM4	Fine	Normal Operation	762.0	762.0	18.0	18.0	50.0	50.0	2.7238	2.8613	0.1375	1.4587	1.4587	1.46	10027.12	10051.12	1440.0	2100.53	65.5
130283	Mar-11	3-Mar-11	AM4	Fine	Normal Operation	763.0	764.0	18.0	16.0	50.0	50.0	2.7337	2.8728	0.1391	1.4597	1.4663	1.46	10051.12	10075.12	1440.0	2106.72	66.0
130287	Mar-11	9-Mar-11	AM4	Cloudy	Normal Operation	765.0	765.0	15.0	16.0	50.0	50.0	2.7588	2.8954	0.1366	1.4701	1.4673	1.47	10075.12	10099.12	1440.0	2114.93	64.6
130295	Mar-11	15-Mar-11	AM4	Fine	Normal Operation	762.0	766.0	19.0	15.0	50.0	50.0	2.7184	2.8718	0.1534	1.4558	1.4712	1.46	10099.12	10123.12	1440.0	2107.44	72.8
130301	Mar-11	21-Mar-11	AM4	Fine	Normal Operation	758.0	762.0	22.0	19.0	50.0	50.0	2.7923	2.9241	0.1318	1.4436	1.4558	1.45	10123.12	10147.12	1440.0	2087.57	63.1
130307	Mar-11	26-Mar-11	AM4	Cloudy	Normal Operation	766.0	766.0	17.0	15.0	50.0	50.0	2.7810	3.0387	0.2577	1.4656	1.4712	1.47	10147.12	10171.12	1440.0	2114.50	121.9
130323	Apr-11	1-Apr-11	AM4	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.7764	2.8901	0.1137	1.4896	1.482	1.49	10171.12	10195.12	1440.0	2139.55	53.1
130329	Apr-11	6-Apr-11	AM4	Fine	Normal Operation	763.0	762.0	19.0	21.0	50.0	50.0	2.782	2.9494	0.1674	1.4933	1.4868	1.49	10195.12	10219.12	1440.0	2145.67	78.0
130335	Apr-11	11-Apr-11	AM4	Fine	Normal Operation	761.0	762.0	23.0	22.0	50.0	50.0	2.7948	2.8801	0.0853	1.4804	1.4841	1.48	10219.12	10243.12	1440.0	2134.44	40.0
130341	Apr-11	16-Apr-11	AM4	Fine	Normal Operation	757.0	756.0	25.0	24.0	50.0	50.0	2.7915	2.9436	0.1521	1.4708	1.4724	1.47	10243.12	10267.12	1440.0	2119.10	71.8
130347	Apr-11	20-Apr-11	AM4	Fine	Normal Operation	762.0	760.0	21.0	23.0	50.0	50.0	2.789	2.8897	0.1007	1.4868	1.4793	1.48	10267.12	10291.12	1440.0	2135.59	47.2
130353	Apr-11	26-Apr-11	AM4	Fine	Normal Operation	757.0	755.0	24.0	25.0	50.0	50.0	2.7882	2.9085	0.1203	1.4735	1.4686	1.47	10291.12	10315.12	1440.0	2118.31	56.8
130359	Apr-11	30-Apr-11	AM4	Fine	Normal Operation	757.0	755.0	24.0	25.0	50.0	50.0	2.7872	2.8417	0.0545	1.4735	1.4686	1.47	10315.12	10339.12	1440.0	2118.31	25.7

Average (ug/m^3)	65.1
Max (ug/m^3)	121.9
Min (ug/m^3)	25.7

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			
130256	Feb-11	2-Feb-11	AM5	Fine	Normal Operation	765.0	765.0	14.0	15.0	50.0	50.0	2.7367	2.8545	0.1178	1.4992	1.4964	1.50	9717.27	9741.27	1440.0	2156.83	54.6
130262	Feb-11	8-Feb-11	AM5	Fine	Normal Operation	756.0	757.0	19.0	19.0	50.0	50.0	2.7546	2.8928	0.1382	1.4764	1.4775	1.48	9741.27	9765.27	1440.0	2126.81	65.0
130252	Feb-11	14-Feb-11	AM5	Cloudy	Normal Operation	765.0	765.0	10.0	11.0	50.0	50.0	2.7466	2.9505	0.2039	1.5103	1.5075	1.51	9765.27	9789.27	1440.0	2172.82	93.8
130268	Feb-11	19-Feb-11	AM5	Cloudy	Normal Operation	762.0	764.0	13.0	13.0	50.0	50.0	2.7492	2.833	0.0838	1.4988	1.501	1.50	9789.27	9813.27	1440.0	2159.86	38.8
130278	Feb-11	25-Feb-11	AM5	Fine	Normal Operation	762.0	762.0	18.0	18.0	50.0	50.0	2.7462	2.8258	0.0796	1.4853	1.4853	1.49	9813.27	9837.27	1440.0	2138.83	37.2
130284	Mar-11	3-Mar-11	AM5	Fine	Normal Operation	763.0	764.0	18.0	16.0	50.0	50.0	2.7567	2.9063	0.1496	1.4863	1.4927	1.49	9837.27	9861.27	1440.0	2144.88	69.7
130288	Mar-11	9-Mar-11	AM5	Cloudy	Normal Operation	765.0	765.0	15.0	16.0	50.0	50.0	2.7184	2.8544	0.1360	1.4964	1.4937	1.50	9861.27	9885.27	1440.0	2152.87	63.2
130296	Mar-11	15-Mar-11	AM5	Fine	Normal Operation	762.0	766.0	19.0	15.0	50.0	50.0	2.7291	2.9004	0.1713	1.4825	1.4975	1.49	9885.27	9909.27	1440.0	2145.60	79.8
130302	Mar-11	21-Mar-11	AM5	Fine	Normal Operation	758.0	762.0	22.0	19.0	50.0	50.0	2.7886	2.9082	0.1196	1.4706	1.4825	1.48	9909.27	9933.27	1440.0	2126.23	56.2
130308	Mar-11	26-Mar-11	AM5	Cloudy	Normal Operation	766.0	766.0	17.0	15.0	50.0	50.0	2.7960	3.1041	0.3081	1.4921	1.4975	1.49	9933.27	9957.27	1440.0	2152.51	143.1
130324	Apr-11	1-Apr-11	AM5	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.7878	2.8575	0.0697	1.503	1.495	1.50	9957.27	9981.27	1440.0	2158.56	32.3
130330	Apr-11	6-Apr-11	AM5	Fine	Normal Operation	763.0	762.0	19.0	21.0	50.0	50.0	2.7697	2.8842	0.1145	1.5069	1.500	1.50	9981.27	10005.27	1440.0	2164.97	52.9
130336	Apr-11	11-Apr-11	AM5	Fine	Normal Operation	761.0	762.0	23.0	22.0	50.0	50.0	2.7852	2.8416	0.0564	1.4932	1.4972	1.50	10005.27	10029.27	1440.0	2153.09	26.2
130342	Apr-11	16-Apr-11	AM5	Fine	Normal Operation	757.0	756.0	25.0	24.0	50.0	50.0	2.7961	2.9646	0.1685	1.4831	1.4848	1.48	10029.27	10053.27	1440.0	2136.89	78.9
130348	Apr-11	20-Apr-11	AM5	Fine	Normal Operation	762.0	760.0	21.0	23.0	50.0	50.0	2.7706	2.8851	0.1145	1.500	1.4921	1.50	10053.27	10077.27	1440.0	2154.31	53.1
130354	Apr-11	26-Apr-11	AM5	Fine	Normal Operation	757.0	755.0	24.0	25.0	50.0	50.0	2.7876	2.9331	0.1455	1.486	1.4808	1.48	10077.27	10101.27	1440.0	2136.10	68.1
130315	Apr-11	30-Apr-11	AM5	Fine	Normal Operation	757.0	755.0	24.0	25.0	50.0	50.0	2.8009	3.001	0.2001	1.486	1.4808	1.48	10101.27	10125.27	1440.0	2136.10	93.7

Average (ug/m^3)	65.1
Max (ug/m^3)	143.1
Min (ug/m^3)	26.2

Action Level (ug/m^3)	146
Limit Level (ug/m^3)	260

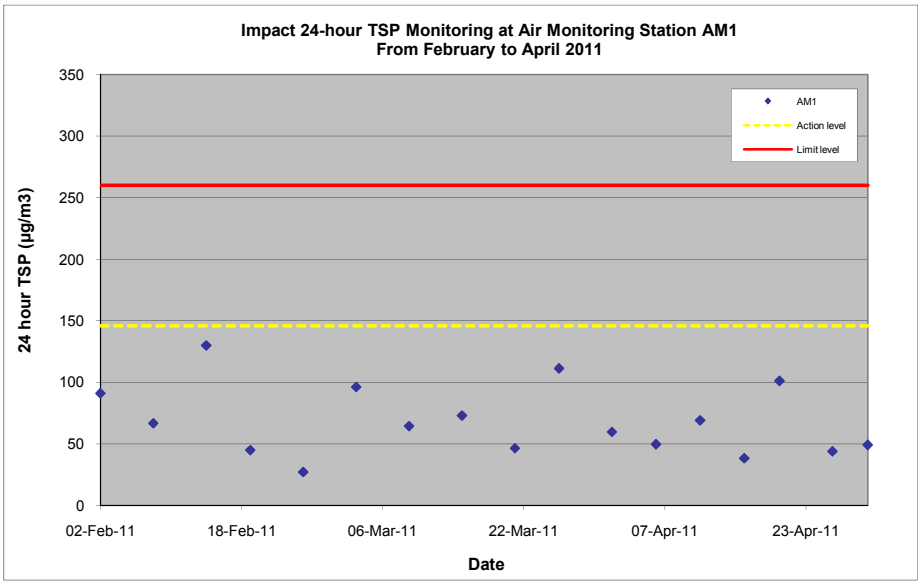
Agreement No. HMW 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section

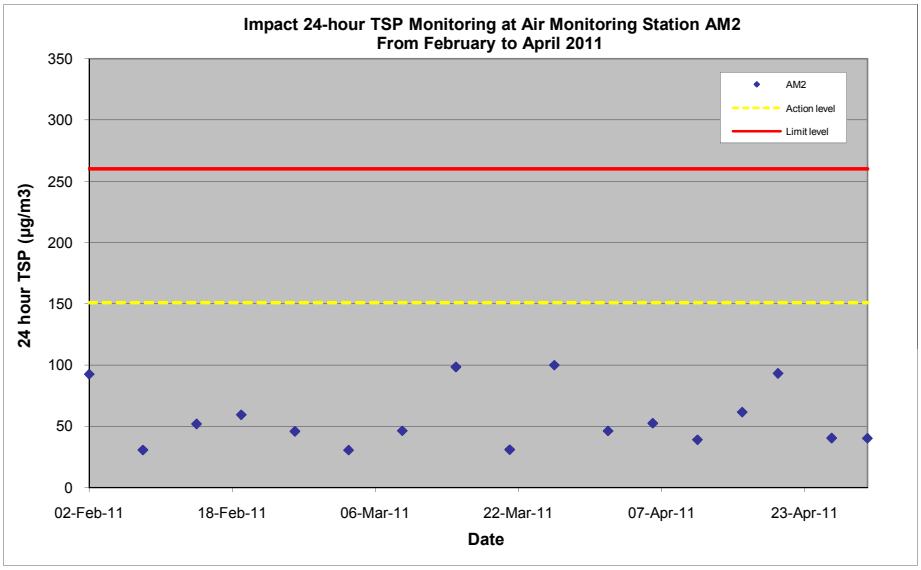
Impact Air Quality Monitoring Result at Yan Oi Tong Community and Sports Centre (AM6) - 24 hour TSP

