

MTR Corporation Limited

West Island Line Project

Final Environmental Monitoring and Audit Report

Introduction

The West Island Line (WIL) Project commenced on 10 July 2009. EM&A programme for WIL commenced on 10 August 2009, the commencement date of construction of the Project. Construction works for the WIL Project had been substantially completed and the operation of the Project commenced on 28 December 2014 with service of HKU and Kennedy Town commenced. Service of Sai Ying Pun Station commenced on 29 March 2015 except Sai Ying Pun Entrance B3 (i.e. Works Area L1). Works in the Project Site Office work site (i.e. Works Area B) has been completed in December 2015. Remaining construction works in Sai Ying Pun Entrance B3 (i.e. Works Area L1) was also completed in February 2016 and Entrance B3 has been in service since 27 March 2016.

In view of completion of all construction works for WIL project, a proposal for termination of WIL EM&A programme, which was certified by ET Leader and verified by IEC, has been submitted on 12 April 2016.

In accordance with clause 12.11 of EM&A Manual, the final EM&A report should be submitted to present the results of EM&A works and the impact monitoring for the construction phase of the Project. This report serves as a complete set of Final EM&A report for WIL project which comprises of three submissions as below. In addition, these submissions have been certified by ET Leader and verified by IEC accordingly.

1. Final EM&A report (Rev A) for Works Area MA (submitted on 16 January 2012 and approved on 22 February 2012);
2. Final EM&A report (Part 1) – the report covers WIL Project Works Areas except Works Areas B, L1, M1 and N1 (submitted on 8 July 2015 and approved on 11 August 2015); and
3. Final EM&A report (Part 2) – the report covers Works Area B, L1, M1 and N1 (this submission).

MTR Corporation Limited

West Island Line Project

Final Environmental Monitoring and Audit Report for
Works Area MA (Rev A)

Verified by:  _____

Position: Independent Environmental Checker

Date: 16 January 2012

MTR Corporation Limited

West Island Line Project

Final Environmental Monitoring and Audit Report for
Works Area MA (Rev A)

Certified by: _____

Position: Environmental Team Leader

Date: 13 January 2012

EXECUTIVE SUMMARY

The West Island Line Project commenced on 10 July 2009. The EM&A programme for the West Island Line Project commenced on 10 August 2009, the commencement date of construction of the Project. This is the final Environmental Monitoring and Audit (EM&A) Report for Works Area MA. The Report presents the results of EM&A works and the impact monitoring for the construction works undertaken during the period of 10 August 2009 to 9 September 2010. As the construction works for the magazine had been completed in August 2010, those construction activities that have the potential to result in a significant environmental impact will not be carried out. The EM&A programme has already finished from 10 September 2010 onwards for Works Area MA.

Impact monitoring for air quality and noise were conducted for Works Area MA in accordance with the EM&A Manual in the reporting period, no exceedance was found and there was no breach of Limit Levels for air and noise monitoring. It can be concluded that the EIA predictions for Works Area MA are valid.

No environmental notification of summon and prosecution was received for the Works Area MA in the reporting period. No environmental complaint was received for the Works Area MA in the reporting period.

Site inspections were conducted by the Environmental Team on a weekly basis to monitor proper implementation of environmental pollution control and mitigation measures for the Project. No non-conformance to the environmental requirements was identified for Works Area MA by the Environmental Team in the reporting period.

The Environmental Permit (EP-313/2008/D) issued by EPD on 19 January 2011 had been used for Works Area MA of the WIL Project.

In the reporting period, there was no reporting change of circumstances for Works Area MA which may affect the compliance with the recommendations of the EIA Report.

It is concluded that the environmental monitoring and audit works for the West Island Line Project has been performing in an acceptable standard complying with the requirements of the EM&A Manual and the construction works at Works Area MA were undertaken in an appropriately environmentally sensitive manner. The environmental protection and pollution control measures provided by the Contract 708 Contractor were found to be effective and efficient.

EXECUTIVE SUMMARY

1 INTRODUCTION

- 1.1 Project Background***
- 1.2 Project Programme***
- 1.3 Coverage of the EM&A Report***

2 PROJECT INFORMATION

- 2.1 Project Management Organization and Contact Details***
- 2.2 Project Works Areas and Environmental Monitoring Locations***
- 2.3 Summary of EM&A Requirements***
- 2.4 Implementation of Environmental Mitigation Measures***
- 2.5 Construction Activities in the Reporting Period***

3 IMPACT MONITORING

- 3.1 Air Quality***
- 3.2 Noise***
- 3.3 Action taken in Event of Exceedence***

4 LANDSCAPE AND VISUAL

- 4.1 Monitoring Requirements***
- 4.2 Audit Results***

5 WASTE MANAGEMENT

6 WATER QUALITY

7 RECORD OF ENVIRONMENTAL COMPLAINTS

8 RECORD OF NON- COMPLIANCES

9 NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

10 STATUS OF STATUTORY SUBMISSIONS

- 10.1 Submissions required under Environmental Permits***
- 10.2 Statutory Permits and Licenses***

11 SITE INSPECTIONS

- 11.1 Observations***
- 11.2 Other Notable Events***
- 11.3 Solid and Liquid Waste Management Status***
- 11.4 Effectiveness and Efficiency of Mitigation Measures***

12 CONCLUSIONS

List of Appendices

Appendix A *Environmental Quality Performance Limits*

Appendix B *Event Action Plans*

Appendix C *Implementation of Environmental Mitigation Measures*

Appendix D *Impact Monitoring Graphical Plots*

Appendix E *Certified Arborist Final Report for Magazine Site*

1 INTRODUCTION

1.1 Project Background

MTR Corporation Limited (MTRCL) proposes to build a new railway line, the West Island Line (WIL) which is an extension of the Island Line to the Western District. The route length of the fully underground WIL is approximately 3 km with three new underground stations namely Sai Ying Pun Station (SYP), University Station (UNI) and Kennedy Town Station (KET).

1.2 Project Programme

The West Island Line Project commenced on 10 July 2009. Commencement of construction was on 10 August 2009. The commencement of operation of the Project is scheduled to be in mid 2014.

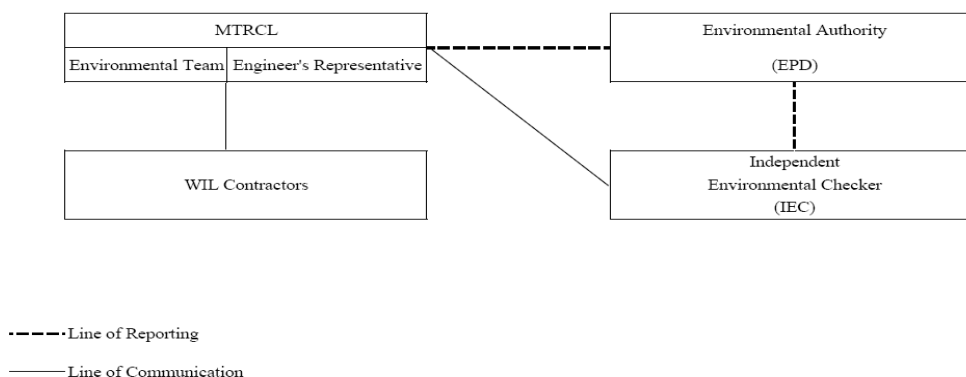
1.3 Coverage of the Final EM&A Report for Works Area MA

The EM&A programme for the West Island Line Project commenced on 10 August 2009. This is the final Environmental Monitoring and Audit (EM&A) Report for the Works Area MA of the West Island Line Project. The Report presents the results of EM&A works and the impact monitoring for the construction works undertaken at Works Area MA including magazine and access road construction during the period of 10 August 2009 to 9 September 2010.

2 PROJECT INFORMATION

2.1 Project Management Organization and Contact Details

The WIL Project organization chart is presented in Figure 1. Contacts of key environmental personnel of the Project are shown in Tables 1a, 1b and 1c respectively.



PROJECT ORGANIZATION
Figure 1

Table 1a Contact List of Key Personnel for Project Management

Organization	Name	Telephone
Engineer's Representative		
Project Manager – WIL Civil	Mr. Julian Saunders	3411 9828 / 9738 8634
Construction Manager(Contract 704/706/708)	Mr. Stephen Hamill	34119811
Independent Environmental Checker		
Senior Environmental Consultant	Mr. Coleman Ng	2268 3097
Environmental Team		
Environmental Team Leader	Mr. Richard Kwan	2688 1179 / 9819 9027
Contact 708 Contractor		
Project Manager	Mr. Jason Cheng	9837 9323
Tunnel Engineer	Mr. John Wai	6083 9220

Table 1b Contact List of Key Personnel for Emergency Response

Organization	Name	Telephone
Engineer's Representative		
Project Manager – WIL Civil	Mr. Julian Saunders	3411 9828 / 9738 8634
Construction Manager(Contract 704/706/708)	Mr. Stephen Hamill	3411 9811
Independent Environmental Checker		
Senior Environmental Consultant	Mr. Coleman Ng	2268 3097
Environmental Team		
Environmental Team Leader	Mr. Richard Kwan	2688 1179 / 9819 9027
Contact 708 Contractor		
Project Manager	Mr. Jason Cheng	9837 9323
Tunnel Engineer	Mr. John Wai	6083 9220
Environmental Engineer	Mr. M. K. Cheung	9096 7254

Table 1c Contact List of Environmental Authority

Organization	Name	Telephone
Environmental Protection Department		
Sr Env Protection Offr(Metro Assessment) 3	Mr. Steve Li	2835 1142
Sr Env Protection Offr(Regional S) 1	Mr. Sean Law	2516 1806

2.2 Project Works Areas and Environmental Monitoring Locations

The WIL Project works area MA and the locations of environmental monitoring stations are shown in Figures 2 and 5 respectively. Table 2 shows the details of the monitoring stations for Works Area MA as reported in Sections 3.1 and 3.2 below.

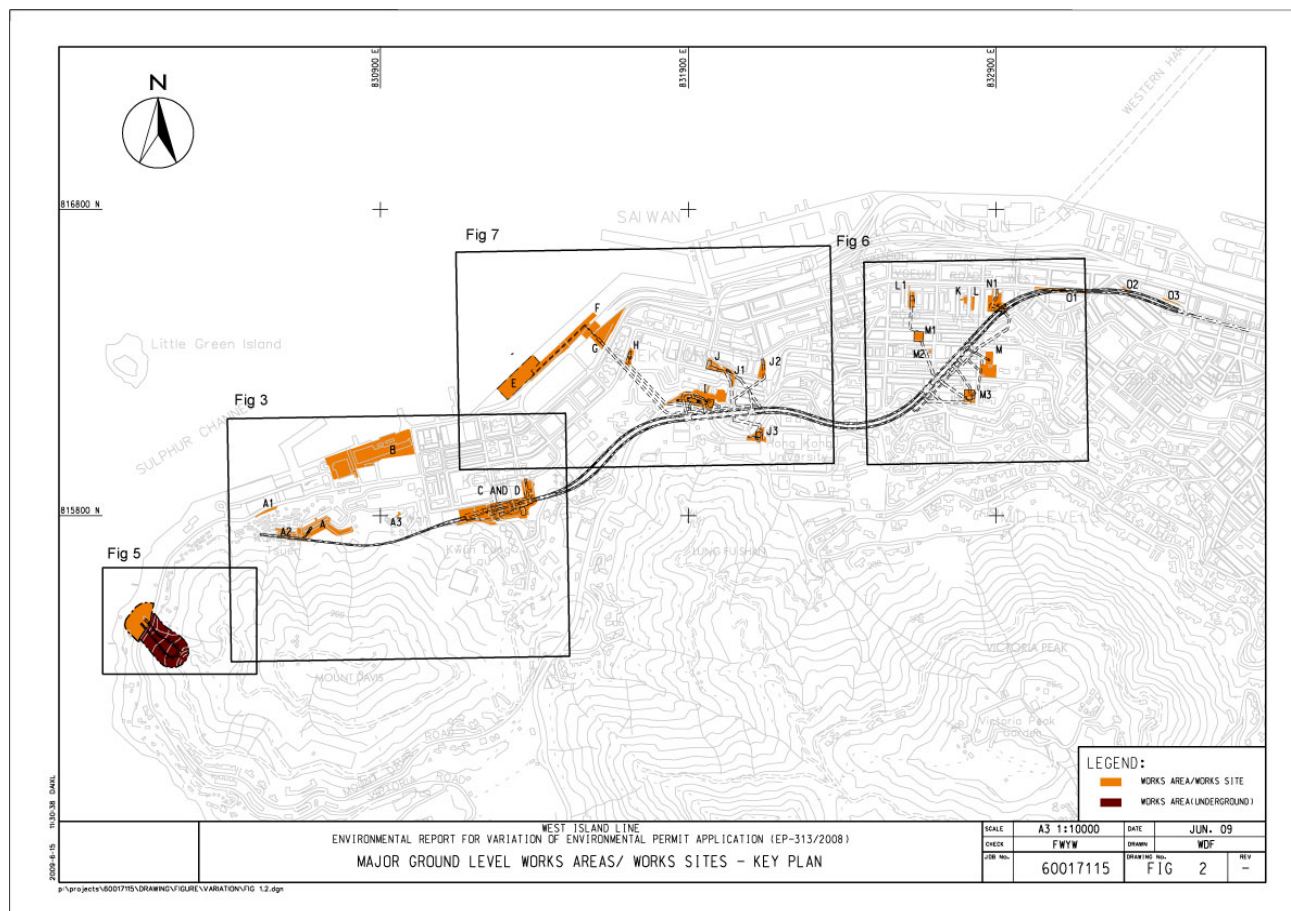
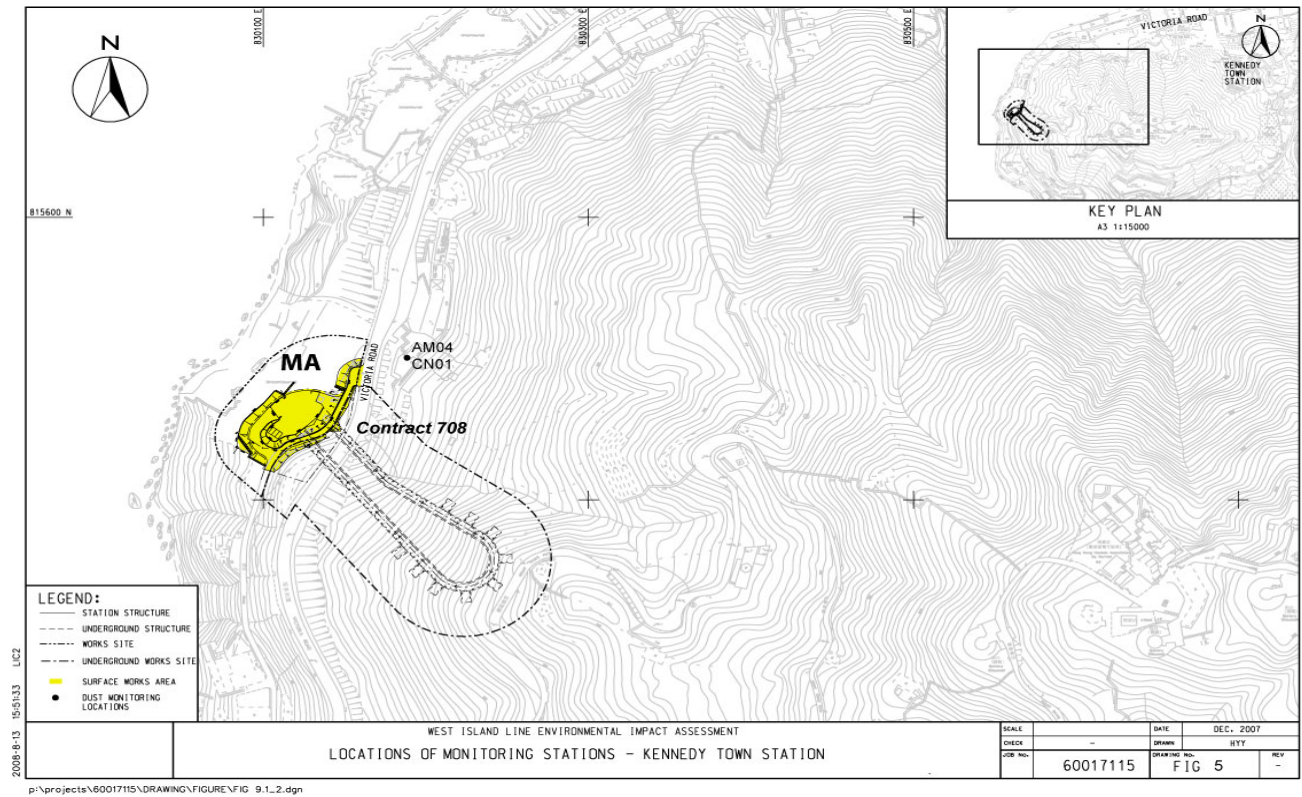


Table 2 Summary of impact air quality and noise monitoring stations for Works Area MA

ID	Premise	Monitoring Location
Air		
AM4	Chee Sing Kok Social Centre of the Humanity Love (current name for the premise)	Adjacent to building and facing Works Area MA
Noise		
CN1	Chee Sing Kok Social Centre of the Humanity Love (current name for the premise)	Adjacent to building and facing Works Area MA



2.3 Summary of EM&A Requirements

The EM&A programme requires environmental monitoring for air quality, noise, water quality and waste management as specified in the EM&A Manual.

In the reporting month, 24-hour TSP levels at the air monitoring station shown in Table 2 were monitored during the construction stage.

In the reporting month, construction noise levels at the noise monitoring station shown in Table 2 were monitored during the construction stage.

A summary of impact EM&A requirements as applicable to this EM&A Report for Works Area MA is presented in Table 3 below.

Table 3 Summary of impact EM&A Requirements

Parameters	Descriptions	Locations	Frequencies	Duration
Air Quality	24-hr TSP	Shown in Table 2	Once every 6 days	During construction stage
Noise	Leq(30min)	Shown in Table 2	Once a week	During construction stage
Waste	On-Site Audit	Active Works Sites	Monthly	During construction stage

Parameters	Descriptions	Locations	Frequencies	Duration
Wastewater	On-Site Audit	Active Works Sites	Monthly	During construction stage
General Site Conditions	Environmental Site Inspection	Active Works Sites	Weekly	During construction stage

Environmental Quality Performance Limits for air quality and noise are shown in Appendix A. The Event Action Plan for air quality and noise are shown in Appendix B.

2.4 Implementation of Environmental Mitigation Measures

The WIL Civil Works Contract 708 Contractor for construction of magazine at Works Area MA is required to implement the mitigation measures as specified in the EP, EIA Report and EM&A Manual. During the regular environmental site inspections, the Contractor's implementation of mitigation measures were inspected and reviewed. A schedule of the implementation of mitigation measures identified in the WIL EIA is given in Appendix C.

2.5 Construction Activities in the Reporting Period

Major construction activities carried out by the WIL Civil Works Contractor during the reporting period include:

Contract 708 - Works Area MA

- Site clearance and preparation
- Site Formation and construction of temporary access
- Pipe piling and preparation of tunnel portals
- Blasting for magazine and construction of tunnel portals
- Tunnel works and E&M works
- External works

Construction works commenced on 10 August 2009 and completed on 31 August 2010.

3 IMPACT MONITORING

3.1 Air Quality

24-Hour TSP Levels Monitoring

The sampling procedure follows that described in the App. B of Pt 50 in 40CFR Ch.1 (U.S. Environmental Protection Agency). TSP is sampled by drawing air through a conditioned, pre-weighed filter paper inside the high volume sampler at a controlled rate. After 24-hour sampling the filter paper with retained particles is collected and returned to the laboratory for drying in a desiccator followed by weighing. TSP levels are calculated from the ratio of the mass of particulate retained on the filter paper to the total volume of air sampled.

The samplers should be properly maintained. Prior to dust monitoring commencing, appropriate checks should be made to ensure that all equipment and necessary power supply are in good working condition.

Calibration Requirements

The flow rate of the high volume sampler with mass flow controller was calibrated using an orifice calibrator. Initial calibration (five points) was conducted upon installation and prior to commissioning. Calibration is carried out every six months.

To examine the construction dust levels, 24-hour TSP monitoring was undertaken according to the EM&A Manual. The dust monitoring location is shown in the Section 2.2 above. Monitoring results are presented Appendix D as graphical plot. The 24-hour TSP levels when there were construction activities during the monitoring period were within the Action Level. No exceedance was found. This indicates that the construction activities did not have a noticeable adverse effect on the general air quality for the Works Area MA.

Statistical Analysis of Air Quality Monitoring Data			
Number	Average ($\mu\text{g}/\text{m}^3$)	Maximum ($\mu\text{g}/\text{m}^3$)	Minimum ($\mu\text{g}/\text{m}^3$)
68	76.1	149.6	34.9

3.2 Noise

B&K 2236 sound level meters which complied with the International Electrotechnical Commission Publication 651:1979 (Type 1) and 804:1985 (Type 1), specification as referred to in the Technical Memoranda to the NCO were used for the construction noise impact monitoring. The B&K sound level meters and B&K 4231 calibrator are verified by the certified laboratory or manufacturer once every two years to ensure they perform to the same level of accuracy as stated in the manufacturer's specifications.

Immediately prior to and following each set of measurements at any NSR, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. If the calibration levels before and after the measurement differ by more than 1.0dB the measurement shall be repeated to obtain a reliable result (note: maximum deviation during this initial baseline monitoring period was 0.3dB). Periods of prolonged or repeated overloading of the sound level meter detector were avoided by setting the meter with adequate headroom prior to commencing measurements. Measurements were recorded to the nearest 0.1 dB, with values of 0.05 being rounded up.

Impact noise monitoring of $L_{A,eq30}$ was undertaken to measure construction noise levels in accordance with the EM&A Manual. The noise monitoring locations are shown in Section 2.2 above.

Monitoring results are presented in Appendix D as graphical plot. No exceedance was found.

Statistical Analysis of Noise Monitoring Data			
Number	Average (dB(A))	Maximum (dB(A))	Minimum (dB(A))
57	68.7	74.4	59.9

3.3 Action taken in Event of Exceedence

There was no exceedance in air quality and noise monitoring parameters recorded in the reporting period for Works Area MA, therefore no action was taken.

4 LANDSCAPE AND VISUAL

4.1 Monitoring Requirements

Monitoring of the implementation of the landscape and visual mitigation measures during construction phase was conducted in accordance with the requirements as stipulated in the EM&A Manual.

The landscape and visual monitoring and audit had been conducted once a month throughout the construction stage for Works Area MA.

4.2 Audit Results

Monthly monitoring and audit was undertaken in accordance with the EM&A Manual.

Tree Felling at Contract 708 Works Area MA

107 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work as mentioned in the EM&A Report for September 2009.

Tree Transplantation

In accordance with EP Condition 2.8, the two individual plants, *Pavetta hongkongensis* located at the Works Area MA shall be transplanted.

It was identified that only one of the plant as mentioned above require transplanting and the other can be retained at its original location.

With consent from AFCD on the proposed method statement for transplanting the plant and protecting the retained plant, the plant was transplanted to a nearby location with similar habitat in September 2009 as agreed by AFCD and supervised by the Certified Arborist. The retained plant was properly protected in accordance with the agreed method.

The existing trees and species of conservation importance (ie the two identified *Artocarpus hypargyreus*) located near the Works Area MA were fenced off and the trunk protected with hessian sacking.

Others

The Certified Arborist as required by the EP had conducted inspections and audits and found that the transplanting works and the tree protection works carried out by the Contract 708 Contractor were in accordance with the EP/EIA, Tree Protection Plan and contract requirements. No non compliance was identified in the reporting period. The above identified four plants of conservation importance within/near the Works Area MA had been inspected in November 2011 by the Certified Arborist after the completion of magazine construction, it was found that the four plants had been properly protected and maintained. These plants remain in good health. The final inspection report attached in Appendix E had been reviewed by AFCD and no adverse comment had been raised.

5 WASTE MANAGEMENT

Mitigation measures on waste management had been implemented in accordance with the Waste Management Plans for Contract 708 Works Area MA submitted under the Environmental Permit. The C&D materials had been disposed of at the public filling reception facilities while C&D wastes had been disposed of at the landfills. Quantities of wastes disposed in the reporting period are summarized in the following table:

Amount of Construction Wastes Disposed			
Reporting Period	Inert C&D Materials to Public Fill (ton)	Non-inert Waste to Landfill (ton)	Chemical Waste to designated treatment facility (litre)
<u>Contract 708 (Contract completed in August 2010)</u>			
Jul - Sep 2009	0	181	0
Oct - Dec 2009	5698.9	12	0
Jan - Mar 2010	9989.6	12.5	0
Apr - Jun 2010	2741	54.3	0
Jul 2010	1035.4	13.3	0
Aug 2010	0	0	0
Cumulative	19464.9	273.1	0

6 WATER QUALITY

Monitoring of the implementation of the water quality mitigation measures during construction phase was conducted for Works Area MA in accordance with the requirements as stipulated in the EM&A Manual.

Weekly site inspections were conducted throughout the construction stage covering the entire project site areas to ensure the recommended mitigation measures are properly implemented.

In the reporting period, the water quality mitigation measures were implemented in accordance with the requirements as stipulated in the EM&A Manual.

7 *RECORD OF ENVIRONMENTAL COMPLAINTS*

No environmental complaint was received for Works Area MA in the reporting period.

8 *RECORD OF NON-COMPLIANCES*

There was no non-compliance identified for Works Area MA in the reporting period.

9 *NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS*

No summon or prosecution related to environmental issue was received or made against Contract 708 of the West Island Line Project for Works Area MA in the reporting period.

10 *STATUS OF STATUTORY SUBMISSIONS*

10.1 Submissions required under Environmental Permit

A summary of the status of submissions required under the WIL Environmental Permit for Works Area MA as of September 2010 is shown below:

EP-313/2008/C Clause No.	Description		Status
1.11	1	Commencement date of construction	submitted on 10 July 2009
2.1 & 2.2	2	Employment of IEC, ET Leader	submitted on 23 June 2009
2.3	3	Contractor Management Organization for Civil Works Contracts 706, 708 and 714	submitted on 24 July 2009
2.5 & 2.7	4	Certified Arborist and Tree Protection Plan	submitted on 24 July 2009 and 5 August 2009
2.5 & 2.7	5	Certified Arborist and Tree Protection Plan – Responses to Comments	submitted on 10 September 2009
2.5 & 2.7	6	Certified Arborist and Tree Protection Plan – Certified Arborist	submitted on 3 November 2009
2.5 & 2.7	7	Tree Protection Plan Rev A	submitted on 19 July 2010
2.5	8	Certified Arborist	submitted on 22 June 2010
2.6	9	Set up of Community Liaison Groups and designated complaint hotline	submitted on 20 July 2009
2.12	10	Waste Management Plans for Civil Works Contracts 706, 708 and 714	submitted on 24 July 2009
2.12	11	Revised Waste Management Plans for Civil Works Contracts 706, 708 and 714 Rev A	submitted on 7 September 2009
2.12	12	Revised Waste Management Plans for Civil Works Contracts 706, 708 and 714 Rev B	submitted on 16 October 2009
6.3	13	Baseline Monitoring Report (Part 2) for Works Area MA	submitted on 12 August 2009
6.4	14	EM&A Report for September 2009	submitted on 23 September 2009
6.4	15	EM&A Report for October 2009	submitted on 23 October 2009
6.4	16	EM&A Report for November 2009	submitted on 23 November 2009
6.4	17	EM&A Report for December 2009	submitted on 23 December 2009
6.4	18	EM&A Report for January 2010	submitted on 22 January 2010
6.4	19	EM&A Report for February 2010	submitted on 25 February 2010
6.4	20	EM&A Report for March 2010	submitted on 23 March 2010
6.4	21	EM&A Report for April 2010	submitted on 23 April 2010
6.4	22	EM&A Report for May 2010	submitted on 24 May 2010
6.4	23	EM&A Report for June 2010	submitted on 24 June 2010
6.4	24	EM&A Report for July 2010	submitted on 23 July 2010
6.4	25	EM&A Report for August 2010	submitted on 23 August 2010
6.4	26	EM&A Report for September 2010	submitted on 24 September 2010
7.2	27	Internet address of web site for environmental monitoring and project data	submitted on 23 September 2009

10.2 Statutory Permits and Licenses

A summary of the status of all relevant environmental permits and licenses for Works Area MA as of September 2010 is shown below:

Description	Status
Environmental Permit for West Island Line Project (EP-313/2008)	Issued on 12 January 2009 and superseded
Environmental Permit for West Island Line Project (EP-313/2008/A)	Issued on 26 June 2009 and superseded
Environmental Permit for West Island Line Project (EP-313/2008/B)	Issued on 22 July 2009 and superseded
Environmental Permit for West Island Line Project (EP-313/2008/C)	Issued on 31 August 2009
<u>Contract 708</u>	
Wastewater Discharge License	WT00004902-2009
Registration as a Chemical Waste Producer	Approved on 7 September 2009 Permit no. 5213-111-G2347-08
Disposal of Construction Waste	Billing Account no. 7009116 activated on 12 August 2009
Construction Noise Permit	GW-RS0938-09 (expired) GW-RS0283-10 (expired)

11 SITE INSPECTIONS

11.1 Observations

Regular site inspections were undertaken by the ET in accordance with the EM&A Manual. The contractors' performance on environmental matters were assessed. The inspection findings and the associated recommendations on improvement to the environmental protection and pollution control works were raised to the Contract 708 Contractor which were rectified timely by the Contract 708 Contractor for the magazine construction.

11.2 Other Notable Events

As the construction of the WIL magazine had completed and a portion of land at Works Area MA had been handed over to Lands Department. The concerned plants (2nos. Hong Kong Pavetta and 2nos. Silver-back Artocarpus) as mentioned in WIL EP Condition 2.8 are located in the land area which had been handed over to Lands Department. As these plants falls outside the revised Works Area MA, the regular inspection to these plants by the ET/Certified Arborist stopped from 10 September 2010 onwards.

11.3 Solid and Liquid Waste Management Status

Base on the findings of the weekly site inspections, the Contractors' performance in solid and liquid waste management were acceptable and compliance with the EIA requirements were demonstrated. Solid wastes and liquid waste were properly disposed of. The current management standard should be maintained for the remaining works sites of the West Island Line Project.

11.4 Effectiveness and Efficiency of Mitigation Measures

Based on the environmental monitoring results, the effectiveness and efficiency of the mitigation measures implemented were found to be satisfactory. The current practice should be maintained for the remaining works sites of the West Island Line Project.

12 CONCLUSIONS

This final Environmental Monitoring and Audit (EM&A) Report for Works Area MA presents the results of EM&A works and the impact monitoring for the construction works undertaken at Works Area MA during the period of 10 August 2009 to 9 September 2010. As the construction works for the magazine had been completed in August 2010, those construction activities that have the potential to result in a significant environmental impact will not be carried out. It is proposed that the EM&A programme will be terminated from 10 September 2010 onwards for Works Area MA.

Impact monitoring for air quality and noise were conducted for Works Area MA in accordance with the EM&A Manual in the reporting period, no exceedance was found and there was no breach of Limit Levels for air and noise monitoring. It can be concluded that the EIA predictions for Works Area MA are valid.

No environmental notification of summon and prosecution was received for Works Area MA in the reporting period. No environmental complaint was received for Works Area MA in the reporting period.

Site inspections were conducted by the Environmental Team on a weekly basis to monitor proper implementation of environmental pollution control and mitigation measures for the Project. No non-conformance to the environmental requirements was identified for Works Area MA by the Environmental Team in the reporting period.

The Environmental Permit (EP-313/2008/D) issued by EPD on 19 January 2011 had been used for Works Area MA of the WIL Project.

In the reporting period, there was no reporting change of circumstances for Works Area MA which may affect the compliance with the recommendations of the EIA Report.

It is concluded that the environmental monitoring and audit works for the West Island Line Project has been performing in an acceptable standard complying with the requirements of the EM&A Manual and the construction works at Works Area MA were undertaken in an appropriately environmentally sensitive manner. The environmental protection and pollution control measures provided by the Contract 708 Contractor were found to be effective and efficient.

The ET will continue the implementation of the environmental monitoring and audit programme for the remaining works sites of the West Island Line Project in accordance with the EM&A Manual and to a level consistent with MTRCL's Corporate Sustainability Policy.

Appendix A

Environmental Quality Performance Limits

Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level (µg/m3)	Limit Level (µg/m3)
AM4	158	260

Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level (dB(A)), Leq(30min)
0700-1900 hr on normal weekdays	When one documented complaint is received	75*
0700-2300 hr on holidays including Sundays and 1900-2300 hr on all other days		Subject to requirements stipulated in Construction Noise Permits
2300-0700 hr of next day		

* Limit for school is 70 dB(A) and 65 dB(A) during school examination periods.

Appendix B
Event Action Plans

Table 2.4 Event and Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and ER 2. Carry out investigation 3. Report the results of investigation to the IEC and ER 4. Discuss jointly with the ER and Contractor and formulate remedial measures 5. Increase monitoring frequency to check mitigation effectiveness 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly 3. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to ER with copy to IEC 2. Implement noise mitigation proposals
Limit Level	<ol style="list-style-type: none"> 1. Notify IEC, ER, EPD and Contractor 2. Identify source 3. Repeat measurement to confirm findings 4. Increase monitoring frequency 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Inform IEC, ER, EPD the causes and actions taken for the exceedances 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER with copy to IEC 3. Implement the agreed proposals 4. Revise and resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Table 9.4 Event and Action Plan for Ambient Air Quality Monitoring (Construction)

EVENT	ET		ACTION		ER	CONTRACTOR
ACTION LEVEL						
1. Exceedance for one sample	1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.		1. Check monitoring data submitted by ET; 2. Check Contractor's working method.		1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and ER (together with the Contractor) on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.		1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and ER (together with the Contractor) on possible remedial measures; 4. Advise the ET/ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.		1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.
LIMIT LEVEL						
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC, ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.		1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and ER (together with the Contractor) on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.		1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to ER with a copy to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.		1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.		1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to ER with a copy to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Revise and resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.

Appendix C

Implementation of Environmental Mitigation Measures

Table C1

**Implementation Schedule for Works Area MA - Underground Magazine Site
(Status as of 9 November 2010)**

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
Airborne Noise Impact (Construction Phase)							
S 3.55	S 2.23	<p>The following good site practices shall be implemented:</p> <ul style="list-style-type: none"> - Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program - Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program - Mobile plant, if any, shall be sited as far from NSRs as possible - Machines and plant (such as trucks) that may be in intermittent use shall be shut down between work periods or shall be throttled down to a minimum - Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs - Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities. 	To reduce construction noise impact	MTRC / Contractor	Works area MA	Construction phase	Implemented
S 3.56-3.57, Table 3.10	S 2.23	<p>Quieter plant shall be used for the following PME:</p> <ul style="list-style-type: none"> - Truck - Crane/ Mobile Crane - Backhoe/Excavator/Wheel Loader/ Front-end-loader - Breaker - Concrete Mixer Truck - Pokers, vibratory, hand held - Pile Extractor - Roller, vibratory - Asphalt Paver - Hydraulic Breaker 	To reduce construction noise impacts	MTRC / Contractor	Works area MA	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<ul style="list-style-type: none"> - Pile Rig - Crawler Crane - Sheet Piling Machine/ Piling, Hydraulic 					
S 3.60	S 2.23	<p>Noise enclosure/acoustic shed shall be used for the following PME where practicable:</p> <ul style="list-style-type: none"> - Air Compressor - Concrete Pump - Shotcrete Pump - Hand Held Breaker - Grout Pump - Concrete Corer 	To reduce construction noise impacts	MTRC / Contractor	Works area MA	Construction phase	Implemented
S 3.63	S 2.23	Silencer shall be used for the ventilation fan	To reduce construction noise impacts	MTRC / Contractor	Works area MA	Construction phase	Implemented
S 3.64	S 2.23	<p>Noise insulating fabric shall be applied where practicable to cover the following PME:</p> <ul style="list-style-type: none"> - Pile Rig - Drill rig - Pile Extractor - Power Rammer - Piling, earth auger - Piling, hydraulic - Sheet Piling Machine 	To reduce construction noise impacts	MTRC / Contractor	Works area MA	Construction phase	Implemented
Landscape and Visual Impact (Construction Phase)							
Table 5.4	Table 4.2	<p>Re-use of Existing Soil</p> <p>Existing topsoil shall be re-used where possible for new planting areas within the project. The construction program shall consider using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing ground may be set up on-site as necessary.</p>	To reduce the volume of soil for disposal	MTRC / Contractor	Works area MA	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		■					
Table 5.4	Table 4.2	<p>No-intrusion Zone</p> <p>To maximize protection to existing trees, ground vegetation and the associated understory habitats, construction contracts may designate "No-intrusion Zone" to various areas within the site boundary with rigid and durable fencing for each individual no-intrusion zone. The contractor should close monitor and restrict the site working staff not to enter the "no-intrusion zone", even for non-direct construction activities and storage of equipment.</p>	To protect the existing trees, ground vegetation and the associated understory habitats.	MTRC / Contractor	Works area MA	Construction phase	Implemented
Table 5.4	Table 4.2	<p>Decorative Hoarding</p> <p>Erection of decorative screen hoarding should be designed to be compatible with the existing urban context.</p>	To reduce visual impact due to construction	MTRC / Contractor	Works area MA	Construction phase	Implemented
Table 5.4	Table 4.2	<p>Minimize light pollution and control of night-time glare</p> <p>All security floodlights for construction sites shall be equipped with adjustable shield, frosted diffusers and reflective covers, and be carefully controlled to minimize light pollution and night-time glare to nearby residences and GIC users. The Contractor shall consider other security measures which shall minimize the visual impacts.</p>	To minimize the visual impacts.	MTRC / Contractor	Works area MA	Construction phase	Implemented
Table 5.4	Table 4.2	<p>Protection of Retained Trees</p> <p>All retained trees should be recorded photographically at the commencement of the Contract, and carefully protected during the construction period. Detailed tree protection specification shall be allowed and included in the Contract Specification, which specifying the</p>	To protect the retained trees within the site boundary	MTRC / Contractor	Works area MA	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>tree protection requirement, submission and approval system, and the tree monitoring system.</p> <p>In addition, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas.</p> <p>All implementation of tree protection works and tree preservation measures shall be supervised by a landscape specialist on site.</p>					
Table 5.4	Table 4.2	<p>Protection of Registered Old and Valuable Trees</p> <p>Detailed tree protection measures as stipulated in WBTC No. 29/2004 – Registration of Old and Valuable Trees, and Guidelines for their Preservation, shall be allowed and included in the Contract Specification. All implementation of OVT protection measures shall be supervised by a landscape specialist on site.</p>	To protect the OVT within the site boundary	MTRC / Contractor	Works area MA	Construction phase	Implemented
Table 5.4	Table 4.2	<p>Protection of Old Stone Wall-cum-trees</p> <p>Detailed tree protection specification shall be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and the tree monitoring system. All implementation of Old stone wall-cum-trees protection measures shall be supervised by a landscape specialist on site.</p>	To protect the existing trees-cum-wall	MTRC / Contractor	Works area MA	Construction phase	Implemented
Landscape and Visual Impact (Operation Phase)							