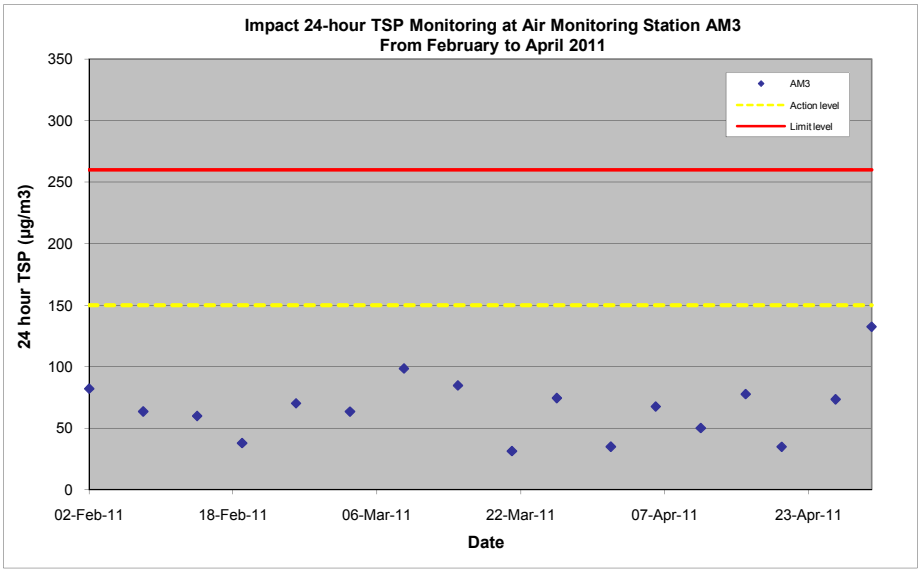
Filter No.	Month	Date	Receptor No.	Weather condition	Site condition	Pressure (mmHg)		Temperature (oC)		Flow Recorder Reading (CFM)		Filter Weight (g)		TSP weight (g)	Flow Rate (m^3/min)		Average Flow Rate (m^3/min)	Elapse Time		Sampling Time (mins.)	Total vol. (m^3)	(ug/m^3) AM6
						Initial	Final	Initial	Final	Initial	Final	Initial	Final		Initial	Final		Start	Finish			
130257	Feb-11	2-Feb-11	AM6	Fine	Normal Operation	765.0	765.0	14.0	15.0	50.0	50.0	2.7387	2.9008	0.1621	1.5545	1.5515	1.55	6050.80	6074.80	1440.0	2236.32	72.5
130263	Feb-11	8-Feb-11	AM6	Fine	Normal Operation	756.0	757.0	19.0	19.0	50.0	50.0	2.7574	2.9164	0.159	1.5294	1.5306	1.53	6074.80	6098.80	1440.0	2203.20	72.2
130269	Feb-11	14-Feb-11	AM6	Cloudy	Normal Operation	765.0	765.0	10.0	11.0	50.0	50.0	2.7403	2.8578	0.1175	1.5668	1.5637	1.57	6098.80	6122.80	1440.0	2253.96	52.1
130272	Feb-11	19-Feb-11	AM6	Cloudy	Normal Operation	762.0	764.0	13.0	13.0	50.0	50.0	2.7321	2.8105	0.0784	1.5542	1.5565	1.56	6122.80	6146.80	1440.0	2239.70	35.0
130279	Feb-11	25-Feb-11	AM6	Fine	Normal Operation	762.0	762.0	18.0	18.0	50.0	50.0	2.759	2.9141	0.1551	1.5392	1.5392	1.54	6146.80	6170.80	1440.0	2216.45	70.0
130285	Mar-11	3-Mar-11	AM6	Fine	Normal Operation	763.0	764.0	18.0	16.0	50.0	50.0	2.7506	2.8791	0.1285	1.5403	1.5474	1.54	6170.80	6194.80	1440.0	2223.14	57.8
130289	Mar-11	9-Mar-11	AM6	Cloudy	Normal Operation	765.0	765.0	15.0	16.0	50.0	50.0	2.7223	2.8419	0.1196	1.5515	1.5485	1.55	6194.80	6218.80	1440.0	2232.00	53.6
130297	Mar-11	15-Mar-11	AM6	Fine	Normal Operation	762.0	766.0	19.0	15.0	50.0	50.0	2.7467	2.8375	0.0908	1.5362	1.5527	1.54	6218.80	6242.80	1440.0	2224.01	40.8
130303	Mar-11	21-Mar-11	AM6	Fine	Normal Operation	758.0	762.0	22.0	19.0	50.0	50.0	2.7820	2.9484	0.1664	1.5231	1.5362	1.53	6242.80	6266.80	1440.0	2202.70	75.5
130309	Mar-11	26-Mar-11	AM6	Cloudy	Normal Operation	766.0	766.0	17.0	15.0	50.0	50.0	2.7842	2.9932	0.2090	1.5467	1.5527	1.55	6266.80	6290.80	1440.0	2231.57	93.7
130325	Apr-11	1-Apr-11	AM6	Fine	Normal Operation	762.0	760.0	20.0	22.0	50.0	50.0	2.7844	2.8788	0.0944	1.5022	1.4952	1.50	6290.80	6314.80	1440.0	2158.13	43.7
130331	Apr-11	6-Apr-11	AM6	Fine	Normal Operation	763.0	762.0	19.0	21.0	50.0	50.0	2.782	2.8904	0.1084	1.5057	1.4997	1.50	6314.80	6338.80	1440.0	2163.89	50.1
130337	Apr-11	11-Apr-11	AM6	Fine	Normal Operation	761.0	762.0	23.0	22.0	50.0	50.0	2.7848	2.8814	0.0966	1.4937	1.4972	1.50	6338.80	6362.80	1440.0	2153.45	44.9
130343	Apr-11	16-Apr-11	AM6	Fine	Normal Operation	757.0	756.0	25.0	24.0	50.0	50.0	2.7898	2.968	0.1782	1.4848	1.4862	1.49	6362.80	6386.80	1440.0	2139.12	83.3
130349	Apr-11	20-Apr-11	AM6	Fine	Normal Operation	762.0	760.0	21.0	23.0	50.0	50.0	2.7773	2.8735	0.0962	1.4997	1.4927	1.50	6386.80	6410.80	1440.0	2154.53	44.7
130356	Apr-11	26-Apr-11	AM6	Fine	Normal Operation	757.0	755.0	24.0	25.0	50.0	50.0	2.777	2.8668	0.0898	1.4873	1.4828	1.49	6410.80	6434.80	1440.0	2138.47	42.0
130360	Apr-11	30-Apr-11	AM6	Fine	Normal Operation	757.0	755.0	24.0	25.0	50.0	50.0	2.7837	2.9237	0.1400	1.4873	1.4828	1.49	6434.80	6458.80	1440.0	2138.47	65.5

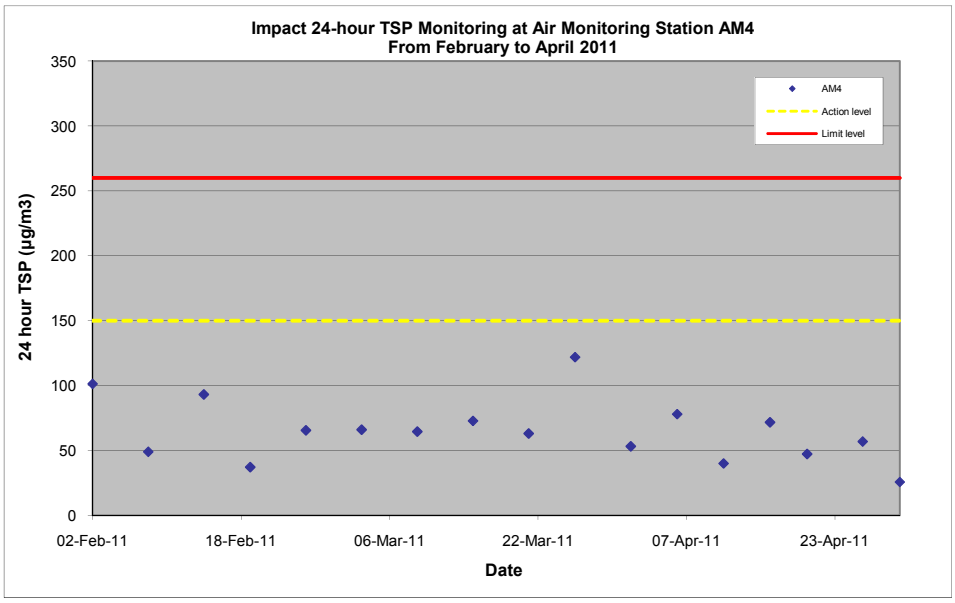
Average (ug/m^3)	58.7
Max (ug/m^3)	93.7
Min (ug/m^3)	35.0

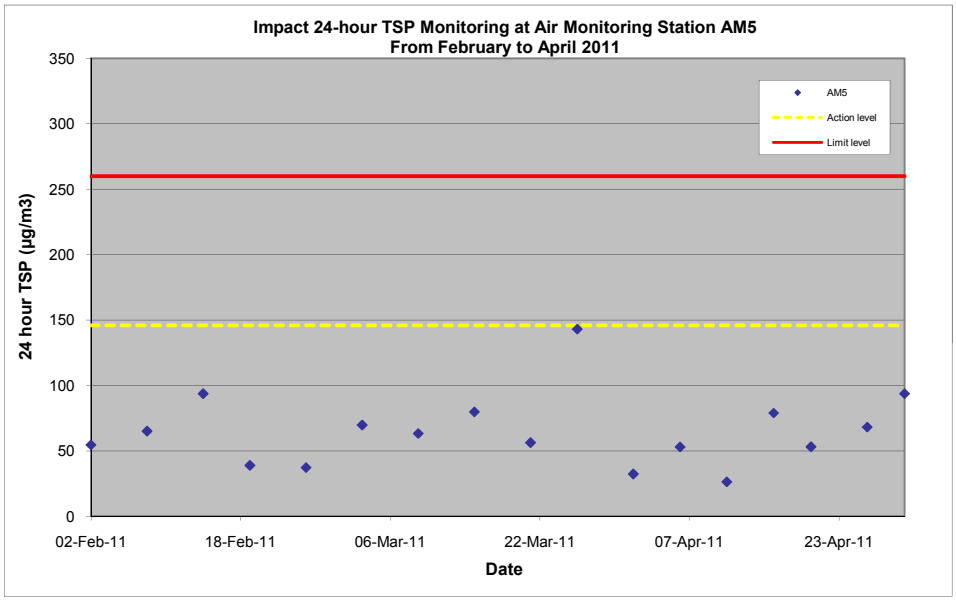
Action Level (ug/m^3)	147
Limit Level (ug/m^3)	260

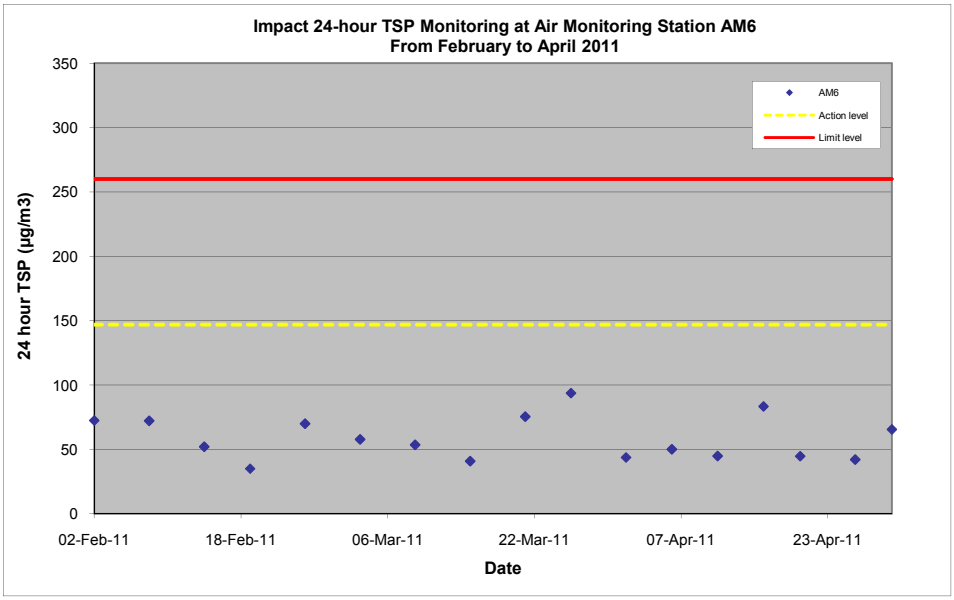

Impact 24-hour TSP Monitoring at Air Monitoring Station AM1
From February to April 2011
24 hour TSP (µg/m3)
350
300
250
200
150
100
50
0
02-Feb-11
18-Feb-11
06-Mar-11
22-Mar-11
07-Apr-11
23-Apr-11
Date
AM1
Action level
Limit level


Impact 24-hour TSP Monitoring at Air Monitoring Station AM2
From February to April 2011
24 hour TSP (µg/m3)
350
300
250
200
150
100
50
0
02-Feb-11
18-Feb-11
06-Mar-11
22-Mar-11
07-Apr-11
23-Apr-11
Date
AM2
Action level
Limit level


Impact 24-hour TSP Monitoring at Air Monitoring Station AM3
From February to April 2011
24 hour TSP (µg/m3)
350
300
250
200
150
100
50
0
02-Feb-11
18-Feb-11
06-Mar-11
22-Mar-11
07-Apr-11
23-Apr-11
Date
AM3
Action level
Limit level


Impact 24-hour TSP Monitoring at Air Monitoring Station AM4
From February to April 2011
24 hour TSP (µg/m3)
350
300
250
200
150
100
50
0
02-Feb-11
18-Feb-11
06-Mar-11
22-Mar-11
07-Apr-11
23-Apr-11
Date
AM4
Action level
Limit level

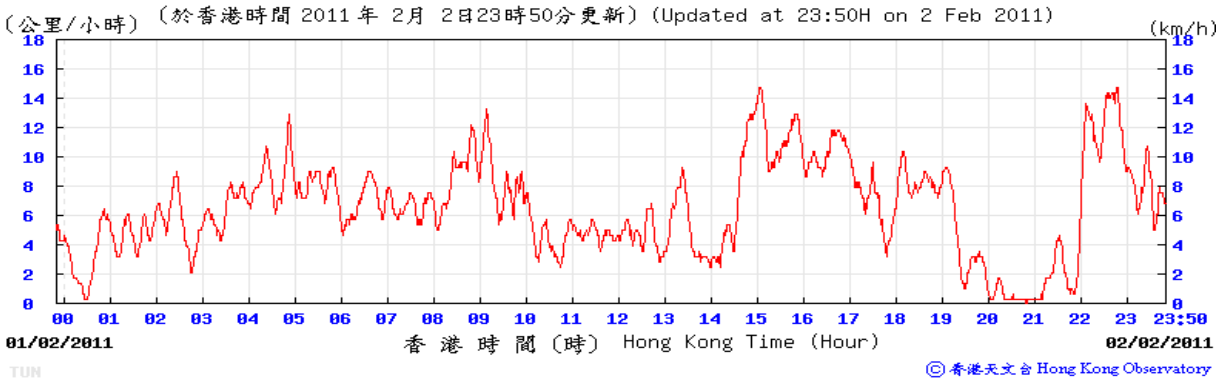

Impact 24-hour TSP Monitoring at Air Monitoring Station AM5
From February to April 2011
24 hour TSP (µg/m3)
350
300
250
200
150
100
50
0
02-Feb-11
18-Feb-11
06-Mar-11
22-Mar-11
07-Apr-11
23-Apr-11
Date
AM5
Action level
Limit level

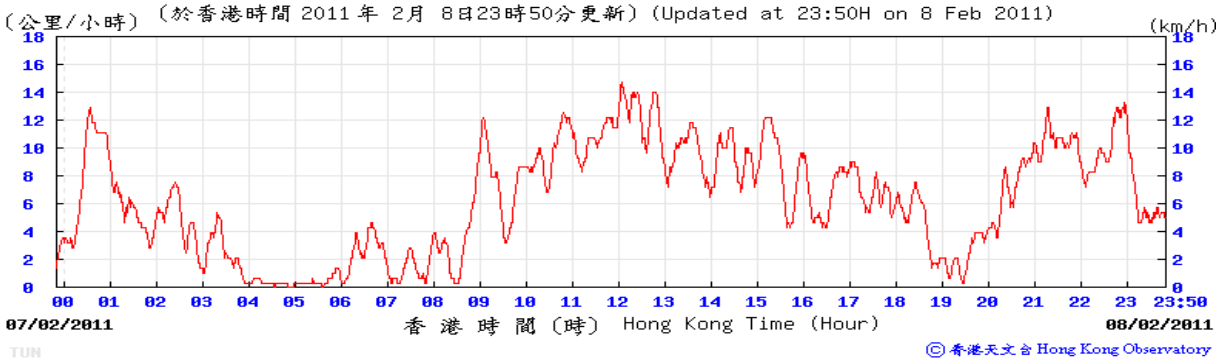

Impact 24-hour TSP Monitoring at Air Monitoring Station AM6
From February to April 2011
24 hour TSP (µg/m3)
350
300
250
200
150
100
50
0
02-Feb-11
18-Feb-11
06-Mar-11
22-Mar-11
07-Apr-11
23-Apr-11
Date
AM6
Action level
Limit level

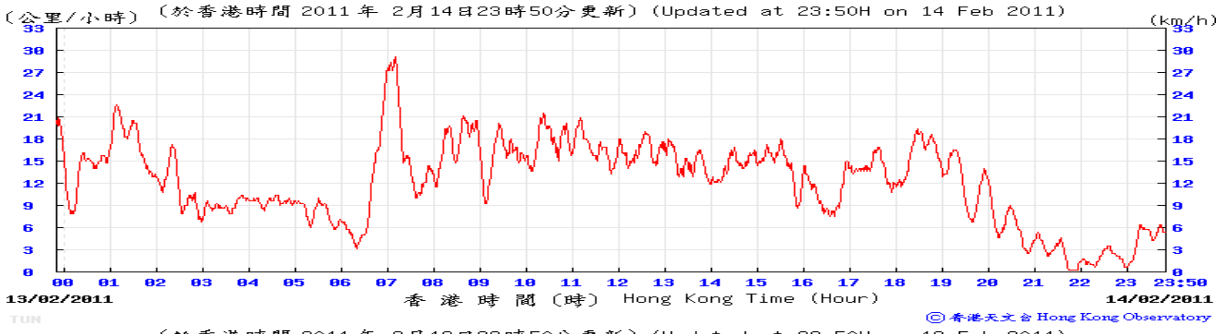
Appendix D

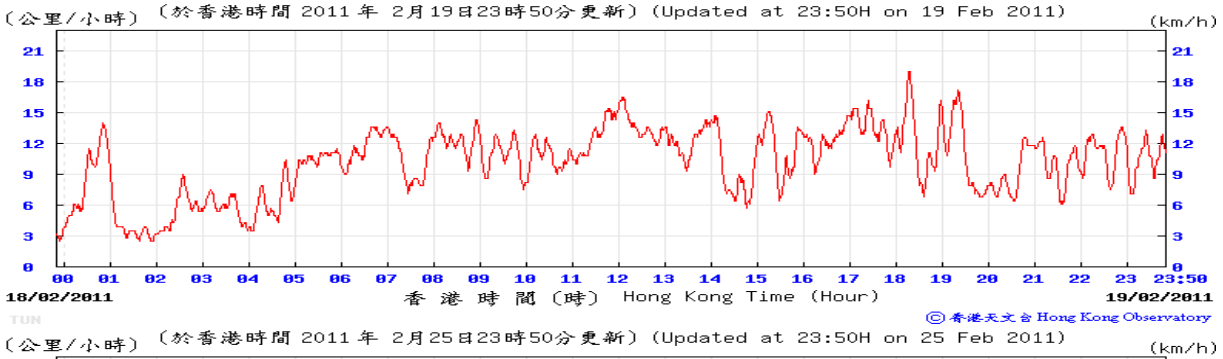
Wind Data

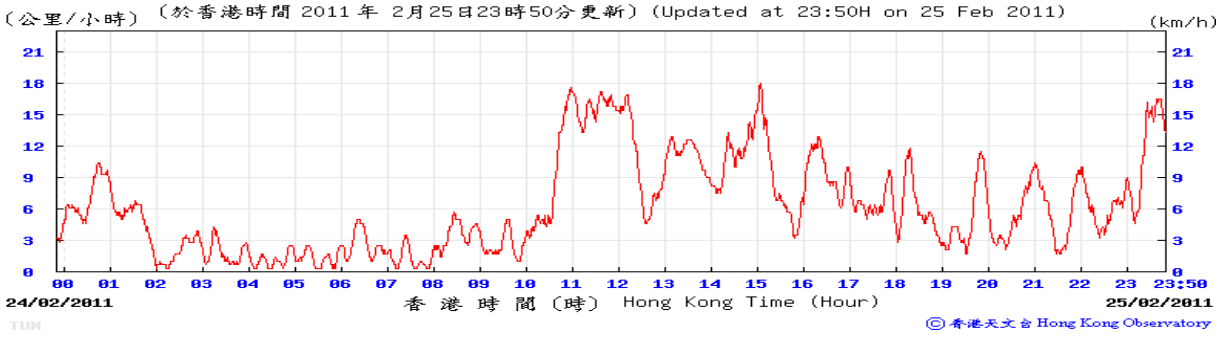
Wind Monitoring Data – Wind Speed during Air Quality Monitoring in February 2011