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
Table 5.5	Table 4.3	Tree Transplanting Trees of high to medium survival rate after transplanting to be affected by the works shall be transplanted where possible and practicable. Tree transplanting proposal including final location for transplanted trees will be submitted separately to seek relevant government department's approval.	Tree preservation	MTRC / Contractor	Works area MA	Detail design and operation phase	To be implemented upon completion of magazine operation
Table 5.5	Table 4.3	Compensation Tree Planting Compensatory tree planting should be provided to compensate for felled trees. Compensatory tree planting proposal including location of compensation will be submitted separately to seek relevant government department's approval.	To reduce impact to existing trees.	MTRC / Contractor	Works area MA	Detail design and operation phase	To be implemented upon completion of magazine operation
Table 5.5	Table 4.3	Re-instatement of excavated Area All excavated area and disturbed area for utilities diversion, temporary road diversion, and pipeline works shall be reinstated to former conditions or even better, to the satisfaction of the relevant Government departments.	To minimize the visual impacts.	MTRC / Contractor	Works area MA	Construction phase	Implemented
Cultural Heritage Impact (Construction Phase)							
S6.45, S6.51-6.55	S 5.4 – 5.11	The construction vibration control limits shall be followed. Compliance monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme The location and installation of the monitoring stations should be discussed and agreed with AMO before installation.	To minimize vibration impacts on the identified vibration sensitive historical buildings.	MTRC / Contractor	Works Area MA	Detail design, construction and operational phase	Implemented
S6.46	S5.3	Hoardings or boundary fencing shall be designed in a manner that responds to the existing urban context.	To minimize visual impacts	MTRC / Contractor	Works Area MA	Detailed design and operational	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
						phase	
Waste Management Implications (Construction Phase)							
S7.30	S 6.5	<p>Good site practices</p> <ul style="list-style-type: none"> - Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site - Training of site personnel in proper waste management and chemical handling procedures - Provision of sufficient waste disposal points and regular collection of waste - 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. - Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre. 	To reduce waste management impacts	MTRC / Contractor	Works area MA	Construction phase	Implemented
S7.31 & S7.32	S 6.6 – S 6.7	<p>Waste reduction measures</p> <ul style="list-style-type: none"> - Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals - 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 	To achieve waste reduction	MTRC / Contractor	Works area MA	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<ul style="list-style-type: none"> - Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force - 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. - A recording system for the amount of wastes generated, recycled and disposed (including disposal sites) should be proposed - Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle. - A Waste Management Plan shall be prepared by the Contractor prior to the commencement of construction work to provide an overall framework for waste management and reduction. 					
S7.34 & S7.35	S 6.9 & S6.10	<p>C&D Material</p> <ul style="list-style-type: none"> - In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the excavated materials arising from station and tunnel construction shall be reused on-site as backfilling material and for landscaping works as far as practicable. - Surplus rock generated from the tunnelling works, shafts/adits construction and the stations cavern construction should be reused in reclamation and site formation projects either in the Mainland or Macau, or disposed of at a PFRF, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses. 	To minimize environmental impacts during the handling, transportation and disposal of C&D material	MTRC / Contractor	Works area MA	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<ul style="list-style-type: none"> - C&D waste generated site clearance from the proposed works areas would require disposal to the designated landfill site. - In order to monitor the disposal of inert C&D material and C&D waste at PFRFs and landfills, respectively, and to control fly-tipping, a trip-ticket system shall be established in accordance with ETWB TCW No. 31/2004. - Material delivered to PFRFs should be of size less than 250mm or other sizes as agreed with the Secretary of the Public Fill Committee. 					
S7.36	S 6.11	<p>General refuse</p> <ul style="list-style-type: none"> - General refuse shall be stored in enclosed bins or compaction units separate from C&D material and chemical wastes. - A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D material and chemical wastes. Preferably an enclosed and covered area shall be provided to reduce the occurrence of 'wind blown' light material. 	To minimize environmental impacts during the handling, transportation and disposal of general refuse	MTRC / Contractor	Works area MA	Construction phase	Implemented
S7.37	S 6.12	<p>Chemical waste</p> <ul style="list-style-type: none"> - Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i>. - Good quality containers compatible with the chemical wastes shall be used, and incompatible chemicals shall be stored separately. - Appropriate labels shall be securely attached on each chemical 	To minimize environmental impacts during the handling, transportation and disposal of chemical refuse	MTRC / Contractor	Works area MA	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>waste container indicating the corresponding chemical characteristics of the waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc.</p> <ul style="list-style-type: none"> - The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, either to the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the <i>Waste Disposal (Chemical Waste) (General) Regulation</i>. 					
Water Quality Impact (Construction Phase)							
S9.31	S 8.4	<p>Construction Site Run-off and Drainage</p> <p>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. The following measures are recommended to protect water quality and sensitive uses of the coastal area i.e. WSD flushing water intakes along the harbour front, and when properly implemented should be sufficient to adequately control site discharges so as to avoid water quality impacts:</p> <ul style="list-style-type: none"> - At the start of site establishment (including the barging facilities), perimeter cut-off drains to direct off-site water around the site shall be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers shall be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system would be undertaken by the contractor prior to the commencement of construction. - The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment 	To minimize water quality impacts	MTRC / Contractor	Works area MA	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates</p> <ul style="list-style-type: none"> - Sand/silt removal facilities such as sand/silt traps and sediment basins shall be provided to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of efficient silt removal facilities shall be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps shall be 5 minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flowrate of 0.1m³/s a sedimentation basin of 30m³ would be required and for a flow rate of 0.5 m³/s the basin would be 150m³. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction. - All drainage facilities and erosion and sediment control structures shall be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit shall be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. - Measures shall be taken to minimize the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations shall be discharged into storm drains via silt removal facilities. - If surface excavation works cannot be avoided during the wet season (April to September), temporarily exposed slope/soil surfaces shall be covered by a tarpaulin or other means, as far as practicable, and temporary access roads shall be protected by crushed stone or gravel, as excavation proceeds. Interception 					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>channels shall be provided (e.g. along the crest/ edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements shall always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm. Other measures that need to be implemented before, during and after rainstorms are summarized in ProPECC PN 1/94.</p> <ul style="list-style-type: none"> - The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows, and all trafficked areas and access roads protected by coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows - All vehicles and plant shall be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facility shall be provided at every construction site exit where practicable. Wash-water shall have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road shall be paved with sufficient backfill toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. - Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. - Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage 					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>system and storm runoff being directed into foul sewers.</p> <ul style="list-style-type: none"> - Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes. - Bentonite slurries used in diaphragm wall construction shall be reconditioned and reused wherever practicable. Temporary enclosed storage locations shall be provided on-site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC PN 1/94 shall be adhered to in the handling and disposal of bentonite slurries. 					
S9.32 & S9.33	S 8.5 & S 8.6	<p>General Construction Activities</p> <ul style="list-style-type: none"> - Construction solid waste, debris and refuse generated on-site shall be collected, handled and disposed of properly to avoid entering any nearby stormwater drain. Stockpiles of cement and other construction materials shall be kept covered when not being used. Requirements of the solid waste management are described in Section 7 of this EIA Report. - Oils and fuels shall only be used and stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to nearby stormwater drain, all fuel tanks and storage areas shall 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 shall be drained of rainwater after a rain event. 	To minimize water quality impacts	MTRC / Contractor	Works area MA	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
S9.34	S 8.7	Sewage from Construction Workforce - Temporary sanitary facilities, such as portable chemical toilets, shall be employed on-site where necessary to handle sewage from the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and would be responsible for appropriate disposal of waste matter and maintenance of these facilities.	To minimize water quality impacts	MTRC / Contractor	Works area MA with on-site sanitary facilities	Construction phase	Implemented
S9.35	S 8.8	Tunnelling Wastewater Discharge Wastewater with a high level of suspended solids should be treated before discharge by settlement in tanks with sufficient retention time. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater. In case of very high levels of suspended solids, an on-site pre-packaged treatment plant may be required with the addition of flocculants to improve the settlement of solids. A discharge licence under the WPCO would be required for discharge to the stormwater drain. It may be a stipulation of the WPCO licence to require the Contractor to monitor the quality / quantity of the discharge to show compliance with the conditions of the licence.	To minimize water quality impacts	MTRC / Contractor	Works area MA with tunneling works	Construction phase	Implemented
Hazard to Life							
S10	S10.1	Blasting activities regarding transport, storage and use of explosives should be supervised and audited by competent site staff to ensure strict compliance with the blasting permit conditions.	To ensure that the risks from the proposed explosives storage, handling and transport would be acceptable	MTRC / Contractor	Works area MA at which explosives would be stored and/or used.	Construction phase	Implemented
S10	S10.1	Delivery vehicles shall not be permitted to remain unattended within the magazine. In addition, they shall not be allowed to park overnight, or when not in use, within the magazine and its audits	To reduce the risk of fire within the magazine	MTRC / Contractor	Explosive Magazine	Operational phase	Being implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
S10	S10.1	Blast doors or heavy duty blast curtains should be installed at the access adits and shafts to prevent flyrock, and control the air over-pressure	To reduce the risk of injury due to flyrock during the WIL construction	MTRC / Contractor	At suitable locations, access adits and shafts for Works Area MA	Construction phase	Implemented
S10	S10.1	Detonators shall not be transported in the same vehicle with other Class 1 explosives	To reduce the risk of explosion during the transport of cartridged emulsion	MTRC / Contractor	-	Construction phase	Being implemented
Air Quality (Construction Phase)							
Table 11.10	S9.27	Open work areas at temporary magazine site Active operating area of 50% Watering two times a day with complete coverage of active construction area	To minimize dust impacts	MTRC / Contractor	Open works area at magazine site	Construction phase	Implemented
S 11.42	S 9.28	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: - Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - Use of frequent watering for particularly dusty construction areas and areas close to ASRs. - Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines. - Open stockpiles shall be avoided or covered. Where possible,	To minimize dust impacts	MTRC / Contractor	Works area MA	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>prevent placing dusty material storage piles near ASRs.</p> <ul style="list-style-type: none"> - Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. - Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. - Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading points, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. - Imposition of speed controls for vehicles on unpaved site roads. 8 kilometers per hour is the recommended limit. - Where possible, routing of vehicles and positioning of construction plant shall be at the maximum possible distance from ASRs. - Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. - Cement or dry PFA delivered in bulk shall be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed. - Loading, unloading, transfer, handling or storage of bulk cement or dry PFA shall be carried out in a totally enclosed system or facility, and any vent or exhaust shall be fitted with an effective fabric filter or equivalent air pollution control system. 					

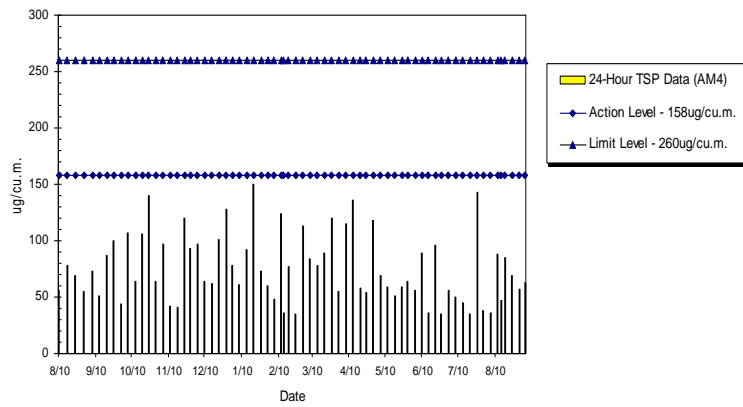
**Table C2 Implementation Schedule Specific for Works Area MA - Underground Magazine Site
(Status as of 9 November 2010)**

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Reference
Ecological Impact (Construction Phase)							
App.2.3 – S. 6.1		Proposed works shall be designed to avoid or minimize direct impacts to natural habitats in the works area wherever possible.	To protect the natural habitats in the works area	MTRC / Contractor	Works Area MA	Design and construction of the magazine site	Implemented
App.2.3 – S. 6.2		Planting of vegetation shall be provided to compensate for the unavoidable loss of tall shrubland and woodland habitats. It shall be provided to re-vegetate the areas which would be 1m beyond the security fencing and temporarily affected by the construction works (e.g. slope works, erecting security fence) after the construction phase. The plant species selected for re-vegetation shall make reference to the existing habitats.	To compensate for the ecological impacts associated with the loss of vegetation	MTRC / Contractor	Works Area MA	Construction phase of the magazine site	To be implemented upon completion of magazine operation
App.2.3 – S. 6.2		Suitable plants, preferably with native species, shall be planted within the boundary of the completed magazine site to compensate for unavoidable loss of understorey vegetation resulting from the proposed works on-site after the decommissioning of the magazine site. The compensatory planting shall make use of native plant species with flowers/fruits to attract wildlife.	To compensate for the ecological impacts associated with the loss of vegetation	MTRC / Contractor	Works Area MA	After completing the construction of the magazine site	To be implemented upon completion of magazine operation
App.2.3 – S. 6.3		The two individuals of Hong Kong Pavetta (<i>Pavetta hongkongensis</i>) located within the footprint of the proposed tunnel portal and access entrance shall be transplanted to a suitable nearby tall shrubland or woodland habitats. Transplantation shall be supervised by a suitably qualified ecologist/horticulturalist	To protect the 2 species from the proposed works within the works area	MTRC / Contractor	Works Area MA	Prior to the construction phase of the magazine site	Implemented
App.2.3 – S. 6.4		The trees located within the works area shall be preserved as far as practicable. If tree felling is unavoidable, feasibility of tree transplantation and compensatory planting shall be explored shall be implemented.	To protect the existing trees within the works area	MTRC / Contractor	Works Area MA	Prior to the construction phase of the	Implemented

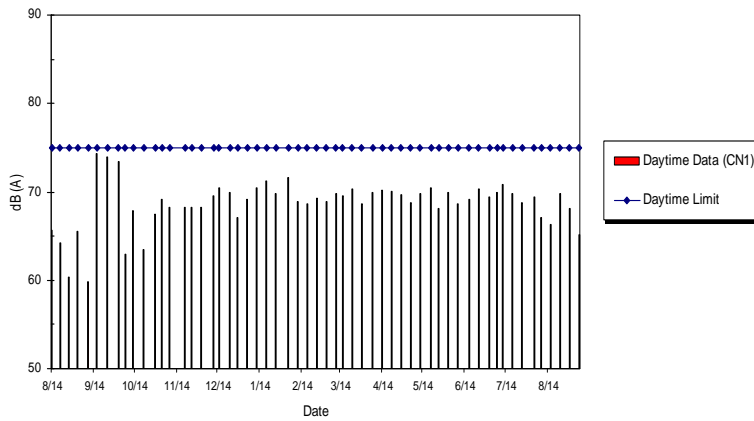
EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Reference
						magazine site	
App.2.3 – S. 6.5		All the existing trees and species of conservation importance (i.e. the two identified Silver-back <i>Artocarpus</i> , <i>Artocarpus hypargyreus</i>) located near the proposed works site shall be fenced off and the trunk shall be protected with hessian sacking as far as possible.	To protect the existing trees and the species of conservation importance near the works area	MTRC / Contractor	Works Area MA	Construction and operation phase of the magazine site	Implemented
App.2.3 – S. 6.6		Noise control measures including the use of quiet excavation methods, quiet construction plant and temporary noise barriers shall be implemented	To minimize the noise disturbance to the wildlife near the works area	MTRC / Contractor	Works Area MA	Construction and operation phase of the magazine site	Implemented
App.2.3 – S. 6.7		Standard good site practice measures shall be implemented, including <ul style="list-style-type: none"> • Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats. • Construction activities should be restricted to work areas that would be clearly demarcated. The work areas should be reinstated after completion of the works. • Waste skips should be provided to collect general refuse and construction wastes. The wastes would be disposed of timely and properly off-site. • General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. • Open burning on works sites is illegal, and should be strictly prohibited. 	To minimize ecological impacts	MTRC / Contractor	Works Area MA	Construction and operation phase of the magazine site	Implemented

Appendix D
Impact Monitoring Graphical Plots

WIL-AM4 24hr TSP Level at Chee Sing Kok Social Centre (Aug 2009 - Sept 2010)



WIL-CN1 Noise Level at Chee Sing Kok Social Centre, Aug 2009 - Sept 2010



Appendix E

Certified Arborist Final Report for Magazine Site



West Island Line Consultancy Agreement No. C735F 708 – Magazine Site Final Report

Prepared by:

Certified Arborist
Signature:

Mike Leung



Date:
Revision

3 November 2011
3



Contents

1	Introduction	3
2	AT260 Pavetta hongkongensis 香港大沙葉	4
3	AT261 Artocarpus hypargyreus 白桂木	9
4	AT262 Artocarpus hypargyreus 白桂木	15
5	AT263 Pavetta hongkongensis 香港大沙葉	21
6	Conclusion	25

Figure 1 – Location of AT260, AT261, AT262, and AT263

Appendix A – Tree Heath Assessment Methodology

1 Introduction

The temporary magazine for the construction of WIL is located at Victoria Road (Works Area MA referred in the EP). The EIA Report identifies flora species of conservation interest in the area; and the EP requires the protection and / or transplantation of the identified four plants (2 *Pavetta hongkongensis* and 2 *Artocarpus hypargyreus*) that might be affected by the construction.

The construction of the temporary magazine for WIL commenced in July 2009, and completed in September 2010. The magazine site is fully fenced off by security fence for the operation. Partial of the works area in construction phase has been returned to the government. And now, the four protected plants fall outside the works area and outside the security fence of the magazine site. Figure 1 shows the current locations of the four plants and the security fencing.

This report is the final inspection report of the four protected plants. In this report, the health conditions of the four protected plants after construction are assessed. Photos of the plants in different period of time are also included in the report.

The methodology of tree health assessment is illustrated in Appendix A.



2 AT260 *Pavetta hongkongensis* 香港大沙葉



This plant was found inclined horizontally in the initial survey in July 2009. The Tree Protection Plan for AT260 submitted to AFCD in September 2009 proposed to adjust this plant to a less inclining angle. The photo taken in November 2009 shows that this plant has been straightened up since then.

As observed on September 2010, the tree was retained tree being fenced off from the magazine site. Foliage density, color and size of AT260 were normal. No sign of infection was observed or recorded. No damage was recorded during the construction phase. Though this plant is outside the security fence from the magazine site, it was retained fenced off. The tree was in good health.

The tree has no change in health condition as observed in the last inspection in November 2011. For better tree growth, it is recommended to remove the bamboo support and the orange plastic net away from the tree.

A photographic record of AT260 from November 2009 to November 2011 is presented below:

	<p>Condition of AT260 in September 2009</p>
	<p>Condition of AT260 in November 2009</p>

	<p>Condition of AT260 in March 2010</p>
	<p>Condition of AT260 in June 2010</p>



Condition of
AT260 in
September 2010



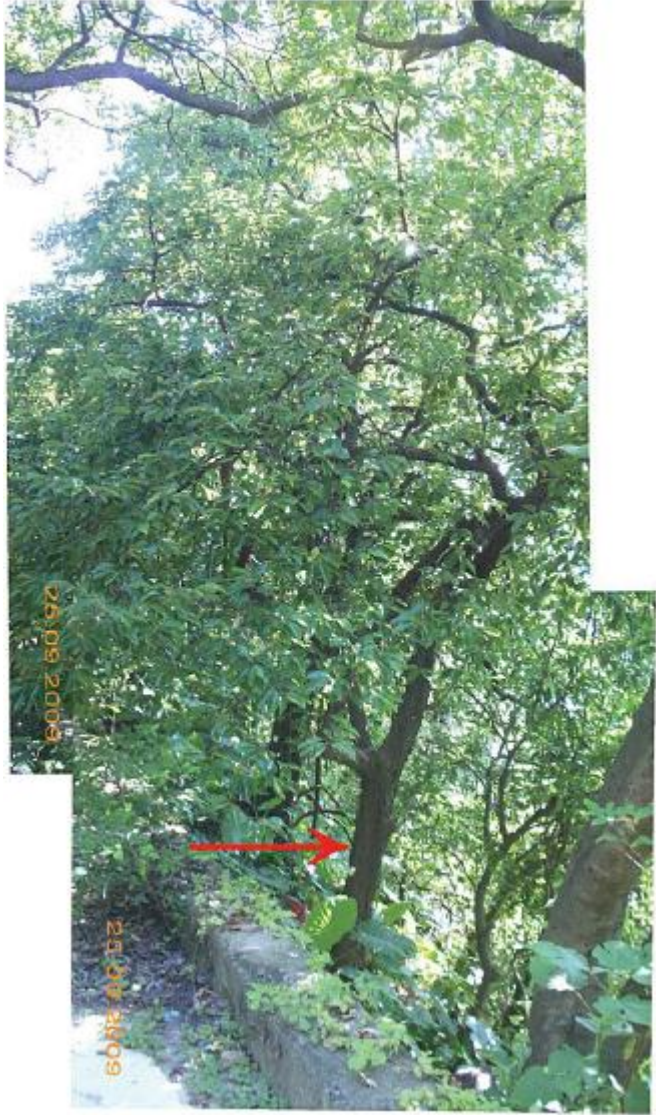
Condition of
AT260 in
November 2011


3 AT261 *Artocarpus hypargyreus* 白桂木


The tree has been outside the hoarding of the construction site from the beginning. No work from the construction of magazine site disturbed it.

As observed in September 2010, the tree was in good health with dense foliage. Climbers recorded in the initial survey had been removed in the construction stage. Abundant fruits were recorded in the summer with good new shoots growth reflecting the tree was in good vigor. No sign of pest infection was observed.

The tree has no change in health condition as observed in the last inspection in November 2011.

	Condition of AT261 in September 2009
--	--

	<p>Condition of AT261 in November 2009</p>
--	--

 <p>22 Mar 2010</p>	<p>Condition of AT261 in March 2010</p>
--	---



Condition of
AT261 in June
2010



Condition of
AT261 in
September
2010


	<p>Condition of AT261 in November 2011</p>
---	--

4 AT262 *Artocarpus hypargyreus* 白桂木

The tree has been outside the hoarding of the construction site from the beginning. No work from the construction of magazine site has disturbed it.

As observed in September 2010, the tree was in good health with dense foliage. Climbers recorded in the initial survey had been removed during the construction stage. Abundant fruits were recorded in the summer with good new shoots growth reflecting the tree was in good vigor. No sign of pest infection was observed.

The tree has no change in health condition as observed in the last inspection in November 2011.

	<p>Condition of AT262 in September 2009</p>
--	---



Condition of
AT261 in
November 2009



Condition of
AT261 in March
2010



Condition of
AT261 in June
2010



Condition of
AT261 in
September 2010






Condition of
AT262 in
November 2011



5 AT263 *Pavetta hongkongensis* 香港大沙葉

This plant was transplanted in the end of August 2009 and remained in good health. The transplantation shock was minimal to the plant as reflected by its dense foliage and good vigor in November 2009. Flower blooms were recorded in March 2010. No sign of pest infection was observed.

The tree has no change in health condition as observed in the last inspection in November 2011.

	<p>Condition of AT263 in September 2009</p>
--	---

	<p>Condition of AT263 in November 2009</p>
	<p>Condition of AT263 in March 2010</p>

	<p>Condition of AT263 in June 2010</p>
	<p>Condition of AT263 in September 2010</p>

	<p>Condition of AT263 in November 2011</p>
--	--

6 Conclusion

The four protection plants in Works Area MA under the EP have been properly protected and maintained during the construction of the temporary magazine. These plants remain in good health.

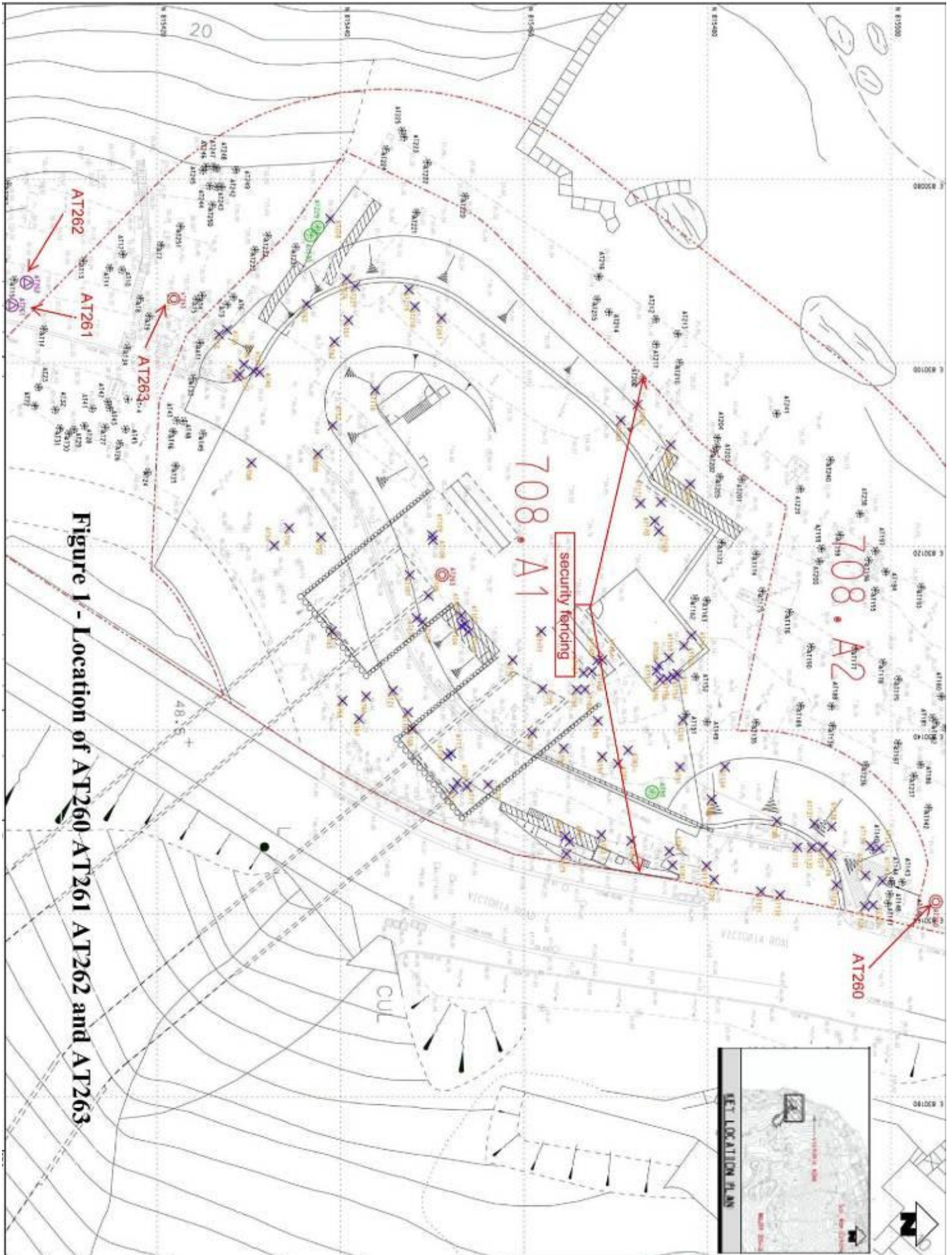


Figure 1 - Location of AT260 AT261 AT262 and AT263

Appendix A- Tree Health Assessment Methodology

Each inspected tree was evaluated in accordance with the following criteria and considerations:

Foliage

- size of leaf color and size as compared with same species of similar size
- evidence of insect or fungal infections in leaves:
- evidence of leaf damage owing to typhoons or vandalism.

Twigs

- shoot growth and die-back of twigs in the crown
- evidence of insect and fungal infections on the twigs and branches;
- evidence of twig damage

Branches

- dead or crossing branches;
- evidence of heavy horizontal branches which may make the tree unstable”
- the presence of broken, damaged or cut branches as a possible site for infections;
- evidence of damaged branches which may make the tree unbalanced or unstable;

Trunk

- evidence of cavities or internal rot which can be revealed by discoloured bark, moisture seeping through the bark or bracket fungi
- open cavities and bark damage.

Parasitism / Tangling

- Occurrence of aggressive climbers, parasitic plants;
- Evidence of serious competition between closely located trees - tangling.

The health of each tree was graded in accordance with following:

Good. Trees demonstrate to be in good vigour and have good chance of long term survival can be graded as good;

Fair Trees with fair vigour demonstrated on the foliage, growth and etc. illustrated above can be graded fair;

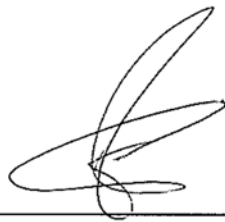
Poor Trees serious health features can be graded poor;

Very Poor Trees with very serious health features and with a low chance of recovery, even with remedial measures, can be graded poor;

MTR Corporation Limited

West Island Line Project

Final Environmental Monitoring and Audit Report
(Part 1)

A handwritten signature in black ink, consisting of several overlapping loops and a long horizontal stroke at the end.

Verified by: _____

Position: Independent Environmental Checker

Date: 7 July 2015

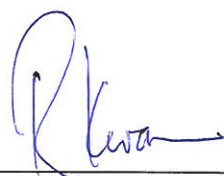
MTR Corporation Limited

West Island Line Project

Final Environmental Monitoring and Audit Report

(Part 1)

Revision A

Certified by:  _____

Position: Environmental Team Leader

Date: 3 July 2015

EXECUTIVE SUMMARY

The West Island Line Project commenced on 10 July 2009. The EM&A programme for the West Island Line Project commenced on 10 August 2009, the commencement date of construction of the Project. As the construction works for the WIL Project had been substantially completed and the WIL Project commenced operation on 28 December 2014, however Sai Ying Pun Station is still not yet open to public. There remains outstanding works including entrances and passenger adits which are under construction in Works Areas L1, M1, N1 and construction materials storage in Works Area. Those construction activities that have potential to result in a significant environmental impact will not be carried out in the WIL Project Works Areas except Works Areas B, L1, M1 and N1. This final Environmental Monitoring and Audit (EM&A) Report Part 1 for West Island Line Project presents the results of EM&A works and the impact monitoring for the construction works undertaken during the period of 10 August 2009 to 9 January 2015 for the WIL Project Works Areas except Works Areas B, L1, M1 and N1. The results of EM&A works and the impact monitoring for the construction works in Works Areas B, L1, M1 and N1 are to be presented in final Environmental Monitoring and Audit Report Part 2.

The ET Leader proposes to terminate the regular construction dust and noise monitoring at the monitoring stations together with the regular site inspections for the WIL Project Works Areas except those for Works Areas B, L1, M1 and N1 after the WIL Operation.

Impact monitoring for air quality and noise were conducted in accordance with the EM&A Manual in the reporting periods, there was no breach of Limit Levels for air monitoring.

There was no successful environmental prosecution in the reporting period of 10 August 2009 to 9 January 2015.

Site inspections were conducted by the Environmental Team on a weekly basis to monitor proper implementation of environmental pollution control and mitigation measures for the Project.

There were non-compliances identified in the reporting period of 10 August 2009 to 9 January 2015 for the WIL Project which were two exceedances of the Limit Level for the noise monitoring.

The Environmental Permit (EP-313/2008/J) issued by EPD on 1 September 2014 is used for the WIL Project.

In the reporting period, there was no reporting change of circumstances which may affect the compliance with the recommendations of the EIA Report.

EXECUTIVE SUMMARY

1 INTRODUCTION

- 1.1 Project Background***
- 1.2 Project Programme***
- 1.3 Coverage of the Final EM&A Report Part 1***

2 PROJECT INFORMATION

- 2.1 Project Management Organization***
- 2.2 Project Works Areas and Environmental Monitoring Locations***
- 2.3 Summary of EM&A Requirements***
- 2.4 Implementation of Environmental Mitigation Measures***
- 2.5 Construction Activities in the Reporting Period***

3 IMPACT MONITORING

- 3.1 Air Quality***
- 3.2 Noise***
- 3.3 Action taken in Event of Exceedence***
- 3.4 Ground-borne Noise for TBM operation***

4 LANDSCAPE AND VISUAL

- 4.1 Monitoring Requirements***
- 4.2 Audit Results***

5 WASTE MANAGEMENT

6 WATER QUALITY

7 CULTURAL HERITAGE

8 RECORD OF ENVIRONMENTAL COMPLAINTS

9 RECORD OF NON- COMPLIANCES

10 NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

11 STATUS OF STATUTORY SUBMISSIONS

- 11.1 Submissions required under Environmental Permits***
- 11.2 Statutory Permits and Licenses***

12 SITE INSPECTIONS

12.1 Observations

12.2 Other Notable Events

12.3 Solid and Liquid Waste Management

12.4 Effectiveness and Efficiency of Mitigation Measures

12.5 Review of WIL EIA Predictions

13 CONCLUSIONS

List of Appendices

Appendix A *Environmental Quality Performance Limits*

Appendix B *Event Action Plans*

Appendix C *Implementation of Environmental Mitigation Measures*

Appendix D *Impact Monitoring Graphical Plots*

1 INTRODUCTION

1.1 Project Background

MTR Corporation Limited (MTRCL) proposes to build a new railway line, the West Island Line (WIL) which is an extension of the Island Line to the Western District. The route length of the fully underground WIL is approximately 3 km with three new underground stations namely Sai Ying Pun Station (SYP), University Station (UNI) and Kennedy Town Station (KET).

1.2 Project Programme

The West Island Line Project commenced on 10 July 2009. Commencement of construction was on 10 August 2009. The commencement of operation of the Project was on 28 December 2014.

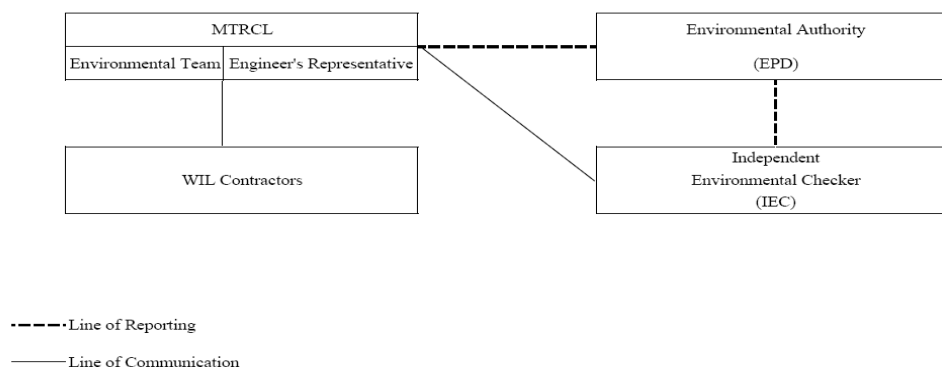
1.3 Coverage of the EM&A Report

The EM&A programme for the West Island Line Project commenced on 10 August 2009. This final Environmental Monitoring and Audit (EM&A) Report Part 1 for the WIL Project presents the results of EM&A works and the impact monitoring for the construction works undertaken during the period of 10 August 2009 to 9 January 2015 for the WIL Project Works Areas except Works Areas B, L1, M1 and N1.

2 PROJECT INFORMATION

2.1 Project Management Organization

The WIL Project organization chart is presented in Figure 1. Contacts of key environmental personnel of the Project are shown in Tables 1.



PROJECT ORGANIZATION
Figure 1

Table 1 Contact List of Key Personnel for Project Management

Organization	Name	Telephone
Engineer's Representative		
Project Manager – WIL Civil	Mr. Stephen Hamill	3411 9811
Independent Environmental Checker		
Senior Environmental Consultant	Mr. Coleman Ng	2268 3097
Environmental Team		
Environmental Team Leader	Mr. Richard Kwan	2688 1179 / 9819 9027
Contact 703 Contractor		
Project Director	Mr. Seved Robin	2541 1511
General Construction Manager	Mr. Emmanuel Clech	2541 1586
Contact 704 Contractor		
Project Director	Mr. C.C. Hau	3559 9003
Contact 705 Contractor		
Project Director	Mr. Brian Gowran	9865 0100
Contact 706 Contractor		
Project Manager	Mr. Cheng Kam Man	9650 1739
Construction Manager	Mr. Tai Yiu Tong	9047 1830
Environmental Manager	Mr. Andrew Hui	9424 1926
Contact 706A Contractor		
Project Manager	Mr. Hobby H.M. Lau	9828 0638
Site Agent	Mr. Stan Y.S. Lo	6276 0908
Environmental Officer	Mr. Lee Ho Cheong	9416 8347
Contact 708 Contractor		
Project Manager	Mr. Jason Cheng	9837 9323
Tunnel Engineer	Mr. John Wai	6083 9220
Environmental Engineer	Mr. M. K. Cheung	9096 7254

2.2 Project Works Areas and Environmental Monitoring Locations

The WIL Project works areas and the locations of environmental monitoring stations are shown in Figures 2 and 3 to 7 respectively. Table 2 shows the details of the active monitoring stations as reported in Sections 3.1 and 3.2 below.

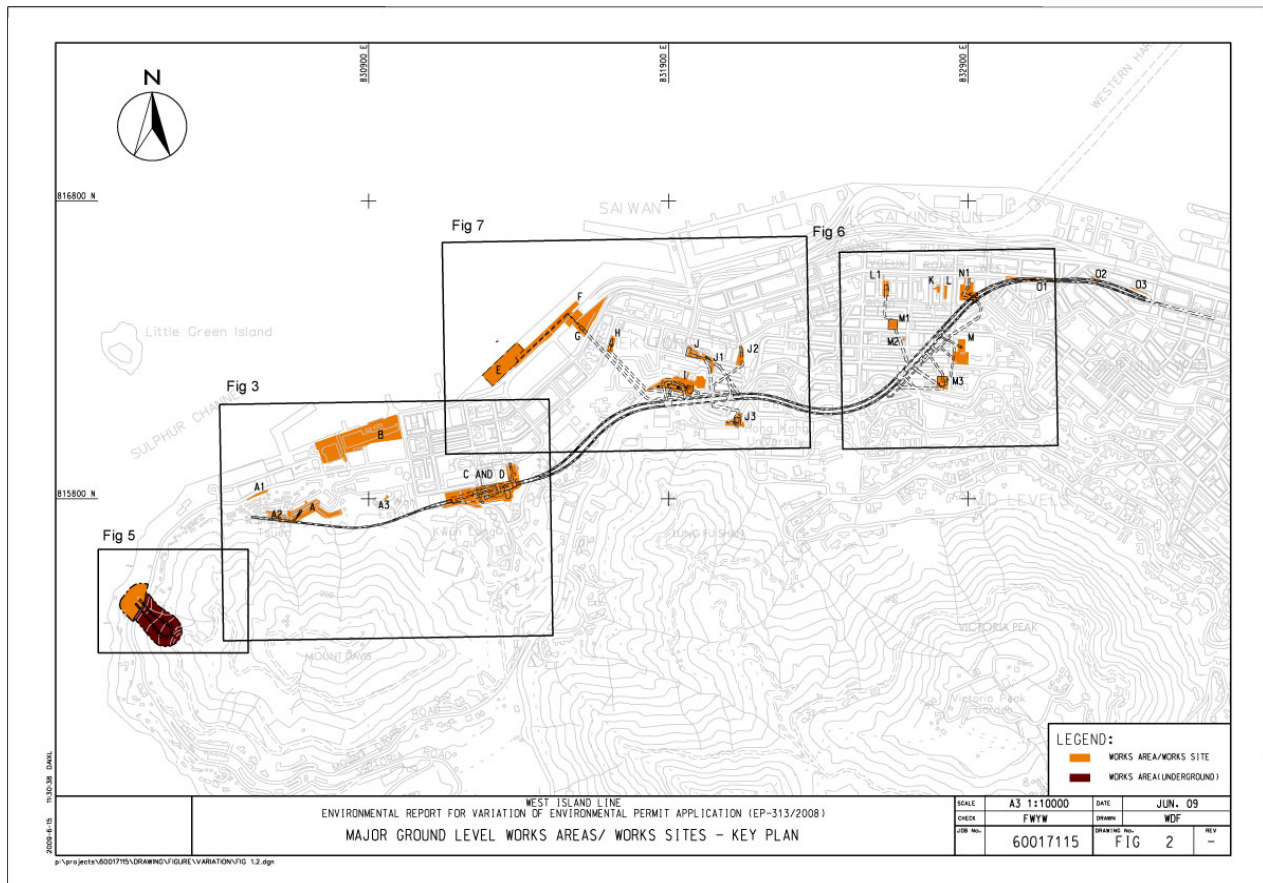


Table 2 Summary of impact air quality and noise monitoring stations

ID	Premise	Monitoring Location
Air		
AM1a+	Kwun Lung Lau Block 1	Building facing Works Area C (propose to terminate)
AM2	Victoria Public Mortuary	Building facing Works Area B (active)
AM3a*	Hong Kong Institute of Vocational Education (Tsing Yi) Kennedy Town Centre	Building facing Works Area A (propose to terminate)
AM4~	Chee Sing Kok Social Centre of the Humanity Love (current name for the premise)	Adjacent to building and facing Works Area MA (inactive)
AM5a%	Kennedy Town Fire Station	Building facing Works Area E (propose to terminate)

ID	Premise	Monitoring Location
AM6a*	St. Paul's College Primary School	Building facing Works Area I (propose to terminate)
AM7a*	Hill Court	Building facing Works Area J (propose to terminate)
AM8	Bon-Point	Building facing Works Area M3 (propose to terminate)
AM9a^	No. 28 Sai Woo Lane	Building facing Works Area N1 (active)
AM10	Western Garden, Ivy Tower	Building facing Works Area M1 (active)
Noise		
CN1~	Chee Sing Kok Social Centre of the Humanity Love (current name for the premise)	Adjacent to building and facing Works Area MA (inactive)
CN2	Hong Kong Institute of Vocational Education (Tsing Yi) Kennedy Town Centre	Building facing Works Area A (propose to terminate)
CN3	Lui Ming Choi Primary School	Building facing Works Area B (active)
CN4	Luen Tak Apartments	Building facing Works Area C (propose to terminate)
CN5	Western Court (Block 1)	Building facing Works Area J2 (propose to terminate)
CN6	Yick Fung Garden (Block A)	Building facing Works Area G (propose to terminate)
CN7a#	Bowie Court	Building facing Works Area J3 (propose to terminate)
CN8	St. Paul's College Primary School	Building facing Works Area I (propose to terminate)
CN9	Hill Court	Building facing Works Area J (propose to terminate)
CN10\$	Graceful Court	Building facing Works Area J1 (not used)
CN11b@	The Belcher's Tower 8	Building facing Works Area H (propose to terminate)
CN12	Wah Po Building	Building facing Works Area E (propose to terminate)
CN13	No. 18-20 Eastern Street	Building facing Works Area N1 (active)
CN14	Bon-Point	Building facing Works Area M3 (propose to terminate)
CN15	Ivy Tower	Building facing Works Area M1 (active)
CN16	No. 9-11 Ki Ling Lane	Building facing Works Area L1 (active)
CN17	No. 1 Third Street	Building facing Works Area M

ID	Premise	Monitoring Location
		(propose to terminate)
CN18	Princeton Tower	Building facing Works Area O1 (propose to terminate)
CN20	Ka On Building	Building facing Works Area O3 (propose to terminate)
CN21	The Merton (Block 2)	Building facing Works Area B (active)

* The alternative air monitoring stations AM3a, AM6a and AM7a were approved by EPD on 10 August 2009

^The alternative air monitoring station AM9a was approved by EPD on 26 November 2009

+The alternative air monitoring station AM1a was approved by EPD on 7 September 2010