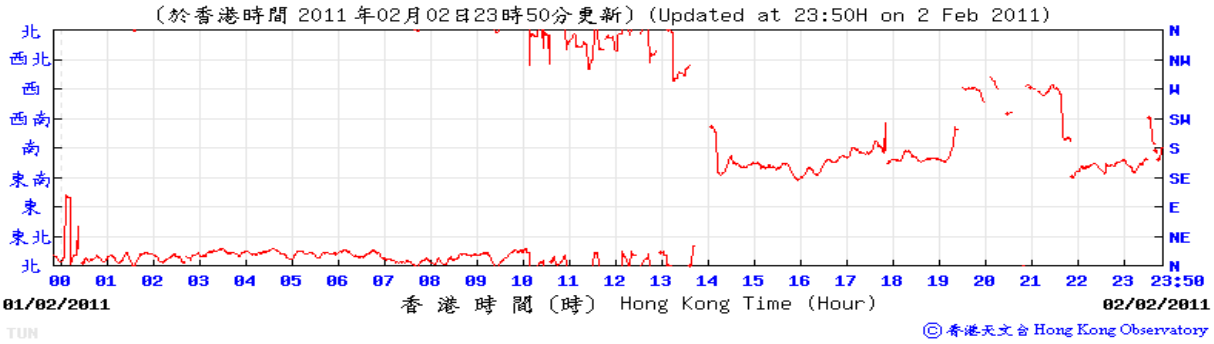


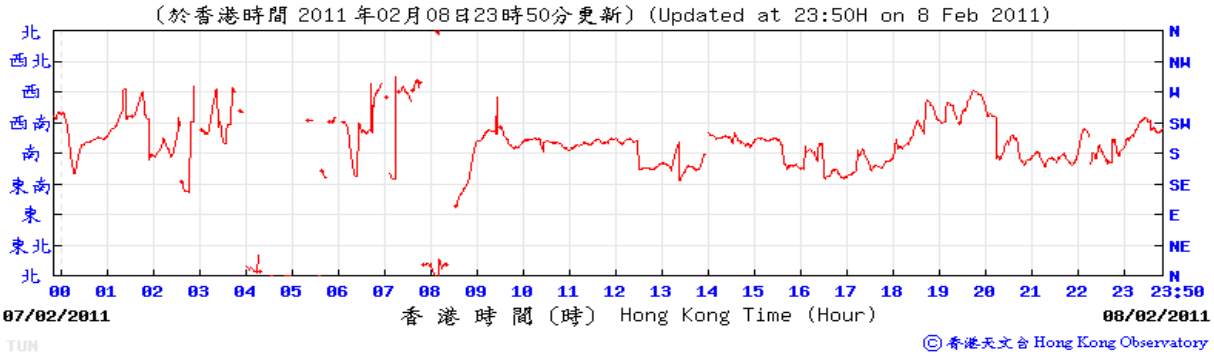


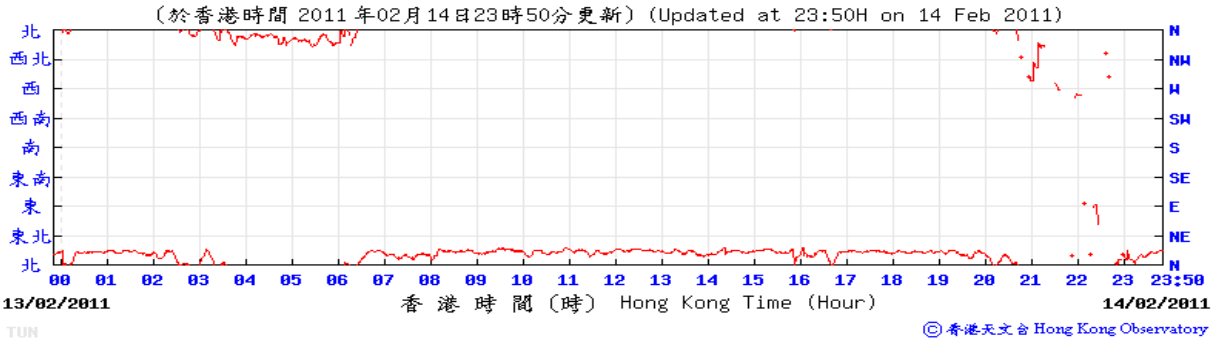


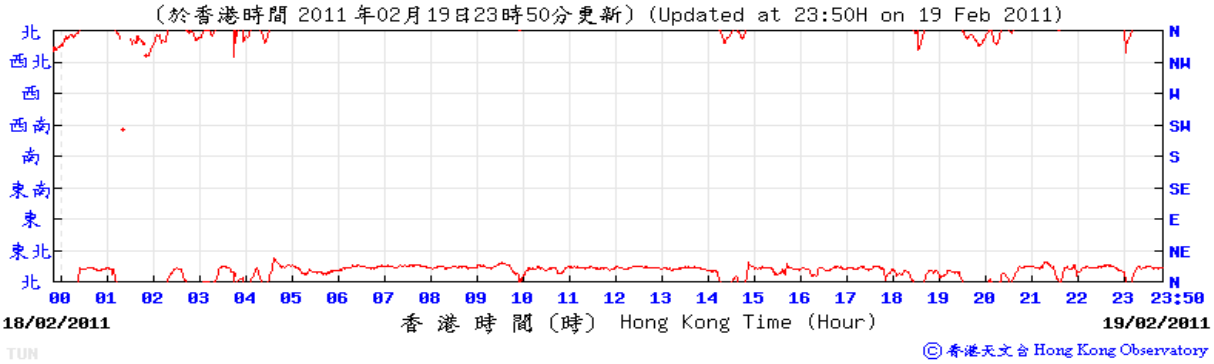


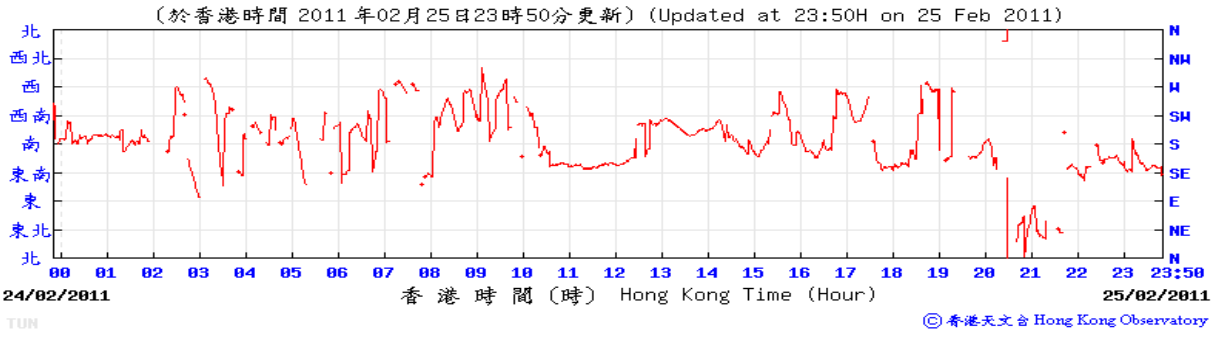
Wind Monitoring Data – Wind Direction during Air Quality Monitoring in February 2011



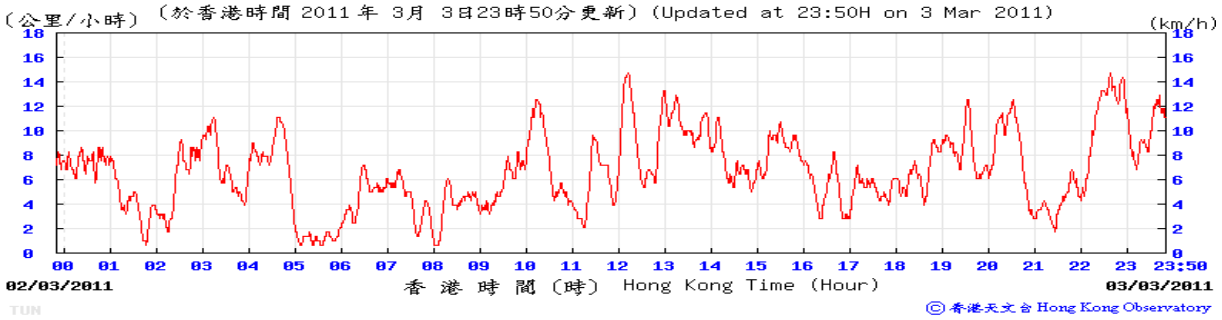


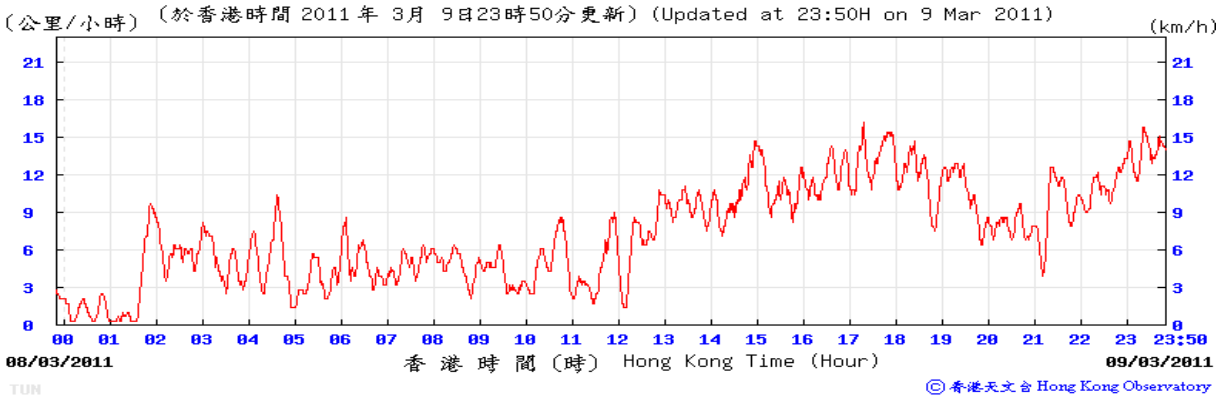


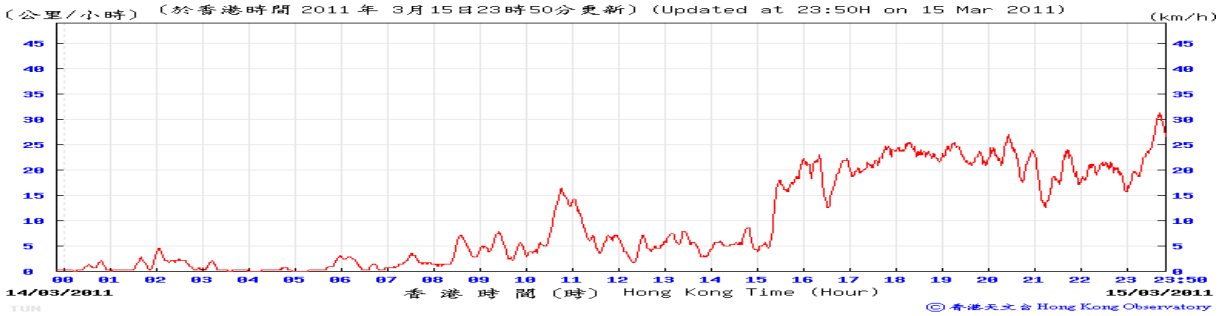


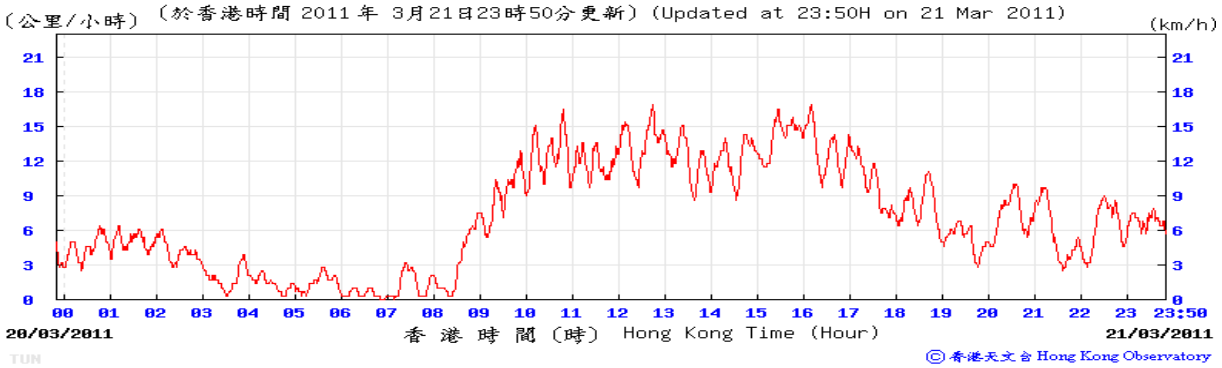


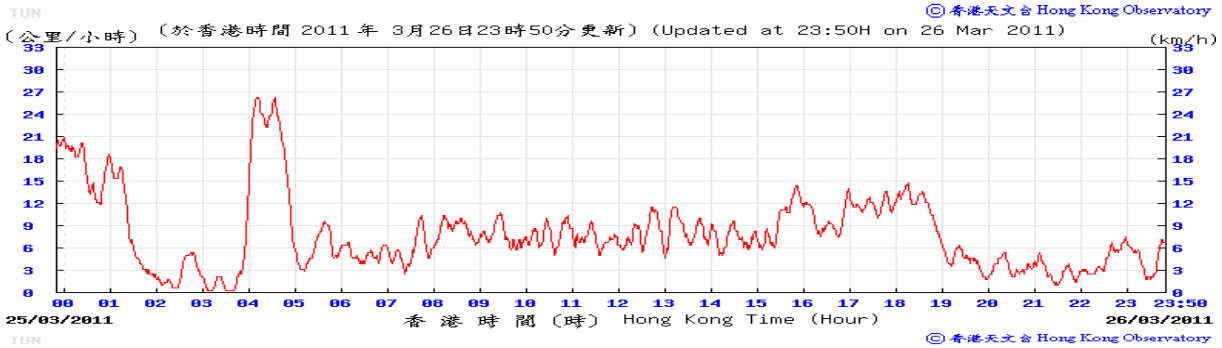
Wind Monitoring Data – Wind Speed during Air Quality Monitoring in March 2011