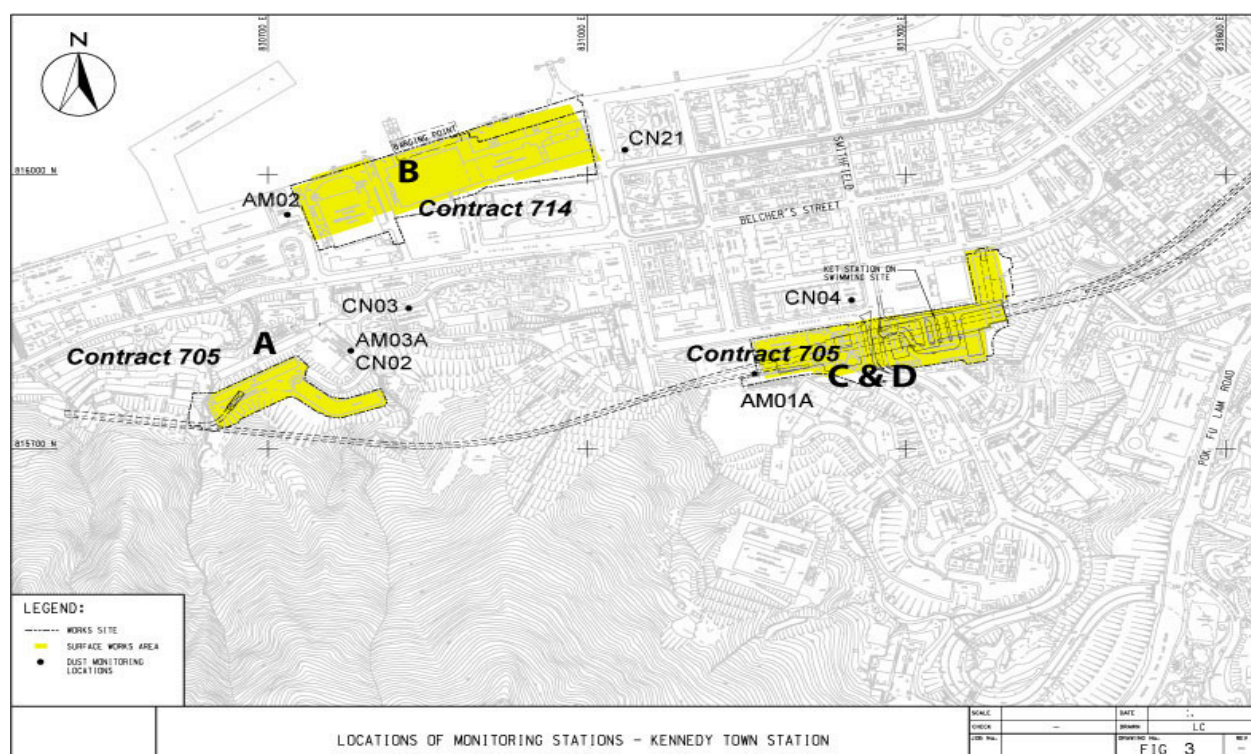
%The alternative air monitoring station AM5a proposal was submitted to EPD on 22 September 2010

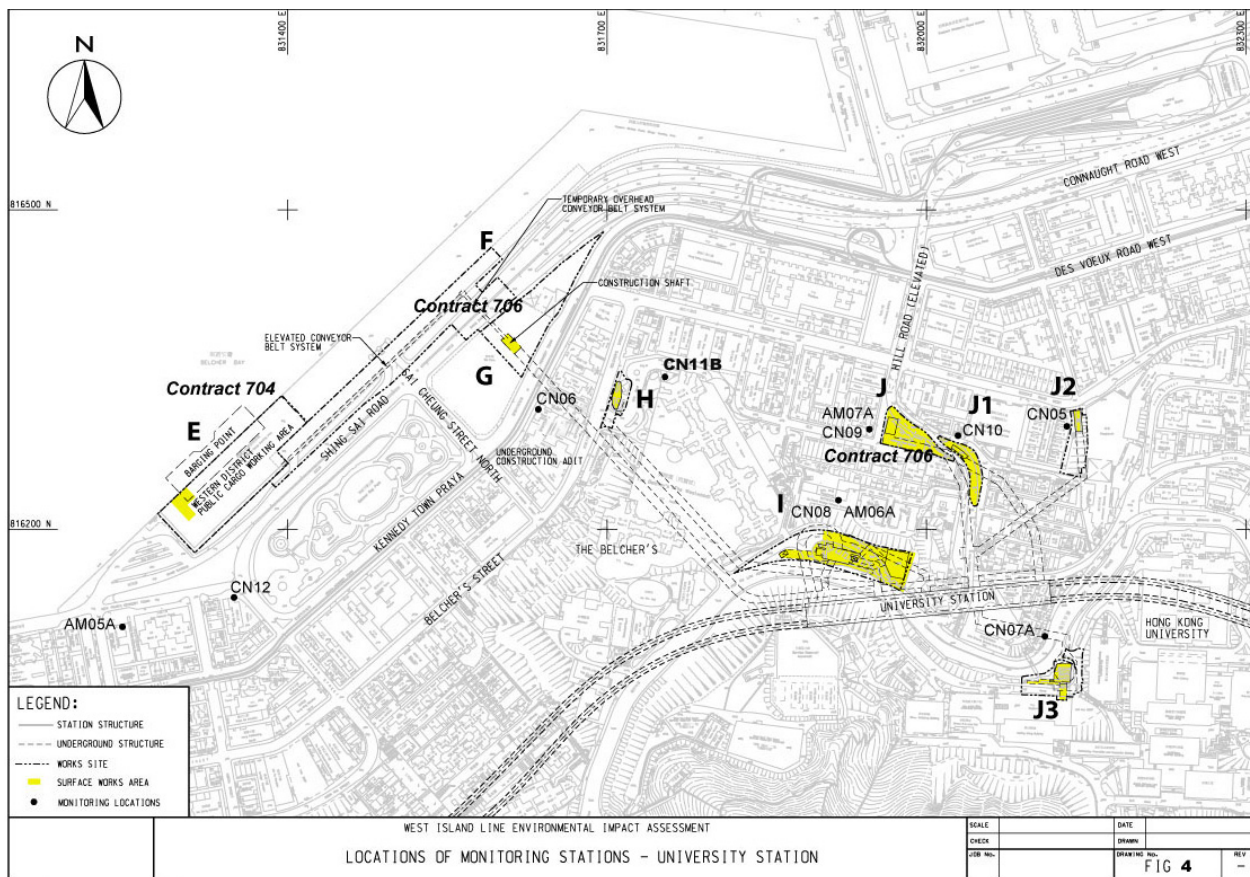
The alternative noise monitoring station CN7a was approved by EPD on 1 September 2010

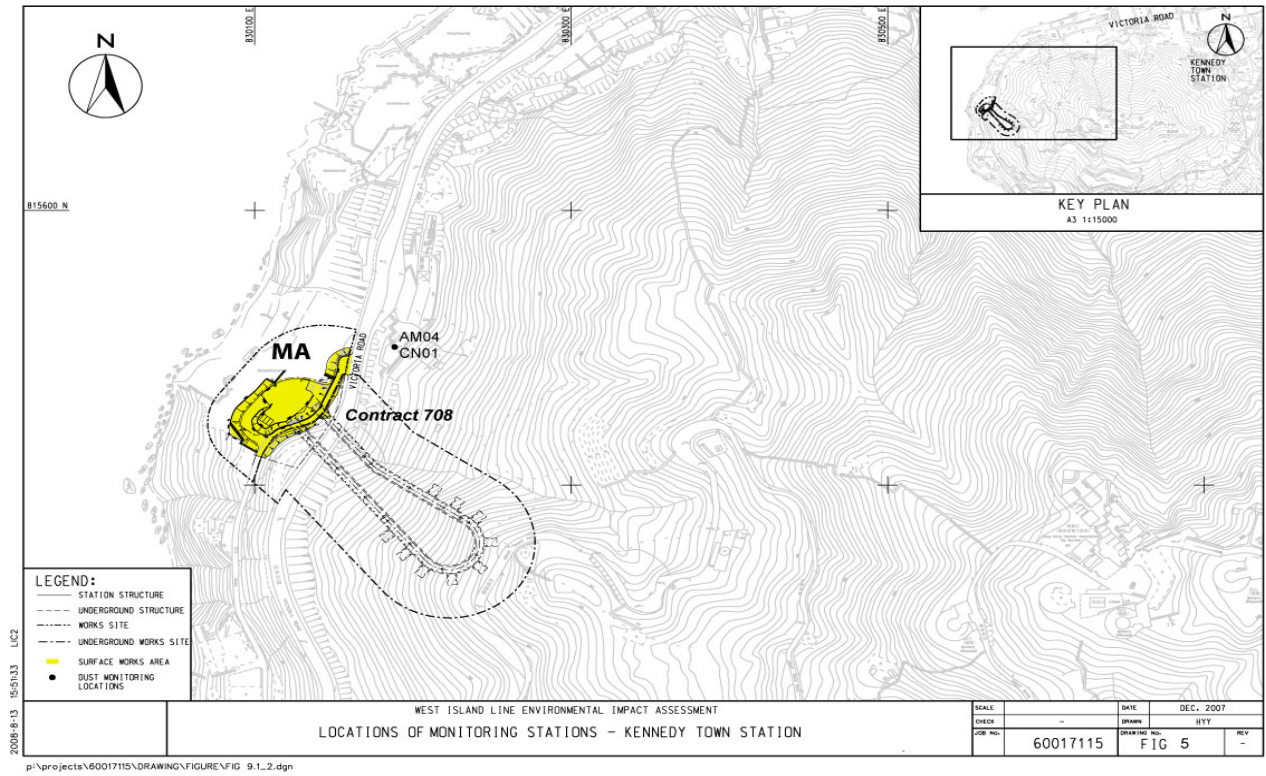
@ The alternative noise monitoring station CN11b was approved by EPD on 14 June 2011

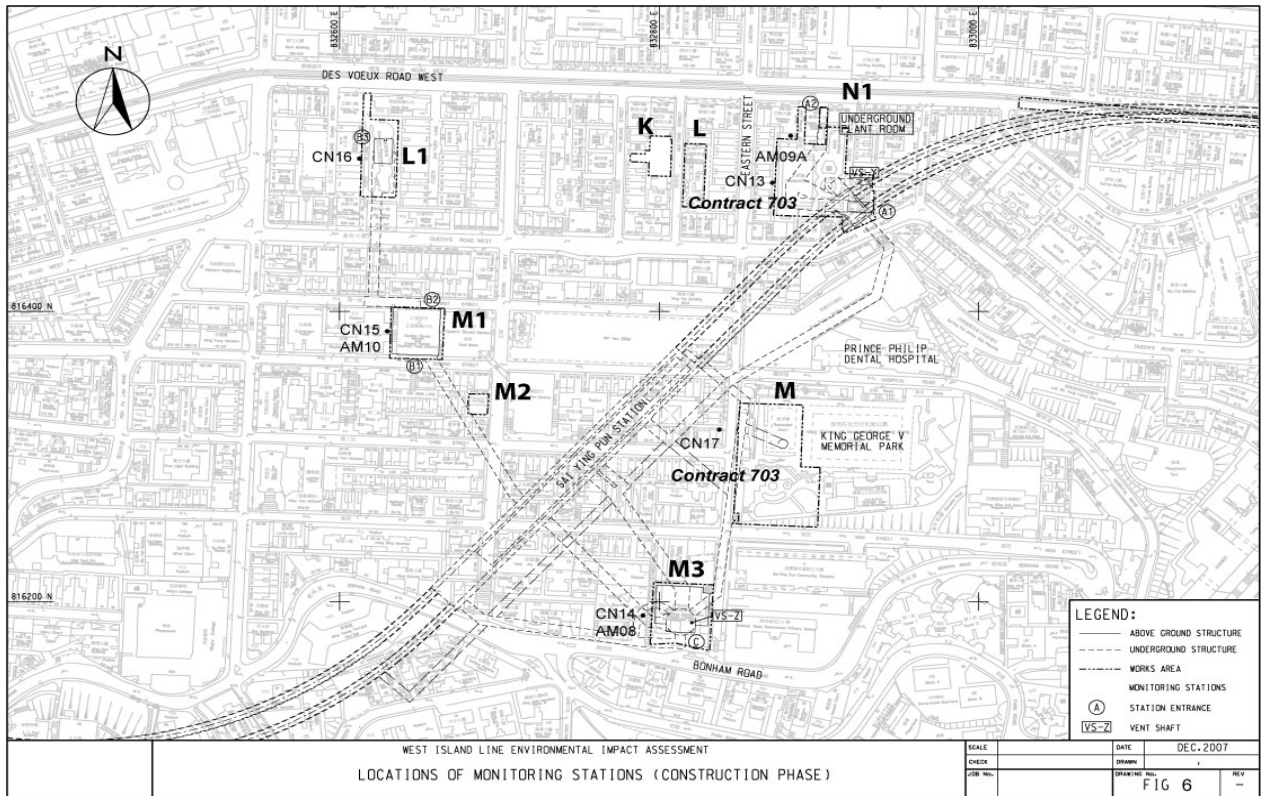
\$ The noise monitoring station CN10 was not used due to deletion of vent shaft construction

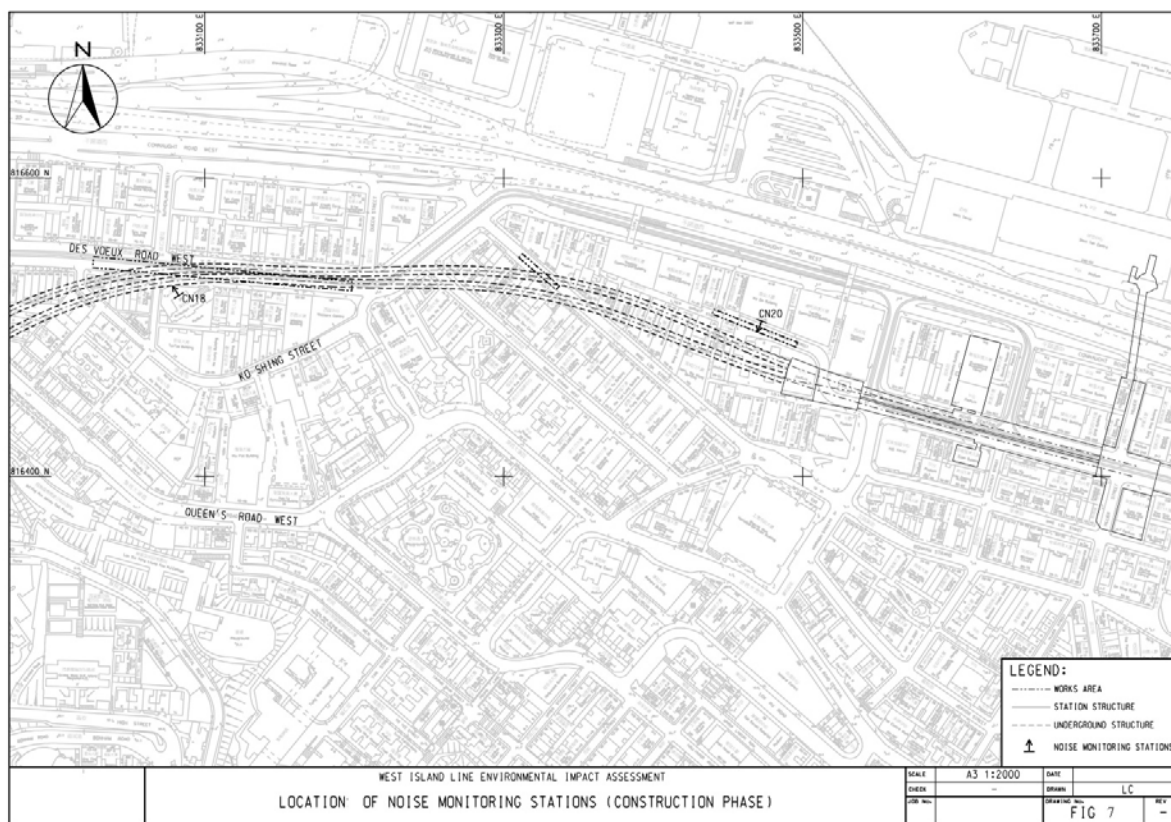
~ Final EM&A Report for Works Area MA was submitted to EPD on 16 January 2012











2.3 Summary of EM&A Requirements

The EM&A programme requires environmental monitoring for air quality, noise, water quality and waste management as specified in the EM&A Manual.

In the reporting months, 24-hour TSP levels at the air monitoring stations shown in Table 2 were monitored during the construction stage.

In the reporting months, construction noise levels at the noise monitoring stations shown in Table 2 were monitored during the construction stage.

A summary of impact EM&A requirements as applicable to this EM&A Report is presented in Table 3 below.

Table 3 Summary of impact EM&A Requirements

Parameters	Descriptions	Locations	Frequencies	Duration
Air Quality	24-hr TSP	Shown in Table 2	Once every 6 days	During construction stage
Noise	Leq(30min)	Shown in Table 2	Once a week	During construction stage

Parameters	Descriptions	Locations	Frequencies	Duration
Waste	On-Site Audit	Active Works Sites	Monthly	During construction stage
Wastewater	On-Site Audit	Active Works Sites	Monthly	During construction stage
General Site Conditions	Environmental Site Inspection	Active Works Sites	Weekly	During construction stage

Environmental Quality Performance Limits for air quality and noise are shown in Appendix A. The Event Action Plan for air quality and noise are shown in Appendix B.

The environmental impact hypotheses with respect to construction air quality and construction noise detailed in the WIL EIA Report are tested throughout the construction stage of the WIL Project by the regular construction impact monitorings.

The WIL Civil Works Contractors are required to implement the mitigation measures as specified in the EP, EIA Report and EM&A Manual. A schedule of the implementation of mitigation measures identified in the WIL Project EIA Report is given in Appendix C.

2.4 Implementation of Environmental Mitigation Measures

The WIL Civil Works Contractors are required to implement the mitigation measures as specified in the EP, EIA Report and EM&A Manual. During the regular environmental site inspections, the Contractors' implementation of mitigation measures were inspected and reviewed. It is concluded that the environmental mitigation measures as recommended in the approved WIL Project EIA Report had been implemented satisfactorily. The implementation of mitigation measures identified in the WIL Project EIA Report is given in Appendix C.

2.5 Construction Activities in the Reporting Period

Major construction activities carried out by the WIL Civil Works Contractors during the reporting period include:

Contract 703 - Works Area K/L

- No site work
- Reinstatement completed

Contract 703 - Works Area M

- Tunnel excavation inside noise enclosure completed

Contract 703 - Works Area N1

- Down track tunnel excavation by TBM towards SHW completed
- Shaft construction completed
- Entrance construction completed

Contract 703 - Works Areas O1/O2/O3

- Demolition of overrun tunnel completed at Works Area O1
- Road reinstatement completed at Works Area O3
- Site preparation for modification of vent shaft at Ko Shing Street which is a non-EP work completed

Contract 704 - Works Area E

- Operation of barging point completed
- Dismantling of barging point completed
- Dismantling of noise enclosure completed
- Reinstatement completed

Contract 704 - Works Area G

- Construction of UNI adits inside noise enclosure completed
- UNI Station construction completed
- Finishing work completed

Contract 704 - Works Area H

- Adit construction completed
- Entrance construction completed
- Finishing work completed
- Reinstatement completed

Contract 704 - Works Area I

- Shaft construction completed
- Entrance construction completed
- Finishing work completed
- Reinstatement completed

Contract 704 - Works Area J

- Excavation by blasting for Hill Road Entrance adits completed
- Adit construction completed
- Entrance construction completed
- Finishing work completed
- Reinstatement completed

Contract 704 - Works Area J2

- Adit construction under decking completed
- Entrance construction completed
- Finishing work completed
- Reinstatement completed

Contract 704 - Works Areas J3

- Shaft construction completed
- Entrance construction completed
- Finishing work completed
- Reinstatement completed

Contract 704 - Works Area L1

- Adit excavation

Contract 704 - Works Area M

- Excavation by blasting for SYP adits inside noise enclosure completed
- Construction of SYP adits inside noise enclosure completed
- SYP Station construction completed
- Finishing work completed
- Noise enclosure dismantling completed
- Reinstatement completed

Contract 704 - Works Area M1

- Bored piling completed
- Decking installation completed
- Shaft excavation completed
- Shaft construction completed
- Entrance construction completed
- Finishing work
- Reinstatement

Contract 704 - Works Area M2

- Reprovisioning of transformer and public toilet completed

Contract 704 - Works Area M3

- Shaft excavation completed
- Shaft construction completed
- Entrance construction completed
- Finishing work completed
- Reinstatement completed

Contract 704 - Works Area MA

- Management of magazine completed
- Decommissioning completed

Contract 704 - Works Area N1

- Finishing work
- Reinstatement

Contract 705 - Works Area A

- Shaft construction completed
- Vent shaft construction completed
- Finishing work completed
- Reinstatement completed

Contract 705 - Works Area B

- Operation of barging point completed
- Dismantling of barging point completed
- Management of Works Area B

Contract 705 - Works Area C

- KET Station construction completed
- Finishing work completed
- Reinstatement completed

Contract 705 - Works Area D

- KET Station construction completed
- Finishing work completed
- Reinstatement completed

Contract 706A - Works Areas A/A1/A2/A3

- Contract completed

Contract 706 - Works Area G/I/J

- Contract completed

Contract 708 - Works Area MA

- Contract completed

Contract 714 - Works Area B

- Contract completed

3 IMPACT MONITORING

3.1 Air Quality

24-Hour TSP Levels Monitoring

The sampling procedure follows that described in the App. B of Pt 50 in 40CFR Ch.1 (U.S. Environmental Protection Agency). TSP is sampled by drawing air through a conditioned, pre-weighed filter paper inside the high volume sampler at a controlled rate. After 24-hour sampling the filter paper with retained particles is collected and returned to the laboratory for drying in a desiccator followed by weighing. TSP levels are calculated from the ratio of the mass of particulate retained on the filter paper to the total volume of air sampled.

The samplers should be properly maintained. Prior to dust monitoring commencing, appropriate checks should be made to ensure that all equipment and necessary power supply are in good working condition.

Calibration Requirements

The flow rate of the high volume sampler with mass flow controller will be calibrated using an orifice calibrator. Initial calibration (five points) was conducted upon installation and prior to commissioning. Calibration was carried out every six months.

To examine the construction dust levels, 24-hour TSP monitoring was undertaken according to the EM&A Manual. The dust monitoring locations are shown in the Section 2.2 above. Monitoring results are presented in Appendix D as graphical plot. The 24-hour TSP levels when there were construction activities during the monitoring period were within the Action Level. No exceedance was found. This indicates that the construction activities did not have a noticeable adverse effect on the general air quality for the WIL Project Works Areas.

Monitoring Stations propose to terminate

The ET Leader proposes to terminate the regular construction dust monitoring at the monitoring stations AM1a, AM3a, AM5a, AM6a, AM7a and AM8. The statistical analysis of air quality monitoring data for these monitoring stations in the reporting period of 10 August 2009 to 9 January 2015 are summarized in Table 4 below. The monitoring stations AM2, AM9a and AM10 are still active for the construction works being carried out in Works Areas B, M1 and N1.

Table 4 Statistical Analysis of Air Quality Monitoring Data

AM1a- Kwun Lung Lau Block 1+ (propose to terminate)					
Number	Average ($\mu\text{g}/\text{m}^3$)	Maximum ($\mu\text{g}/\text{m}^3$)	Minimum ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
292	94.7	166.8	40.5	170	260
AM3a- Hong Kong Institute of Vocational Education (Tsing Yi) Kennedy Town Centre* (propose to terminate)					
309	93.9	153.9	35.1	155	260
AM4- Chee Sing Kok Social Centre of the Humanity Love (inactive)					
68	76.1	149.6	34.9	158	260
AM5a- Kennedy Town Fire Station% (propose to terminate)					
270	92.8	160.6	38.8	178	260
AM6a- St. Paul's College Primary School* (propose to terminate)					
326	89.5	156.1	23.7	157	260
AM7a- Hill Court* (propose to terminate)					
343	88.9	149.9	23.1	151	260
AM8- Bon-Point (propose to terminate)					
223	89.6	168.3	36.9	181	260

*The alternative air monitoring stations AM3a, AM6a and AM7a were approved by EPD on 10 August 2009

+The alternative air monitoring station AM1a was approved by EPD on 7 September 2010

%The alternative air monitoring station AM5a proposal was submitted to EPD on 22 September 2010

3.2 Noise

B&K 2236 sound level meters which complied with the International Electrotechnical Commission Publication 651:1979 (Type 1) and 804:1985 (Type 1), specification as referred to in the Technical Memoranda to the NCO were used for the construction noise impact monitoring. The B&K sound level meters and B&K 4231 calibrator are verified by the certified laboratory or manufacturer on biennial basis and annual basis respectively to ensure they perform to the same level of accuracy as stated in the manufacturer's specifications.

Immediately prior to and following each set of measurements at any NSR, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. If the calibration levels before and after the measurement differs by more than 1.0dB the measurement shall be repeated to obtain a reliable result (note: maximum deviation during this initial baseline monitoring period was 0.3dB). Periods of prolonged or repeated overloading of the sound level meter detector were avoided by setting the meter with adequate headroom prior to commencing measurements. Measurements were recorded to the nearest 0.1 dB, with values of 0.05 being rounded up.

Impact noise monitoring of $L_{A,eq30}$ was undertaken to measure construction noise levels in accordance with the EM&A Manual. The noise monitoring locations are shown in Section 2.2 above. Monitoring results are presented in Appendix D as graphical plot.

Monitoring Stations propose to terminate

The ET Leader proposes to terminate the regular construction noise monitoring at the monitoring stations CN2, CN4, CN5, CN6, CN7a, CN8, CN9, CN11b, CN12, CN14, CN17, CN18 and CN20. The statistical analysis of construction noise monitoring data for these monitoring stations in the reporting period of 10 August 2009 to 9 January 2015 are summarized in Table 5 below. The monitoring stations CN3, CN13, CN15, CN16 and CN21 are still active for the construction works being carried out in Works Areas B, L1, M1 and N1.

Table 5 Statistical Analysis of Noise Monitoring Data

CN1- Chee Sing Kok Social Centre of the Humanity Love (inactive)				
Number	Average (dBA)	Maximum (dBA)	Minimum (dBA)	Limit Level (dBA)
57	68.7	74.4	59.9	75
CN2- Hong Kong Institute of Vocational Education (Tsing Yi) Kennedy Town Centre (propose to terminate)				
256	68.5	69.9	64.6	70
CN4 - Luen Tak Apartments (propose to terminate)				
264	71.2	78.7	65.7	75
CN5- Western Court (Block 1) (propose to terminate)				
202	71.2	74.7	68.5	75
CN6- Yick Fung Garden (BlockA) (propose to terminate)				
288	73.1	75.0	70.1	75
CN7a- Bowie Court# (propose to terminate)				
233	72.8	74.5	70.2	75
CN8- St. Paul's College Primary School (propose to terminate)				

276	69.0	70.0	64.7	70
CN9- Hill Court (propose to terminate)				
298	71.6	74.9	62.9	75
CN11b- The Belcher's Tower 8+ (propose to terminate)				
244	71.2	74.9	68.4	75
CN12- Wah Po Building (propose to terminate)				
223	70.0	72.1	67.5	75
CN14- Bon-Point (propose to terminate)				
185	73.6	74.9	70.8	75
CN17- No.1 Third Street (propose to terminate)				
270	72.6	74.5	60.3	75
CN18- Princeton Tower (propose to terminate)				
223	72.9	74.1	72.1	75
CN20- Ka On Building (propose to terminate)				
223	73.1	75.0	70.3	75

The alternative noise monitoring station CN7a was approved by EPD on 1 Sept 2010

+ The alternative noise monitoring station CN11b was approved by EPD on 14 June 2011

3.3 Action taken in Event of Exceedence

There was no exceedance in air quality parameter recorded in the reporting period for the air monitoring stations shown in Section 3.1.

There were two exceedances of the Limit Level for the noise monitoring conducted on 6 August 2010 and 3 June 2011 at the monitoring station CN4 for Works Area D. Repeated monitorings had been conducted to confirm the finding on the exceedances. The ER had been notified of the exceedances and the Contract 705 had investigated the cause of the exceedances and proposed remedial measures to abate the exceedances. Monitoring frequency had been increased to assess the effectiveness of Contractor's remedial actions. Notice of exceedance had been submitted to the IEC and EPD after satisfactory completion of remedial measures in accordance with the Event and Action Plan under the WIL EM&A Manual and the WIL EP.

3.4 Ground-borne Noise for TBM operation

Ground-borne noise measurement had been conducted for TBM tunneling work in accordance with EP condition 6.1(i) and the approved Construction Ground-borne Noise Monitoring Plan submitted as per EM&A Manual Clause 3.1 requirement. There was no exceedance in ground-borne noise monitoring parameters recorded in the reporting period. The TBM tunneling work had been completed in December 2012.

4 LANDSCAPE AND VISUAL

4.1 Monitoring Requirements

Monitoring of the implementation of the landscape and visual mitigation measures during construction phase was conducted in accordance with the requirements as stipulated in the EM&A Manual.

The landscape and visual monitoring and audit had been conducted once a month throughout the construction stage covering the entire project site areas.

4.2 Audit Results

Monthly monitoring and audit was undertaken in accordance with the EM&A Manual.

Tree Felling at Contract 703 Works Area L

15 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 703 Works Area M

11 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 703 Works Area N1

29 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 704 Works Area H

12 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 704 Works Area I

42 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 704 Works Area J2

16 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 704 Works Area J3

6 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 704 Works Area L1

19 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 704 Works Area M1

16 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 704 Works Area M3

8 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 705 Works Areas C and D

77 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 706 Works Area G

4 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 706 Works Area J

16 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 708 Works Area MA

107 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Contract 714 Works Area B

2 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Transplantation in the reporting period

7 nos. of trees were transplanted from Works Area J to the Receptor Sites at Sheung Wan Pumping Station site (4nos.), Junction of Shing Sai Road/New Praya (2 nos.) and Shing Sai Road (1 no.) in accordance with the approved Tree Removal Application. In the approved Tree Removal Application, 5nos. of trees were approved to be transplanted in Works Area J, 2 nos. additional trees were transplanted in response to the request made by LCSD with a view to preserving the landscape resources as much as practicable.

In addition, 2nos. of trees from Works Area C and 6nos. of trees from Works Area J3 were transplanted to the Receptor Site at Sheung Wan Pumping Station site in accordance with the

approved Tree Removal Application. The tree transplanting works for these two works areas were carried out prior to the construction contracts award.

3 nos. of trees were transplanted from Works Area N1 to the Receptor Sites at Sheung Wan Pumping Station site, road side planter at Shing Sai Road and Connaught Road West. 1 no. of tree was transplanted from Works Area L to the Receptor Site at road side planter at Connaught Road West. 14 nos. of trees were transplanted within the park area for Works Area M.

11 nos. of trees were transplanted from Works Area C to the Receptor Site at the road side planter at Shing Sai Road.

20 nos. of trees were transplanted from Works Area I to the Receptor Site at Shing Sai Road/Pok Fu Lam Road Playground and CEDD's GMP sites. 17 nos. of trees were transplanted from Works Area L1 to the CEDD's GMP sites. 2 nos. of trees were transplanted from Works Area G to the Receptor Site at Shing Sai Road.

Tree transplantation had been completed.

The Certified Arborist as required by the EP has conducted inspections and audits and found that the transplanting works and the tree protection works being carried out by the civil works and transplanting contractors were in accordance with the EP/EIA, Tree Protection Plan and contract requirements. No non compliance was identified in the reporting period.

Compensatory Tree Planting in reporting period

48 nos. trees had been planted for Works Area MA.

115 nos. trees had been planted for Works Areas C and D.

20 nos. trees had been planted for Works Area I.

15 nos. trees had been planted for Works Area J2.

6 nos. trees had been planted for Works Area H.

Others

In accordance with EP Condition 2.8, the two individual plants, *Pavetta hongkongensis* located at the Works Area MA shall be transplanted.

It was identified that only one of the plant as mentioned above require transplanting and the other can be retained at its original location.

With consent from AFCD on the proposed method statement for transplanting the plant and protecting the retained plant, the plant was transplanted to a nearby location with similar habitat in September 2009 as agreed by AFCD and supervised by the Certified Arborist. The retained plant was properly protected in accordance with the agreed method.

The existing trees and species of conservation importance (ie the two identified *Artocarpus hypargyreus*) located near the Works Area MA were fenced off and the trunk protected with hessian sacking.

In addition, the tree (no. BT049A) at Pok Fu Lam Road which was originally proposed for transplant was toppled by Typhoon Koppu on 14 September 2009 and was removed by LCSD. Access to this site had not been given to MTR and no work had been carried out to the tree.

The ET had reminded the ER and the civil works contractors to implement appropriate tree protection measures to ensure tree stability. In addition, as there was safety concern for the trees no. BT92 and BT93 at Works Area I, decision was made by the Project Team to fell the trees which posed potential safety risk to the residents of the Hillview Garden. The trees had been felled in the reporting period for October 2010 due to public safety consideration in accordance with Emergency Tree Felling procedures stipulated in LAO practice note 7/2007 Appendix II Section III. The felling of the two trees had been requested and strongly supported by the Incorporated Owners of Hillview Garden in order to mitigate the safety risk to the Hillview Garden residents and the public.

Wall tree No. T04 collapsed at Forbes Street due to Typhoon Vicente on 23 July 2012 and was removed on 24 July 2012. No injury was reported in this incident. The incident had been reported to the concerned Government Departments.

5 WASTE MANAGEMENT

Mitigation measures on waste management had been implemented in accordance with the Waste Management Plans for the respective civil works contracts submitted under the Environmental Permit. The C&D materials were disposed of at the public filling reception facilities while C&D wastes are to be disposed of at the landfills. Quantities of wastes disposed in the reporting period are summarized in the following table:

Amount of Construction Wastes Disposed				
Reporting Period	Inert C&D Materials to Public Fill (ton)	Inert C&D Materials Reused (ton)	Non-inert Waste to Landfill (ton)	Chemical Waste to designated treatment facility (litre)
<u>Contract 703 (Contract completed in August 2014)</u>				
Aug – Sept 2009	387.0	0	23.4	0
Oct – Dec 2009	4581.4	0	35.6	0
Jan – Mar 2010	7943.0	0	86.6	0
Apr – Jun 2010	11691.1	0	98.6	0
Jul – Sept 2010	15461.1	0	94.3	2.9m ³ +200kg+800 litres
Oct – Dec 2010	20092.9	0	66.1	800 litres
Jan – Mar 2011	45689.3	0	175.4	200kg+600 litres
Apr – Jun 2011	67312.3	0	128.9	1800 litres
Jul – Sept 2011	32531.4	0	123.5	1600 litres
Oct – Dec 2011	23917.0	0	126.4	200kg+1600 litres
Jan – Mar 2012	38472.3	0	94.9	200 litres
Apr – Jun 2012	11702.3	0	95.0	600 litres
Jul – Sept 2012	20750.7	0	113.2	1200 litres

Oct - Dec 2012	30045.6	0	88.5	2800 litres+150kg
Jan - Mar 2013	6359.2	0	109.8	2000 litres
Apr - Jun 2013	3601.7	0	133.5	0
Jul - Sept 2013	2829.1	0	183.9	0
Oct - Dec 2013	5756.7	0	142.2	1200 litres
Jan - Mar 2014	925.7	0	66.1	0
Apr - Jun 2014	6.3	0	0	0
Jul 2014	0	0	0	0
Cumulative	350056.3	0	1985.8	2.9m3 [^] +750kg+ 15200 litres
<u>Contract 704</u>				
Apr - Jun 2010	3257.8	0	198.5	0
Jul - Sept 2010	4364.2	0	295.4	0
Oct - Dec 2010	17230.6	17216.8	215.9	0
Jan - Mar 2011	5391.6	73638.7	221.2	1400 litres
Apr - Jun 2011	5163.2	108205.3	229.0	3000kg [^] +20kg+ 1000 litres
Jul - Sept 2011	6093.0	210113.8	168.9	7kg+3600 litres
Oct - Dec 2011	2800.5	282756.4	142.2	3200 litres
Jan - Mar 2012	12155.2	252941.7	203.1	4400 litres
Apr - Jun 2012	22093.6	205734.7	367.9	2600 litres
Jul - Sept 2012	4298.5	159985.2	604.1	1027 litres
Oct - Dec 2012	4045.3	57715.1	668.6	1018 litres
Jan - Mar 2013	3730.1	46720.6	880.6	1108 litres
Apr - Jun 2013	1191.6	11378	470.8	3316 litres
Jul - Sept 2013	3110.8	32177.6	2061.1	1404 litres
Oct - Dec 2013	3999.5	43330.1	1549.3	14 litres
Jan - Mar 2014	8215.9	13251.0	2181.0	681 litres
Apr - Jun 2014	5790.5	0	2153.7	1013 litres
Jul - Sept 2014	5526.1	0	3006.4	2439 litres
Oct - Dec 2014	5208.3	960.5	2288.2	1609 litres
Cumulative	126359.8	1534324.2	18882.8	3000kg [^] +27kg+ 29829 litres
<u>Contract 705 (Contract substantially completed)</u>				
Dec 2009	0	0	0	0
Jan - Mar 2010	291.2	0	22.4	0
Apr - Jun 2010	4840.4	0	65.8	287m3 [^] +400 litres
Jul - Sept 2010	14730.2	0	130.7	400 litres
Oct - Dec 2010	8778.7	4447.3	130.6	390kg [^] +200 litres
Jan - Mar 2011	6829.3	48244.3	101.2	0
Apr - Jun 2011	1154.3	6967.4	131.7	0
Jul - Sept 2011	3022.4	33635.5	170.5	0
Oct - Dec 2011	31687.3	33632	115.4	1000 litres
Jan - Mar 2012	11257.5	58666.5	216.3	0
Apr - Jun 2012	50844.8	12845.9	1493.1	0

Jul - Sept 2012	1081.3	11868	2744.5	0
Oct - Dec 2012	286	2844	1281.7	0
Jan - Mar 2013	99.9	826	670.1	0
Apr - Jun 2013	97.9	4172.0	461.2	2400 litres
Jul - Sept 2013	99.3	1144.0	327.0	0
Oct - Dec 2013	3612.0	1785	284.2	480 litres
Jan - Mar 2014	3742.9	0	261.7	0
Apr - Jun 2014	4276.6	0	151.6	0
Jul - Sept 2014	2009.7	0	445.6	0
Oct - Dec 2014	318.9	0	634.4	0
Cumulative	149060.6	220959.9	9839.7	287m3 [^] +390kg [^] + 4880 litres
<u>Contract 706 (Contract completed in November 2010)</u>				
Jul - Sept 2009	1746.6	0	12.7	0
Oct - Dec 2009	5641.3	0	10.4	200 litres
Jan - Mar 2010	13633.9	0	54.9	0
Apr - Jun 2010	21208.8	0	72.6	0
Jul - Sept 2010	5657.9	0	39.3	0
Oct 2010	742.7	0	2.4	0
Nov 2010	0	0	0	0
Cumulative	48631.2	0	192.3	200 litres
<u>Contract 706A (Contract completed in April 2011)</u>				
Dec 2009	0	0	0	0
Jan - Mar 2010	8238.6	0	96.2	0
Apr - Jun 2010	1054.7	0	1724	0
Jul - Sept 2010	195.7	0	196.6	0
Oct - Dec 2010	1231.5	0	90.6	0
Jan 2011	1453.6	0	37.6	0
Feb 2011	25.6	0	34.4	0
Mar 2011	0	0	25.4	0
Cumulative	12199.7	0	2204.8	0
<u>Contract 708 (Contract completed in August 2010)</u>				
Jul - Sept 2009	0	0	181	0
Oct - Dec 2009	5698.9	0	12	0
Jan - Mar 2010	9989.6	0	12.5	0
Apr - Jun 2010	2741	0	54.3	0
Jul 2010	1035.4	0	13.3	0
Aug 2010	0	0	0	0
Cumulative	19464.9	0	273.1	0

<u>Contract 714 (Contract completed in April 2010)</u>				
Jul - Sept 2009	0	0	42.1	0
Oct - Dec 2009	271.9	0	161.6	0
Jan - Mar 2010	87.7	0	124.7	0
Apr 2010	0	0	0	0
Cumulative	359.6	0	328.4	0

^ACM disposal from buildings demolition

6 ***WATER QUALITY***

Monitoring of the implementation of the water quality mitigation measures during construction phase was conducted in accordance with the requirements as stipulated in the EM&A Manual.

Weekly site inspection was conducted throughout the construction stage covering the entire project site areas to ensure the recommended mitigation measures are properly implemented.

In the reporting period, the water quality mitigation measures were implemented in accordance with the requirements as stipulated in the EM&A Manual.

Impact on tree walls at Forbes Street due to the potential for groundwater drawdown induced by tunnelling is controlled, as a precautionary measure, through monitoring of groundwater level. Groundwater level monitoring conducted weekly at the monitoring well adjacent to the two tree walls located outside the boundary of Works Area C had been completed.

7 ***CULTURAL HERITAGE***

Archaeological Watching Brief monitoring for Works Area J2 had been completed as mentioned in the EM&A Report for June 2012. No archaeological finding was observed.

Archaeological Watching Brief monitoring for Works Area J3 had been completed as mentioned in the EM&A Report for June 2011. No archaeological finding was observed.

Archaeological Watching Brief monitoring for Works Area I had been completed as mentioned in the EM&A Report for May 2011. No archaeological finding was observed.

Archaeological Watching Brief monitoring for Works Areas C and H had been completed as mentioned in the EM&A Report for February 2011. No archaeological finding was observed.

Archaeological Watching Brief monitoring for Works Area J had been completed as mentioned in the EM&A Report for January 2011. No archaeological finding was observed.

Archaeological Watching Brief monitoring for Works Area M had been completed as mentioned in the EM&A Report for July 2010. No archaeological finding was observed.

Archaeological Watching Brief monitoring for Works Area M2 had been completed as mentioned in the EM&A Report for May 2010. No archaeological finding was observed.

Vibration monitoring at the identified vibration sensitive historical buildings within 100m in plan of the blast location in accordance with the requirements stipulated in Chapter 5 of the EM&A Manual had been completed. From the monitoring results obtained in the reporting period, the measured PPV were far below the PPV criterion of 25mm/s. As such, it is considered that there was no adverse indirect vibration impact on the vibration sensitive historical buildings due to the use of drill and blast method for the WIL tunnel construction.

8 *RECORD OF ENVIRONMENTAL COMPLAINTS*

Environmental complaints were referred from EPD in the reporting period of 10 August 2009 to 9 January 2015 for the WIL Project. The complaints had been handled in accordance with the requirements specified in the EM&A Manual. The ET had provided feasible solutions to the ER and Contractors in mitigating the environmental disturbances/concerns lodged by the complainants, the complaints had been resolved satisfactorily. Details of the environmental complaints including investigation and follow-up actions can be referenced in the respective Monthly EM&A Reports in the reporting period of 10 August 2009 to 9 January 2015.

A summary of environmental complaints since commencement of construction up to 9 January 2015 is shown below:

Reporting Period	Frequency	Cumulative	Nature	Status
10 Aug 2009 – 9 Nov 2009	3	3	3nos.- Noise	Cases closed
10 Nov 2009 – 9 Feb 2010	6	9	3 nos. - Noise/ Air 3 nos. – Noise	Cases closed
10 Feb 2010 – 9 May 2010	10	19	6 nos. - Noise 4 nos. – Dust/Smoke	Cases closed
10 May 2010 – 9 Aug 2010	5	24	1 no. – Dust/Smoke 2 nos – Other 1 no. - Noise 1 no. – Water	Cases closed
10 Aug 2010 – 9 Nov 2010	14	38	7 nos. - Noise 2 nos. – Smoke/Smell 2 nos. – Dust/Noise 2 nos. – Dust 1 no. – Water	Cases closed
10 Nov 2010 – 9 Feb 2011	17	55	12 nos. – Noise 2 nos. – Dust 1 no. – Dust/Noise 2 nos. – Other	Cases closed
10 Feb 2011 – 9 May 2011	24	79	12 nos. - Noise 2 nos. – Dust/Noise 2 nos. – Dust 8 nos. – Other	Cases closed
10 May 2011 – 9 Aug 2011	10	89	5 nos. - Noise 2 nos. – Dust/Smoke/Water 1 no. – Dust/Smell 1 no. – Water 1 no. – Dust	Cases closed
10 Aug 2011 – 9 Nov 2011	6	95	1 no. – Noise 1 no. – Dust 1 no. – Smell 2 nos. - Water 1 no. – Other	Cases closed
10 Nov 2011 – 9 Feb 2012	17	112	12 nos. – Noise 2 nos. – Water 3 nos. – Other	Cases closed
10 Feb 2012 – 9 May 2012	13	125	6 nos. – Noise 2 nos. – Dust 4 nos. – Smell 1 no. - Water	Cases closed
10 May 2012 – 9 Aug 2012	24	149	9 nos. – Noise 2 nos. – Dust 6 nos. – Water 5 nos. – Smell 2 nos. – Other	Cases closed
10 Aug 2012 – 9 Nov 2012	6	155	3 nos. – Noise 1 no. – Dust 1no. – Water 1 no. – Smell	Cases closed

10 Nov 2012 – 9 Feb 2013	7	162	6 nos. – Noise 1no. – Water	Cases closed
10 Feb 2013 – 9 May 2013	4	166	3 nos. – Noise 1 no. – Dust/Noise	Cases closed
10 May 2013 – 9 Aug 2013	10	176	6 nos. – Noise 1 no. – Dust 2 nos. – Smell 1 no. – Other	Cases closed
10 Aug 2013 – 9 Nov 2013	7	183	7 nos. – Noise	Cases closed
10 Nov 2013 – 9 Feb 2014	7	190	7 nos. – Noise	Cases closed
10 Feb 2014 – 9 May 2014	6	196	1 no. – Water/Smell 5 nos. – Noise	Cases closed
10 May 2014 – 9 Aug 2014	2	198	1 no. – Noise/Dust/Smell 1 no. – Other	Cases closed
10 Aug 2014 – 9 Nov 2014	6	204	4 nos. – Noise 1 no. – Dust 1 no. – Smell	Cases closed
10 Nov 2014 – 9 Dec 2014	1	205	1no. – Water	Case closed
10 Dec 2014 – 9 Jan 2015	1	206	1no. – Noise	Case closed

9 RECORD OF NON-COMPLIANCES

There were non-compliances identified in the reporting period of 10 August 2009 to 9 January 2015 for the WIL Project which were two exceedances of the Limit Level for the noise monitoring as detailed in Section 3.3.

10 NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

There was no successful prosecution related to environmental issue recorded for the WIL Project in the reporting period of 10 August 2009 to 9 January 2015.

In addition, the ER/ET was informed by EPD in the reporting period of August 2010 that an environmental notification of summon had been served on Contract 706 Contractor for the non-compliance with the CNP no. GW-R0703-09 found on 10 November 2009. Legal proceedings had been instituted and trial hearing had been proceeded in September 2010. This prosecution case was not successful. Investigation had been carried out by ER and found that the Contractor had used a PME not approved in the CNP. The ER had instructed the Contractor to improve their site management and training to site personnel in relation to plant and equipment operation in restricted hours for compliance with CNP requirements.

A summary of environmental prosecution since commencement of construction up to 9 January 2015 is shown below:-

Reporting Period	Frequency	Cumulative	Nature	Status
10 Aug – 9 Nov 2009	0	0	N/A	N/A
10 Nov 2009– 9 Feb 2010	0	0	N/A	N/A
10 Feb 2010 – 9 May 2010	1	1	Noise	Summon served
10 May 2010 – 9 Aug 2010	0	1	N/A	N/A
10 Aug 2010 – 9 Nov 2010	0	1	N/A	N/A
10 Nov 2010 – 9 Feb 2011	0	1	N/A	N/A
10 Feb 2011 – 9 May 2011	0	1	N/A	N/A
10 May 2011 – 9 Aug 2011	0	1	N/A	N/A
10 Aug 2011 – 9 Nov 2011	0	1	N/A	N/A
10 Nov 2011 – 9 Feb 2012	0	1	N/A	N/A
10 Feb 2012 – 9 May 2012	0	1	N/A	N/A
10 May 2012 – 9 Aug 2012	0	1	N/A	N/A
10 Aug 2012 – 9 Nov 2012	0	1	N/A	N/A
10 Nov 2012 – 9 Feb 2013	0	1	N/A	N/A
10 Feb 2013 – 9 May 2013	0	1	N/A	N/A
10 May 2013 – 9 Aug 2013	0	1	N/A	N/A
10 Aug 2013 – 9 Nov 2013	0	1	N/A	N/A
10 Nov 2013 – 9 Feb 2014	0	1	N/A	N/A
10 Feb 2014 – 9 May 2014	0	1	N/A	N/A
10 May 2014 – 9 Aug 2014	0	1	N/A	N/A
10 Aug 2014 – 9 Nov 2014	0	1	N/A	N/A
10 Nov 2014 – 9 Dec 2014	0	1	N/A	N/A
10 Dec 2014 – 9 Jan 2015	0	1	N/A	N/A

11 STATUS OF STATUTORY SUBMISSIONS

11.1 Submissions required under Environmental Permit

A summary of the submissions made under the WIL Environmental Permit in the reporting period of 10 August 2009 to 9 January 2015 is shown below:

EP-313/2008/D Clause No.	Description		Status
1.11	1	Commencement date of construction	submitted on 10 July 2009
2.1 & 2.2	2	Employment of IEC, ET Leader	submitted on 23 June 2009
2.1	3	Employment of ET Leader	submitted on 19 September 2011
2.3	4	Contractor Management Organization for Civil Works Contracts 706, 708 and 714	submitted on 24 July 2009
2.3	5	Contractor Management Organization for Civil Works Contract 703	submitted on 14 September 2009 and 6 October 2009
2.3	6	Contractor Management Organization for Civil Works Contracts 705 and 706A	submitted on 22 January 2010
2.3	7	Contractor Management Organization for Civil Works Contract 704	submitted on 16 April 2010
2.5 & 2.7	8	Certified Arborist and Tree Protection Plan	submitted on 24 July 2009 and 5 August 2009
2.5 & 2.7	9	Certified Arborist and Tree Protection Plan – Responses to Comments	submitted on 10 September 2009
2.5 & 2.7	10	Certified Arborist and Tree Protection Plan – Certified Arborist	submitted on 3 November 2009
2.5 & 2.7	11	Tree Protection Plan Rev A	submitted on 19 July 2010
2.5 & 2.7	12	Tree Protection Plan Rev B	submitted on 13 October 2010
2.5 & 2.7	13	Tree Protection Plan Rev C	submitted on 11 January 2013
2.5 & 2.7	14	Tree Protection Plan Rev D	submitted on 3 March 2014
2.5 & 2.7	15	Tree Protection Plan Rev E	submitted on 6 October 2014
2.5 & 2.7	16	Tree Protection Plan Rev F (Part 1)	submitted on 11 November 2014
2.5	17	Certified Arborist	submitted on 22 June 2010
2.6	18	Set up of Community Liaison Groups and designated complaint hotline	submitted on 20 July 2009
2.11.1	19	Archaeological Watching Brief Proposal	submitted on 31 August 2009
2.11.1	20	Revised Archaeological Watching Brief Proposal	submitted on 23 September 2009
2.11.1	21	Revised Archaeological Watching Brief Proposal	submitted on 16 October 2009
2.12	22	Waste Management Plans for Civil Works Contracts 706, 708 and 714	submitted on 24 July 2009
2.12	23	Revised Waste Management Plans for Civil Works Contracts 706, 708 and 714 Rev A	submitted on 7 September 2009
2.12	24	Revised Waste Management Plans for Civil Works Contracts 706, 708 and 714 Rev B	submitted on 16 October 2009
2.12	25	Waste Management Plan for Civil Works Contract 703	submitted on 2 December 2009
2.12	26	Revised Waste Management Plan for Civil Works Contract 703 Rev A	submitted on 14 January 2010
2.12	27	Waste Management Plan for Civil Works Contract 706A	submitted on 22 January 2010
2.12	28	Waste Management Plan for Civil Works	submitted on 5 February 2010

		Contract 705	
2.12	29	Revised Waste Management Plan for Civil Works Contract 705 Rev A	submitted on 2 September 2010
2.12	30	Waste Management Plan for Civil Works Contract 704	submitted on 22 July 2010
2.12	31	Waste Management Plan for Civil Works Contract 704 Rev A	submitted on 14 April 2011
2.12	32	Waste Management Plan for Civil Works Contract 704 Rev B	submitted on 7 October 2011
2.12	33	Waste Management Plan for Civil Works Contract 704 Rev C	submitted on 22 May 2012
3.1.1(a) & 2.4	34	Works Area B programme, site layout plan and drawings of mitigation measures	submitted on 23 June 2009
3.1.1(a)	35	Remediation Report for Works Area B	submitted on 10 June 2009
3.1.2(a) & 3.1.2(b)	36	Appointment of ISC and certification of additional concrete paving for the small western portion of Works Area B occupied by HyD Depot	submitted on 13 July 2009 and 25 August 2009
3.1.2(a) & 3.1.2(b)	37	Appointment of ISC and certification of additional concrete paving for Works Area B for WIL Project	submitted on 30 October 2009
3.3.2(a)	38	Sampling and Testing Proposal	submitted on 14 May 2014
3.3.2(a)	39	Revised Sampling and Testing Proposal	submitted on 4 August 2014
3.3.2(a)	41	Revised Sampling and Testing Proposal	submitted on 6 October 2014
3.3.2	42	Sampling and Testing Report	submitted on 11 December 2014
4.1.4	43	As-built Drawing of Track / Trackform / Baseplate	submitted on 13 September 2013
4.1.4	44	As-built Drawings for Operation Ground-borne Noise Mitigation Measures	submitted on 9 January 2014
4.1.5	45	Noise Performance Test Proposal	submitted on 28 February 2014
4.1.5	46	Noise Performance Test Proposal Re-submission	submitted on 6 June 2014
4.1.5	47	Noise Performance Test Report	submitted on 23 July 2014
4.1.5	48	Noise Performance Test Report Re-submission	submitted on 26 August 2014
4.1.5	49	Noise Performance Test Report Re-submission	submitted on 16 October 2014
4.2.1	50	Aesthetic Landscape and Architectural Proposal	submitted on 11 June 2014
4.2.1	51	Aesthetic Landscape and Architectural Proposal Re-submission	submitted on 18 September 2014
4.2.2	52	Audit Report of Tree Protection Plan Implementation	submitted on 11 November 2014
6.1(i)	53	Construction Ground-borne Noise Monitoring Plan for TBM	submitted on 27 May 2011
6.1(i)	54	Construction Ground-borne Noise Monitoring Plan for TBM Rev A	submitted on 9 September 2011
6.3	55	Baseline Monitoring Report (Part 1) for Works Area B	submitted on 10 July 2009

6.3	56	Baseline Monitoring Report (Part 1) for Works Area B Rev A	submitted on 10 February 2012
6.3	57	Baseline Monitoring Report (Part 2) for Works Area MA	submitted on 12 August 2009
6.3	58	Baseline Monitoring Report (Part 3) for Works Areas G and J	submitted on 28 August 2009
6.3	59	Baseline Monitoring Report (Part 4) for Works Areas M and N1	submitted on 9 October 2009
6.3	60	Baseline Monitoring Report (Part 5) for Works Area I	submitted on 8 December 2009
6.3	61	Baseline Monitoring Report (Part 6) for Works Area C	submitted on 10 February 2010
6.3	62	Baseline Monitoring Report (Part 7) for Works Areas C and D	submitted on 15 April 2010
6.3	63	Baseline Monitoring Report (Part 7) for Works Areas C and D Rev A	submitted on 11 June 2010
6.3	64	Baseline Monitoring Report (Part 8) for Works Area A	submitted on 23 April 2010
6.3	65	Baseline Monitoring Report (Part 8) for Works Area A Rev A	submitted on 15 June 2010
6.3	66	Baseline Monitoring Report (Part 9) for Works Area L1	submitted on 7 July 2010
6.3	67	Baseline Monitoring Report (Part 10) for Works Areas H and J3	submitted on 6 October 2010
6.3	68	Baseline Monitoring Report (Part 11) for Works Areas O1, O2 and O3	submitted on 12 October 2010
6.3	69	Baseline Monitoring Report (Part 12) for Works Area E	submitted on 4 November 2010
6.3	70	Baseline Monitoring Report (Part 12) Rev A for Works Area E	submitted on 17 December 2010
6.3	71	Baseline Monitoring Report (Part 13) for Works Area M1	submitted on 17 January 2011
6.3	72	Baseline Monitoring Report (Part 14) for Works Area J2	submitted on 1 February 2011
6.3	73	Baseline Monitoring Report (Part 15) for Works Area M3	submitted on 22 July 2011
6.3	74	Baseline Monitoring Report (Part 15) for Works Area M3 Rev A	submitted on 20 October 2011
6.3	75	Baseline Monitoring Report (Part 15) for Works Area M3 Rev B	submitted on 9 December 2011
6.4	76	EM&A Report for September 2009	submitted on 23 September 2009
6.4	77	EM&A Report for October 2009	submitted on 23 October 2009
6.4	78	EM&A Report for November 2009	submitted on 23 November 2009
6.4	79	EM&A Report for December 2009	submitted on 23 December 2009
6.4	80	EM&A Report for January 2010	submitted on 22 January 2010
6.4	81	EM&A Report for February 2010	submitted on 25 February 2010
6.4	82	EM&A Report for March 2010	submitted on 23 March 2010

6.4	83	EM&A Report for April 2010	submitted on 23 April 2010
6.4	84	EM&A Report for May 2010	submitted on 24 May 2010
6.4	85	EM&A Report for June 2010	submitted on 24 June 2010
6.4	86	EM&A Report for July 2010	submitted on 23 July 2010
6.4	87	EM&A Report for August 2010	submitted on 23 August 2010
6.4	88	EM&A Report for September 2010	submitted on 24 September 2010
6.4	89	EM&A Report for October 2010	submitted on 25 October 2010
6.4	90	EM&A Report for November 2010	submitted on 23 November 2010
6.4	91	EM&A Report for December 2010	submitted on 23 December 2010
6.4	92	EM&A Report for January 2011	submitted on 24 January 2011
6.4	93	EM&A Report for February 2011	submitted on 25 February 2011
6.4	94	EM&A Report for March 2011	submitted on 23 March 2011
6.4	95	EM&A Report for April 2011	submitted on 27 April 2011
6.4	96	EM&A Report for May 2011	submitted on 23 May 2011
6.4	97	EM&A Report for June 2011	submitted on 24 June 2011
6.4	98	EM&A Report for July 2011	submitted on 26 July 2011
6.4	99	EM&A Report for August 2011	submitted on 23 August 2011
6.4	100	EM&A Report for September 2011	submitted on 23 September 2011
6.4	101	EM&A Report for October 2011	submitted on 21 October 2011
6.4	102	EM&A Report for November 2011	submitted on 23 November 2011
6.4	103	EM&A Report for December 2011	submitted on 23 December 2011
6.4	104	EM&A Report for January 2012	submitted on 20 January 2012
6.4	105	EM&A Report for February 2012	submitted on 23 February 2012
6.4	106	EM&A Report for March 2012	submitted on 23 March 2012
6.4	107	EM&A Report for April 2012	submitted on 23 April 2012
6.4	108	EM&A Report for May 2012	submitted on 23 May 2012
6.4	109	EM&A Report for June 2012	submitted on 22 June 2012
6.4	110	EM&A Report for July 2012	submitted on 23 July 2012
6.4	111	EM&A Report for August 2012	submitted on 23 August 2012
6.4	112	EM&A Report for September 2012	submitted on 21 September 2012
6.4	113	EM&A Report for October 2012	submitted on 22 October 2012
6.1	114	EM&A Report for November 2012	submitted on 23 November 2010
6.1	115	EM&A Report for December 2012	submitted on 21 December 2010

6.1	116	EM&A Report for January 2013	submitted on 23 January 2013
6.1	117	EM&A Report for February 2013	submitted on 27 February 2013
6.1	118	EM&A Report for March 2013	submitted on 22 March 2013
6.1	119	EM&A Report for April 2013	submitted on 23 April 2013
6.1	120	EM&A Report for May 2013	submitted on 24 May 2013
6.1	121	EM&A Report for June 2013	submitted on 24 June 2013
6.1	122	EM&A Report for July 2013	submitted on 23 July 2013
6.1	123	EM&A Report for August 2013	submitted on 23 August 2013
6.1	124	EM&A Report for September 2013	submitted on 24 September 2013
6.1	125	EM&A Report for October 2013	submitted on 23 October 2013
6.1	126	EM&A Report for November 2013	submitted on 22 November 2013
6.1	127	EM&A Report for December 2013	submitted on 23 December 2013
6.1	128	EM&A Report for January 2014	submitted on 23 January 2014
6.1	129	EM&A Report for February 2014	submitted on 21 February 2014
6.1	130	EM&A Report for March 2014	submitted on 23 March 2014
6.1	131	EM&A Report for April 2014	submitted on 25 April 2014
6.1	132	EM&A Report for May 2014	submitted on 23 May 2014
6.1	133	EM&A Report for June 2014	submitted on 23 June 2014
6.1	134	EM&A Report for July 2014	submitted on 23 July 2014
6.1	135	EM&A Report for August 2014	submitted on 23 August 2014
6.1	136	EM&A Report for September 2014	submitted on 23 September 2014
6.1	137	EM&A Report for October 2014	submitted on 23 October 2014
6.1	138	EM&A Report for November 2014	submitted on 23 November 2014
6.1	139	EM&A Report for December 2014	submitted on 23 December 2014
6.1	140	Final EM&A Report for Works Area MA	submitted on 29 December 2010
6.1	141	Final EM&A Report for Works Area MA Rev A	submitted on 16 January 2012
7.2	142	Internet address of web site for environmental monitoring and project data	submitted on 23 September 2009

11.2 Statutory Permits and Licenses

A summary of the status of all relevant environmental permits and licenses in the reporting period of 10 August 2009 to 9 January 2015 is shown below:

Description	Status
Environmental Permit for West Island Line Project (EP-313/2008)	Issued on 12 January 2009 and superseded
Environmental Permit for West Island Line	Issued on 26 June 2009 and superseded

Project (EP-313/2008/A)	
Environmental Permit for West Island Line Project (EP-313/2008/B)	Issued on 22 July 2009 and superseded
Environmental Permit for West Island Line Project (EP-313/2008/C)	Issued on 31 August 2009 and superseded
Environmental Permit for West Island Line Project (EP-313/2008/D)	Issued on 19 January 2011 and superseded
Environmental Permit for West Island Line Project (EP-313/2008/E)	Issued on 1 August 2012 and superseded
Environmental Permit for West Island Line Project (EP-313/2008/F)	Issued on 5 October 2012 and superseded
Environmental Permit for West Island Line Project (EP-313/2008/G)	Issued on 16 May 2013 and superseded
Environmental Permit for West Island Line Project (EP-313/2008/H)	Issued on 16 December 2013 and superseded
Environmental Permit for West Island Line Project (EP-313/2008/I)	Issued on 26 March 2014 and superseded
Environmental Permit for West Island Line Project (EP-313/2008/J)	Issued on 1 September 2014
<u>Contract 703 (Contract Completed)</u>	
Wastewater Discharge License	WT00005106-2009 (surrendered), WT00005108-2009 (surrendered), WT00008394-2011 (surrendered), WT00006066-2010 (surrendered), WT00007598-2010 (surrendered), WT00012684-2012 (surrendered)
Registration as a Chemical Waste Producer	Approved on 2 September 2009 Permit no. 5213-113-D2422-01 (surrendered), Permit no. 5213-113-D2422-03 (surrendered), Permit no. 5213-113-D2422-02 (surrendered)
Disposal of Construction Waste	Billing Account no. 7009262 activated on 21 August 2009
Construction Noise Permit	GW-RS0867-09 (expired), GW-RS0025-10 (expired), GW-RS0086-10 (expired), GW-RS0176-10 (expired), GW-RS0297-10 (expired), GW-RS0367-10 (surrendered), GW-RS0448-10 (expired), GW-RS0467-10 (surrendered), GW-RS0606-10 (surrendered), GW-RS0673-10 (expired), GW-RS0849-10 (expired), GW-RS0876-10 (expired), GW-RS1052-10 (expired), GW-RS1145-10 (expired), GW-RS0159-11 (expired), GW-RS0237-11 (expired), GW-RS0242-11 (expired), GW-RS0284-11 (surrendered), GW-RS0386-11 (expired), GW-RS0425-11 (surrendered), GW-RS0437-11 (expired), GW-RS0587-11 (expired), GW-RS0639-11 (expired), GW-RS0641-11 (expired), GW-RS0802-11 (surrendered), GW-RS1007-11 (expired), GW-RS1015-11 (expired), GW-RS1017-11 (expired), GW-RS1037-11 (expired), GW-RS1121-11 (expired), GW-RS0058-12 (expired), GW-RS0159-12 (expired), GW-RS0176-12 (expired), GW-RS0310-12 (expired), GW-RS0688-12 (surrendered), GW-RS0863-12 (expired), GW-RS0869-12 (expired), GW-RS1379-12 (expired),

	GW-RS0669-13 (surrendered), GW-RS0679-13 (surrendered), GW-RS1016-13 (expired), GW-RS1194-13 (surrendered), GW-RS1398-13 (expired)
<u>Contract 704</u>	
Wastewater Discharge License	WT00006664-2010, WT00006925-2010, WT00006958-2010, WT00006961-2010, WT00006962-2010, WT00007021-2010, WT00007998-2010, WT00009469-2011, WT00010128-2011, WT00012385-2012, WT00012577-2012, WT00018075-2013 WT00007939-2010 (surrendered)
Registration as a Chemical Waste Producer	Approved on 2 June 2010 Permit no. 5214-111-G2260-03 Approved on 12 November 2010 Permit no. 5213-112-G2525-02 Approved on 26 November 2010 Permit no. 5213-111-G2525-01 Approved on 25 May 2011 Permit no. 5213-112-G2525-03 Approved on 20 September 2011 Permit no. 5213-113-G2525-04 Permit no. 5213-116-G2260-04 (surrendered)
Disposal of Construction Waste	Billing Account no. 7010555 activated on 8 April 2010, Billing Account no. 7011159 (by vessel) activated on 10 September 2010
Construction Noise Permit	GW-RS0413-10 (expired), GW-RS0552-10 (expired), GW-RS0572-10 (expired), GW-RS0738-10 (surrendered), GW-RS0836-10 (surrendered), GW-RS0838-10 (surrendered), GW-RS0918-10 (expired), GW-RS1015-10 (surrendered), GW-RS1167-10 (expired), GW-RS0034-11 (expired), GW-RS0112-11 (expired), GW-RS0213-11 (expired), GW-RS0229-11 (expired), GW-RS0238-11 (expired), GW-RS0262-11 (expired), GW-RS0327-11 (expired), GW-RS0360-11 (expired), GW-RS0497-11 (expired), GW-RS0505-11 (expired), GW-RS0537-11 (expired), GW-RS0563-11 (expired), GW-RS0575-11 (expired), GW-RS0701-11 (expired), GW-RS0790-11 (expired), GW-RS0837-11 (surrendered) GW-RS0876-11 (expired), GW-RS0888-11 (expired), GW-RS0928-11 (expired), GW-RS0958-11 (expired), GW-RS0980-11 (expired), GW-RS1060-11 (expired), GW-RS1082-11 (surrendered), GW-RS1126-11 (expired), GW-RS1136-11 (expired), GW-RS1142-11 (expired), GW-RS1197-11 (expired), GW-RS1219-11 (expired), GW-RS0078-12 (expired), GW-RS0119-12 (expired), GW-RS0144-12 (expired), GW-RS0171-12 (surrendered), GW-RS0177-12 (expired), GW-RS0217-12 (surrendered), GW-RS0254-12 (expired), GW-RS0300-12 (expired), GW-RS0305-12 (surrendered), GW-RS0306-12 (expired), GW-RS0349-12 (surrendered), GW-RS0354-12 (expired), GW-RS0364-12 (expired), GW-RS0379-12 (surrendered), GW-RS0407-12 (surrendered),

	<p> GW-RS0431-12 (surrendered), GW-RS0450-12 (expired), GW-RS0480-12 (surrendered), GW-RS0527-12 (surrendered), GW-RS0592-12 (expired), GW-RS0608-12 (expired), GW-RS0717-12 (surrendered), GW-RS0723-12 (expired), GW-RS0735-12 (expired), GW-RS0757-12 (expired), GW-RS0805-12 (expired), GW-RS0825-12 (surrendered), GW-RS0876-12 (expired), GW-RS0890-12 (surrendered), GW-RS0901-12 (expired), GW-RS0921-12 (expired), GW-RS0981-12 (expired), GW-RS1012-12 (expired), GW-RS1028-12 (surrendered), GW-RS1041-12 (expired), GW-RS1053-12 (surrendered), GW-RS1098-12 (surrendered), GW-RS1119-12 (expired), GW-RS1183-12 (surrendered), GW-RS1198-12 (surrendered), GW-RS1242-12 (expired), GW-RS1324-12 (expired), GW-RS1349-12 (expired), GW-RS1351-12 (surrendered), GW-RS1389-12 (expired), GW-RS0096-13 (surrendered), GW-RS0110-13 (expired), GW-RS0195-13 (expired), GW-RS0218-13 (expired), GW-RS0422-13 (expired), GW-RS0031-13 (surrendered), GW-RS0111-13 (surrendered), GW-RS0168-13 (surrendered), GW-RS0313-13 (expired), GW-RS0333-13 (surrendered), GW-RS0406-13 (surrendered), GW-RS0407-13 (surrendered), GW-RS0671-13 (expired), GW-RS0138-13 (expired), GW-RS0347-13 (expired), GW-RS0491-13 (expired), GW-RS0574-13 (surrendered) GW-RS0603-13 (surrendered), GW-RS0608-13 (surrendered), GW-RS0723-13 (surrendered), GW-RS0729-13 (expired), GW-RS0837-13 (surrendered), GW-RS0866-13 (expired), GW-RS0934-13 (surrendered), GW-RS0944-13 (surrendered), GW-RS0985-13 (expired), GW-RS1006-13 (expired), GW-RS1030-13 (surrendered), GW-RS1069-13 (expired), GW-RS1098-13 (surrendered), GW-RS1293-13 (expired), GW-RS1317-13 (surrendered), GW-RS1350-13 (expired), GW-RS1424-13 (expired), GW-RS1446-13 (expired), GW-RS1465-13 (surrendered), GW-RS1472-13 (expired), GW-RS0086-14 (surrendered), GW-RS0114-14 (surrendered), GW-RS0037-14 (expired), GW-RS0056-14 (expired), GW-RS0146-14 (expired), GW-RS0207-14 (expired), GW-RS0273-14 (expired), GW-RS0274-14 (expired), GW-RS0310-14 (surrendered), GW-RS0320-14 (surrendered), GW-RS0337-14 (expired), GW-RS0382-14 (expired), GW-RS0423-14 (expired), GW-RS0484-14 (surrendered), GW-RS0574-14 (expired), GW-RS0628-14 (expired), GW-RS0657-14 (surrendered), GW-RS0798-14 (expired), GW-RS0857-14 (expired), GW-RS0938-14 (expired), GW-RS1021-14 (expired) GW-RS0555-14 (expired), GW-RS0696-14 (expired), GW-RS1127-14 (expired), GW-RS1195-14 (expired), GW-RS1200-14 (expired) </p>
--	---

	<p>GW-RS0704-14 (13 Jul 14– 12 Jan 15), GW-RS0714-14 (17 Jul 14– 15 Jan 15), GW-RS0976-14 (29 Sep 14– 28 Mar 15), GW-RS0977-14 (1 Oct 14– 31 Mar 15), GW-RS1102-14 (10 Oct 14– 2 Apr 15), GW-RS1341-14 (14 Dec 14– 1 Feb 15), GW-RS1347-14 (1 Dec 14– 31 May 15), GW-RS1369-14 (13 Dec 14– 12 Jun 15), GW-RS1411-14 (15 Dec 14– 15 Jan 15), GW-RS1464-14 (31 Dec 14– 31 Jan 15) GW-RS0589-11 for using PME for general construction works at Works Area J was cancelled by EPD on 31 October 2011, GW-RS0097-12 for using PME for general construction works at Works Area M was cancelled by EPD on 23 February 2012</p>
SP License	L-11-048(1) (returned)
<u>Contract 705 (Contract Substantially Completed)</u>	
Wastewater Discharge License	<p>WT00006145-2010(superseded), WT00007226-2010(superseded), WT00006686-2010(superseded), WT00008683-2011(superseded), WT00006685-2010, WT00011927-2012, WT00007225-2010 and WT00012686-2012</p>
Registration as a Chemical Waste Producer	<p>Approved on 8 February 2010 Permit no. 5213-111-G2347-17</p>
Disposal of Construction Waste	<p>Billing Account no. 7009116 activated on 8 January 2010 Billing Account no. 7010026 (by vessel) activated on 30 November 2010– expired Billing Account no. 7011896 (by vessel) activated on 3 November 2011</p>
Construction Noise Permit	<p>GW-RS0661-10 (expired), GW-RS0703-10 (surrendered), GW-RS0873-10 (expired), GW-RS0222-11 (expired), GW-RS0454-11 (expired), GW-RS0601-11 (expired), GW-RS0606-11 (surrendered), GW-RS0629-11 (surrendered), GW-RS0706-11 (expired), GW-RS0821-11 (expired), GW-RS0914-11 (surrendered), GW-RS0973-11 (expired), GW-RS1179-11 (surrendered), GW-RS1194-11 (expired), GW-RS0137-12 (expired), GW-RS0246-12 (surrendered), GW-RS0352-12 (surrendered), GW-RS0373-12 (surrendered), GW-RS0635-12 (expired), GW-RS0740-12 (expired), GW-RS0967-12 (surrendered), GW-RS1218-12 (expired), GW-RS1288-12 (surrendered), GW-RS0330-13 (surrendered), GW-RS0436-13 (expired) GW-RS0515-13 (surrendered), GW-RS0645-13 (expired), GW-RS0946-13 (surrendered), GW-RS1336-13 (surrendered), GW-RS1438-13 (expired) GW-RS0530-14 (expired) GW-RS0653-11 for using PME for general construction works at Works Area C was cancelled by EPD on 15</p>

	September 2011
<u>Contract 706 (Contract Completed)</u>	
Wastewater Discharge License	WT00004519-2009, WT00004526-2009, WT00005600-2009
Registration as a Chemical Waste Producer	Approved on 6 October 2009 Permit no. 5213-116-P2781-16
Disposal of Construction Waste	Billing Account no. 7009056 activated on 16 July 2009
Construction Noise Permit	GW-RS0703-09 for using PME for general construction works at Kennedy Town Praya works site was cancelled by EPD on 18 November 2009, GW-RS0174-10 for using PME for general construction works at Kennedy Town Praya works site was cancelled by EPD on 19 May 2010
<u>Contract 706A (Contract Completed)</u>	
Wastewater Discharge License	WT00005647-2009
Registration as a Chemical Waste Producer	Approved on 17 December 2009 Permit no. 5213-111-F2541-02
Disposal of Construction Waste	Billing Account no. 7009743 activated on 17 November 2009
<u>Contract 708 (Contract Completed)</u>	
Wastewater Discharge License	WT00004902-2009
Registration as a Chemical Waste Producer	Approved on 7 September 2009 Permit no. 5213-111-G2347-08
Disposal of Construction Waste	Billing Account no. 7009116 activated on 12 August 2009
Construction Noise Permit	GW-RS0938-09 (expired), GW-RS0283-10 (expired)
<u>Contract 714 (Contract Completed)</u>	
Wastewater Discharge License	WT00004893-2009
Registration as a Chemical Waste Producer	Approved on 21 September 2009 Permit no. 5213-111-S3305-02
Disposal of Construction Waste	Billing Account no. 7009127 activated on 14 August 2009

12 SITE INSPECTIONS

12.1 Observations

Regular site inspections were undertaken by the ET in accordance with the EM&A Manual. The contractors' performance on environmental matters were assessed. The inspection findings and the associated recommendations on improvement to the environmental protection and pollution control works were raised to the contractors for reference and/or action. It is concluded that the environmental protection and pollution control works had been implemented satisfactorily.

12.2 Other Notable Events

WIL Operation on 28 December 2014

As the WIL was in operation on 28 December 2014, the WIL construction works were substantially completed for the SYP/HKU/KET Stations and the majority of the station entrances except the entrances in Works Areas L1, M1 and N1.

IEC Site Inspections

The IEC conducted site inspections for WIL Project Works Areas on monthly basis, minor irregularities were observed during the site inspections and the respective civil works contractors had followed up and satisfactorily rectified the issues as identified in the site inspections promptly.

Works Area B

The small western portion of Works Area B had been occupied by Highways Department as a depot upon the completion of the additional concrete paving and certification of the paving design by ISC in accordance with the EP requirements. Monthly inspections on the condition of the additional paving, site drainage and foul sewerage systems had been carried out in accordance with EP Condition 3.2.2. The structural integrity of the additional concrete paving had been maintained.

Regular soil monitoring had been conducted at 3-month intervals in accordance with EP Condition 3.2.8 in order to monitor any possible migration of contaminants beneath and across the additional concrete paving in Works Area B. The soil monitoring results had been certified by the ET Leader and verified by the IEC. From the monitoring results obtained, there was no evidence of any possible migration of contaminants beneath and across the additional concrete paving in Works Area B.

Works Area MA

As the construction of the WIL magazine had completed and a portion of land at Works Area MA had been handed over to Lands Department. The concerned plants (2nos. Hong Kong Pavetta and 2nos. Silver-back Artocarpus) as mentioned in WIL EP Condition 2.8 are located in the land area which had been handed over to Lands Department. As these plants falls outside the revised Works Area MA, the regular inspection to these plants by the ET/Certified Arborist had stopped in the reporting period for October 2010. In addition, as there will be no construction activities carried out in Works Area MA, the regular construction dust and noise monitoring at the monitoring stations AM4 and CN1 for Works Area MA had stopped in the reporting period for October 2010.

The magazine had been decommissioned and handed over to the Government in end May 2014.

Proposed Alternative Construction Method for Tunnel Works from KGV to Sai Woo Lane(SWL)

The Contract 703 Contractor proposed an alternative construction method for tunnel works from KGV to SWL instead of from SWL to KGV. The proposed change in tunnel works will shorten the

overall adit and tunnel construction by around seven months. Environmental Review was conducted and concluded that the proposed alternative method for tunnel construction from KGV to SWL will not constitute a material change to the WIL Project. No adverse environmental impacts are anticipated from the proposed changes and the environmental performance requirements set out in the WIL EIA Report will not be exceeded. It is believed that there will be a societal benefit from the proposed alternative construction method with shortened construction period and the associated environmental nuisances. The Contract 703 Contractor commenced the captioned tunnel works in November 2010.

Proposed Alternative Construction Method for Shaft Excavation at Sai Woo Lane(SWL)

The Contract 703 Contractor proposed an alternative construction method for shaft excavation by blasting at SWL works site. The proposed change will shorten the construction period for the shaft at SWL. Environmental Review was conducted and concluded that the proposed alternative method for shaft construction will not constitute a material change to the WIL Project. No adverse environmental impacts are anticipated from the proposed changes and the environmental performance requirements set out in the WIL EIA Report will not be exceeded. It is believed that there will be a societal benefit from the proposed alternative construction method with shortened construction period and the associated environmental nuisances.

Proposed Alternative Arrangement in the Magazine

There is a proposal regarding alternative arrangement in the magazine for the Detonator Niche. The Hazard to Life assessments for the Detonator Niche are the same as all the other Niches which is NEQ of 300kg, hence the NEQ for the Detonator Niche can be increased to 300kg with actual Detonator numbers subject to FSD/Mines/HKPF approval. Environmental Review was conducted which concluded that there will not be any significant risk caused by the proposed change. The proposal regarding alternative arrangement in the magazine for the Detonator Niche had been submitted to CEDD/Mines for approval.

Proposed Alternative Delivery Arrangement to Works Area A

There is a proposal regarding alternative delivery arrangement to Works Area A for AM and PM delivery with the total delivery trips and the maximum load per trip maintaining the same as detailed in the WIL EIA Hazard to Life assessments and the Technical Note of Re-examination of the WIL Hazard to Life reported in the Monthly EM&A report for July 2010. Environmental Review was conducted which concluded that there will not be any significant risk caused by the proposed change and the overall risk is still within the acceptable region. The proposed modification of the delivery schedule to Works Area A is negligible in terms of the Potential Loss of Life (PLL) and F-N curve. The proposal regarding the alternative delivery arrangement to Works Area A had been submitted to CEDD/Mines for approval.

Proposed Alternative Noise Mitigation Measure for Works Area J2

The Contract 704 Contractor proposed an alternative noise mitigation measure for Works Area J2 by using noise decking to cover the excavation area. This alternative noise mitigation measure is proposed to replace the full enclosure as specified in the WIL EP condition 2.10.1. In accordance with the requirement stipulated in the WIL EP condition 2.10.1, the proposed alternative noise mitigation measure had been discussed and agreed at the CLG meeting held on 12 January 2012. The presentation material for the proposed noise decking and the extract of the eleventh CLG meeting minutes (item 2 on the proposed noise decking) are shown in Appendix H of EM&A

Report for February 2012.

Odour Emission from Works Area M

A Notice to Abate Air Pollution Pursuant to Section 10 of the Air Pollution Control Ordinance (Cap.311) was issued by EPD on 10 August 2012 regarding the emission of air pollutant in the form of objectionable odour produced from the construction of underground tunnels was causing air pollution as revealed in the EPD inspection to Works Area M on 19 July 2012. The Contract 704 Contractor was required to reduce the emission of the air pollutant to such an extent that the emission does not cause or contribute to objectionable odour or irritation to the nearby general public. According to the abatement notice, GNJV was required to rectify the odour disturbance before 18 Nov 12. The ET/ER had worked with GNJV to take steps to abate the emission of air pollutants from KGV enclosure causing/contributing to air pollution as required in the abatement notice. A consultant was commissioned by GNJV to review the existing site practices and the improvement measures for preventing potential odour disturbance from Works Area M. A report on the improvement measures implementation had been prepared.

The following site practices and improvement measures were identified:-

1. Most of the exhaust air from WIL underground tunnel work site pass through the de-duster and watering facilities via the ducts and discharge from the ventilation outlet to the atmosphere.
2. The ventilation outlet is located away from the nearby residential developments.
3. The man-access entrance always keeps closed as far as possible. The vehicular entrance of the acoustic enclosure is always closed except the need of trucks moving in/out avoiding the leakage of dust/odour emission inside the acoustic enclosure.
4. There is no opening on the acoustic enclosure except the ventilation inlet and exhaust locations, vehicular and man-access entrances. The limited openings would prevent the potential odour emissions from the tunnel shaft directly discharging to the atmosphere.
5. A blower is installed at the vehicular entrance.
6. A misting system is installed at the vehicular entrance of the acoustic enclosure for masking the odour if any.
7. 3 small size and 1 large size activated carbon filters have been installed inside the acoustic enclosure and are well operated. These filters are to remove potential odour emission from the tunnel shaft and mucking out area. The removal efficiency is 80-90% in accordance with the specification.