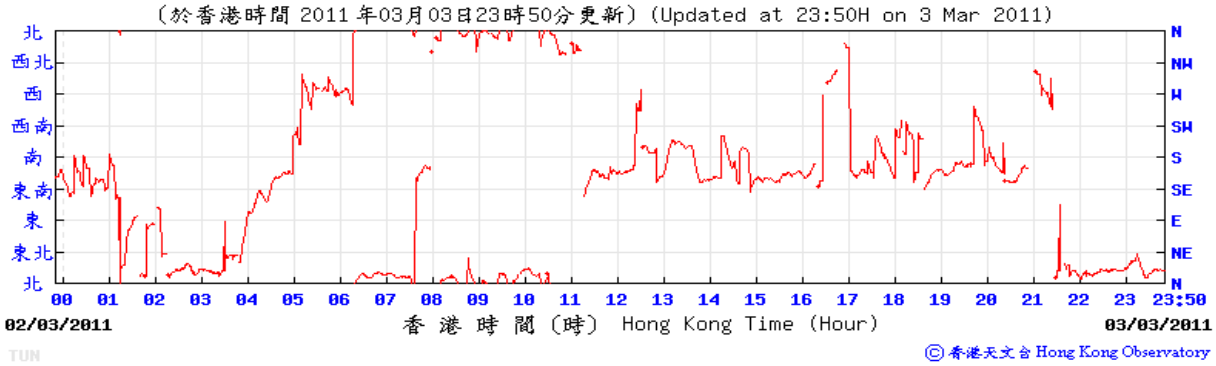


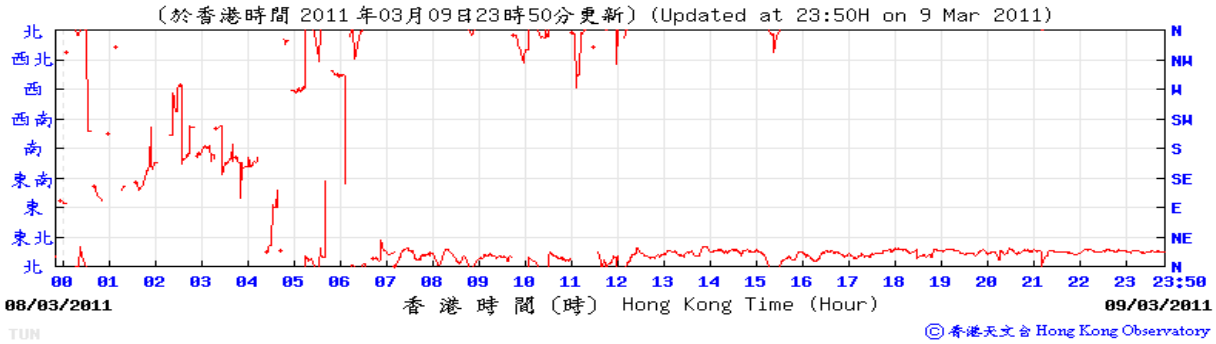


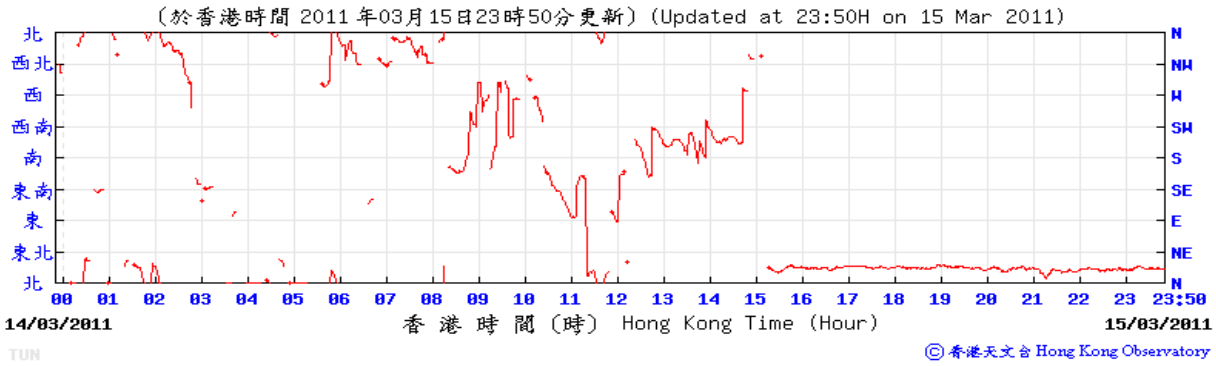


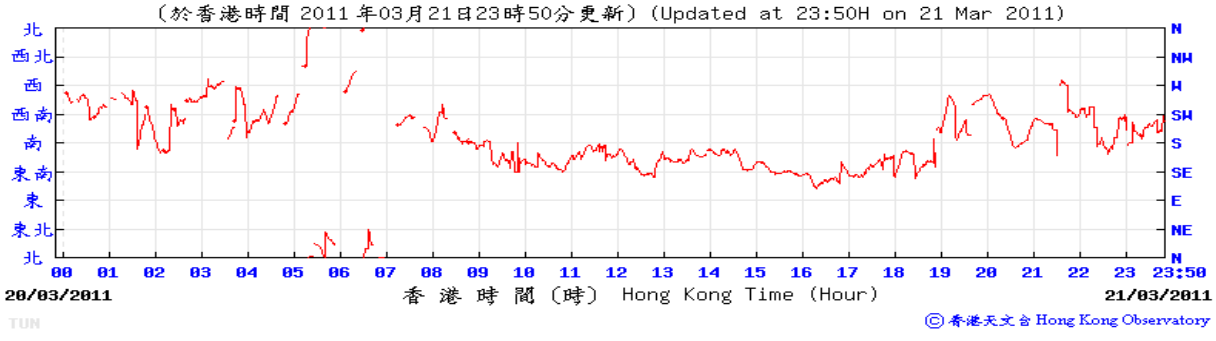


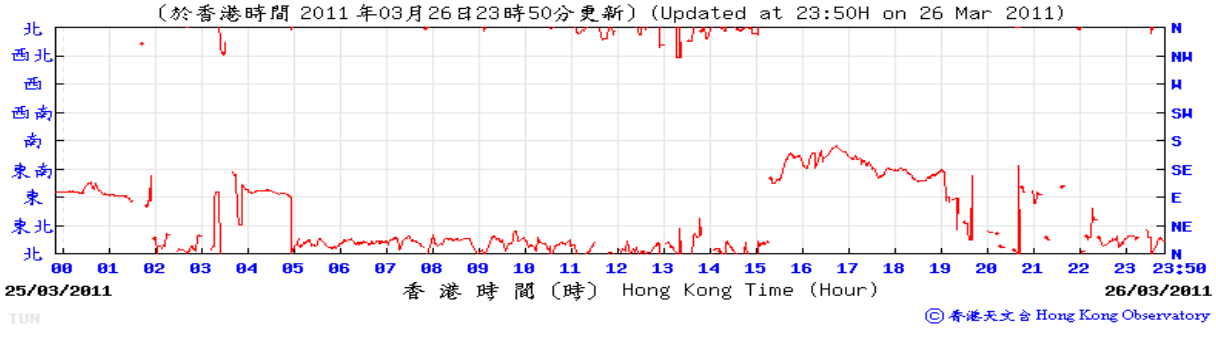
Wind Monitoring Data – Wind Direction during Air Quality Monitoring in March 2011



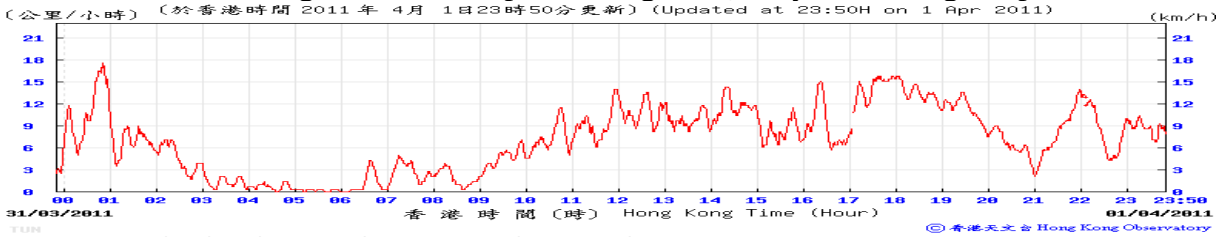


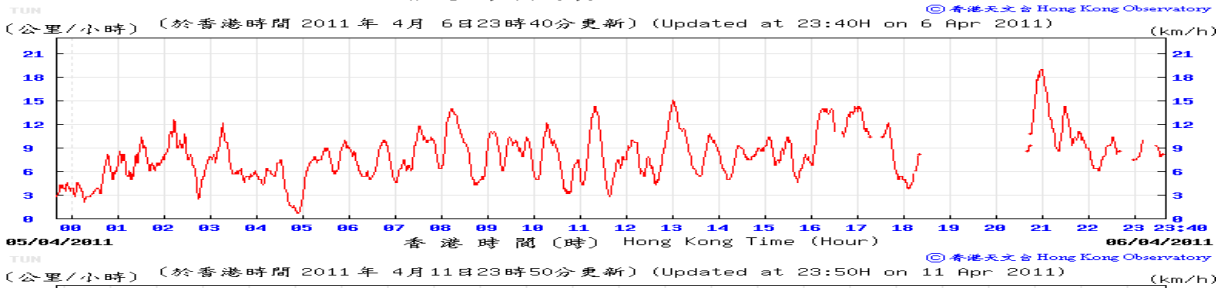


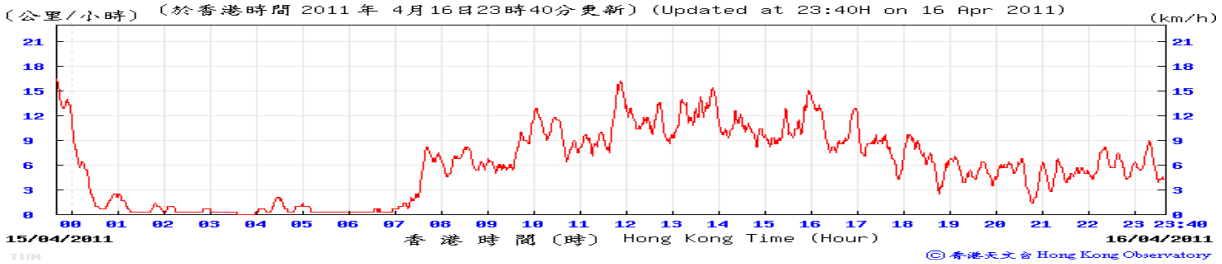


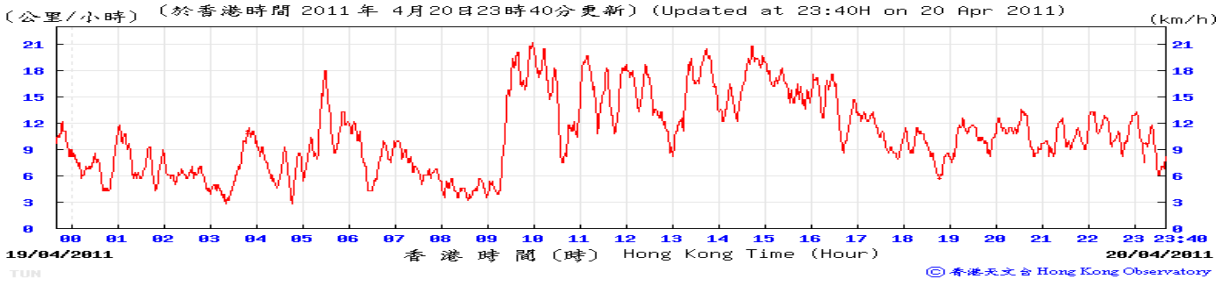


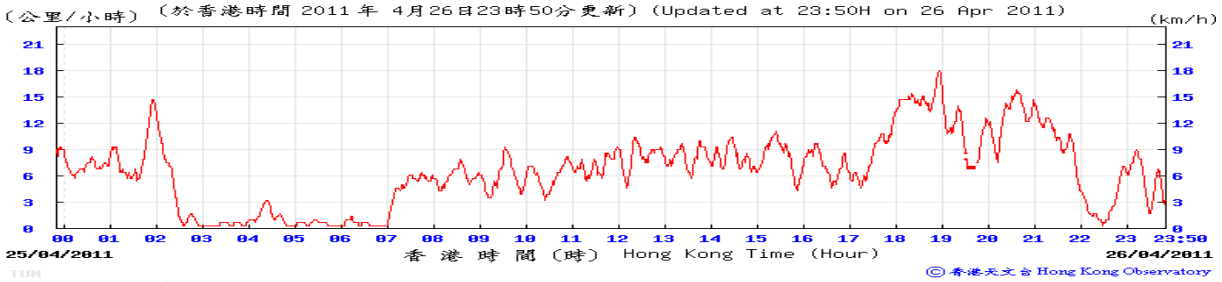
Wind Monitoring Data – Wind Speed during Air Quality Monitoring in April 2011