Upon the implementation of the above improvement measures for preventing odour disturbance to the surrounding air sensitive receivers, odour patrols were conducted from October 2012 to early November 2012, no odour was detected along the site boundary. Therefore, the odour improvement measures are considered effective in preventing odour disturbance to the air sensitive receivers in the vicinity of Works Area M.

In addition, the IEC had noted the implementation of the above odour improvement measures during the site inspection conducted in October 2012.

Community Liaison Groups

The Community Liaison Groups were established on 10 July 2009 in accordance with the EP Condition 2.6. Three CLGs, namely, Sai Ying Pun, University and Kennedy Town have been set up to provide direct communication channel for the local communities to MTR during the

construction stage of the Project on the project matters including enquiries and complaints handling on all environmental issues. Members of CLGs include the Central & Western District Councillors, Chairmen of Area Committees, representatives of local groups and government departments. Property management office, schools, and other local committees will be invited to participate in the CLGs. The first CLG meetings had been held in July 2009. The eighteenth CLG meeting had been held in June 2014.

In addition, a MTR Project hotline at 2993 3333 is in operation for public enquiries on the WIL Project and it also serves as the complaint hotline during the construction stage of the Project.

12.3 Solid and Liquid Waste Management

Base on the findings of the weekly site inspections, the Contractors' performance in solid and liquid waste management were acceptable and compliance with the EIA requirements were demonstrated. Solid wastes and liquid waste were properly disposed of. The current management standard should be maintained.

12.4 Effectiveness and Efficiency of Mitigation Measures

Based on the environmental monitoring results, the effectiveness and efficiency of the mitigation measures implemented were found to be satisfactory. It is concluded that the environmental mitigation measures as recommended in the approved WIL Project EIA Report had been implemented satisfactorily.

12.5 Review of WIL EIA Predictions

The environmental impact hypotheses with respect to construction air quality and construction noise detailed in the WIL EIA Report had been tested throughout the construction stage of the WIL Project by the regular construction impact monitorings. The environmental impact hypotheses are found to be in order generally throughout the construction stage of the WIL Project.

Based on the findings of the regular construction impact monitorings, the validity of the WIL EIA predictions can be concluded. In conclusion, the current practices regarding the performance of the environmental management system are found to be satisfactory and should be maintained.

13 CONCLUSIONS

This final Environmental Monitoring and Audit Report Part 1 presents the results of EM&A works and the impact monitoring for the construction works undertaken during the period of 10 August 2009 to 9 January 2015 for the WIL Project Works Areas except Works Areas B, L1, M1 and N1. The results of EM&A works and the impact monitoring for the construction works in Works Areas B, L1, M1 and N1 are to be presented in final Environmental Monitoring and Audit Report Part 2. The ET Leader proposes to terminate the regular construction dust and noise monitoring at these monitoring stations together with the regular site inspections for the WIL Project Works Areas except those for Works Areas B, L1, M1 and N1 after the WIL Operation.

Impact monitoring for air quality and noise were conducted in accordance with the EM&A Manual in the reporting period, there was no breach of Limit Levels for air monitoring.

There was no successful environmental prosecution in the reporting period of 10 August 2009 to 9 January 2015.

Site inspections were conducted by the Environmental Team on a weekly basis to monitor proper implementation of environmental pollution control and mitigation measures for the Project.

There were non-compliances identified in the reporting period of 10 August 2009 to 9 January 2015 for the WIL Project which were two exceedances of the Limit Level for the noise monitoring.

The Environmental Permit (EP-313/2008/J) issued by EPD on 1 September 2014 is used for the WIL Project.

In the reporting period, there was no reporting change of circumstances which may affect the compliance with the recommendations of the EIA Report.

It is concluded from the environmental monitoring and audit works for the West Island Line Project that the construction works were undertaken in an appropriately environmentally sensitive manner in the reporting period. The environmental protection and pollution control measures provided by the contractors were generally acceptable apart from some minor irregularities which were rectified timely by the respective civil works contractors.

The ET will continue the implementation of the environmental monitoring and audit programme in accordance to the EM&A Manual and to a level consistent with MTRCL's Corporate Sustainability Policy for Works Areas B, L1, M1 and N1.

Appendix A

Environmental Quality Performance Limits

Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level (µg/m3)	Limit Level (µg/m3)
AM1a	170	260
AM2	155	260
AM3a	155	260
AM4	158	260
AM5a	178	260
AM6a	157	260
AM7a	151	260
AM8	181	260
AM9a	168	260
AM10	187	260

Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level (dB(A)), Leq(30min)
0700-1900 hr on normal weekdays	When one documented complaint is received	75*
0700-2300 hr on holidays including Sundays and 1900-2300 hr on all other days		Subject to requirements stipulated in Construction Noise Permits
2300-0700 hr of next day		

* Limit for school is 70 dB(A) and 65 dB(A) during school examination periods.

Appendix B
Event Action Plans

Table 2.4 Event and Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and ER 2. Carry out investigation 3. Report the results of investigation to the IEC and ER 4. Discuss jointly with the ER and Contractor and formulate remedial measures 5. Increase monitoring frequency to check mitigation effectiveness 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly 3. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to ER with copy to IEC 2. Implement noise mitigation proposals
Limit Level	<ol style="list-style-type: none"> 1. Notify IEC, ER, EPD and Contractor 2. Identify source 3. Repeat measurement to confirm findings 4. Increase monitoring frequency 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Inform IEC, ER, EPD the causes and actions taken for the exceedances 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER with copy to IEC 3. Implement the agreed proposals 4. Revise and resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Table 9.4 Event and Action Plan for Ambient Air Quality Monitoring (Construction)

EVENT	ACTION			ER	CONTRACTOR
ACTION LEVEL					
1. Exceedance for one sample	1. Identify source, investigate the causes of complaint and propose remedial measures; Inform IEC and ER; 2. Repeat measurement to confirm finding; 3. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.	
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and ER (together with the Contractor) on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and ER (together with the Contractor) on possible remedial measures; 4. Advise the ET/ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.	
LIMIT LEVEL					
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC, ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and ER (together with the Contractor) on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to ER with a copy to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.	
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to ER with a copy to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Revise and resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.	

Appendix C

Implementation of Environmental Mitigation Measures

Table C1 Project Implementation Schedule for All Works Areas (Status as of 9 January 2015)

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
Airborne Noise Impact (Construction Phase)							
S 3.55	S 2.23	<p>The following good site practices shall be implemented:</p> <ul style="list-style-type: none"> - Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program - Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program - Mobile plant, if any, shall be sited as far from NSRs as possible - Machines and plant (such as trucks) that may be in intermittent use shall be shut down between work periods or shall be throttled down to a minimum - Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs - Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities. 	To reduce construction noise impact	MTRC / Contractor	All works areas	Construction phase	Implemented
S 3.56-3.57, Table 3.10	S 2.23	<p>Quieter plant shall be used for the following PME:</p> <ul style="list-style-type: none"> - Truck - Crane/ Mobile Crane - Backhoe/Excavator/Wheel Loader/ Front-end-loader - Breaker - Concrete Mixer Truck - Pokers, vibratory, hand held - Pile Extractor - Roller, vibratory - Asphalt Paver - Hydraulic Breaker 	To reduce construction noise impacts	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<ul style="list-style-type: none"> - Pile Rig - Crawler Crane - Sheet Piling Machine/ Piling, Hydraulic 					
S 3.58-3.59	S 2.23	<p>Movable noise barrier shall be used for the following PME where practicable:</p> <ul style="list-style-type: none"> - Breaker - Mini Backhoe - Generator, super silenced - Backhoe - Crane - Poker, vibratory, hand-held - Hydraulic Breaker - Wheel Loader - Crusher - Hand Held Breaker - Compressor - Grout Plant - Grout Mixer - Concrete Pump - Excavator - Lorry Crane - Mobile Crane - Crawler Crane 	To reduce construction noise impacts	MTRC / Contractor	Works areas A, C, D, H, I, J, J1, L1, M1, N1, M3, O1, O2 and O3.	Construction phase	Implemented
S 3.60	S 2.23	<p>Noise enclosure/acoustic shed shall be used for the following PME where practicable:</p> <ul style="list-style-type: none"> - Air Compressor - Concrete Pump - Shotcrete Pump - Hand Held Breaker - Grout Pump - Concrete Corer 	To reduce construction noise impacts	MTRC / Contractor	All works areas	Construction phase	Implemented
S 3.61	S 2.23	Acoustic Enclosure shall be used for enclosing the rock drill as fully as possible.	To reduce construction noise	MTRC / Contractor	Works areas H,	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
			impacts		N1 and M		
S 3.62	S 2.23	Noise insulating cover shall be used to cover the following PME: <ul style="list-style-type: none"> - Breaker - Backhoe - Water pump, submersible (electric) - Crawler mounted rock drill trucks - Rock drill - Air compressor - Electric Winch - Concrete pump - Poker, vibratory, hand-held - Hand Held Breaker - Crane - Shotcrete pump 	To reduce construction noise impacts	MTRC / Contractor	Works areas J1, N1, M1 and M3	Construction phase	Implemented
S 3.63	S 2.23	Silencer shall be used for the ventilation fan	To reduce construction noise impacts	MTRC / Contractor	Works areas MA, A, C, D, G, H, I, J, J1, J2, J3, L1, M, M1, M3, N1, O1, O2 and O3.	Construction phase	Implemented
S 3.64	S 2.23	Noise insulating fabric shall be applied where practicable to cover the following PME: <ul style="list-style-type: none"> - Pile Rig - Drill rig - Pile Extractor - Power Rammer - Piling, earth auger - Piling, hydraulic 	To reduce construction noise impacts	MTRC / Contractor	Works areas MA, C, D, G, H, I, J, J1, J2, J3, L1, M, M1, M3, N1, O1, O2 and O3.	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		- Sheet Piling Machine					
S 3.65	S 2.23	Use of "Noise Control Curtain" - a noise insulating fabric to be mounted on the steel scaffold erected on the buildings to be demolished to an extent such that the line of sight between the noise source and NSR would be blocked	To reduce construction noise impacts	MTRC / Contractor	Works area A	Construction Phase – during the demolition of Block A & C of Kennedy Town Ex-Police Quarter	Implemented
S 3.67-3.70, Figure 3.17 and 3.18.	S 2.23	Temporary noise barriers shall be erected at the works areas of West of KET Station and SYP Entrance A1 & A2.	To reduce construction noise impacts	MTRC / Contractor	Works areas C and N1	Construction phase	Implemented
S 3.71	S 2.23	Decking over would be provided to cover the excavation area.	To reduce construction noise impacts	MTRC / Contractor	Works areas J, J3, G and L1	Construction phase	Implemented
S3.72	S 2.23	Full enclosure of entire works area	To reduce construction noise impacts	MTRC / Contractor	Works area J2	Construction Phase (after piling is completed)	Alternative noise mitigation measure implemented
S3.73 – 3.74	S 2.23	Use of concrete crusher instead of hydraulic breaker	To reduce construction noise	MTRC / Contractor	Works area J2, M1 and	Construction Phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
			impacts		M3		
Airborne Noise Impact (Operation Phase)							
S 3.50-3.51, Table 3.9	Appendix B	The maximum permissible sound power levels (Max SWLs) for the fixed plant shall be complied with during the selection of equipment and mitigation measures.	To comply with the noise criteria of Noise Control Ordinance	MTRC / Contractor	Vent shafts and chiller plants at KET Station, UNI Entrance C1 and SYP Entrance C, and vent shafts at KET Ex-Police Quarter, UNI Vent Shaft-Y and SYP Entrance A1&A2.	Design and operation phases	Being implemented in operation phase
S 3.77	Appendix A	<p>The following shall be considered as far as possible in the detailed design of fixed plant:</p> <ul style="list-style-type: none"> - Choose quieter plant such as those which have been effectively silenced. - Include noise levels specification when ordering new plant (including chiller and E/M equipment). 	To comply with the noise criteria of Noise Control Ordinance	MTRC / Contractor	Vent shafts and chiller plants at KET Station, UNI Entrance	Design and operation phases	Implemented in operation phase

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<ul style="list-style-type: none"> - Locate fixed plant/louver away from any NSRs as far as practicable. - Locate fixed plant in walled plant rooms or in specially designed enclosures. - Locate noisy machines in a basement or a completely separate building. - Install direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosure where necessary. 			C1 and SYP Entrance C, and vent shafts at KET Ex-Police Quarter, UNI Vent Shaft-Y and SYP Entrance A1&A2.		
Groundborne Noise Impact							
S4.91	S3.1	Ground-borne construction noise monitoring shall be conducted. The measurement locations shall be above the cutting face of the TBM, and shall be located as close to the cutting face as practicable.	To comply with the noise criteria of Noise Control Ordinance	MTRC / Contractor	Works areas of tunneling by TBM	Construction phase	Implemented
S 4.88 & Table 4.10	S 3.2	Type 1a Trackform – Resilient Baseplate with stiffness of about 25 KN/mm shall be installed at both the west- and east-bounds starting from turnout in proximity of Hongway Garden towards the Sai Ying Pun Station and also the alignment under Po Shu Lau to Sai Wan Estate. A commissioning test shall be included in the Contract document in order to ensure compliance of the operational ground-borne noise criteria.	To comply with the noise criteria of Noise Control Ordinance	MTRC	Tunnel alignment	Operation phase	Implemented
Landscape and Visual Impact (Construction Phase)							
Table 5.4	Table 4.2	Re-use of Existing Soil Existing topsoil shall be re-used where possible for new planting areas within the project. The construction program shall consider	To reduce the volume of soil for disposal	MTRC / Contractor	All Works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing ground may be set up on-site as necessary. ▪					
Table 5.4	Table 4.2	No-intrusion Zone To maximize protection to existing trees, ground vegetation and the associated understory habitats, construction contracts may designate "No-intrusion Zone" to various areas within the site boundary with rigid and durable fencing for each individual no-intrusion zone. The contractor should close monitor and restrict the site working staff not to enter the "no-intrusion zone", even for non-direct construction activities and storage of equipment.	To protect the existing trees, ground vegetation and the associated understory habitats.	MTRC / Contractor	All Works areas	Construction phase	Implemented
Table 5.4	Table 4.2	Decorative Hoarding Erection of decorative screen hoarding should be designed to be compatible with the existing urban context.	To reduce visual impact due to construction	MTRC / Contractor	All Works areas	Construction phase	Implemented
Table 5.4	Table 4.2	Minimize light pollution and control of night-time glare All security floodlights for construction sites shall be equipped with adjustable shield, frosted diffusers and reflective covers, and be carefully controlled to minimize light pollution and night-time glare to nearby residences and GIC users. The Contractor shall consider other security measures which shall minimize the visual impacts.	To minimize the visual impacts.	MTRC / Contractor	All Works areas	Construction phase	Implemented
Table 5.4	Table 4.2	Aesthetic design of the conveyor belt system The removal of excavated material requires installation of a conveyor and a barging point. The conveyor will be covered, except the portion where it meets the barging point. The aim of covering or	To minimize the visual intrusion as well as the air and noise quality issues	MTRC / Contractor	Works areas E & F	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		enclosing the conveyor is to avoid noise and air quality issues; however, the conveyor where above-ground should be adequately screened and /or constructed of suitable materials and in colours/tones that minimize visual intrusion.					
Table 5.4	Table 4.2	<p>Protection of Retained Trees</p> <p>All retained trees should be recorded photographically at the commencement of the Contract, and carefully protected during the construction period. Detailed tree protection specification shall be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and the tree monitoring system.</p> <p>In addition, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas.</p> <p>All implementation of tree protection works and tree preservation measures shall be supervised by a landscape specialist on site.</p>	To protect the retained trees within the site boundary	MTRC / Contractor	All Works areas	Construction phase	Implemented
Table 5.4	Table 4.2	<p>Protection of Registered Old and Valuable Trees</p> <p>Detailed tree protection measures as stipulated in WBTC No. 29/2004 – Registration of Old and Valuable Trees, and Guidelines for their Preservation, shall be allowed and included in the Contract Specification. All implementation of OVT protection measures shall be supervised by a landscape specialist on site.</p>	To protect the OVT within the site boundary	MTRC / Contractor	All Works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
Table 5.4	Table 4.2	<p>Protection of Old Stone Wall-cum-trees</p> <p>Detailed tree protection specification shall be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and the tree monitoring system. All implementation of Old stone wall-cum-trees protection measures shall be supervised by a landscape specialist on site.</p>	To protect the existing trees-cum-wall	MTRC / Contractor	All Works areas	Construction phase	Implemented
Landscape and Visual Impact (Operation Phase)							
Table 5.5	Table 4.3	<p>Tree Transplanting</p> <p>Trees of high to medium survival rate after transplanting to be affected by the works shall be transplanted where possible and practicable. Tree transplanting proposal including final location for transplanted trees will be submitted separately to seek relevant government department's approval.</p>	Tree preservation	MTRC / Contractor	All Works areas	Detail design and operation phase	Implemented
Table 5.5	Table 4.3	<p>Compensation Tree Planting</p> <p>Compensatory tree planting should be provided to compensate for felled trees. Compensatory tree planting proposal including location of compensation will be submitted separately to seek relevant government department's approval.</p>	To reduce impact to existing trees.	MTRC / Contractor	All Works areas	Detail design and operation phase	Being implemented as per planting programme
Table 5.5	Table 4.3	<p>Aesthetic landscape and architectural treatment on Station / Entrance / vent shaft</p> <p>All station entrances, vent shafts and all above ground structures shall be sensitively designed to ensure the element with colour, texture and tonal quality being compatible to the existing urban context, which shall include tree planting where space permits, to minimize the potential adverse landscape and visual impacts. For</p>	To ensure the elements are compatible to the existing urban context and minimize the landscape and	MTRC / Contractor	Stations / Entrances / Vent Shafts	Detail design and operation phase	Being implemented as per construction programme

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		example, roof greening and vertical greening would be applied where possible subject to technical operational and maintenance constraints.	visual impacts.				
Table 5.5	Table 4.3	Re-installment of excavated Area All excavated area and disturbed area for utilities diversion, temporary road diversion, and pipeline works shall be reinstated to former conditions or even better, to the satisfaction of the relevant Government departments.	To minimize the visual impacts.	MTRC / Contractor	All Works areas	Operation phase	Implemented
Table 5.5	Table 4.3	Re-provision of public open space Every effort should be made to so that no public open space would be unnecessarily affected by the Project and if affected, they should be reprovided as far as possible and practicable. Sensitive design and re-provision of the affected Public Open Space (Forbes Street Playground, Hill Road Rest Garden, Ki Ling Lane Children's Playground, Mui Fong Street Children Playground, Sai Woo Lane Playground, Centre Street Market Sitting-out Area, King George V Memorial Park) incorporating replacement facilities for those provided at present, using materials of quality suitable for long term use and acceptable to relevant Government authority. Relevant government departments including LCSD and PlanD should be consulted on the design of the re-provisioned public open spaces at the early stage of the design process.	Re-provision of landscape amenity area and facilities	Contractor	All Works areas	Operation phase	Being implemented as per reinstatement programme
Cultural Heritage Impact (Construction Phase)							
S6.45, S6.51-6.55	S 5.4 – 5.11	The construction vibration control limits shall be followed. Compliance monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme The location and installation of the monitoring stations should be	To minimize vibration impacts on the identified vibration sensitive	MTRC / Contractor	All Works Areas	Detail design, construction and operational	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		discussed and agreed with AMO before installation.	historical buildings.			phase	
S6.46	S5.3	Hoardings or boundary fencing shall be designed in a manner that responds to the existing urban context.	To minimize visual impacts	MTRC / Contractor	All Works Area	Detailed design and operational phase	Implemented
S6.44	S5.12-5.14	Archaeological watching brief shall be conducted for the identification of any historical finds in the directly impacted works areas which might have a potential for finds and remains of archaeological interest to be found. Details of the frequency of inspection shall be provided to AMO for review and comment once the detailed construction programme has been finalized. The inspection should be carried out by the qualified archaeologist who have applied to the Antiquities Authority for a License	To identify any historical finds in the works areas	MTRC / Qualified Archaeologist	Works Area C, H, I, J, J1, J2, J3, M and M2	Construction phase	Implemented
Cultural Heritage Impact (Operation Phase)							
Table 6.2	5.3	Aboveground structures shall be designed in a manner that responds to the existing urban context.	To minimize visual impacts	MTRC / Contractor	Stations / Entrances / Vent Shafts	Detail design and operation phase	Implemented
S6.60	S 5.15	Recommended measures for mitigating operational phase landscape and visual impacts shall be implemented.	To minimize potential visual impact on heritage sites	MTRC / Contractor	Stations / Entrances / Vent Shafts	Detail design and operational phase	Implemented
Waste Management Implications (Construction Phase)							
S7.30	S 6.5	Good site practices - 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	To reduce waste management impacts	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<ul style="list-style-type: none"> - Training of site personnel in proper waste management and chemical handling procedures - Provision of sufficient waste disposal points and regular collection of waste - 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. - Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre. 					
S7.31 & S7.32	S 6.6 – S 6.7	<p>Waste reduction measures</p> <ul style="list-style-type: none"> - Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals - 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 work force - Proper storage and site practices to minimise the potential for damage or contamination of construction materials - Plan and stock construction materials carefully to minimise 	To achieve waste reduction	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>amount of waste generated and avoid unnecessary generation of waste.</p> <ul style="list-style-type: none"> - A recording system for the amount of wastes generated, recycled and disposed (including disposal sites) should be proposed - Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle. - A Waste Management Plan shall be prepared by the Contractor prior to the commencement of construction work to provide an overall framework for waste management and reduction. 					
S7.34 & S7.35	S 6.9 & S6.10	<p>C&D Material</p> <ul style="list-style-type: none"> - In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the excavated materials arising from station and tunnel construction shall be reused on-site as backfilling material and for landscaping works as far as practicable. - Surplus rock generated from the tunnelling works, shafts/adits construction and the stations cavern construction should be reused in reclamation and site formation projects either in the Mainland or Macau, or disposed of at a PFRF, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses. - C&D waste generated site clearance from the proposed works areas would require disposal to the designated landfill site. - In order to monitor the disposal of inert C&D material and C&D 	To minimize environmental impacts during the handling, transportation and disposal of C&D material	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>waste at PFRFs and landfills, respectively, and to control fly-tipping, a trip-ticket system shall be established in accordance with ETWB TCW No. 31/2004.</p> <ul style="list-style-type: none"> - Material delivered to PFRFs should be of size less than 250mm or other sizes as agreed with the Secretary of the Public Fill Committee. 					
S7.36	S 6.11	<p>General refuse</p> <ul style="list-style-type: none"> - General refuse shall be stored in enclosed bins or compaction units separate from C&D material and chemical wastes. - A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D material and chemical wastes. Preferably an enclosed and covered area shall be provided to reduce the occurrence of 'wind blown' light material. 	To minimize environmental impacts during the handling, transportation and disposal of general refuse	MTRC / Contractor	All works areas	Construction phase	Implemented
S7.37	S 6.12	<p>Chemical waste</p> <ul style="list-style-type: none"> - Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i>. - Good quality containers compatible with the chemical wastes shall be used, and incompatible chemicals shall be stored separately. - Appropriate labels shall be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. 	To minimize environmental impacts during the handling, transportation and disposal of chemical refuse	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		- The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, either to the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the <i>Waste Disposal (Chemical Waste) (General) Regulation</i> .					
Waste Management Implications (Operation Phase)							
S7.39	S 6.11	General Refuse and Industrial Waste <ul style="list-style-type: none"> A reputable waste collector should be employed to remove general refuse and industrial wastes from the stations on a daily basis to minimise odour, pest and litter impacts. 	Storage and handling of waste	MTRC	Stations and entrances	Operational stage	Being implemented in operation phase
S7.40	S 6.12	Chemical Waste <ul style="list-style-type: none"> The requirements given in the <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i> should be followed in handling of these chemical wastes. A trip-ticket system should be operated in accordance with the <i>Waste Disposal (Chemical Waste) (General) Regulation</i> to monitor all movements of chemical wastes which would be collected by a licensed collector to a licensed facility for final treatment and disposal. The guidelines covered under the construction phase mitigation of chemical wastes should be referred. 	Storage and handling of the chemical waste to avoid environmental and health hazard	MTRC	Stations and entrances	Operational stage	Being implemented in operation phase
Water Quality Impact (Construction Phase)							

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
S9.31	S 8.4	<p>Construction Site Run-off and Drainage</p> <p>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. The following measures are recommended to protect water quality and sensitive uses of the coastal area i.e. WSD flushing water intakes along the harbour front, and when properly implemented should be sufficient to adequately control site discharges so as to avoid water quality impacts:</p> <ul style="list-style-type: none"> - At the start of site establishment (including the barging facilities), perimeter cut-off drains to direct off-site water around the site shall be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers shall be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system would be undertaken by the contractor prior to the commencement of construction. - The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates - Sand/silt removal facilities such as sand/silt traps and sediment basins shall be provided to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of efficient silt removal facilities shall be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps shall be 5 	To minimize water quality impacts	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flowrate of 0.1m³/s a sedimentation basin of 30m³ would be required and for a flow rate of 0.5 m³/s the basin would be 150m³. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction.</p> <ul style="list-style-type: none"> - All drainage facilities and erosion and sediment control structures shall be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit shall be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. - Measures shall be taken to minimize the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations shall be discharged into storm drains via silt removal facilities. - If surface excavation works cannot be avoided during the wet season (April to September), temporarily exposed slope/soil surfaces shall be covered by a tarpaulin or other means, as far as practicable, and temporary access roads shall be protected by crushed stone or gravel, as excavation proceeds. Interception channels shall be provided (e.g. along the crest/edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements shall always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm. Other measures that need to be implemented before, during and after rainstorms are summarized in ProPECC PN 1/94. - The overall slope of the site should be kept to a minimum to 					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>reduce the erosive potential of surface water flows, and all trafficked areas and access roads protected by coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows</p> <ul style="list-style-type: none"> - All vehicles and plant shall be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facility shall be provided at every construction site exit where practicable. Wash-water shall have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road shall be paved with sufficient backfill toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. - Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. - Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. - Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. 					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.</p> <ul style="list-style-type: none"> - Bentonite slurries used in diaphragm wall construction shall be reconditioned and reused wherever practicable. Temporary enclosed storage locations shall be provided on-site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC PN 1/94 shall be adhered to in the handling and disposal of bentonite slurries. 					
S9.32 & S9.33	S 8.5 & S 8.6	<p>General Construction Activities</p> <ul style="list-style-type: none"> - Construction solid waste, debris and refuse generated on-site shall be collected, handled and disposed of properly to avoid entering any nearby stormwater drain. Stockpiles of cement and other construction materials shall be kept covered when not being used. Requirements of the solid waste management are described in Section 7 of this EIA Report. - Oils and fuels shall only be used and stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to nearby stormwater drain, all fuel tanks and storage areas shall 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 shall be drained of rainwater after a rain event. 	To minimize water quality impacts	MTRC / Contractor	All works areas	Construction phase	Implemented
S9.34	S 8.7	<p>Sewage from Construction Workforce</p> <ul style="list-style-type: none"> - Temporary sanitary facilities, such as portable chemical toilets, shall be employed on-site where necessary to handle sewage from the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and would be responsible for appropriate disposal of waste matter and 	To minimize water quality impacts	MTRC / Contractor	All works areas with on-site sanitary facilities	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		maintenance of these facilities.					
S9.35	S 8.8	<p>Tunnelling Wastewater Discharge</p> <p>Wastewater with a high level of suspended solids should be treated before discharge by settlement in tanks with sufficient retention time. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater. In case of very high levels of suspended solids, an on-site pre-packaged treatment plant may be required with the addition of flocculants to improve the settlement of solids. A discharge licence under the WPCO would be required for discharge to the stormwater drain. It may be a stipulation of the WPCO licence to require the Contractor to monitor the quality / quantity of the discharge to show compliance with the conditions of the licence.</p>	To minimize water quality impacts	MTRC / Contractor	All works areas with tunneling works	Construction phase	Implemented
S9.36	S8.9	<p>Groundwater Monitoring</p> <p>Monitoring of groundwater table shall be conducted on a weekly basis and recharge wells will be installed.</p>	To control the potential impact on tree walls at Forbes Street due to groundwater drawdown induced by tunneling	MTRC / Contractor	Works Areas C & D	Construction phase	Implemented
Water Quality Impact (Operation Phase)							
S9.27	S8.10-S8.11	<p>Runoff from Rail Track and operational tunnel drainage</p> <ul style="list-style-type: none"> - The tunnel wall would be equipped with water-tight liner and designed for no seepage. - Standard designed silt trap or grease trap (if necessary) and oil interceptor would be provided to remove the oil, lubricants, grease, silt and grit from the tunnel runoff before discharge into 	To control runoff from rail track and tunnel seepage	MTRC	Tunnels and rail tracks	Operation phase	Being implemented in operation phase

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
S9.37	S8.12-S8.14	<p>stormwater drainage.</p> <ul style="list-style-type: none"> - Track drainage channels discharge should pass through oil/grit interceptors/chambers to remove oil, grease and sediment before being pumped to the public stormwater drainage system. - The silt traps and oil interceptors should be cleaned and maintained regularly. - Oily contents of the oil interceptors should be transferred to an appropriate disposal facility, or to be collected for reuse, if possible. 					
S9.27	S8.15-S8.16	<p>Sewage from Station</p> <ul style="list-style-type: none"> - Sewage and wastewater effluents generated from the staff at stations and food and beverage outlets, if any, would be connected to the existing foul sewerage system. - Runoff from cleaning activities at the stations which would enter floor drains would also be connected to the foul sewer. 	To control sewage from stations	MTRC	WIL Stations	Operation phase	Being implemented in operation phase
Hazard to Life							
S10	S10.1	Blasting activities regarding transport, storage and use of explosives should be supervised and audited by competent site staff to ensure strict compliance with the blasting permit conditions.	To ensure that the risks from the proposed explosives storage, handling and transport would be acceptable	MTRC / Contractor	Works areas at which explosives would be stored and/or used.	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
S10	S10.1	Delivery vehicles shall not be permitted to remain unattended within the magazine. In addition, they shall not be allowed to park overnight, or when not in use, within the magazine and its adits	To reduce the risk of fire within the magazine	MTRC / Contractor	Explosive Magazine	Operational phase	Implemented
S10	S10.1	Blast doors or heavy duty blast curtains should be installed at the access adits and shafts to prevent flyrock, and control the air over-pressure	To reduce the risk of injury due to flyrock during the WIL construction	MTRC / Contractor	At suitable locations, access adits and shafts	Construction phase	Implemented
S10	S10.1	Detonators shall not be transported in the same vehicle with other Class 1 explosives	To reduce the risk of explosion during the transport of cartridged emulsion	MTRC / Contractor	-	Construction phase	Implemented
Air Quality (Construction Phase)							
Table 11.6	Table 9.5	<p>Rock Crushing Plants</p> <p>The unloading process would be undertaken within enclosed rock crushing facility. Water spraying would be provided at the unloading point.</p> <p>The crushing process is the secondary crushing. The rock crushing plant is enclosed and water spraying system would be installed. Dust extraction and collection system with 80% dust removal efficiency would be provided.</p> <p>The crushed stone/rock would be screened by the screening and sorting facility before transporting to the temporary stockpile via enclosed conveyor. Water spraying system would be installed. Dust extraction and collection system with 80% dust removal efficiency would be provided.</p>	To minimize dust impacts	MTRC / Contractor	Rock crushing plants at works areas B and E	Construction phase	Implemented at Works Area E
Table 11.7	Table 9.6	<p>Temporary Stockpiles</p> <p>Kennedy Town Abattoir Site:</p>	To minimize dust impacts	MTRC / Contractor	Temporary stockpiles at works	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>Loading point – Loading of crushed materials from rock crushing facility onto stockpile</p> <ul style="list-style-type: none"> - The transportation would be via an enclosed conveyor belt system and water spraying and flexible dust curtains would be provided at the loading point to suppress the dust impact. <p>Storage of materials - Active area for loading & unloading materials</p> <ul style="list-style-type: none"> - The active area would be minimized to 20% of the total area of the stock piles. The 80% inactive area would be well covered with impervious sheeting. Water spraying system would be applied on the active area and watering with complete coverage of active area four times a day would be required. <p>Transportation of materials to Barging Point 1</p> <ul style="list-style-type: none"> - Wheel wash facilities provided at the site exit. The vehicles would be washed before leaving the stockpiles. The spoils would also be well covered before leaving the site in order to minimise generation of dusty materials. - The haul roads within the site would be all paved and water spraying would be provided to keep the wet condition. <p>Western PCWA:</p> <p>Loading point – Loading of crushed materials from rock crushing facility onto stockpile</p> <ul style="list-style-type: none"> - The transportation would be via an enclosed conveyor belt system and water spraying and flexible dust curtains would be provided at the loading point to suppress the dust impact. <p>Storage of materials - Active area for loading & unloading materials</p> <ul style="list-style-type: none"> - Water spraying system would be applied on the active area and watering with complete of active area four times a day would be required. 			areas B and E		

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>Transportation of materials to Barging Point 2</p> <ul style="list-style-type: none"> - The vehicles would be washed before leaving the stockpiles. The spoils would also be well covered before leaving the site in order to minimise generation of dusty materials. - The haul road would be paved and water spraying would be provided to keep the wet condition 					
Table 11.8	Table 9.7	<p>Barging Facilities</p> <p>Kennedy Town Abattoir Site</p> <p>Transportation of spoils to Barging Point 1</p> <ul style="list-style-type: none"> - All road surfaces within the barging facilities would be paved and water spraying would be provided to keep the wet condition. <p>Unloading of spoil materials</p> <ul style="list-style-type: none"> - The unloading process would be undertaken within enclosed tipping hall. Flexible dust curtains and water spraying would be provided at the discharge point for dust suppression. <p>Vehicles leaving the barging facility</p> <ul style="list-style-type: none"> - Vehicle wheel washing facilities provided at site exit <p>Western PCWA</p> <p>Transportation of spoils to Barging Point 2</p> <ul style="list-style-type: none"> - All road surfaces within the barging facilities would be paved and water spraying would be provided to keep the wet condition. <p>Unloading of spoil materials from trucks to Barging Point 2</p> <ul style="list-style-type: none"> - The unloading process should be undertaken within the enclosed tipping hall. Flexible dust curtains and water spraying would be provided at the discharge point for dust suppression. <p>Unloading of spoil materials from enclosed tipping hall to Barging</p>	To minimize dust impacts	MTRC / Contractor	Barging points at works areas B and E	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>Point 3</p> <ul style="list-style-type: none"> The tipping hall would be enclosed structure. The conveyor from tipping hall to the Barging Point 3 would be enclosed. Water spraying and flexible dust curtains would be provided at the receiving point of the tipping hall. Flexible dust curtains and water spraying would be provided at the discharge point of barging facilities for dust suppression. <p>Vehicles leaving the barging facility</p> <ul style="list-style-type: none"> Vehicle wheel washing facilities provided at site exit 					
Table 11.9	S 9.26	<p>Rock Crushing Plant at Kennedy Town Abattoir Site</p> <ul style="list-style-type: none"> Dust extraction and collection system (80% dust removal efficiency) should be installed at the rock crushing facility and the discharge point is located at least 39m away from the west boundary of the rock crushing facility under the preliminary design 	To minimize dust impacts	MTRC / Contractor	Rock Crushing Plant at works area B - Kennedy Town Abattoir Site	Construction phase	N/A
Table 11.10	S 9.27	<p>Works areas at KET station construction site</p> <p>Active operating area of 50%</p> <p>Watering four times a day with complete coverage of active construction area</p>	To minimize dust impacts	MTRC / Contractor	Works area A, C and D	Construction phase	Implemented
Table 11.10	S9.27	<p>Open work areas at temporary magazine site</p> <p>Active operating area of 50%</p> <p>Watering two times a day with complete coverage of active construction area</p>	To minimize dust impacts	MTRC / Contractor	Open works area at magazine site	Construction phase	Implemented
S 11.42	S 9.28	For both rock crushing plants, the requirements and mitigation measures stipulated in the <i>Guidance Note on the Best Practicable</i>	To minimize dust impacts	MTRC / Contractor	Rock crushing	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<i>Means for Mineral Works (Stone Crushing Plants) BPM 11/1</i> should be followed and implemented.			plants		
S 11.42	S 9.28	<p>Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices:</p> <ul style="list-style-type: none"> - Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - Use of frequent watering for particularly dusty construction areas and areas close to ASRs. - Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines. - Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. - Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. - Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. - Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading points, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. - Imposition of speed controls for vehicles on unpaved site roads. 8 kilometers per hour is the recommended limit. - Where possible, routing of vehicles and positioning of 	To minimize dust impacts	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>construction plant shall be at the maximum possible distance from ASRs.</p> <ul style="list-style-type: none"> - Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. - Cement or dry PFA delivered in bulk shall be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed. - Loading, unloading, transfer, handling or storage of bulk cement or dry PFA shall be carried out in a totally enclosed system or facility, and any vent or exhaust shall be fitted with an effective fabric filter or equivalent air pollution control system. 					

**Table C2 Implementation Schedule Specific for Works Area MA - Underground Magazine Site
(Status as of 9 January 2015)**

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Reference
Ecological Impact (Construction Phase)							
App.2.3 – S. 6.1		Proposed works shall be designed to avoid or minimize direct impacts to natural habitats in the works area wherever possible.	To protect the natural habitats in the works area	MTRC / Contractor	Works Area MA	Design and construction of the magazine site	Implemented
App.2.3 – S. 6.2		Planting of vegetation shall be provided to compensate for the unavoidable loss of tall shrubland and woodland habitats. It shall be provided to re-vegetate the areas which would be 1m beyond the security fencing and temporarily affected by the construction works (e.g. slope works, erecting security fence) after the construction phase. The plant species selected for re-vegetation shall make reference to the existing habitats.	To compensate for the ecological impacts associated with the loss of vegetation	MTRC / Contractor	Works Area MA	Construction phase of the magazine site	Implemented
App.2.3 – S. 6.2		Suitable plants, preferably with native species, shall be planted within the boundary of the completed magazine site to compensate for unavoidable loss of understorey vegetation resulting from the proposed works on-site after the decommissioning of the magazine site. The compensatory planting shall make use of native plant species with flowers/fruits to attract wildlife.	To compensate for the ecological impacts associated with the loss of vegetation	MTRC / Contractor	Works Area MA	After completing the construction of the magazine site	Implemented
App.2.3 – S. 6.3		The two individuals of Hong Kong Pavetta (<i>Pavetta hongkongensis</i>) located within the footprint of the proposed tunnel portal and access entrance shall be transplanted to a suitable nearby tall shrubland or woodland habitats. Transplantation shall be supervised by a suitably qualified ecologist/horticulturalist	To protect the 2 species from the proposed works within the works area	MTRC / Contractor	Works Area MA	Prior to the construction phase of the magazine site	Implemented
App.2.3 – S. 6.4		The trees located within the works area shall be preserved as far as practicable. If tree felling is unavoidable, feasibility of tree transplantation and compensatory planting shall be explored shall be implemented.	To protect the existing trees within the works area	MTRC / Contractor	Works Area MA	Prior to the construction phase of the	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Reference
						magazine site	
App.2.3 – S. 6.5		All the existing trees and species of conservation importance (i.e. the two identified Silver-back <i>Artocarpus</i> , <i>Artocarpus hypargyreus</i>) located near the proposed works site shall be fenced off and the trunk shall be protected with hessian sacking as far as possible.	To protect the existing trees and the species of conservation importance near the works area	MTRC / Contractor	Works Area MA	Construction and operation phase of the magazine site	Implemented
App.2.3 – S. 6.6		Noise control measures including the use of quiet excavation methods, quiet construction plant and temporary noise barriers shall be implemented	To minimize the noise disturbance to the wildlife near the works area	MTRC / Contractor	Works Area MA	Construction and operation phase of the magazine site	Implemented
App.2.3 – S. 6.7		Standard good site practice measures shall be implemented, including <ul style="list-style-type: none"> • Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats. • Construction activities should be restricted to work areas that would be clearly demarcated. The work areas should be reinstated after completion of the works. • Waste skips should be provided to collect general refuse and construction wastes. The wastes would be disposed of timely and properly off-site. • General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. • Open burning on works sites is illegal, and should be strictly prohibited. 	To minimize ecological impacts	MTRC / Contractor	Works Area MA	Construction and operation phase of the magazine site	Implemented

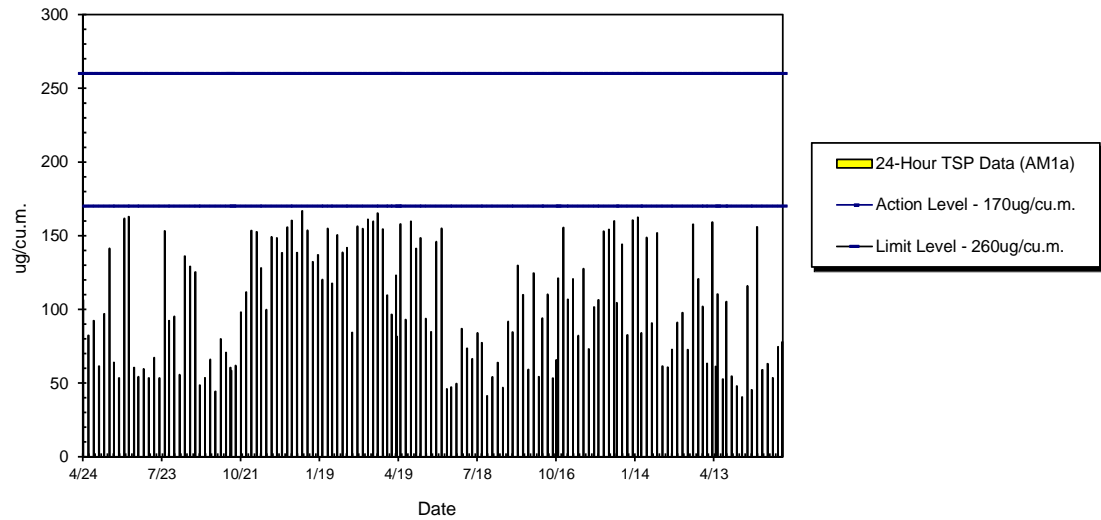
**Table C3 Implementation Schedule Specific for Works Area B – Kennedy Town Abattoir and Incinerator Area
(Status as of 9 January 2015)**

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Reference
The existing ground slab/pavement within the works area shall be kept intact.	To minimize human health risk associated with the contaminated soil and groundwater in the works area.	MTRC / Contractor	Works Area B	Construction phase	Implemented
A reinforced concrete paving of no less than 200mm thick for the cleared site shall be provided after the demolition and clearance works. A debonding layer shall be placed between the existing and new concrete slabs to allow the latter to be removed prior to the former.	To minimize human health risk associated with the contaminated soil and groundwater in the works area.	MTRC / Contractor	Works Area B	Construction phase	Implemented
Monthly site inspection shall be conducted to ensure the integrity of the existing and/or the new paving layer. Any surface cracks identified shall be filled out such that underneath soil would not be exposed.	To minimize human health risk associated with the contaminated soil and groundwater in the works area.	MTRC / Contractor	Works Area B	Construction phase	Being implemented
A clear void between the structure slab of the site office and the ground surface shall be created, i.e. the site office is a raised structure.	To allow ventilation by natural air movements to dilute the contaminant vapour released from the soil and groundwater.	MTRC / Contractor	Works Area B	During the construction of the site offices	Implemented
Incorporate gas-resistant membranes into the raised floor of the site office.	To prevent contaminant vapour under the floor slab from entering the site office to protect the staff working in the site office.	MTRC / Contractor	Works Area B	During the construction of the site offices	Implemented
Site hoardings shall be erected around the works area, and they shall be properly maintained to restrict access of trespassers.	To protect the trespassers from the contaminated soil and groundwater in the works area.	MTRC / Contractor	Works Area B	Construction phase	Implemented

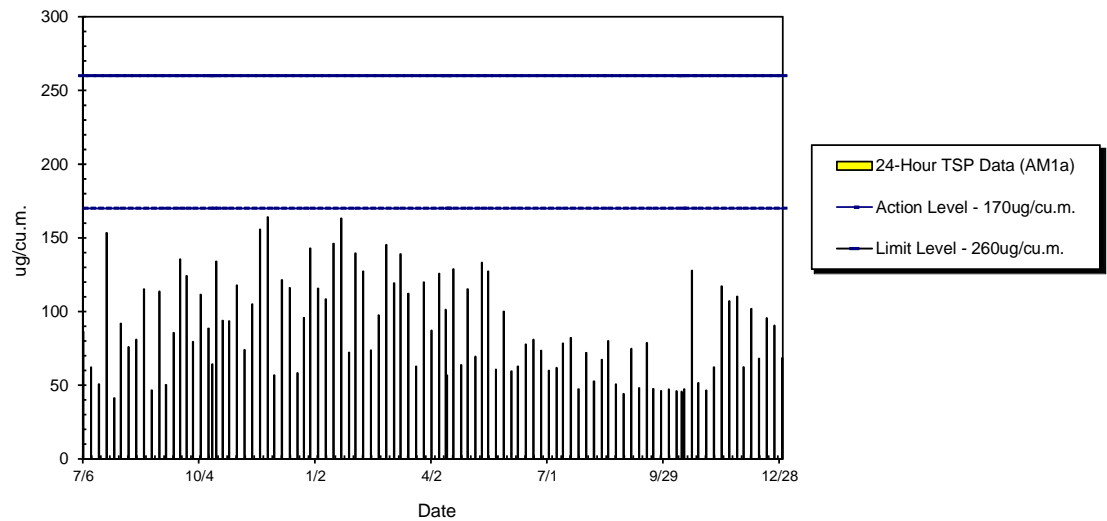
Appendix D

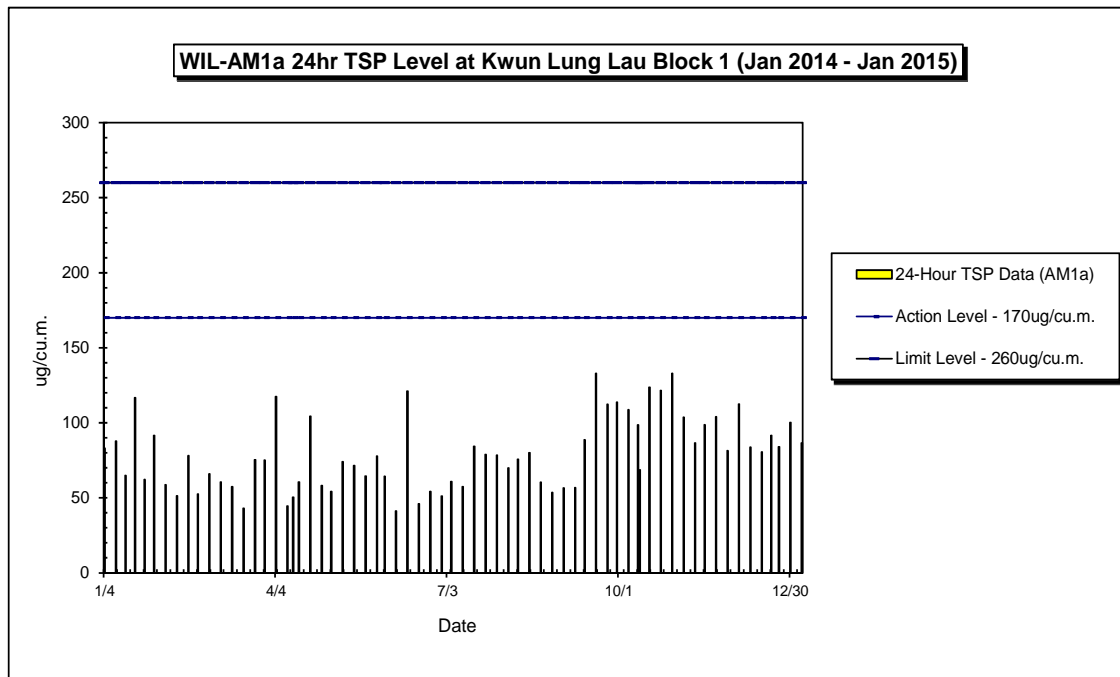
Impact Monitoring Graphical Plots

WIL-AM1a 24hr TSP Level at Kwun Lung Lau Block 1 (Apr 2010 - Jun 2012)



WIL-AM1a 24hr TSP Level at Kwun Lung Lau Block 1 (Jul 2012 - Dec 2013)



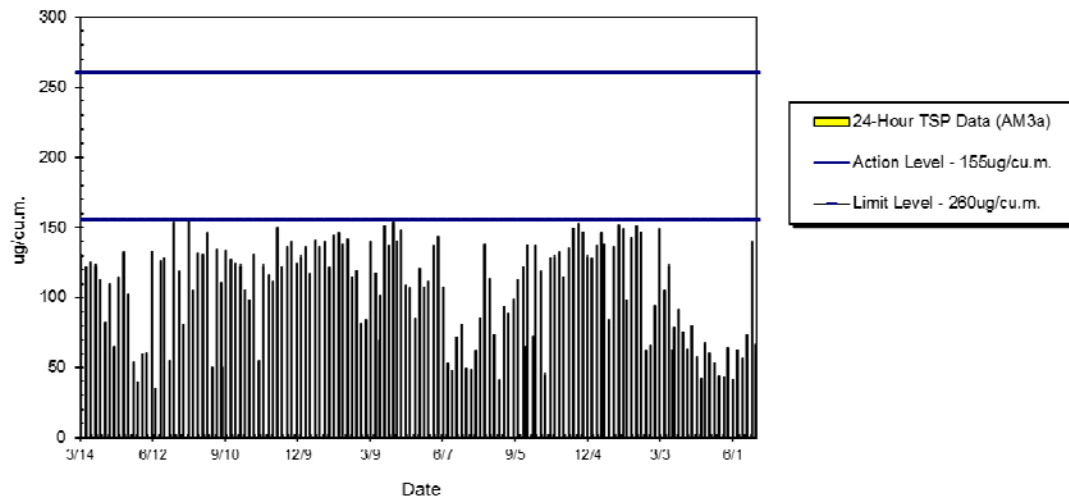


Annotation

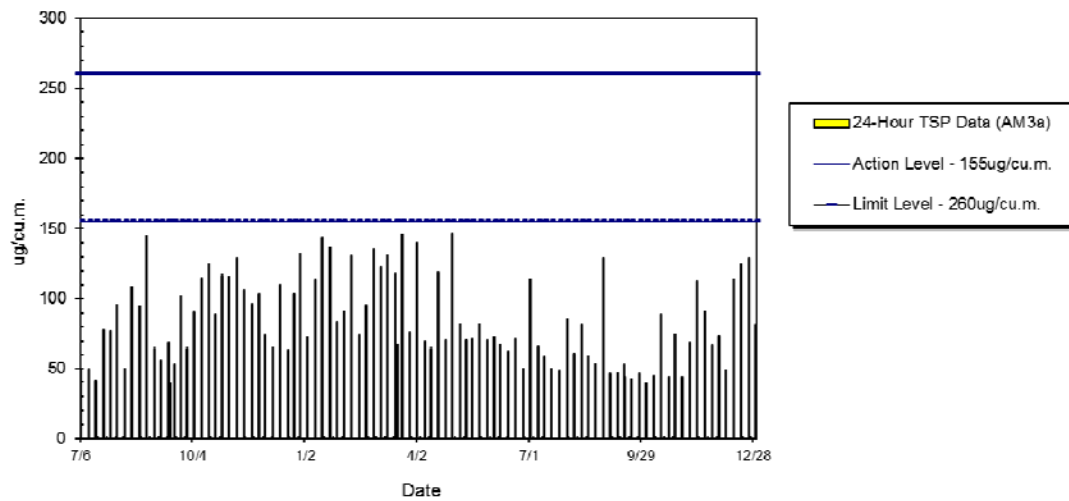
Major Activities: a. Piling and Excavation (April 2010 to June 2012)
 b. Station construction (March 2012 to March 2014)
 c. Finishing works and BS installation (July 2013 to September 2014)

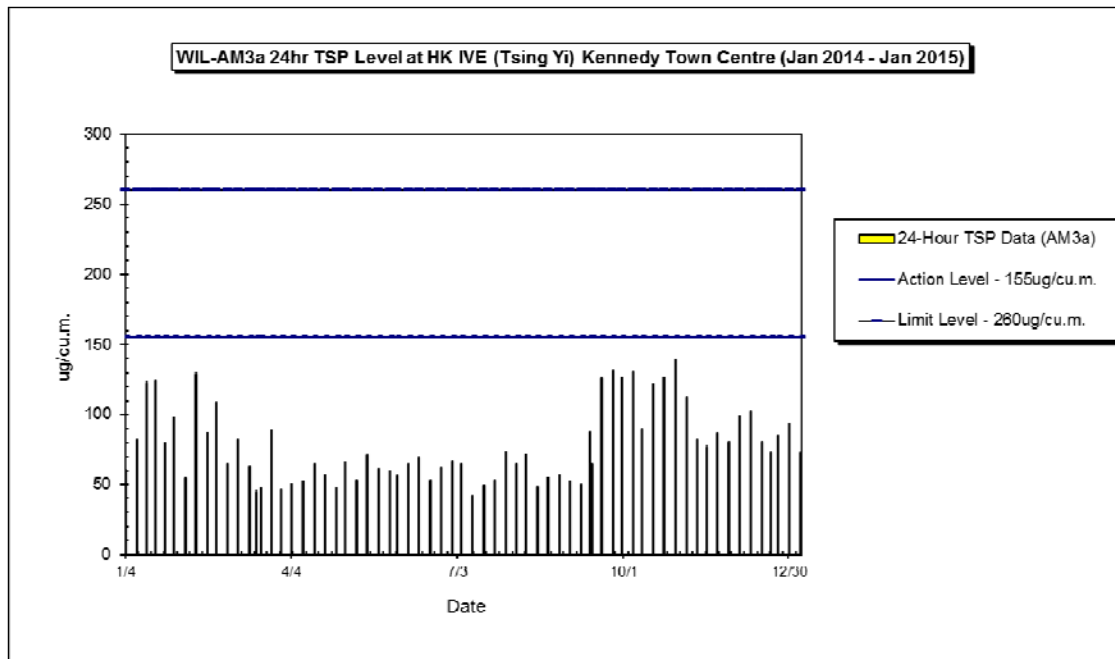
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-AM3a 24hr TSP Level at HK IVE (Tsing Yi) Kennedy Town Centre (Mar 2010 - Jun 2012)



WIL-AM3a 24hr TSP Level at HK IVE (Tsing Yi) Kennedy Town Centre (Jul 2012 - Dec 2013)

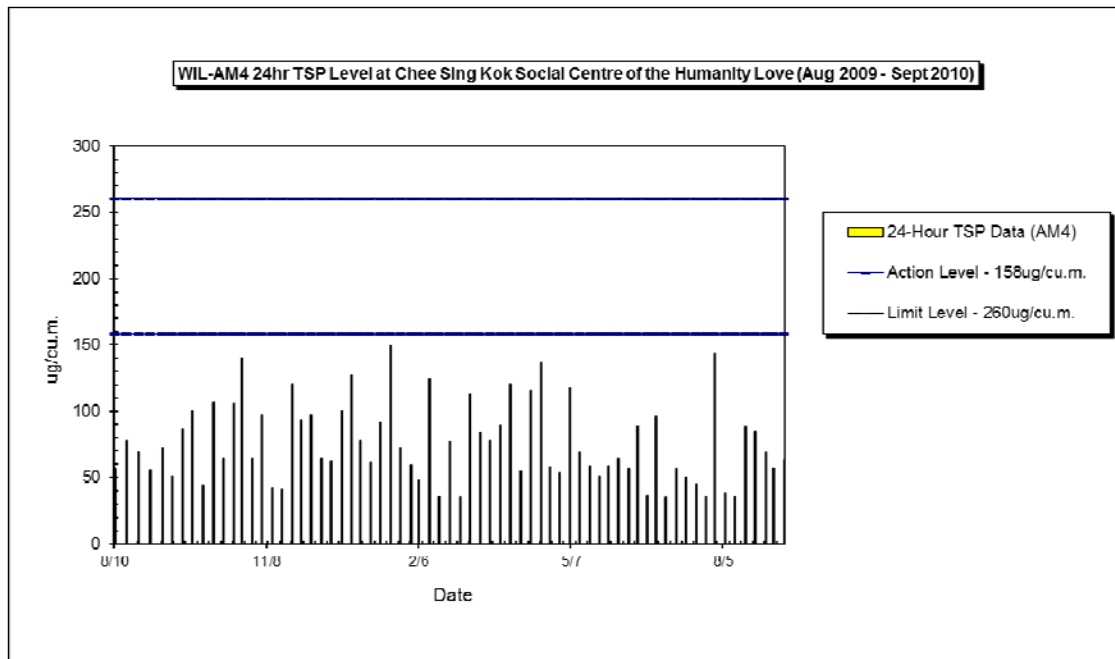




Annotation

Major Activities: a. Shaft construction (March 2010 to December 2011)
 b. Access for tunnel excavation and construction (January 2012 to June 2013)
 c. Access for materials delivery (July 2013 to September 2014)

Weather Conditions: Typical fine and occasionally raining during the monitoring periods

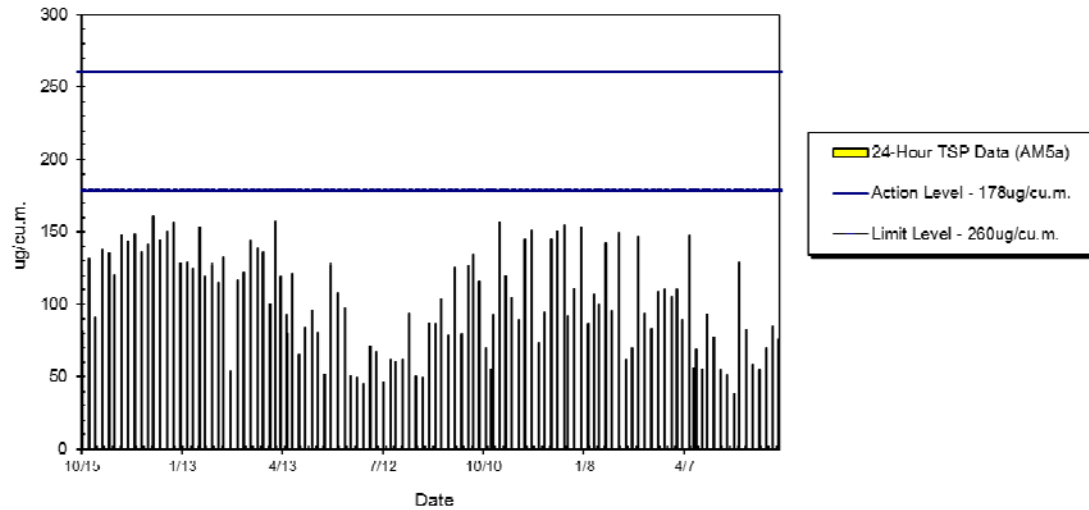


Annotation

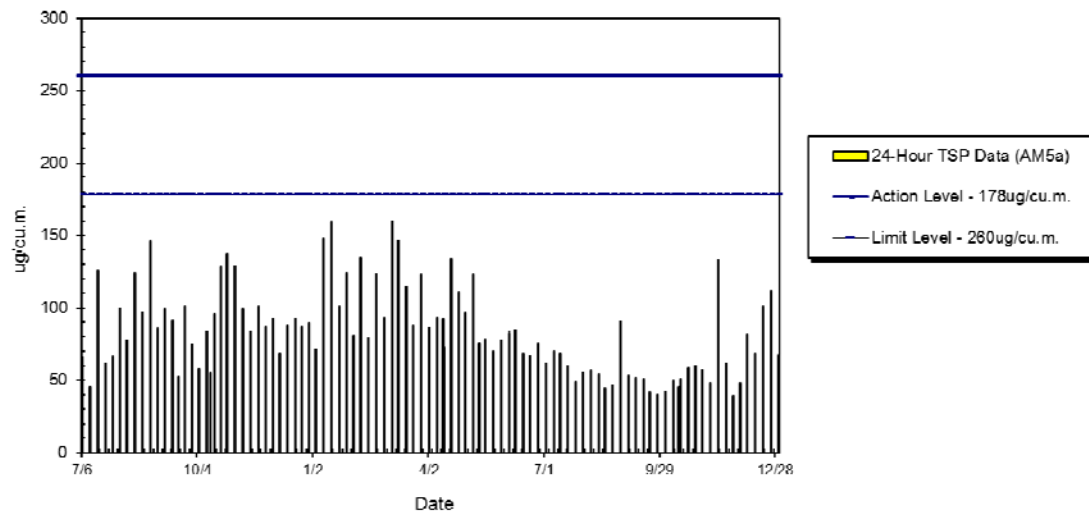
Major Activities: a. Magazine/tunnel excavation and construction (August 2009 to June 2010)
b. Finishing works and BS installation (May 2010 to August 2010)

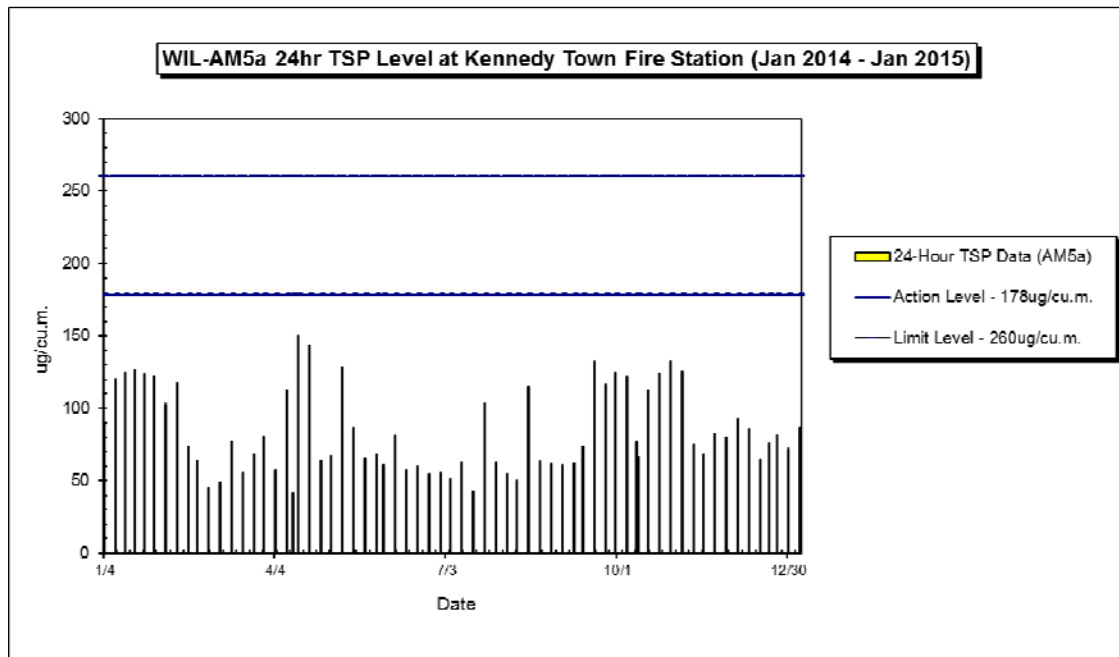
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-AM5a 24hr TSP Level at Kennedy Town Fire Station (Oct 2010 - Jun 2012)



WIL-AM5a 24hr TSP Level at Kennedy Town Fire Station (Jul 2012 - Dec 2013)





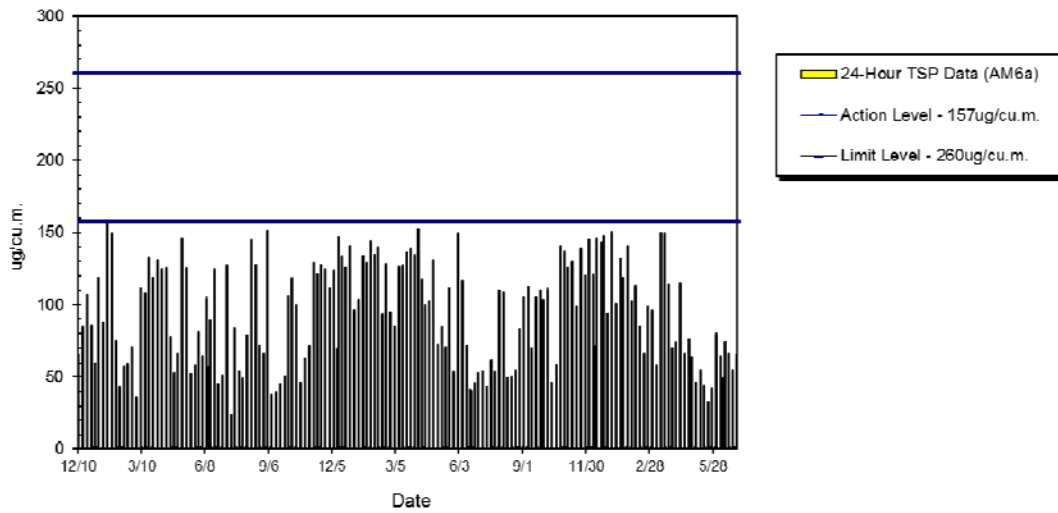
Annotation

Major Activities:

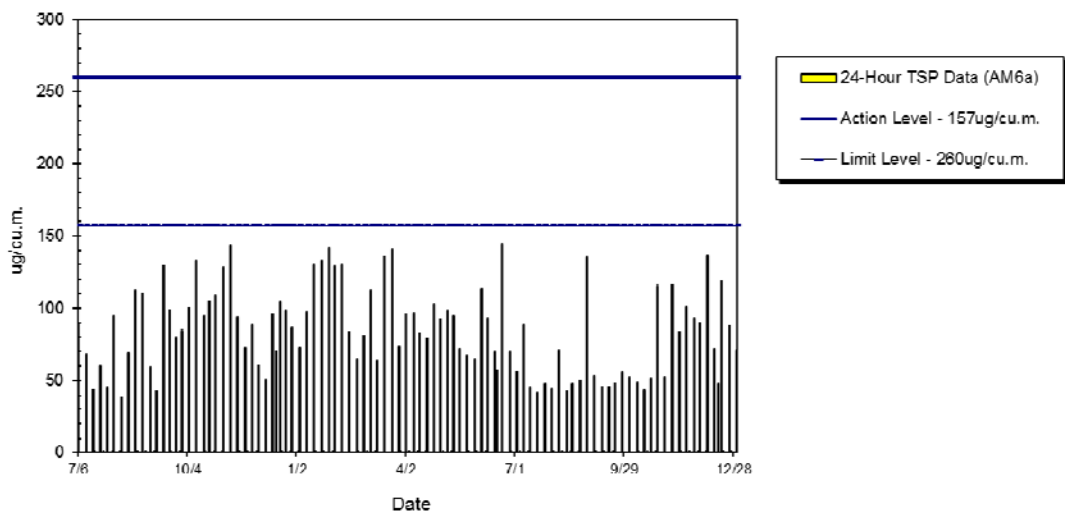
- a. Barging point construction (October 2010)
- b. Barging point operation (November 2010 to July 2014)
- c. Barging point dismantling (November 2014)

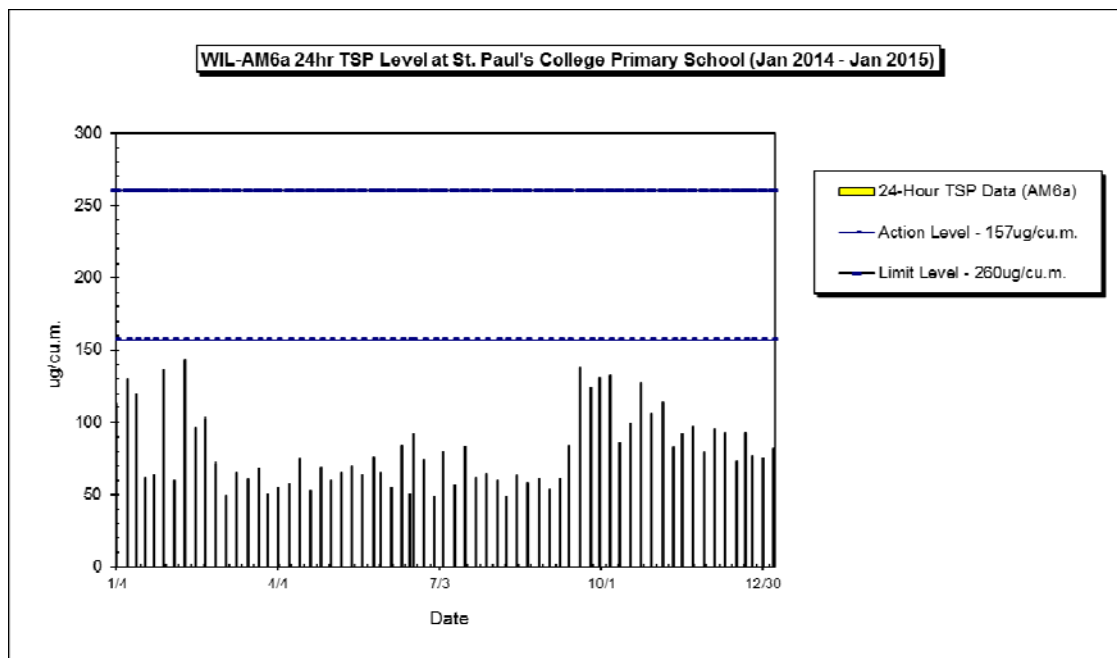
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-AM6a 24hr TSP Level at St. Paul's College Primary School (Dec 2009 - Jun 2012)



WIL-AM6a 24hr TSP Level at St. Paul's College Primary School (Jul 2012 - Dec 2013)





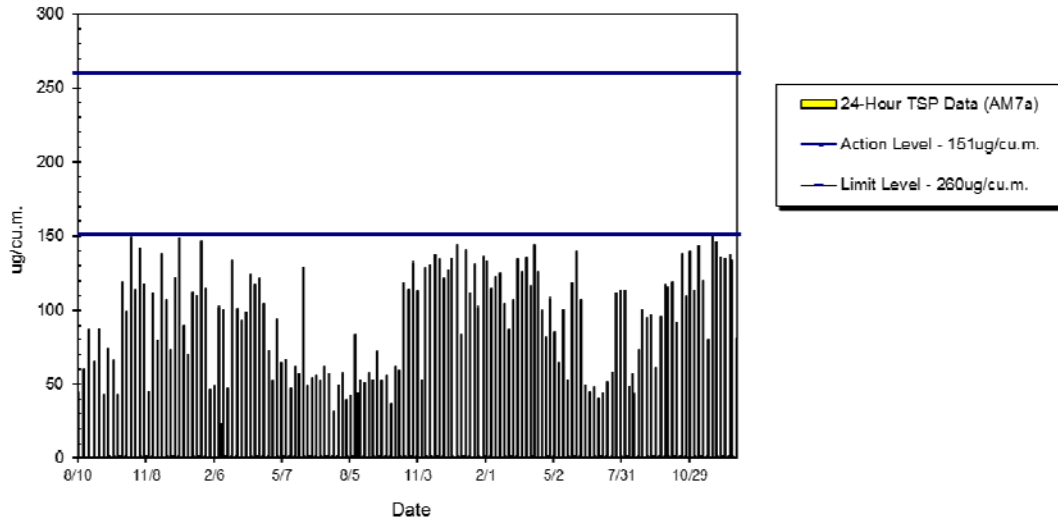
Annotation

Major Activities:

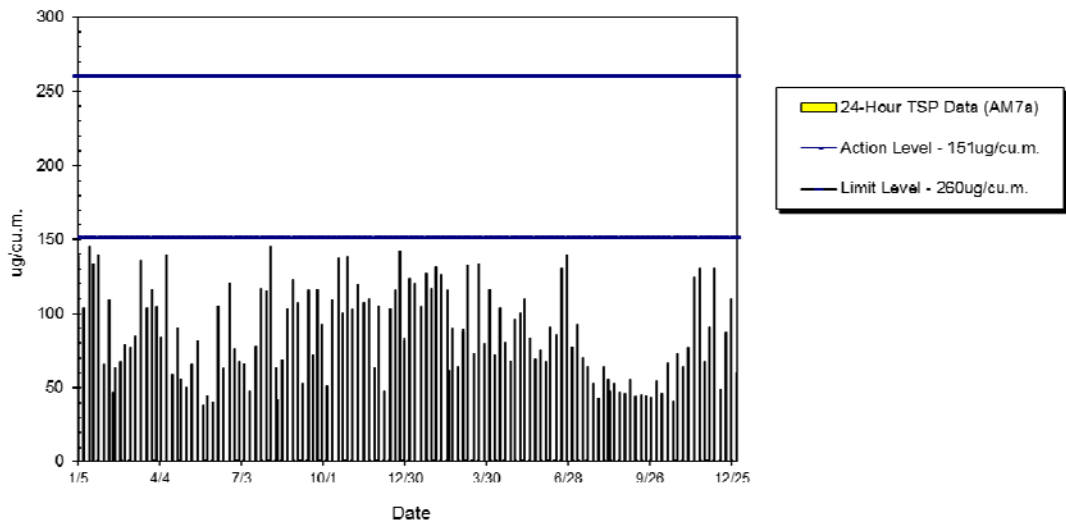
- a. Site preparation and slope work (December 2009 to September 2010)
- b. Piling and excavation (October 2010 to March 2013)
- c. Shaft construction (April 2013 to July 2014)
- d. Entrance construction and finishing work (August 2014 to December 2014)

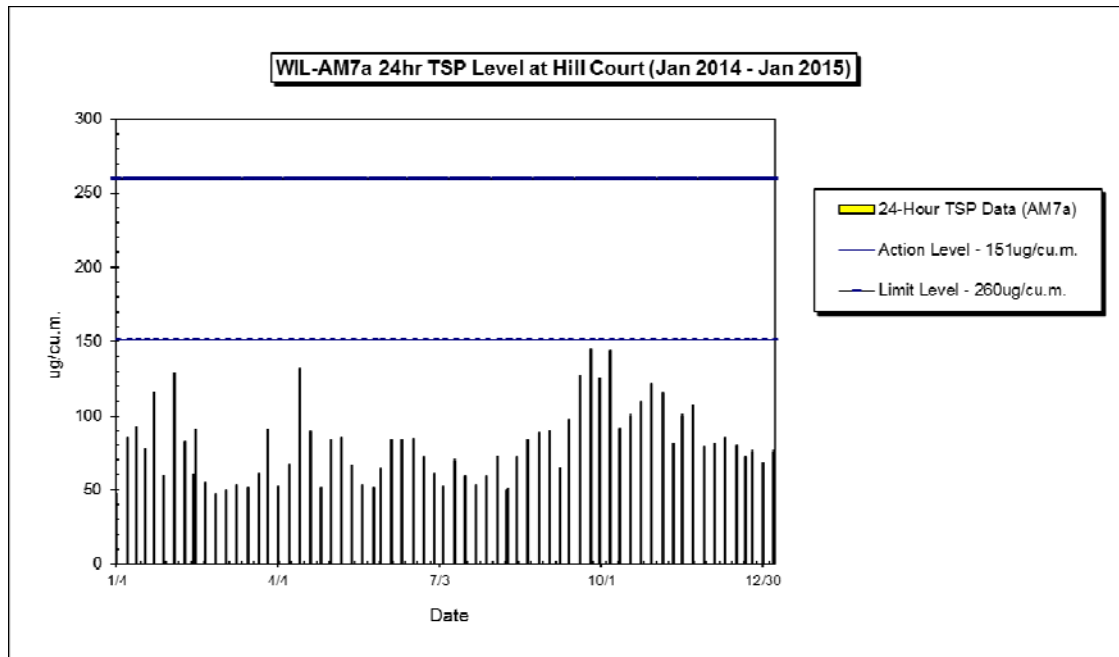
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-AM7a 24hr TSP Level at Hill Court (Aug 2009 - Dec 2011)



WIL-AM7a 24hr TSP Level at Hill Court (Jan 2012 - Dec 2013)





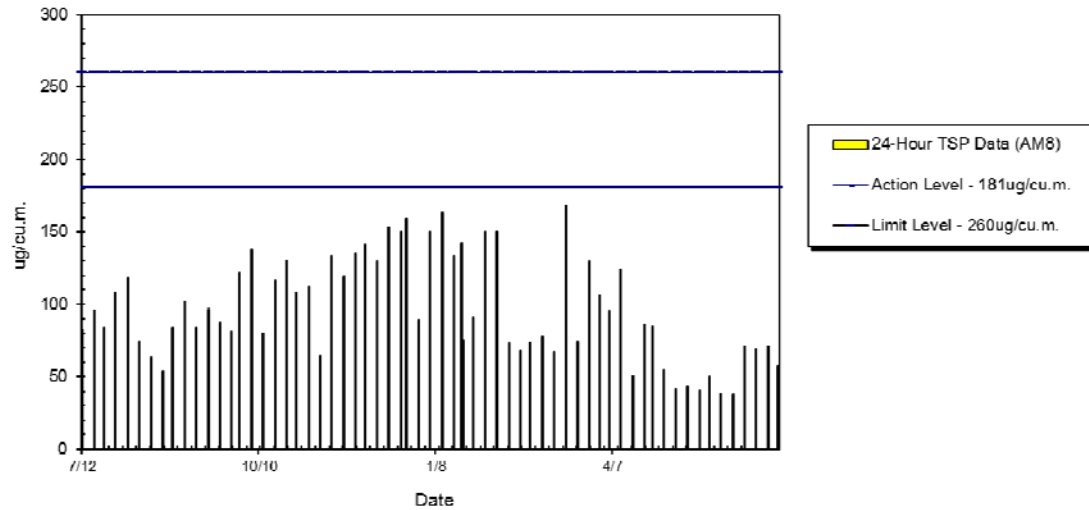
Annotation

Major Activities:

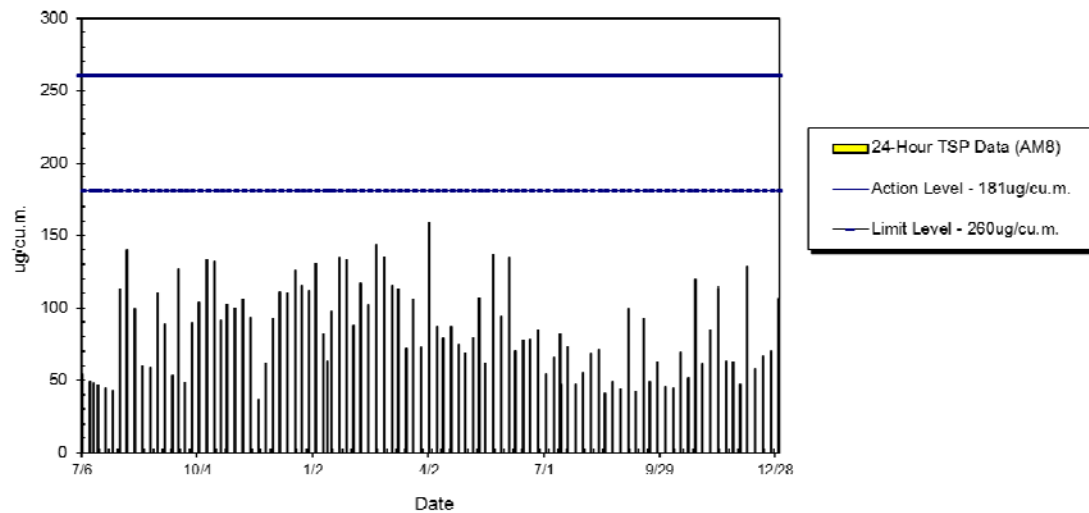
- a. Shaft construction (August 2009 to November 2010)
- b. Access for station/tunnels excavation (December 2010 to June 2012)
- c. Access for station/tunnels construction (January 2012 to June 2013)
- d. Access for materials delivery (June 2013 to September 2014)

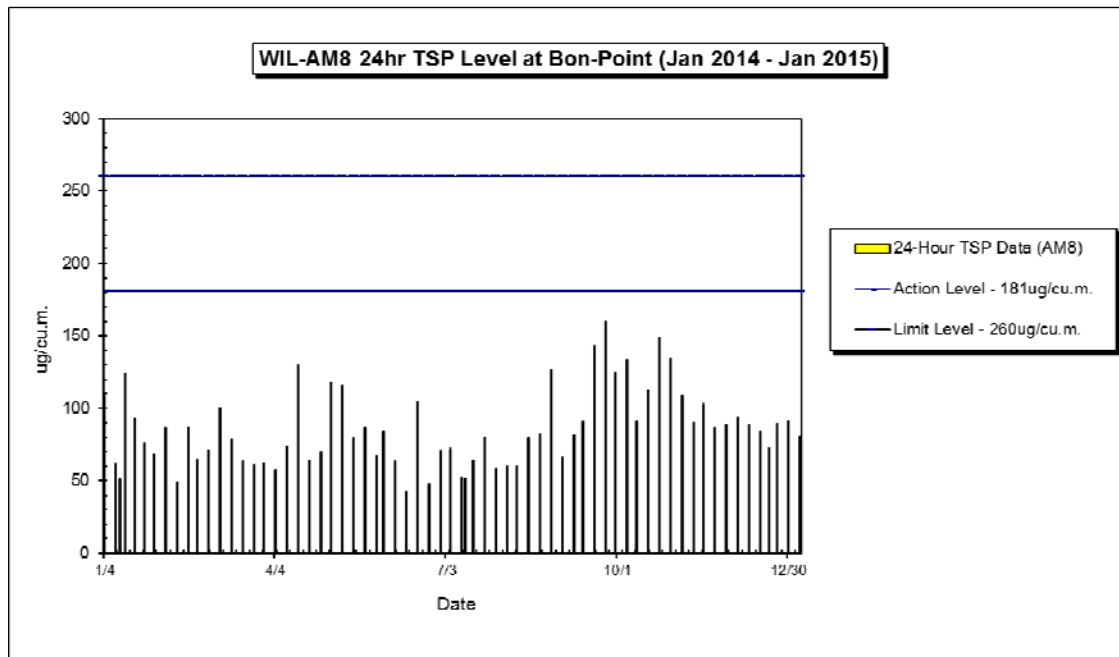
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-AM8 24hr TSP Level at Bon-Point (Jul 2011 - Jun 2012)