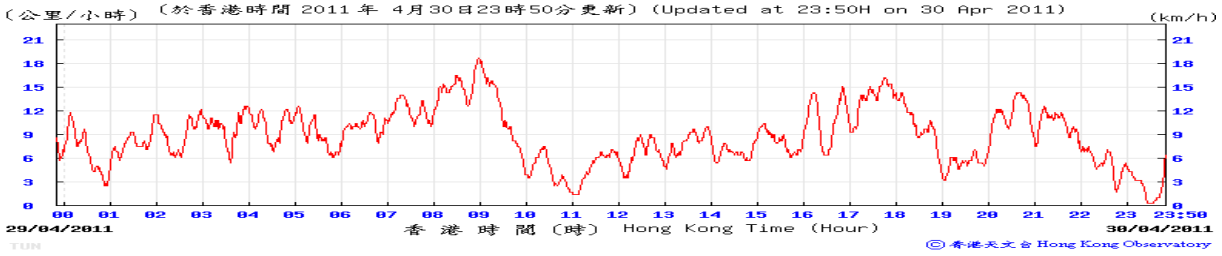




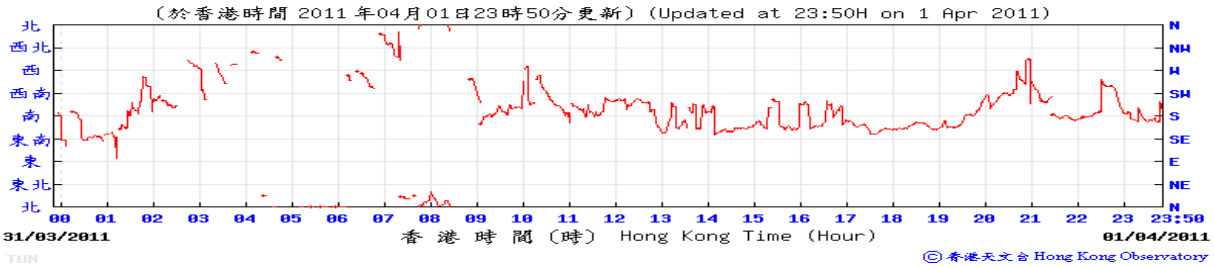


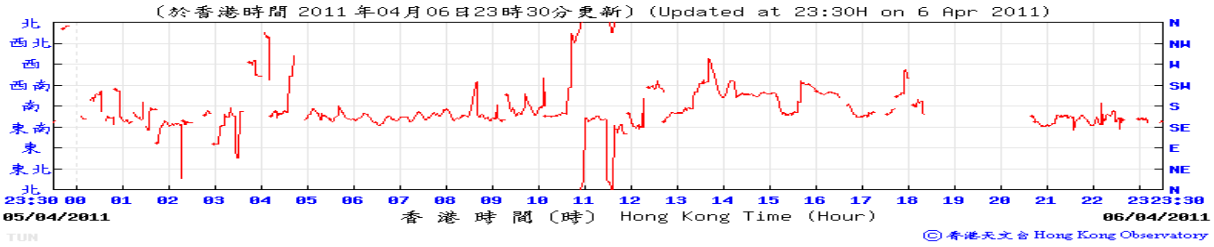


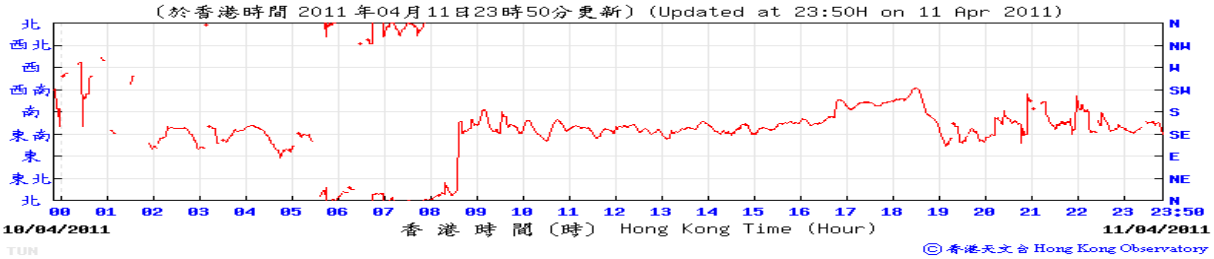


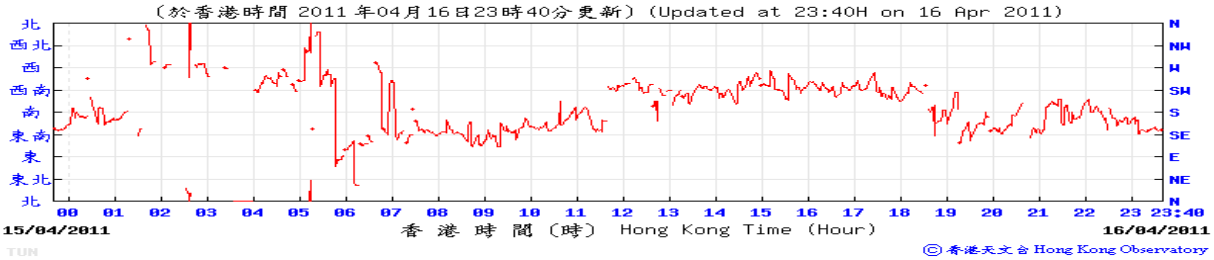


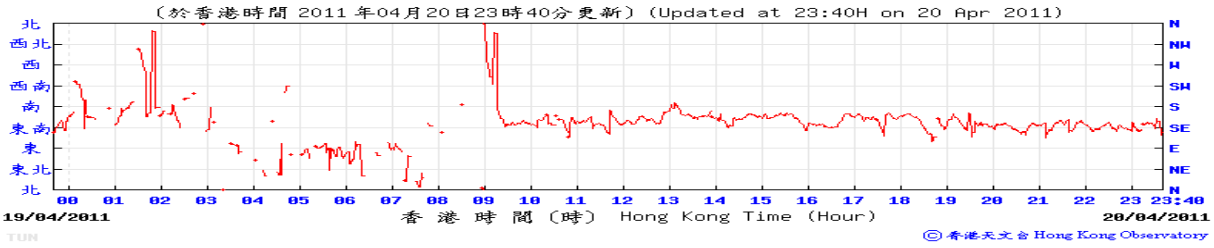
Wind Monitoring Data – Wind Direction during Air Quality Monitoring in April 2011

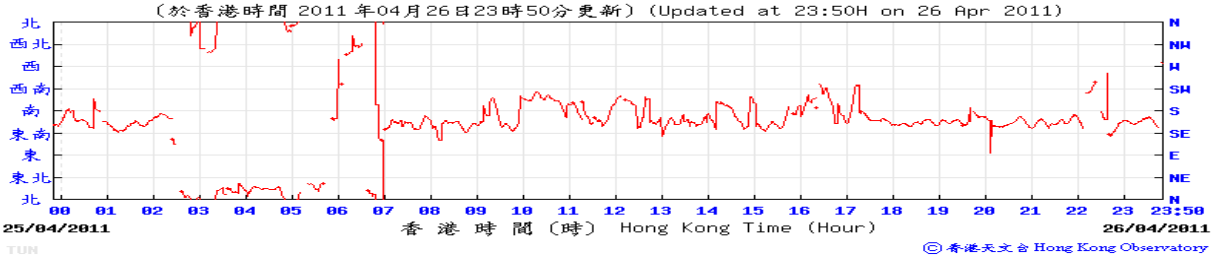


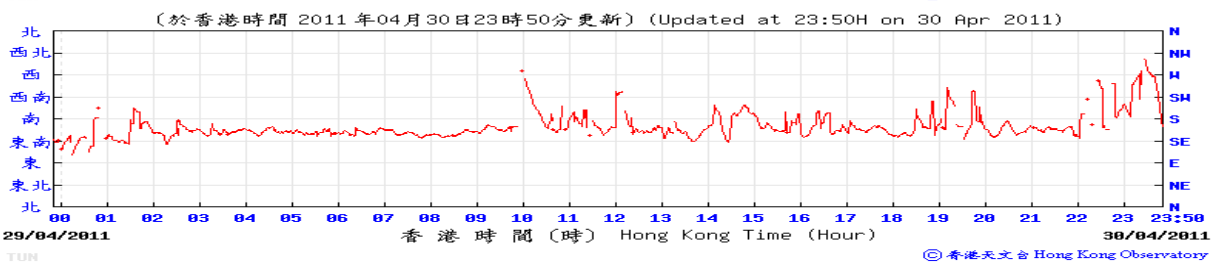












Appendix E

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 - 1 February 2011

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	09:10 - 09:40	74	75	76	72	76	Measured ≦ Baseline
N2	Tai Tung Pui Social Service Building	10:00 - 10:30	75	75	77	73	78	Measured ≦ Baseline
N3	Yuen Yuen Primary School	10:45 - 11:15	66	70	67	65	69	Measured ≦ Baseline
N4	Wu Siu Kui Primary School	08:30 - 09:00	66	70	66	64	67	Measured ≦ Baseline
N5	Tuen King Building	11:45 - 12:15	67	75	69	66	70	Measured ≦ Baseline
N6	Choi Cheung kok Secondary School	13:05 - 13:35	68	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 - 7 February 2011

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	09:45 - 10:15	74	75	76	71	76	Measured ≦ Baseline
N2	Tai Tung Pui Social Service Building	10:30 - 11:00	74	75	76	72	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	66	64	67	Measured ≦ Baseline
N5	Tuen King Building	12:45 - 13:15	68	75	70	66	70	Measured ≦ Baseline
N6	Choi Cheung kok Secondary School	13:50 - 14:20	68	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 - 18 February 2011

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	09:45 - 10:15	77	75	81	75	76	71
N2	Tai Tung Pui Social Service Building	10:30 - 11:00	77	75	79	74	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	67	70	68	65	67	Measured ≦ Baseline
N5	Tuen King Building	12:45 - 13:15	70	75	72	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 - 24 February 2011

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	09:00 - 09:30	77	75	80	74	76	68
N2	Tai Tung Pui Social Service Building	10:00 - 10:30	76	75	80	74	78	Measured ≦ Baseline
N3	Yuen Yuen Primary School	10:40 - 11:10	68	70	69	66	69	Measured ≦ Baseline
N4	Wu Siu Kui Primary School	08:00 - 08:30	66	70	68	65	67	Measured ≦ Baseline
N5	Tuen King Building	11:30 - 12:00	71	75	73	68	70	59
N6	Choi Cheung kok Secondary School	12:15 - 12:45	69	70	71	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 - 2 March 2011

			Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
ID	Premise	Time	L_{Aeq},30min	Limit	L_{10},5min	L_{90},5min	L_{Aeq},30min	L_{Aeq},30min
N1	Kam Fai Garden	09:50 - 10:20	77	75	81	73	76	71
N2	Tai Tung Pui Social Service Building	10:10 - 10:40	77	75	81	74	78	Measured ≦ Baseline
N3	Yuen Yuen Primary School	11:20 - 11:50	67	70	69	66	69	Measured ≦ Baseline
N4	Wu Siu Kui Primary School	08:30 - 09:00	67	70	69	65	67	Measured ≦ Baseline
N5	Tuen King Building	13:00 - 13:30	71	75	72	68	70	61
N6	Choi Cheung kok Secondary School	14:00 - 14:30	69	70	71	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 - 8 March 2011

			Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
ID	Premise	Time	L_{Aeq},30min	Limit	L_{10},5min	L_{90},5min	L_{Aeq},30min	L_{Aeq},30min
N1	Kam Fai Garden	09:45 - 10:15	78	75	81	76	76	73
N2	Tai Tung Pui Social Service Building	10:30 - 11:00	78	75	80	75	78	Measured ≦ Baseline
N3	Yuen Yuen Primary School	11:20 - 11:50	69	70	70	67	69	Measured ≦ Baseline
N4	Wu Siu Kui Primary School	08:30 - 09:00	67	70	69	65	67	Measured ≦ Baseline
N5	Tuen King Building	13:00 - 13:30	71	75	72	68	70	63
N6	Choi Cheung kok Secondary School	13:50 - 14:20	70	70	71	67	69	62

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 - 14 March 2011

			Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
ID	Premise	Time	L_{Aeq},30min	Limit	L_{10},5min	L_{90},5min	L_{Aeq},30min	L_{Aeq},30min
N1	Kam Fai Garden	09:45 - 10:15	78	75	81	75	76	72
N2	Tai Tung Pui Social Service Building	10:30 - 11:00	77	75	79	75	78	Measured ≦ Baseline
N3	Yuen Yuen Primary School	11:10 - 11:40	69	70	71	67	69	Measured ≦ Baseline
N4	Wu Siu Kui Primary School	08:30 - 09:00	67	70	68	65	67	Measured ≦ Baseline
N5	Tuen King Building	13:00 - 13:30	71	75	72	68	70	63
N6	Choi Cheung kok Secondary School	13:45 - 14:15	70	70	72	67	69	61

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 - 25 March 2011

			Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
ID	Premise	Time	L_{Aeq},30min	Limit	L_{10},5min	L_{90},5min	L_{Aeq},30min	L_{Aeq},30min
N1	Kam Fai Garden	09:45 - 10:15	77	75	82	75	76	72
N2	Tai Tung Pui Social Service Building	10:30 - 11:00	77	75	79	74	78	Measured ≦ Baseline
N3	Yuen Yuen Primary School	11:10 - 11:40	69	70	70	67	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	71	75	72	69	70	59
N6	Choi Cheung kok Secondary School	13:45 - 14:15	70	70	71	68	69	62

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 - 31 March 2011

			Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
ID	Premise	Time	L_{Aeq},30min	Limit	L_{10},5min	L_{90},5min	L_{Aeq},30min	L_{Aeq},30min
N1	Kam Fai Garden	09:50 - 10:20	74	75	76	72	76	Measured ≦ Baseline
N2	Tai Tung Pui Social Service Building	10:35 - 11:05	75	75	76	72	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	08:30 - 09:00	66	70	68	65	67	Measured ≦ Baseline
N5	Tuen King Building	13:00 - 13:30	70	75	72	67	70	Measured ≦ Baseline
N6	Choi Cheung kok Secondary School	13:45 - 14:15	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 - 2 April 2011

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	09:50 - 10:20	77	75	82	75	76	72
N2	Tai Tung Pui Social Service Building	10:10 - 10:40	77	75	79	74	78	Measured ≦ Baseline
N3	Yuen Yuen Primary School	11:20 - 11:50	66	70	67	65	69	Measured ≦ Baseline
N4	Wu Siu Kui Primary School	08:30 - 09:00	66	70	66	64	67	Measured ≦ Baseline
N5	Tuen King Building	13:00 - 13:30	70	75	71	67	70	Measured ≦ Baseline
N6	Choi Cheung kok Secondary School	14:00 - 14:30	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 - 7 April 2011

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	09:45 - 10:15	73	75	75	72	76	Measured ≦ Baseline
N2	Tai Tung Pui Social Service Building	10:30 - 11:00	73	75	74	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	66	63	67	Measured ≦ Baseline
N5	Tuen King Building	13:00 - 13:30	70	75	72	68	70	Measured ≦ Baseline
N6	Choi Cheung kok Secondary School	13:50 - 14:20	70	70	72	67	69	59

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 April 2011

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	09:45 - 10:15	78	75	81	75	76	73
N2	Tai Tung Pui Social Service Building	10:30 - 11:00	78	75	80	76	78	Measured ≦ Baseline
N3	Yuen Yuen Primary School	11:05 - 11:35	66	70	69	65	69	Measured ≦ Baseline
N4	Wu Siu Kui Primary School	08:30 - 09:00	67	70	70	65	67	Measured ≦ Baseline
N5	Tuen King Building	13:00 - 13:30	71	75	72	68	70	62
N6	Choi Cheung kok Secondary School	13:50 - 14:20	69	70	71	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 - 21 April 2011

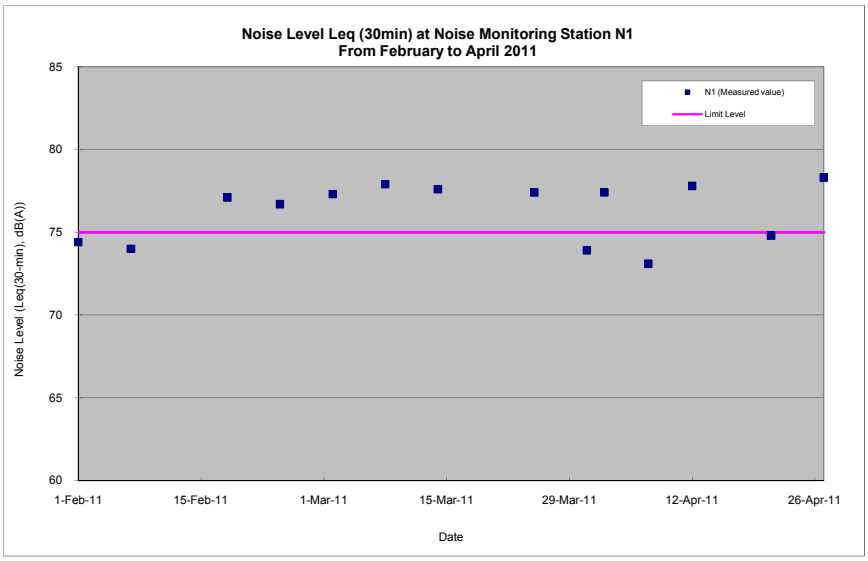
ID	Premise	Time	Measured Noise Level, dB(A)				Baseline Noise Level, dB(A)	Construction Noise Level, dB(A)
			L_{Aeq},30min	Limit	L_{10},5min	L_{90},5min	L_{Aeq},30min	L_{Aeq},30min
N1	Kam Fai Garden	09:45 - 10:15	75	75	77	73	76	Measured ≦ Baseline
N2	Tai Tung Pui Social Service Building	10:30 - 11:00	76	75	79	74	78	Measured ≦ Baseline
N3	Yuen Yuen Primary School	11:05 - 11:35	68	70	69	66	69	Measured ≦ Baseline
N4	Wu Siu Kui Primary School	08:30 - 09:00	67	70	69	65	67	Measured ≦ Baseline
N5	Tuen King Building	13:15 - 13:45	70	75	72	68	70	Measured ≦ Baseline
N6	Choi Cheung kok Secondary School	14:00 - 14:30	69	70	71	68	69	Measured ≦ Baseline

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

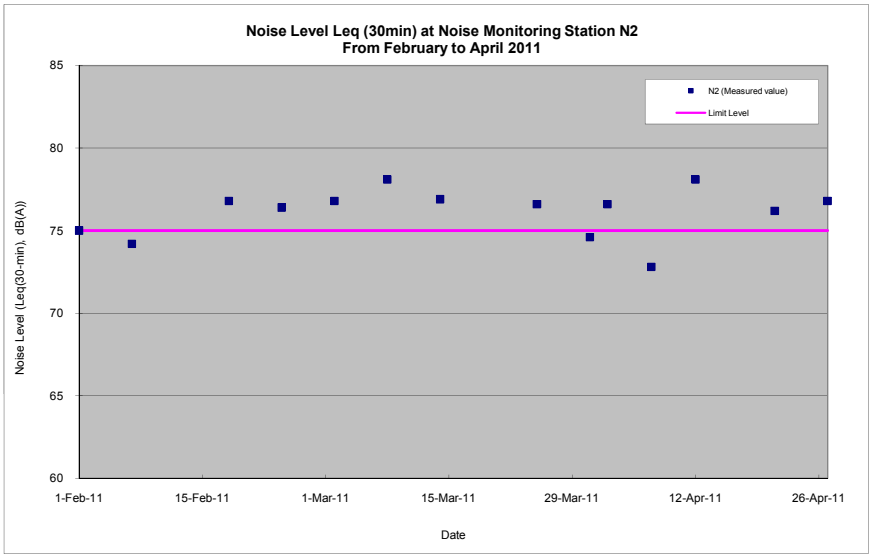
Agreement No. 5/2009 (EP) Traffic Improvements to Tuen Mun Road Town Centre Section - Environmental Team
Day-time Noise Monitoring Results - 27 April 2011

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	10:45 - 11:15	78	75	81	75	76	74
N2	Tai Tung Pui Social Service Building	11:30 - 12:00	77	75	79	74	78	Measured ≦ Baseline
N3	Yuen Yuen Primary School	13:00 - 13:30	69	70	70	67	69	Measured ≦ Baseline
N4	Wu Siu Kui Primary School	11:30 - 12:00	67	70	69	66	67	Measured ≦ Baseline
N5	Tuen King Building	13:50 - 14:20	72	75	73	70	70	66
N6	Choi Cheung kok Secondary School	14:30 - 15:00	70	70	72	69	69	64

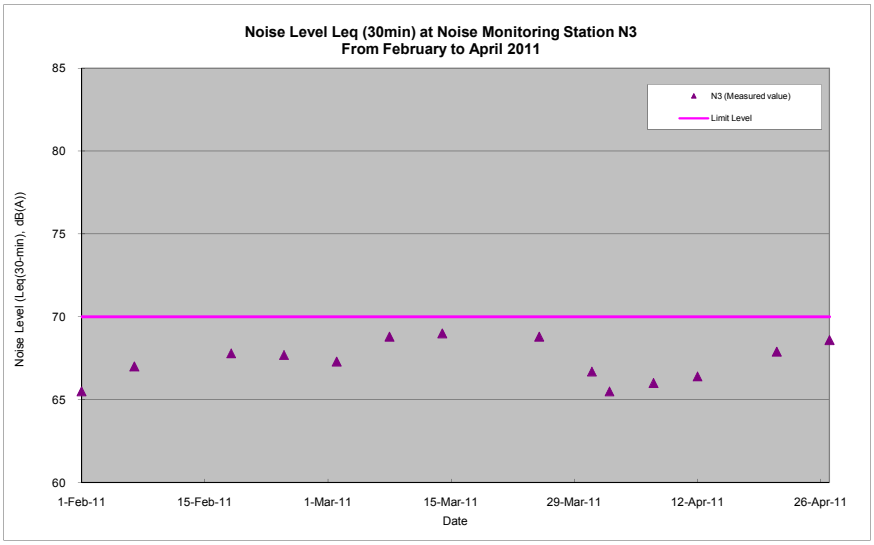
Note: (#): Construction Noise Level = Measured Noise Level - Baseline Noise Level



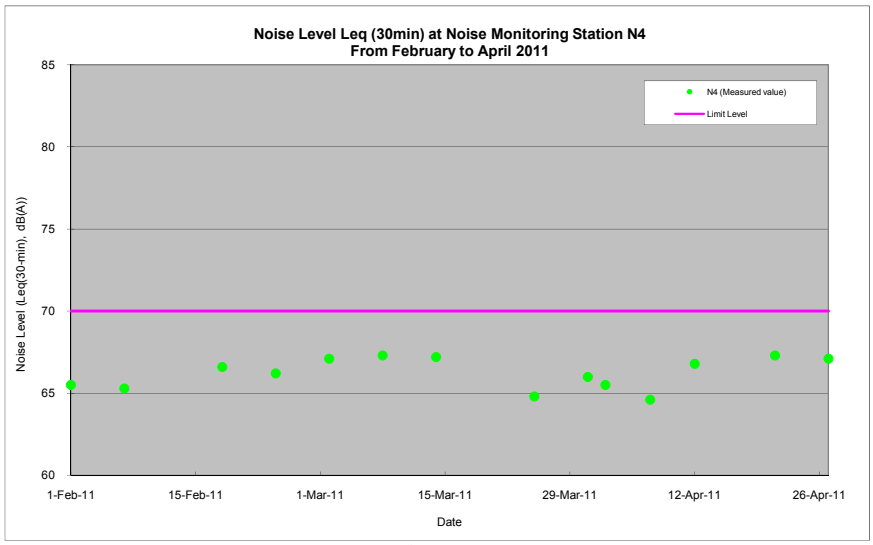
Note: For compliance comparison, please refer to above table and report.