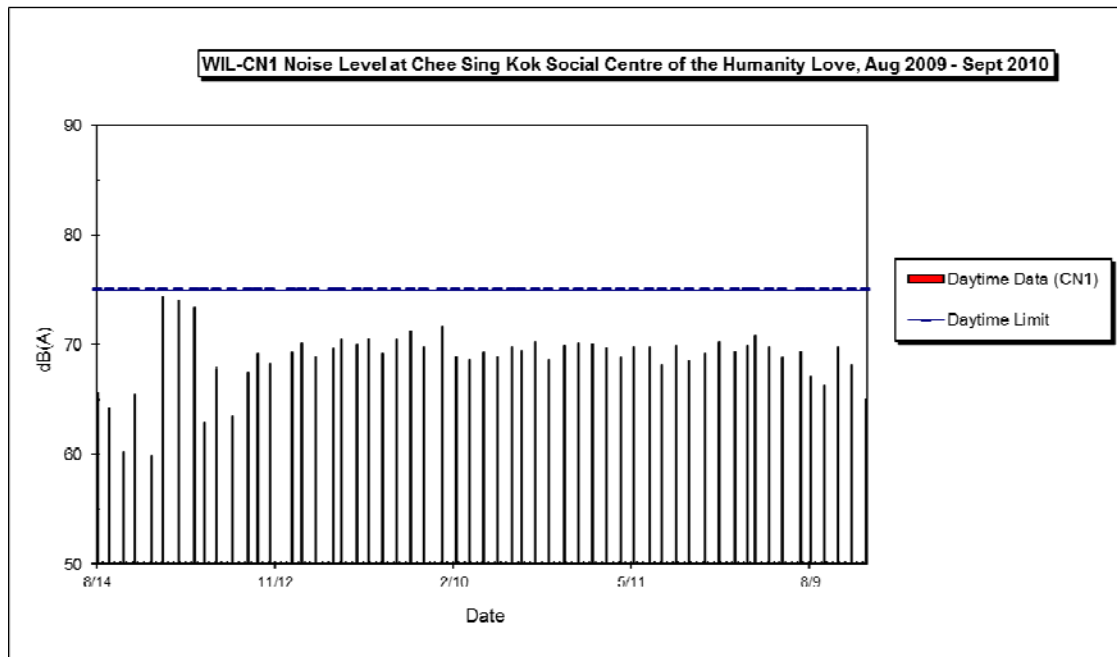
WIL-AM8 24hr TSP Level at Bon-Point (Jul 2012 - Dec 2013)





Annotation

- Major Activities:
- Piling and shaft excavation (July 2011 to December 2013)
 - Shaft construction (January 2014 to June 2014)
 - Entrance construction and finishing work (July 2014 to December 2014)
- Weather Conditions: Typical fine and occasionally raining during the monitoring periods

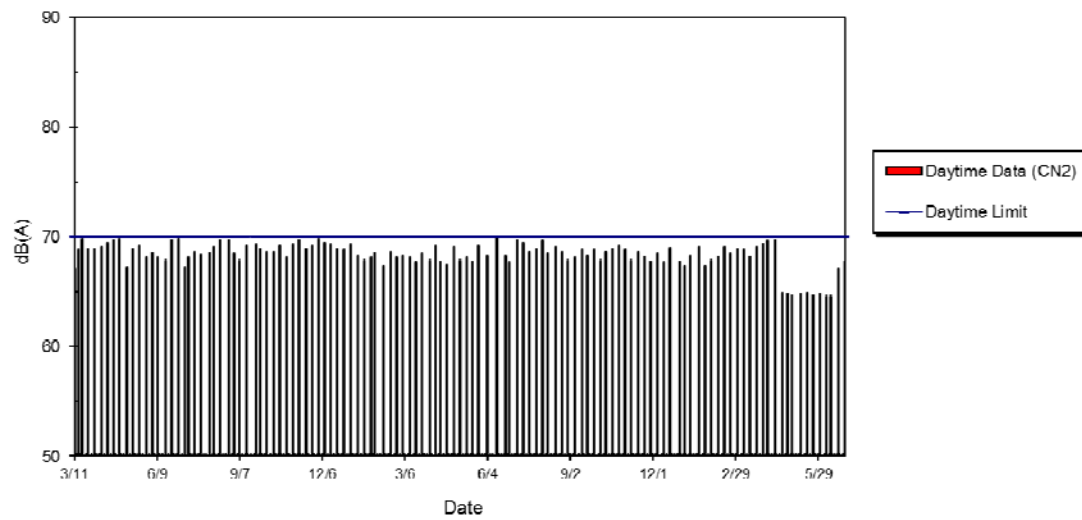


Annotation

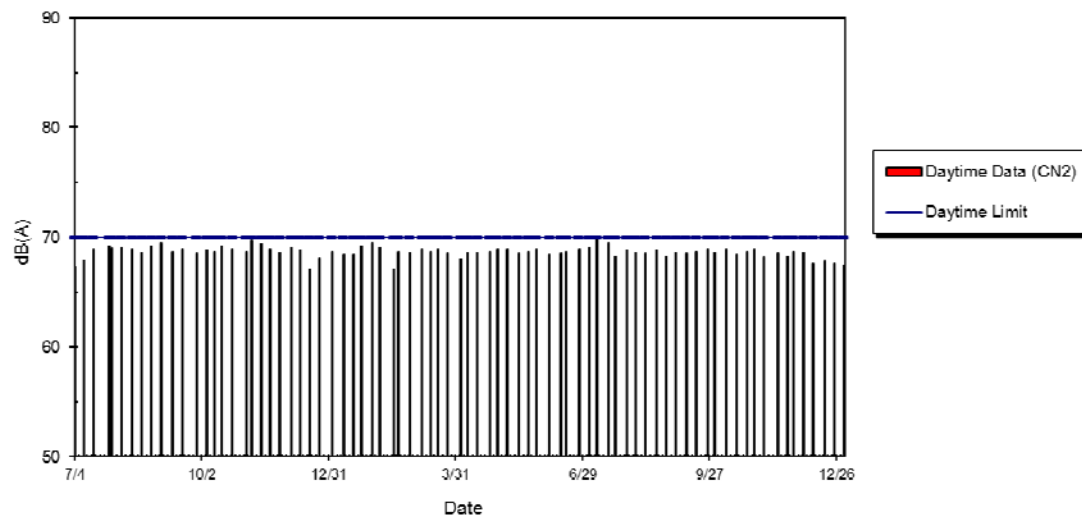
Major Activities: a. Magazine/tunnel excavation and construction (August 2009 to June 2010)
 b. Finishing works and BS installation (May 2010 to August 2010)

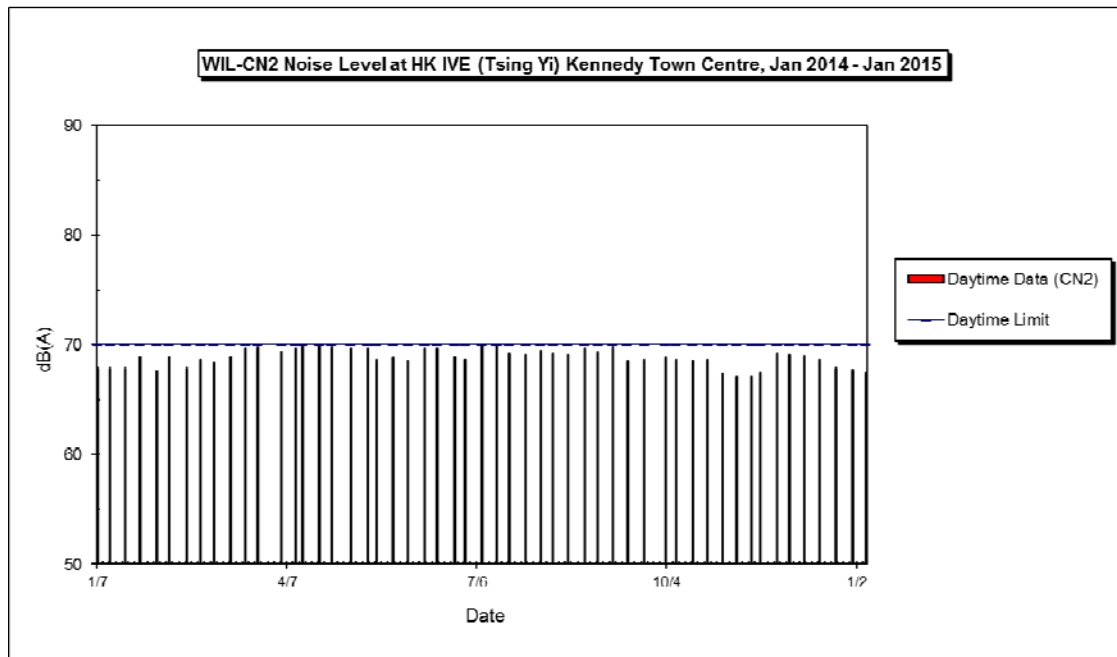
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-CN2 Noise Level at HK IVE (Tsing Yi) Kennedy Town Centre, Mar 2010 - Jun 2012



WIL-CN2 Noise Level at HK IVE (Tsing Yi) Kennedy Town Centre, Jul 2012 - Dec 2013



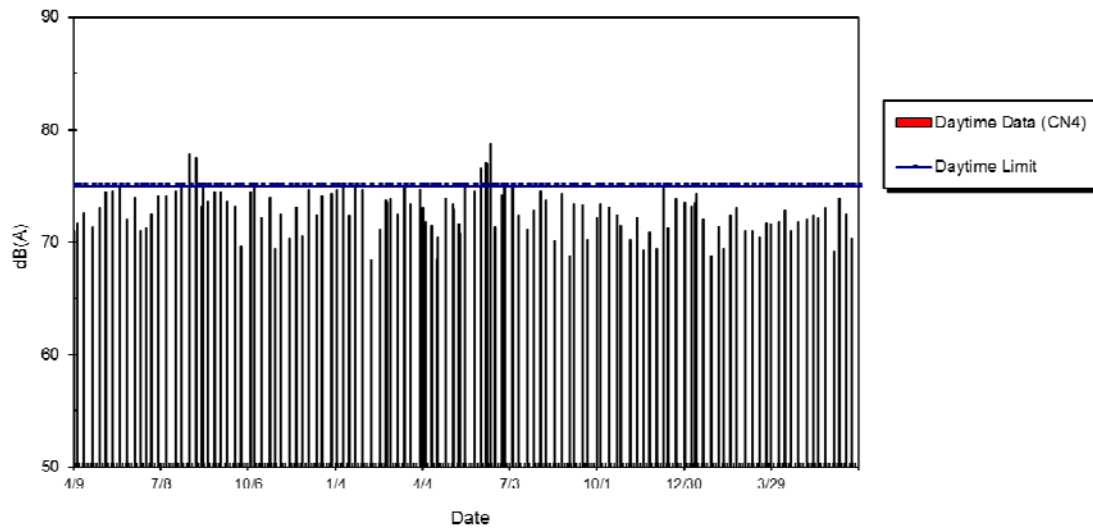


Annotation

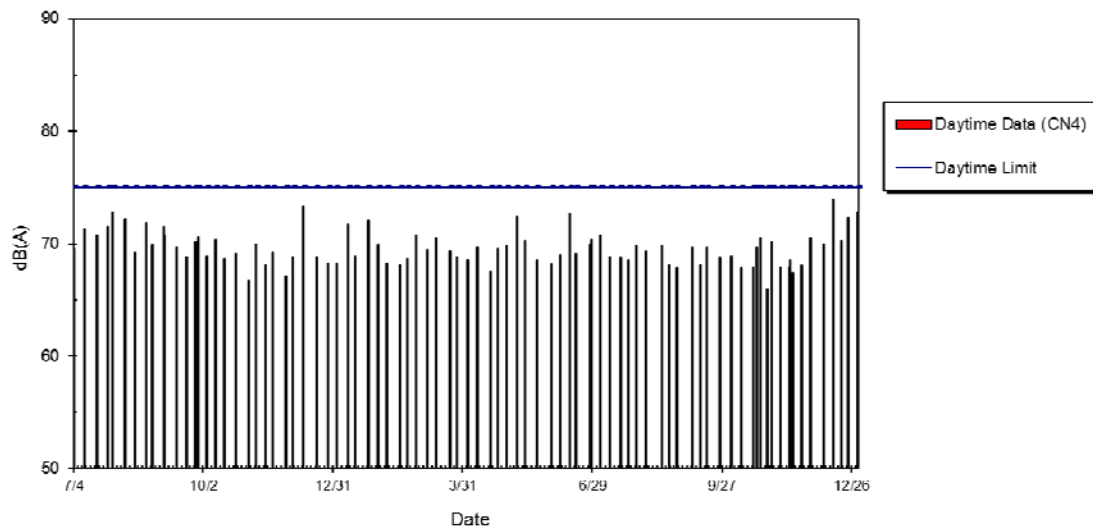
Major Activities: a. Shaft construction (March 2010 to December 2011)
 b. Access for tunnel excavation and construction (January 2012 to June 2013)
 c. Access for materials delivery (July 2013 to September 2014)

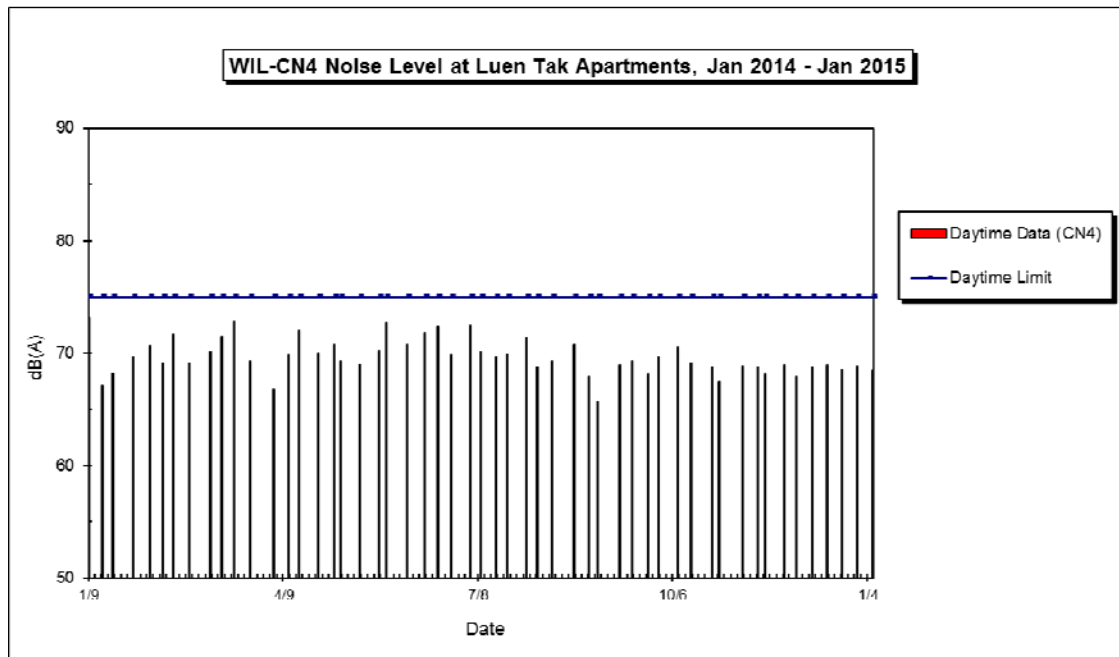
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-CN4 Noise Level at Luen Tak Apartments, Apr 2010 - Jun 2012



WIL-CN4 Noise Level at Luen Tak Apartments, Jul 2012 - Dec 2013

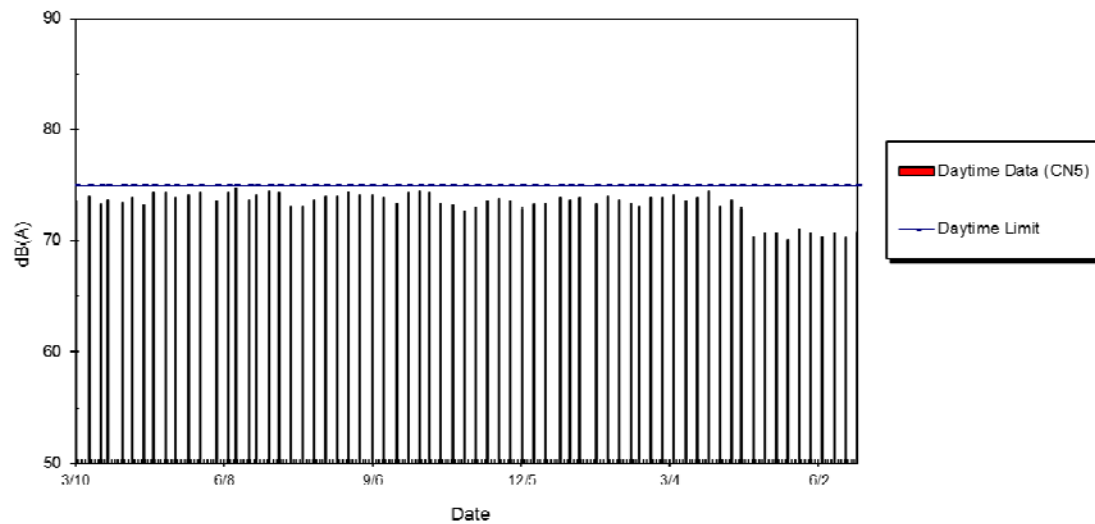




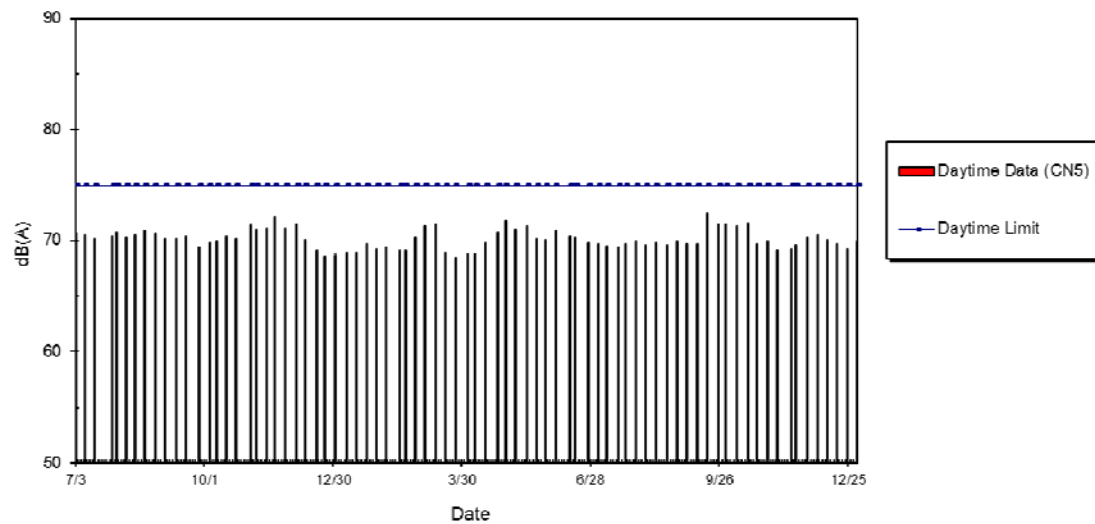
Annotation

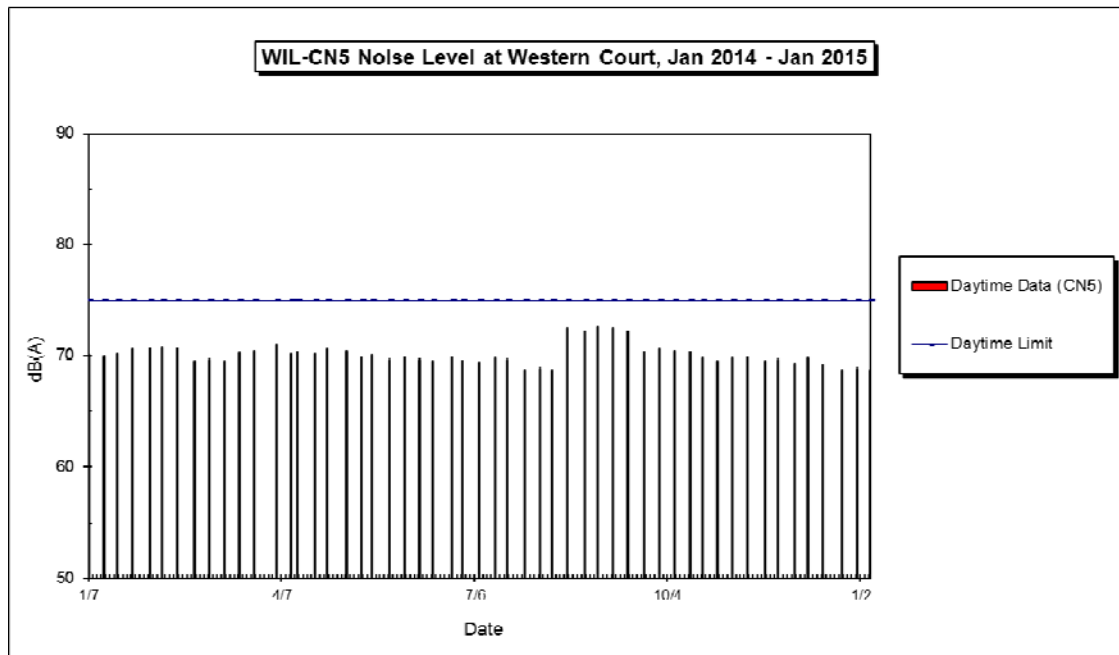
- Major Activities:
- Piling and Excavation (April 2010 to June 2012)
 - Station construction (March 2012 to March 2014)
 - Finishing works and BS installation (July 2013 to September 2014)
- Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-CN5 Noise Level at Western Court, Mar 2011 - Jun 2012



WIL-CN5 Noise Level at Western Court, Jul 2012 - Dec 2013

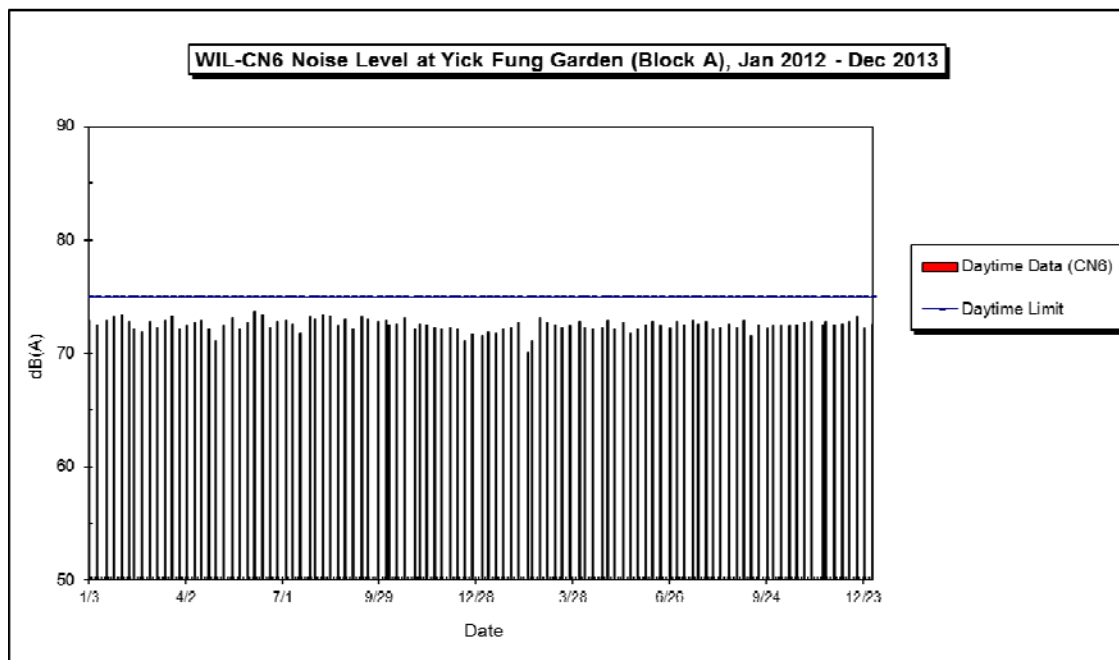
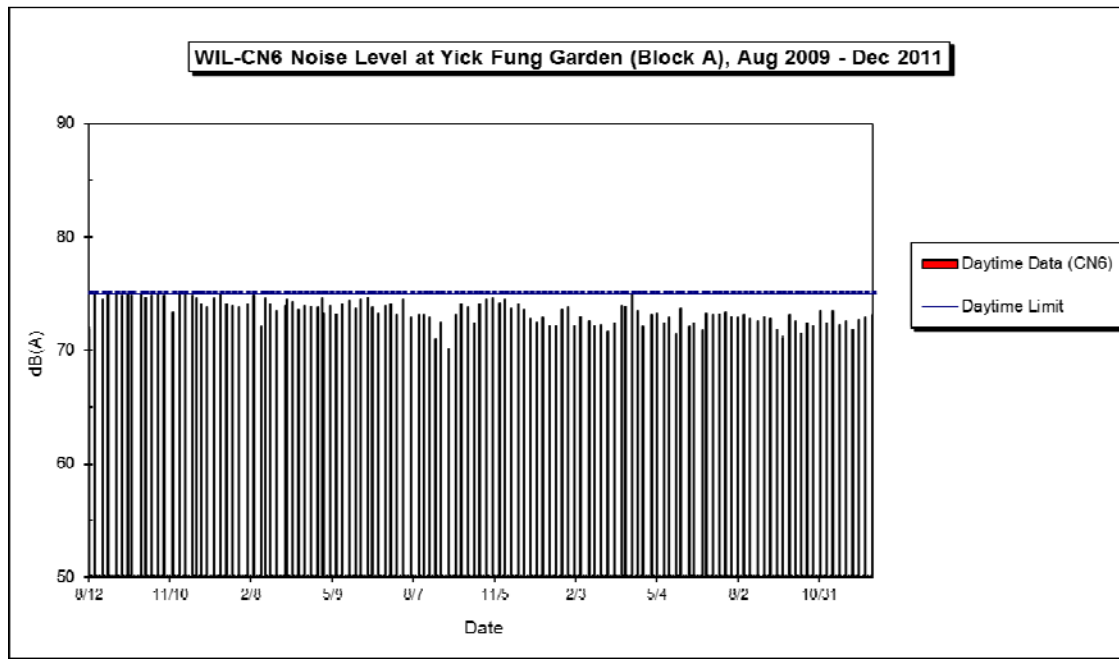


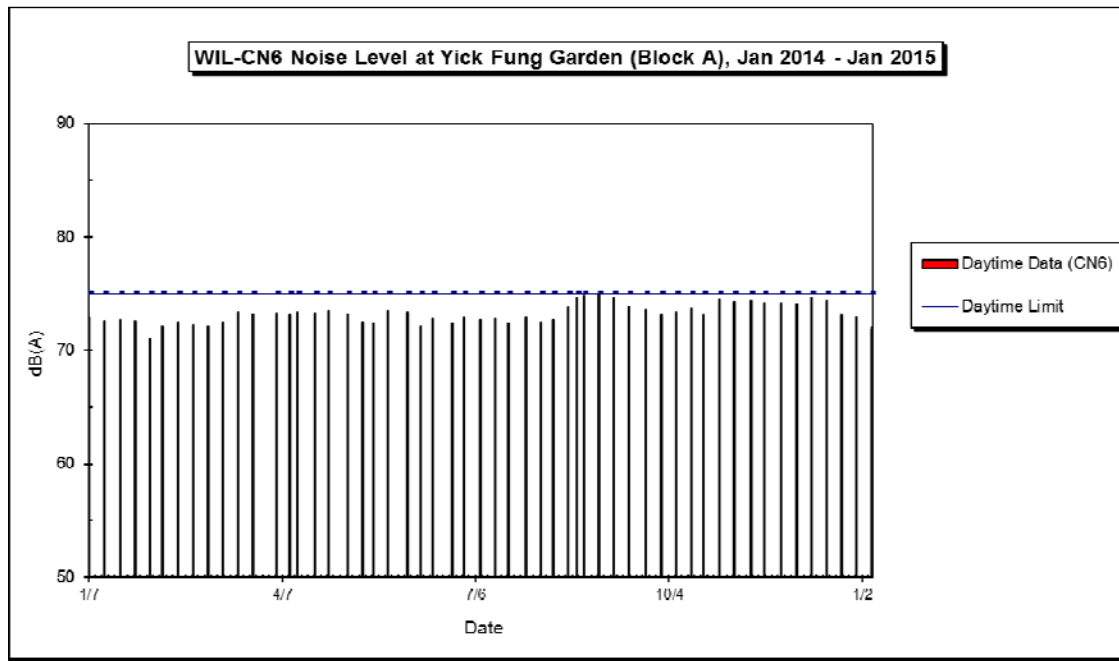


Annotation

Major Activities: a. Piling/adit excavation and construction (March 2011 to June 2014)
 b. Entrance construction and finishing work (July 2014 to December 2014)

Weather Conditions: Typical fine and occasionally raining during the monitoring periods





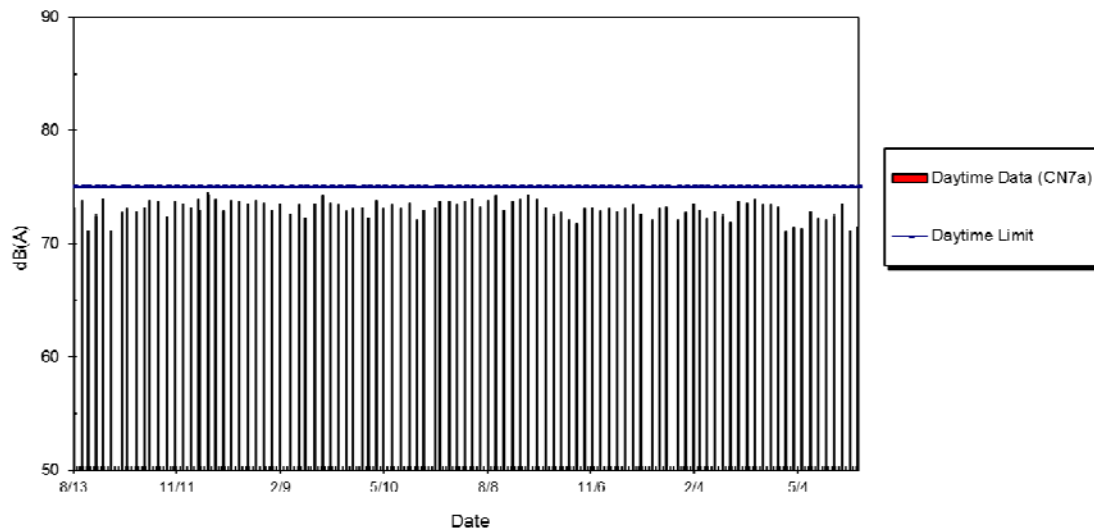
Annotation

Major Activities:

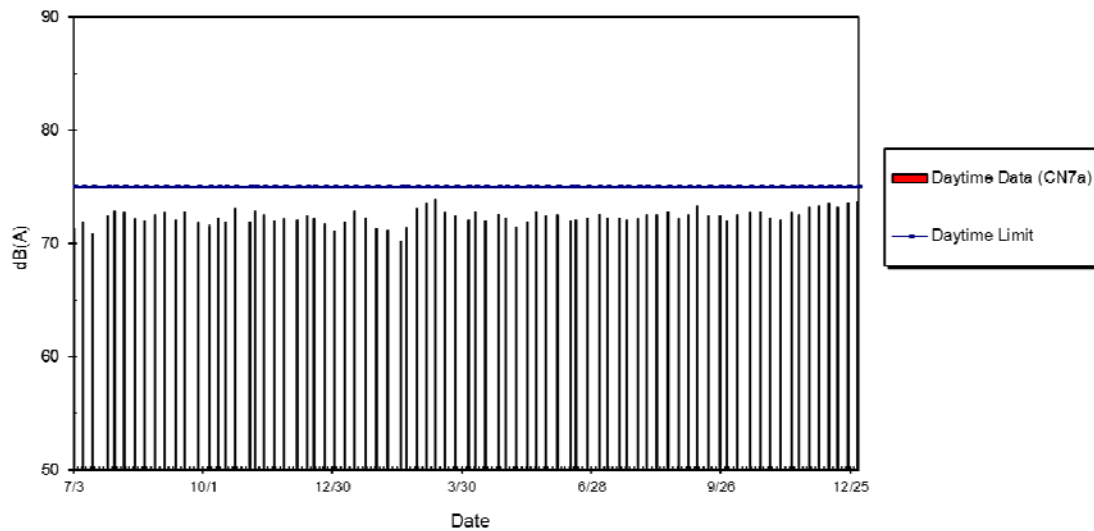
- a. Piling and shaft excavation (August 2009 to July 2010)
- b. Access for station/tunnels excavation (August 2010 to June 2014)
- c. Access for station/tunnels construction (January 2012 to October 2014)
- d. Access for materials delivery (June 2013 to November 2014)

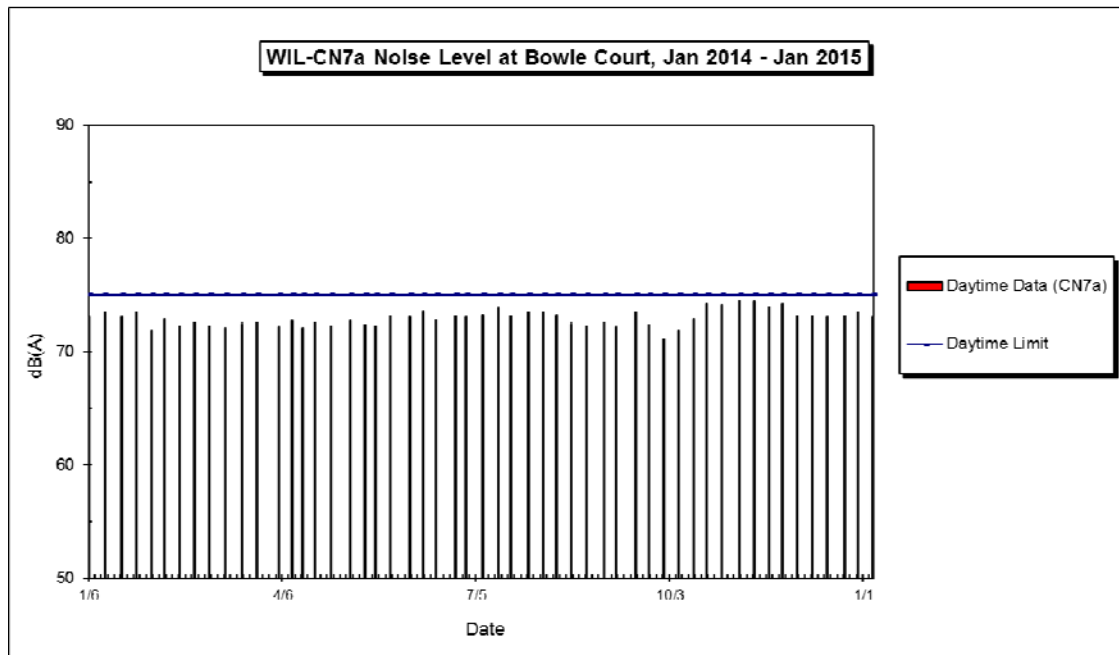
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-CN7a Noise Level at Bowle Court, Aug 2010 - Jun 2012



WIL-CN7a Noise Level at Bowle Court, Jul 2012 - Dec 2013





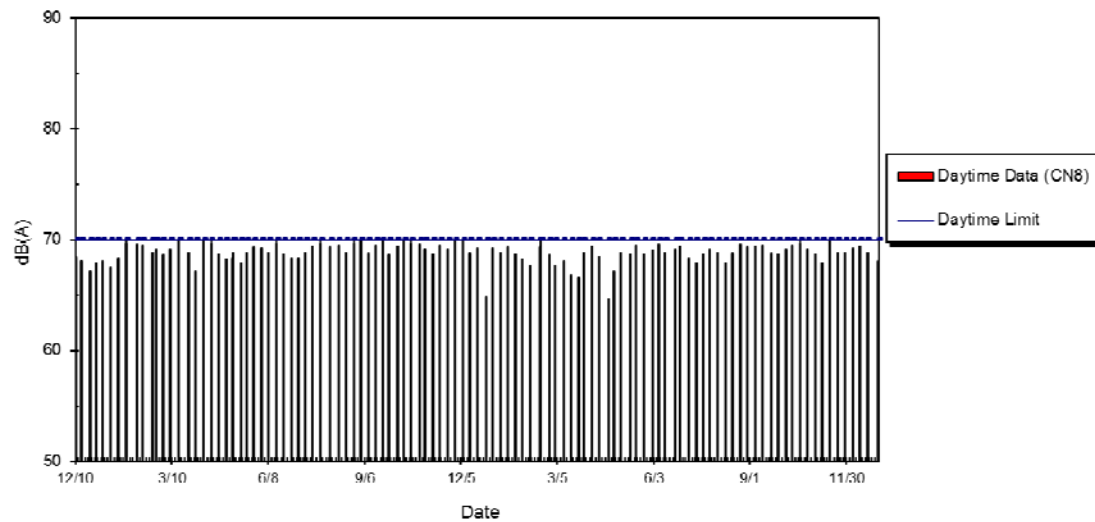
Annotation

Major Activities:

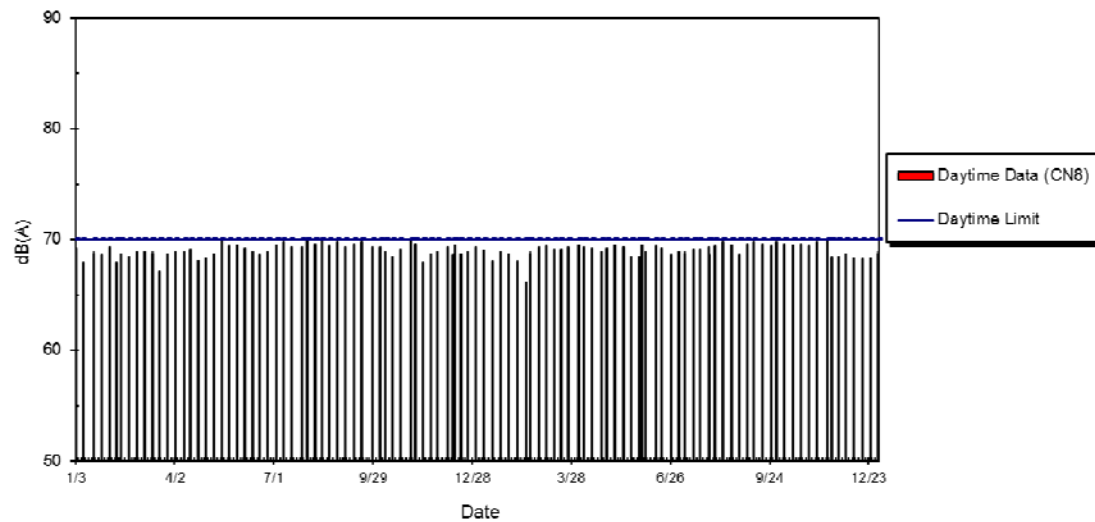
- a. Piling and shaft excavation (August 2010 to March 2013)
- b. Shaft construction (April 2013 to June 2014)
- c. Entrance construction and finishing work (July 2014 to December 2014)

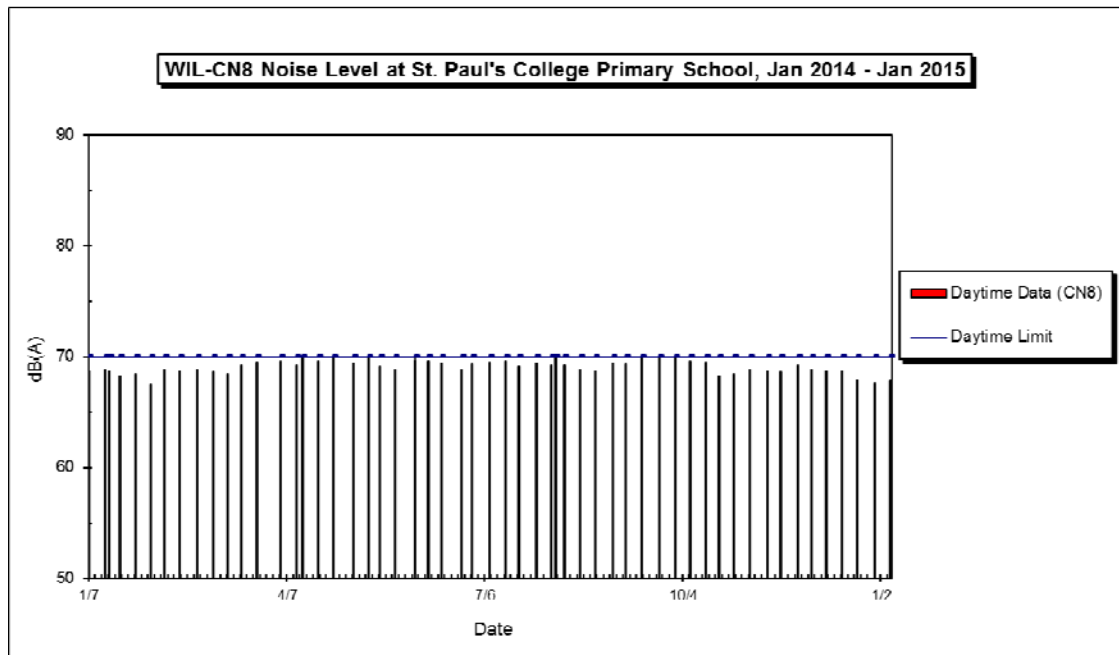
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-CN8 Noise Level at St. Paul's College Primary School, Dec 2009 - Dec 2011