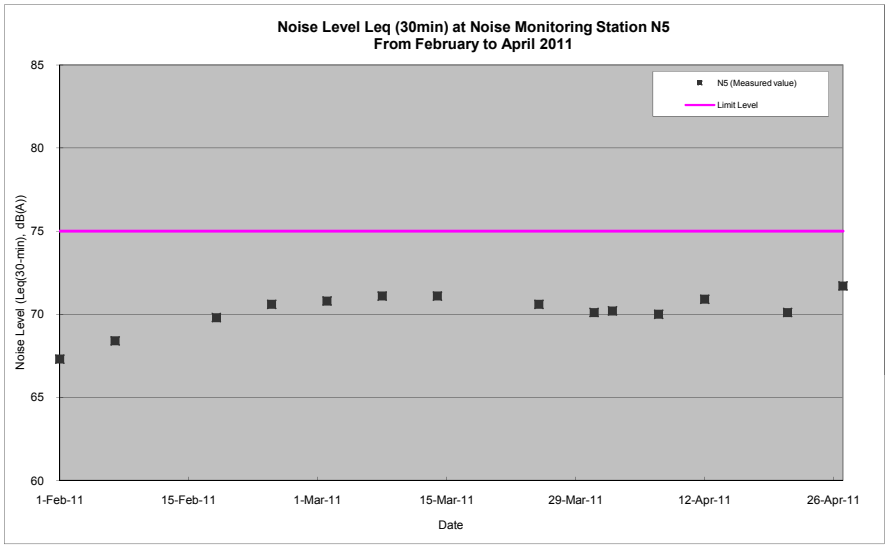
Note: For compliance comparison, please refer to above table and report.



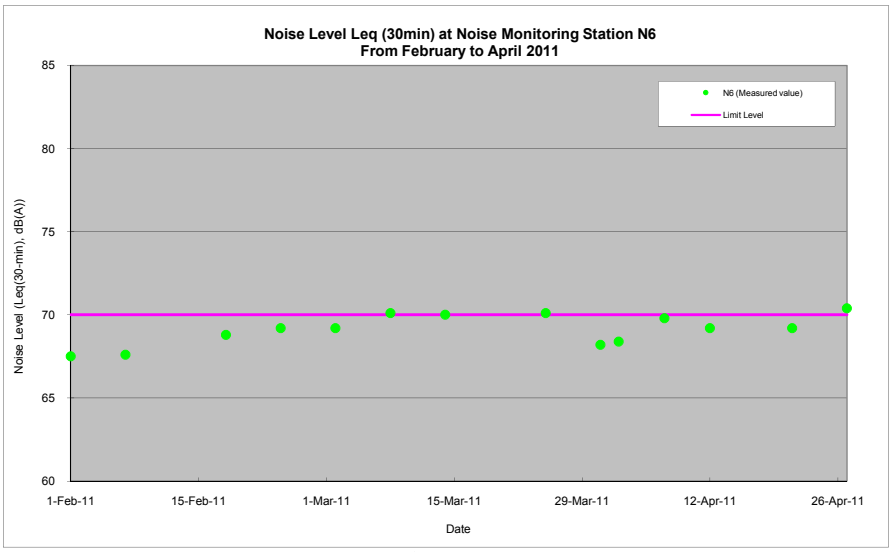
Note: For compliance comparison, please refer to above table and report.



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
C002-TCS	A complaint was received by ICC on 19 Feb 11 and the Supervising Officer Representative was informed via the e-mail on same date.	Management Office of Tuen Mun Town Plaza	19 Feb 11	Day time (afternoon period) of 19 Feb 11	Construction sites in the vicinity of Tuen Mun Town Plaza (Phase II)	Noise	The complaint was related to noise generated from the operation of the construction site in the vicinity of Tuen Mun Town Plaza (Phase II)	22 Feb 11	23 ~ 28 Feb 11	As confirmed by the Contractor and Supervising Officer's Representative, pilling works and loading test were carried out during the complaint period (i.e. afternoon period) in the vicinity of Tuen Mun Town Plaza (Phase II) and are summarized as follow: • **Yan Ching Bridge (approx. 70m from complaint location)** - Piling works • **Pui To Road (in front of the complaint location)** - Static pile loading test • **Tuen Hi Road and Tuen Fat Road (approx. 90m from complaint location)** - Piling works Based on the site inspection on 24 Feb 11, the static pile loading test was still being conducted but no noise generating activities was observed. The sites at Tuen Hi Road and Tuen Fat Road are located the cover road of Tuen Mun Town Plaza (Phase I) and they are quite far away from the complaint location. Therefore, the noise nuisance generated from these sites is considered unlikely. At Yan Ching Bridge, one air compressor, one mobile crane and one pilling machine were deployed for the pilling works. The noise nuisance was mainly generated from the pilling works. It is therefore concluded that the complaint was work-related under the Project. The closest noise monitoring location (N6) of the complaint at The Chinese Manufacturers' Association Of Hong Kong Choi Cheung Kok Secondary School. The monitoring results on 7, 18 and 24 Feb 11, the daytime (0700 – 1900 hours) (Leq30min) were in range of 68 to 69dB(A) which were complied with the limit level of this Project. One additional noise monitoring was carried out on 23 Feb 11 (i.e. a day immediately after the complaint was received), the daytime noise monitoring result (Leq30min) was 69dB(A). Based on the ET's on-site observations during the noise monitoring, no abnormal construction activities was observed. All monitoring results including the additional noise monitoring were in compliance with the limit level of 75dB(A). Nevertheless, it is recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance. 1. Minimize the no. of machines used for the work as far as possible; 2. Employ the QPME units as far as possible; 3. Well-maintain the machines condition to minimize noise nuisance; 4. Machines that may be in intermittent use should be shut down between work periods or should be throttled down; 5. Relocate operating machinery as far as possible from nearby sensitive receivers; 6. Provide temporary / mobile noise barrier for the noisy construction activities; 7. Improve the working practices, minimize the noise nuisance during the working activities as far as possible; and 8. Enhance the workers awareness by regular training to minimize noise nuisance during the working activities.	Yes	Closed on 2 Mar 11

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
C003-TCS	Three complaints regarding same issue were received by ICC on 1, 3 and 4 April 11 respectively and the Supervising Officer Representative was informed via the e-mail on same date.	Unknown	1, 3 and 4 Apr 11	Evening time of 1 Apr 11	Muddy water spillage on TMR in the vicinity of Tuen Mun Town Plaza (near Tuen Hi Road)	Water quality	Three complaints were related to muddy water spillage on TMR in the vicinity of Tuen Mun Town Plaza (near Tuen Hi Road)	4 April 11	7 ~ 15 Apr 11	As confirmed by the Contractor and Supervising Officer's Representative, muddy water was overflowed to Tuen Mun Road (Yuen Long bound) in the vicinity of Tuen Mun Town Plaza (near Tuen Hi Road) on 1 Apr 11 evening time. Based on the information provided by the Contractor and Supervising Officer's Representative, the overflow of muddy spillage was anticipated to be from the broken hose to direct the pump to the wastewater treatment facility. Immediate actions were taken by the Contractor for ceasing the pump and cleaning of muddy spillage. It is therefore concluded that the complaint was work-related under the Project. The site inspection was carried on 7 and 14 Apr 11, the damaged hose had been replaced and the condition was satisfactory. No abnormal operation was observed. Nevertheless, it is recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance. 1. Inspect the conditions of the hoses and connections daily; 2. Well-maintain the hoses and connections condition and replace the old/damaged hoses and connections if necessary; 3. Relocate the hoses as far as possible from the machines and construction materials to minimize the possibility of damage; 4. Stock the spare pumps, hoses and connections on-site for immediate action in case of spillage occurs; 5. Provide adequate bunding along the site boundary to minimize the possibility of the muddy water overflowing to public area in case of spillage occurs; and 6. Enhance the workers awareness by regular training to handle the muddy water spillage incident.	Yes	Closed on 16 Apr 11

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
C004-TCS	Four complaints regarding same issue were received by ICC on 18, 21 and 28 April 11 respectively and the Supervising Officer Representative was informed via the e-mail on same date.	Unknown	• 18 Apr 11 (1 complaint from Chi Lok Fa Yuen), • 21 Apr 11 (1 complaint from Tuen Mun Fa Yuen) and • 28 Apr (two complaints from Waldorf Garden and Tuen Mun Park Lane Square separately)	Restricted hours (night time and Sunday) between 17 and 28 Apr 11	TMR in the vicinity of Chi Lok Fa Yuen, Tuen Mun Fa Yuen, Waldorf Garden and Tuen Mun Park Lane Square	Noise	Four complaints were related to noise nuisance on TMR during the restricted hours (night time and Sunday)	4 May 11	5 ~ 15 May 11	As confirmed by the Contractor and Supervising Officer's Representative, the loading and unloading works at central median was carried out on TMR during the complaint period in the vicinity of Chi Lok Fa Yuen, Tuen Mun Fa Yuen, Waldorf Garden and Tuen Mun Park Lane Square. Totally 3 units of power mechanical equipments had been used including lorry, dump truck and excavator. The relevant construction noise permit (CNP) no. GW-RW0640-10 was obtained for the above works prior commencement. The conditions stipulated in the CNP were strictly followed by the Contractor. EPD had been informed prior the work commencement. Based on the above-mentioned information provided by the Contractor, it is anticipated that the noise nuisance was mainly due to the machines operation. Therefore, it is concluded that the complaint was work-related under the Project. In accordance with the Action/Event Plan, additional noise monitoring during the restricted hours was undertaken on 6 May 11 at the monitoring location N5 (Tuen King Building) and N6 (The Chinese Manufacturers' Association of Hong Kong Choi Cheung Kok Secondary School), where the loading and unloading works was carried out on TMR during restricted hours (night time) in the vicinity of these two monitoring locations. Comparison is made between the monitoring results against the corresponding baseline noise level. Based on the interpretation from the results, the construction noise at both locations are 54dB(A) which below the night time noise limit level (55dB(A)). Nevertheless, ET recommended that the Contractor should undertake following mitigation measures to minimize the noise nuisance. 1. Minimize the no. of machines used for the work as far as possible; 2. Well-maintain the machines condition to minimize noise nuisance; 3. Relocate operating machinery as far as possible from nearby sensitive receivers; 4. Machines that may be in intermittent use should be shut down between work periods or should be throttled down; 5. Optimize the working programme to minimize the restricted hours work activities as far as possible; 6. Improve the working practices to minimize the noise nuisance during the working activities as far as possible; 7. Provide temporary / mobile noise barrier for the noisy activities as far as possible; and 8. Enhance the workers awareness by regular training to minimize noise nuisance during the restricted hours.	Yes	Closed on 16 May 11