WIL-CN8 Noise Level at St. Paul's College Primary School, Jan 2012 - Dec 2013

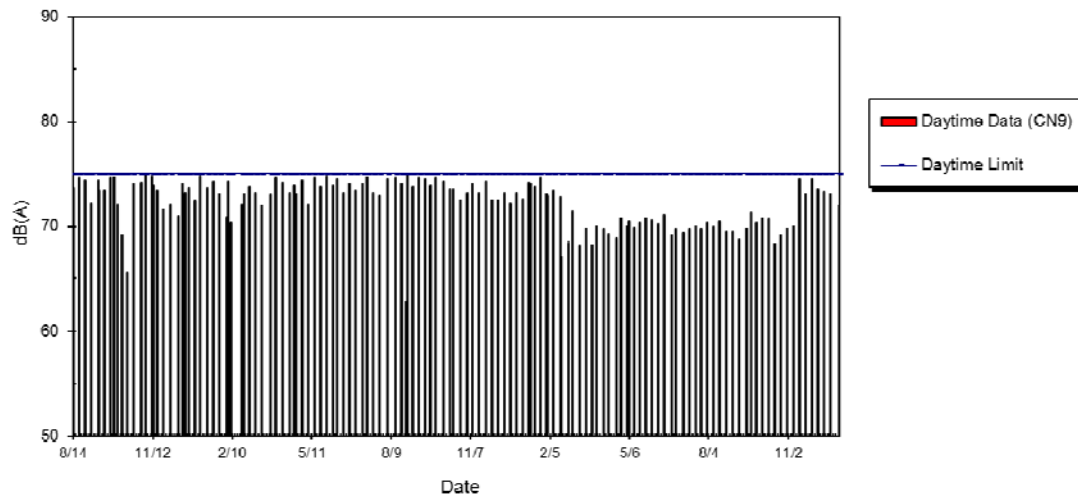




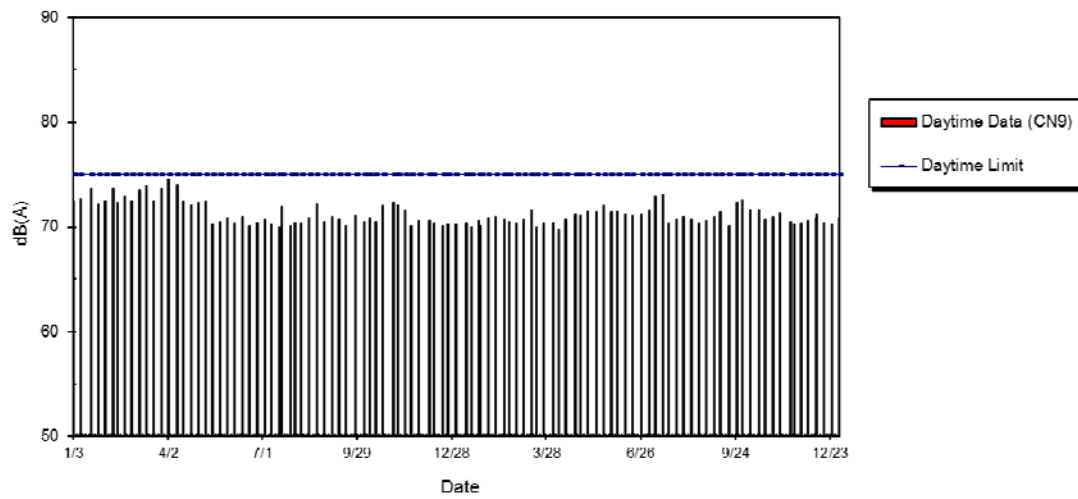
Annotation

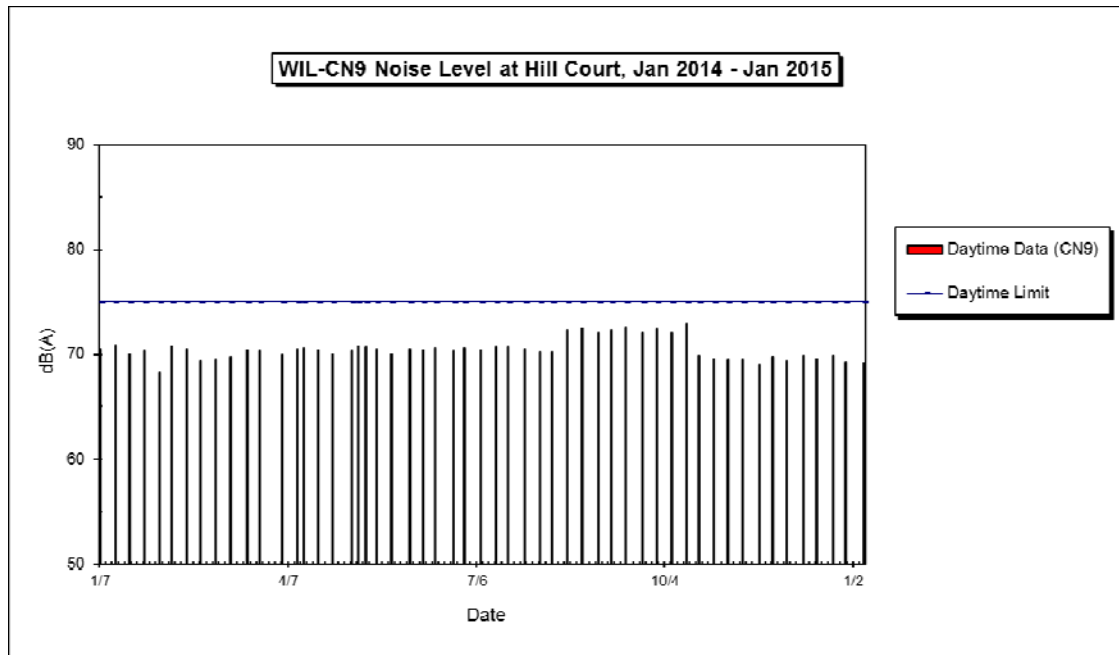
- Major Activities:
- a. Site preparation and slope work (December 2009 to September 2010)
 - b. Piling and excavation (October 2010 to March 2013)
 - c. Shaft construction (April 2013 to July 2014)
 - d. Entrance construction and finishing work (August 2014 to December 2014)
- Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-CN9 Noise Level at Hill Court, Aug 2009 - Dec 2011



WIL-CN9 Noise Level at Hill Court, Jan 2012 - Dec 2013

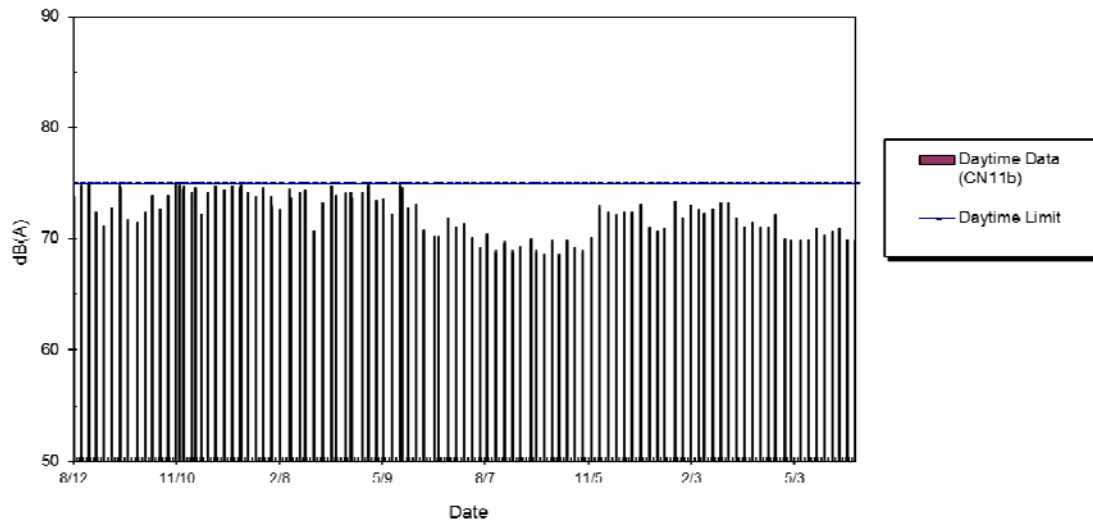




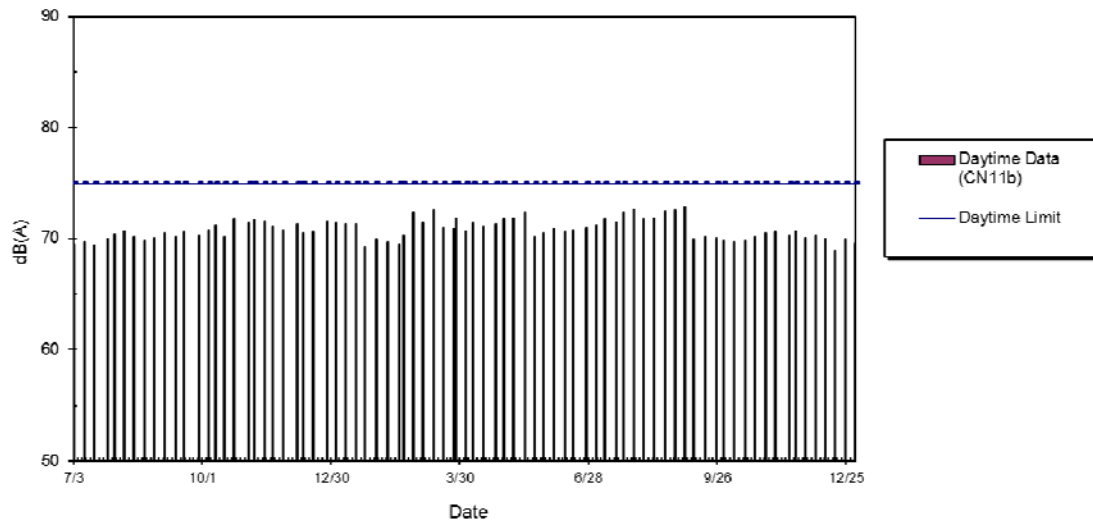
Annotation

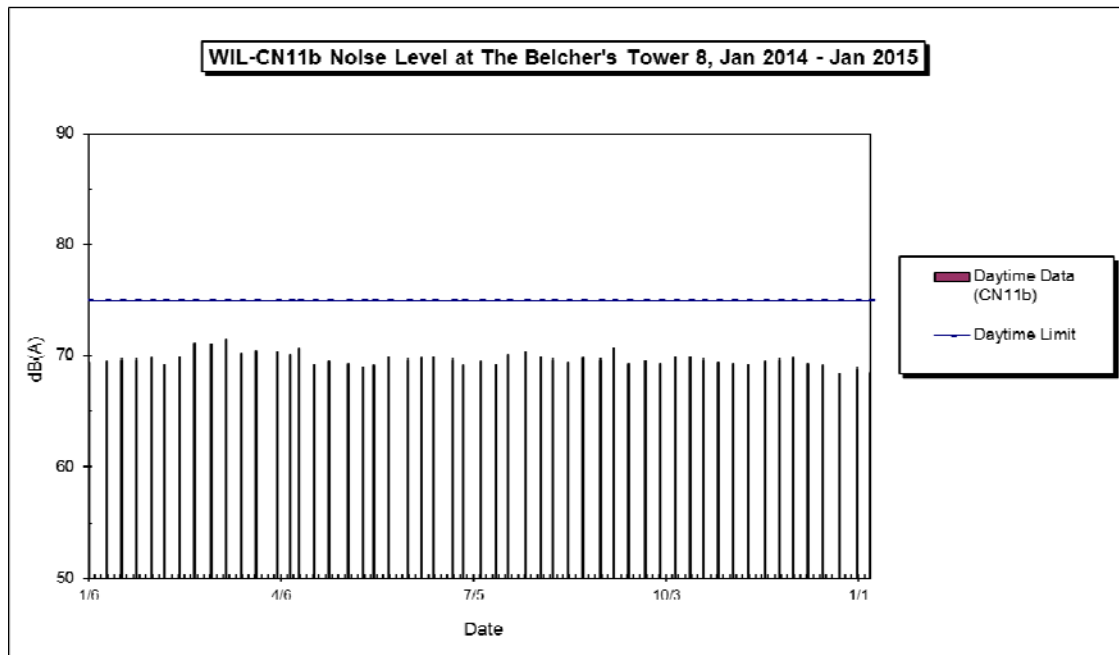
- Major Activities:
- a. Shaft construction (August 2009 to November 2010)
 - b. Access for station/tunnels excavation (December 2010 to June 2012)
 - c. Access for station/tunnels construction (January 2012 to June 2013)
 - d. Access for materials delivery (June 2013 to September 2014)
- Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-CN11b Noise Level at The Belcher's Tower 8, Aug 2010 - Jun 2012



WIL-CN11b Noise Level at The Belcher's Tower 8, Jul 2012 - Dec 2013



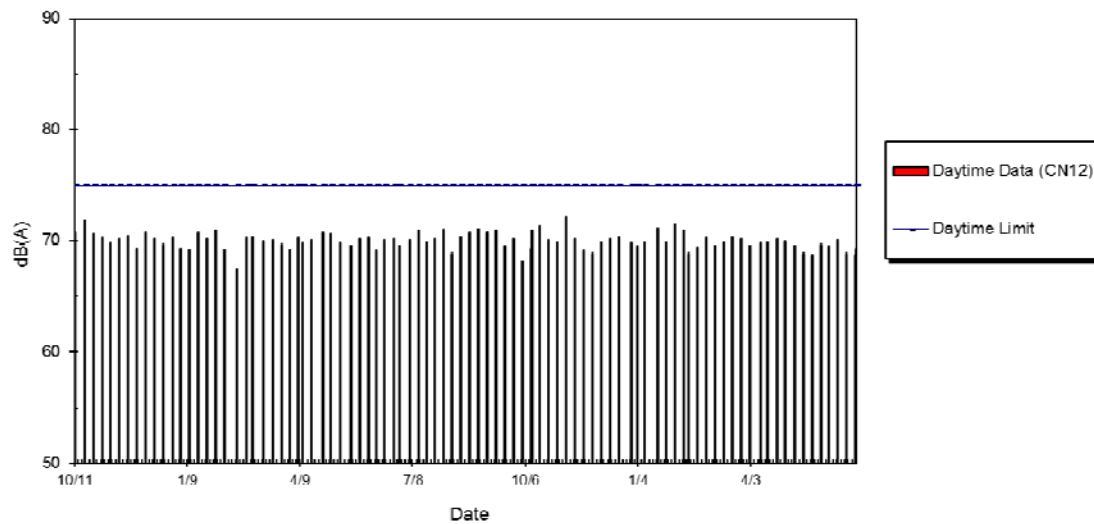


Annotation

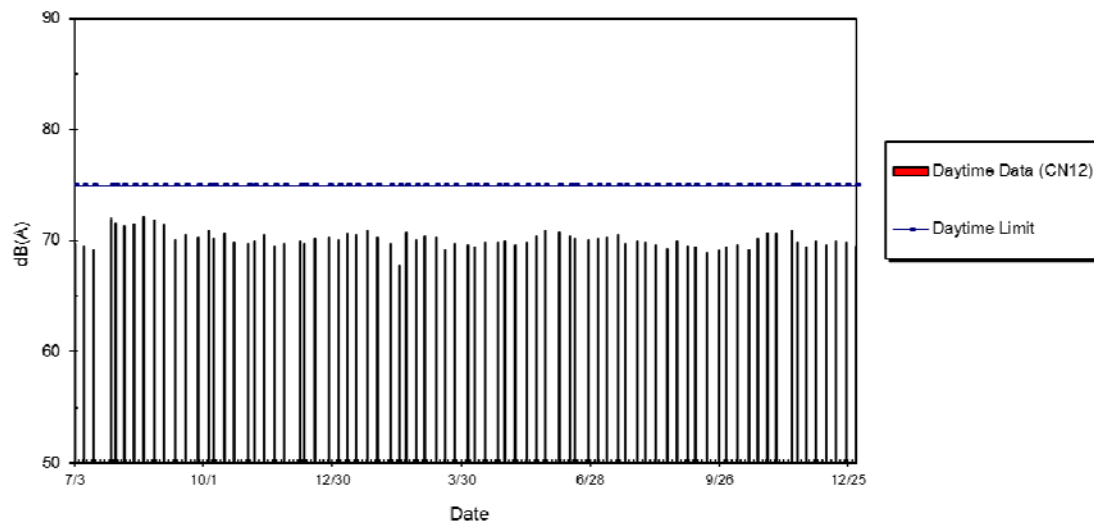
Major Activities: a. Entrance/adit excavation and adit construction (August 2010 to June 2014)
 b. Entrance construction and finishing work (June 2012 to December 2014)

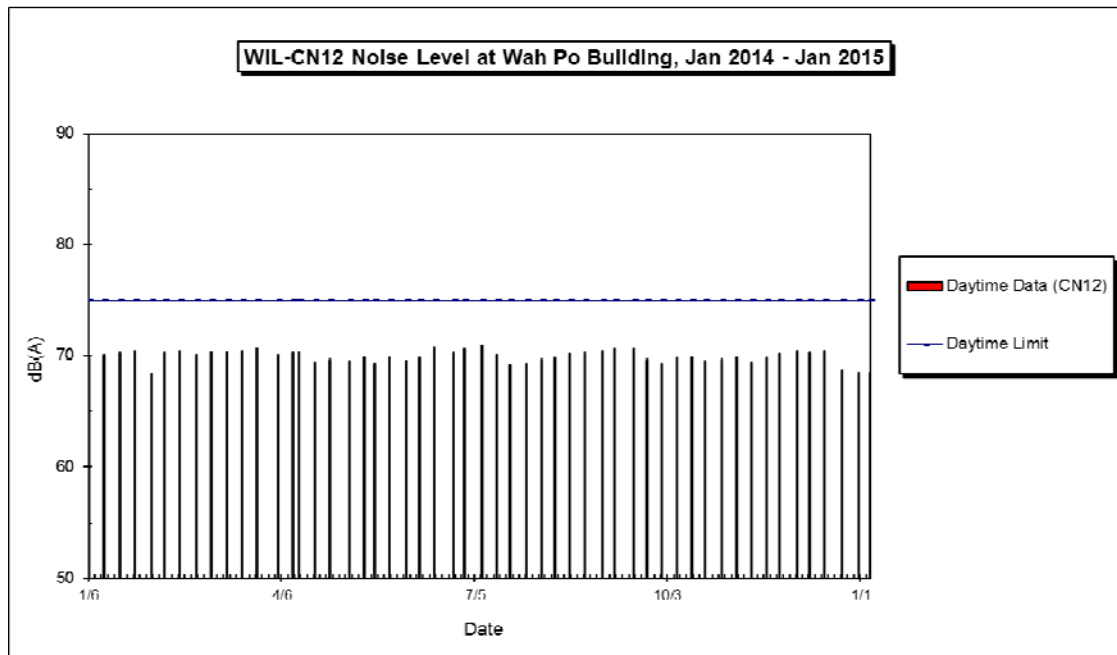
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-CN12 Noise Level at Wah Po Building, Oct 2010 - Jun 2012



WIL-CN12 Noise Level at Wah Po Building, Jul 2012 - Dec 2013





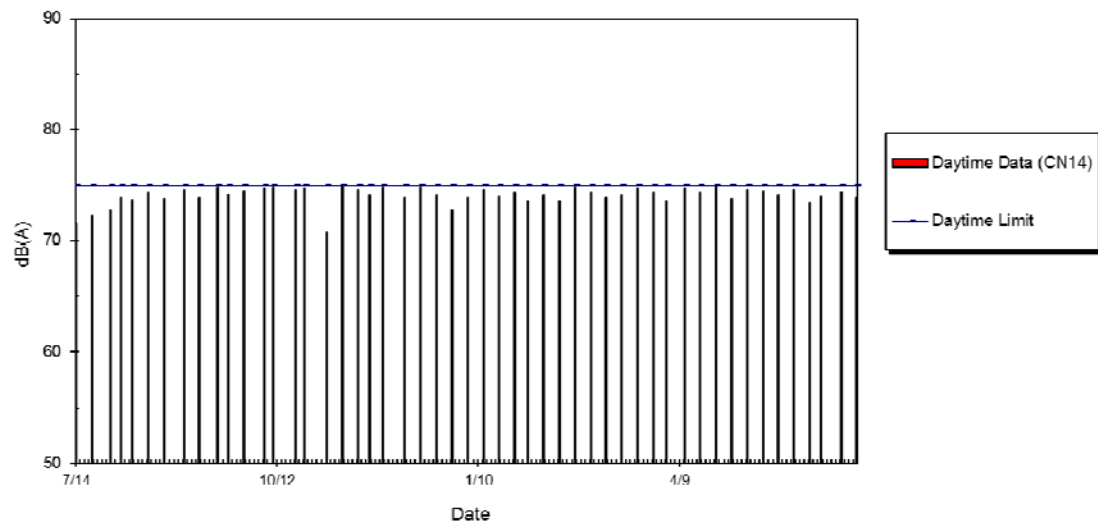
Annotation

Major Activities:

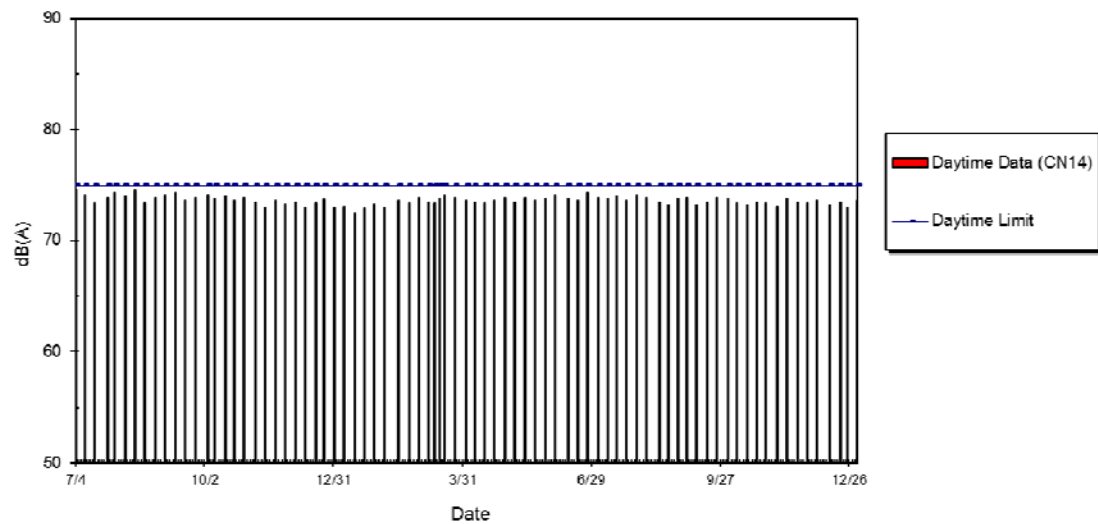
- a. Barging point construction (October 2010)
- b. Barging point operation (November 2010 to July 2014)
- c. Barging point dismantling (November 2014)

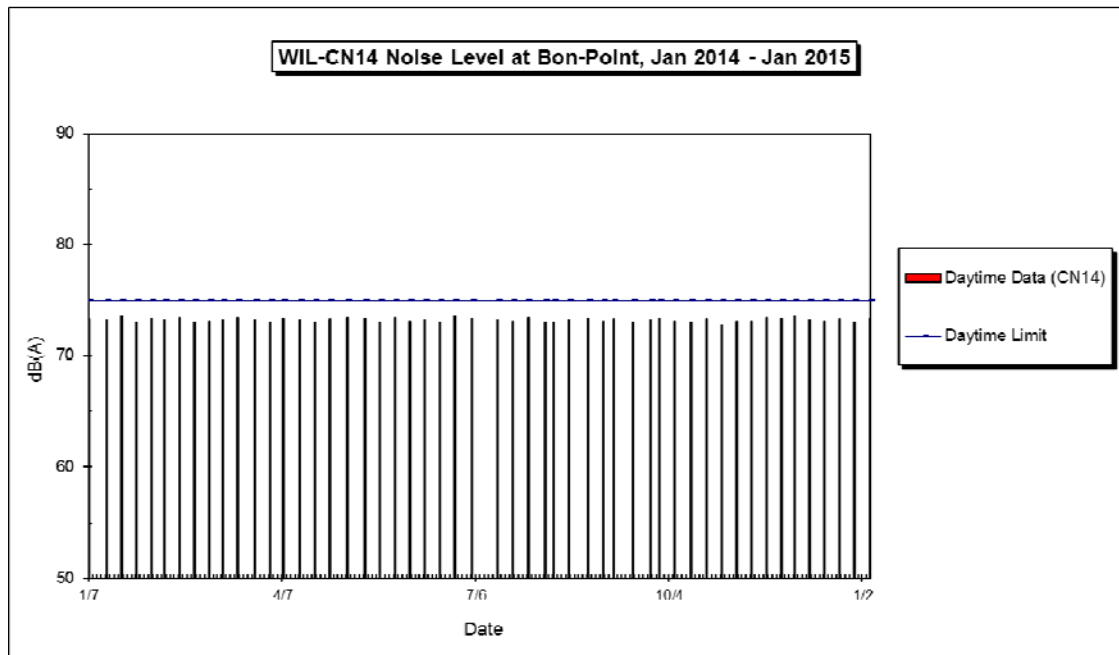
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-CN14 Noise Level at Bon-Point, Jul 2011 - Jun 2012



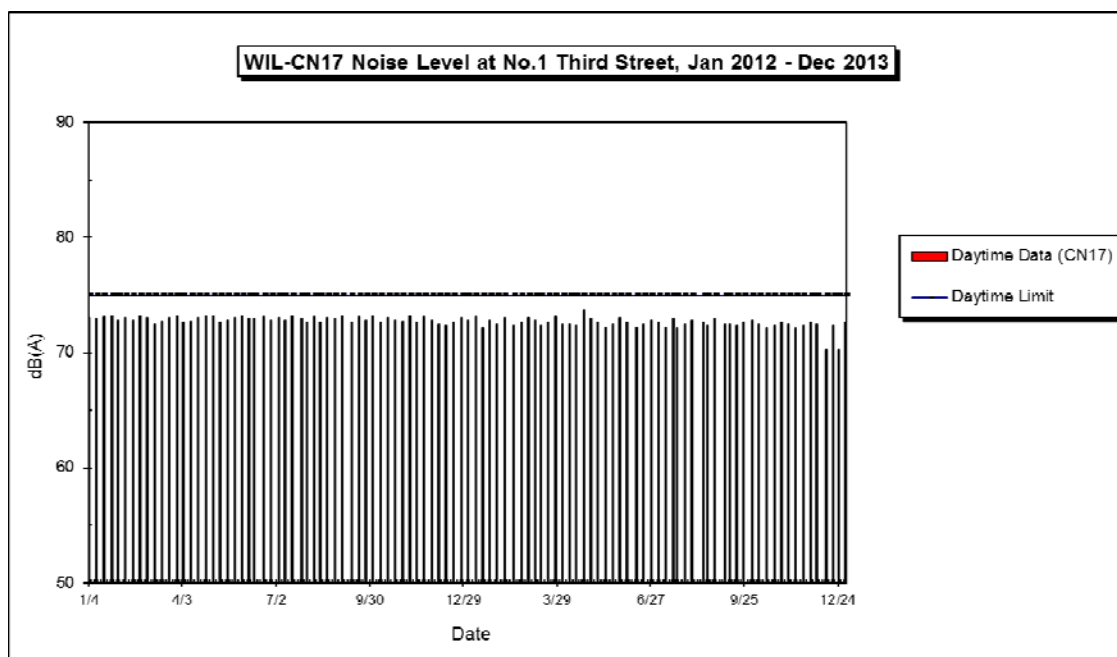
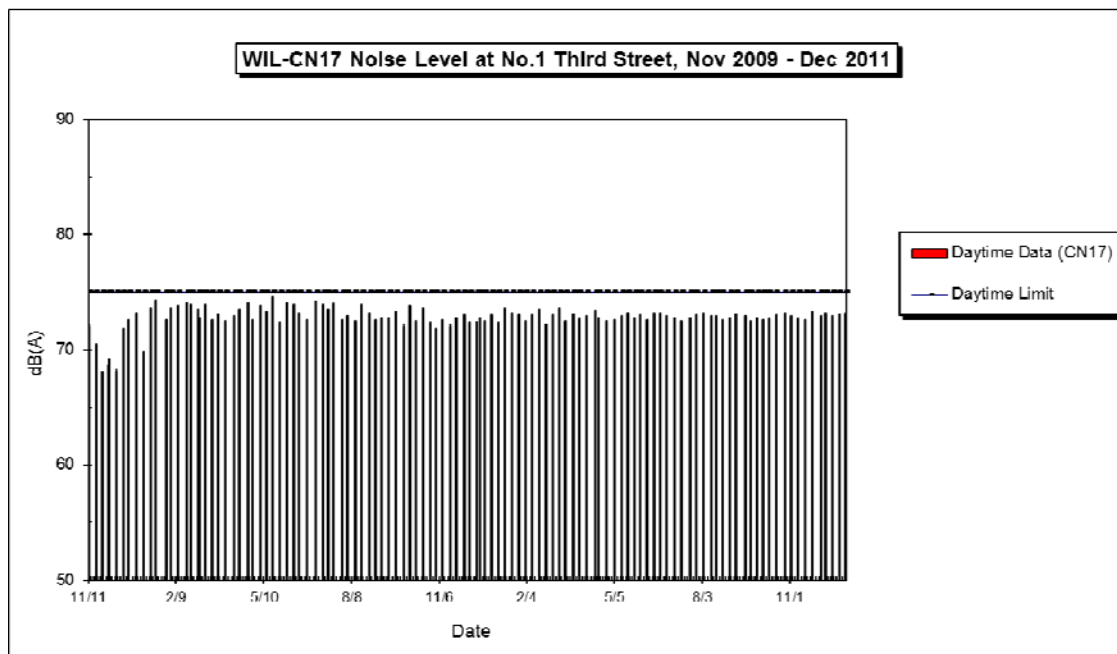
WIL-CN14 Noise Level at Bon-Point, Jul 2012 - Dec 2013

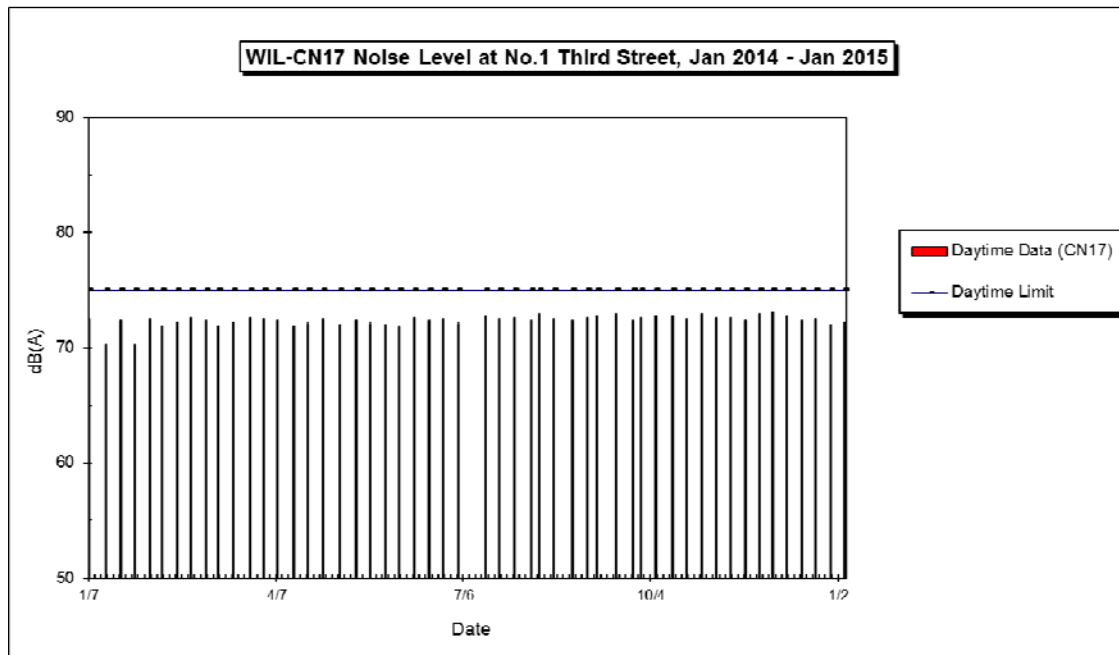




Annotation

- Major Activities:
- a. Piling and shaft excavation (July 2011 to December 2013)
 - b. Shaft construction (January 2014 to June 2014)
 - c. Entrance construction and finishing work (July 2014 to December 2014)
- Weather Conditions: Typical fine and occasionally raining during the monitoring periods





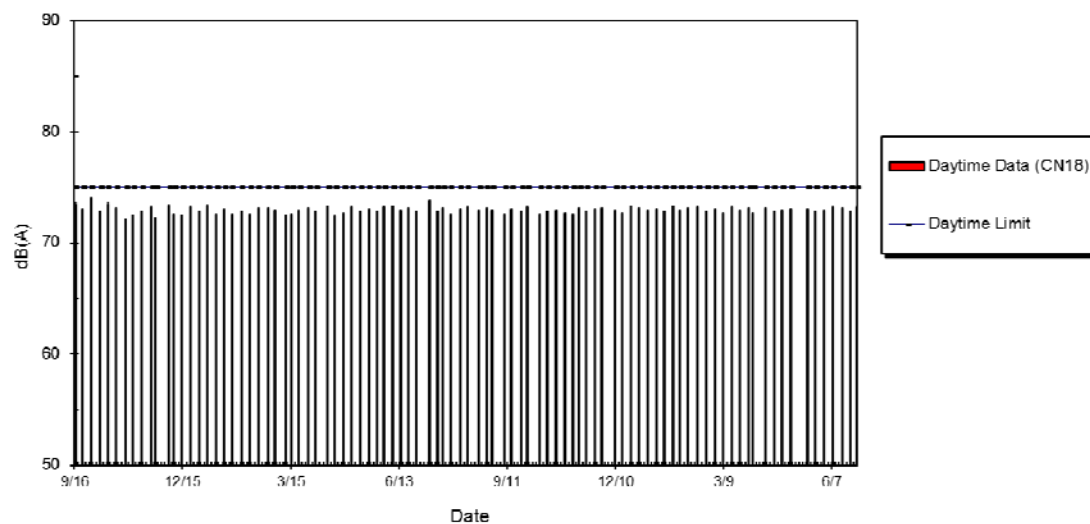
Annotation

Major Activities:

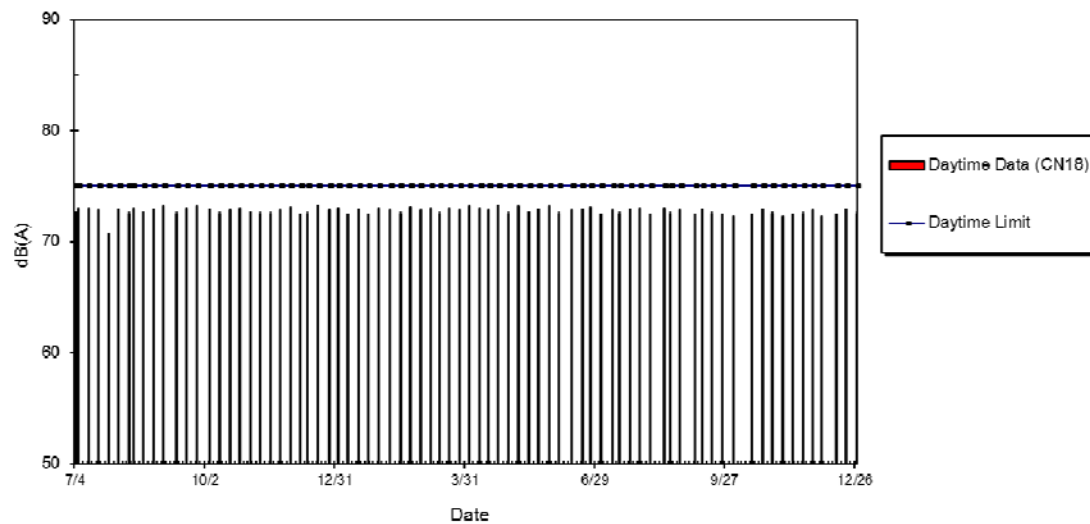
- a. Shaft construction (November 2009 to November 2010)
- b. Access for station/tunnels excavation (December 2010 to December 2013)
- c. Access for station/tunnels construction (April 2013 to November 2014)
- d. Access for materials delivery (June 2013 to November 2014)

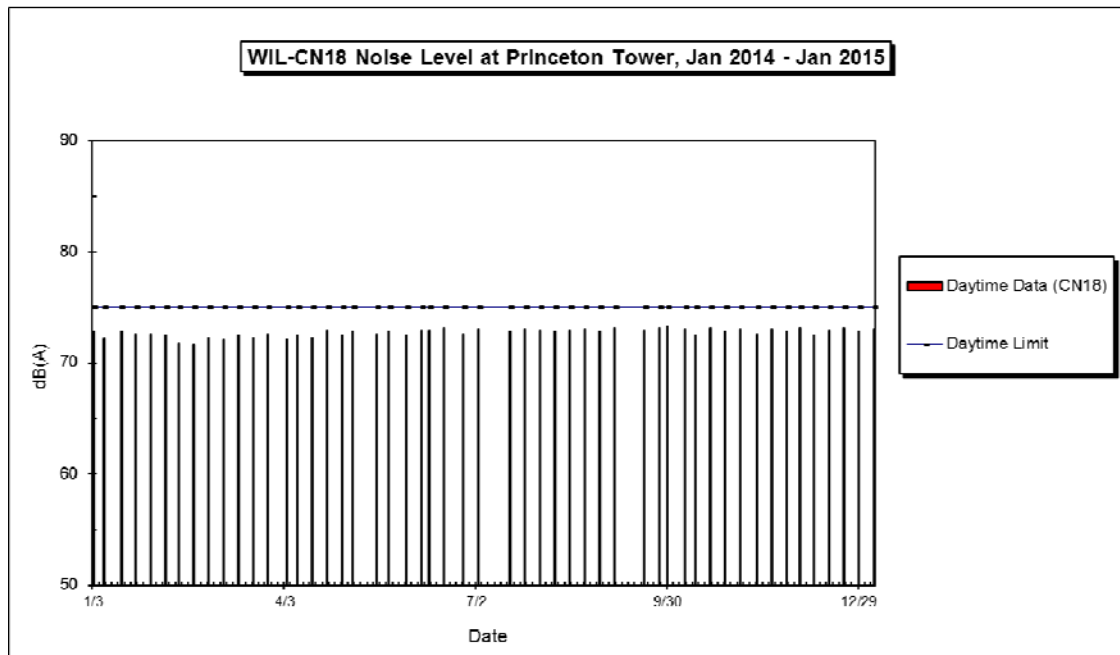
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-CN18 Noise Level at Princeton Tower, Sep 2010 - Jun 2012



WIL-CN18 Noise Level at Princeton Tower, Jul 2012 - Dec 2013



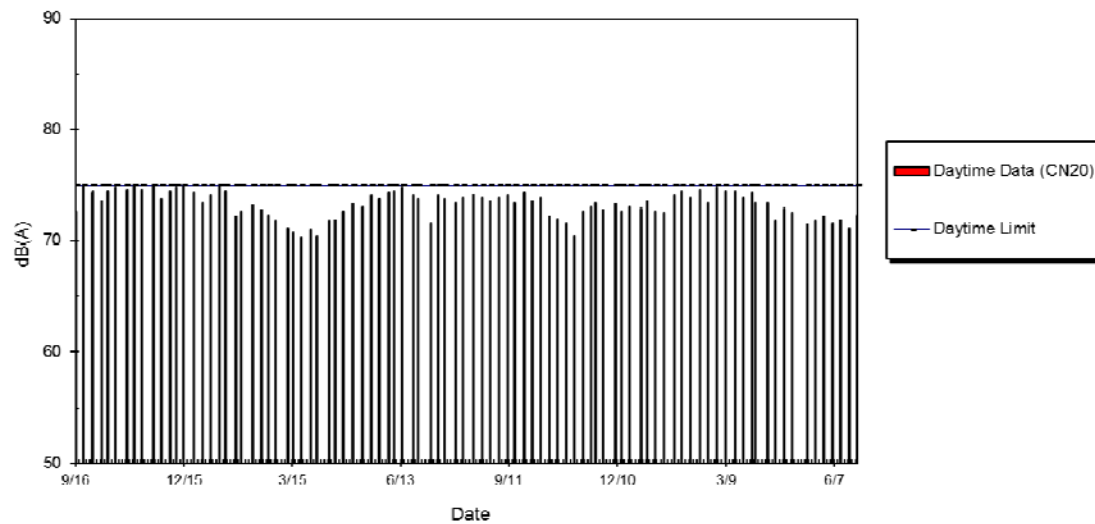


Annotation

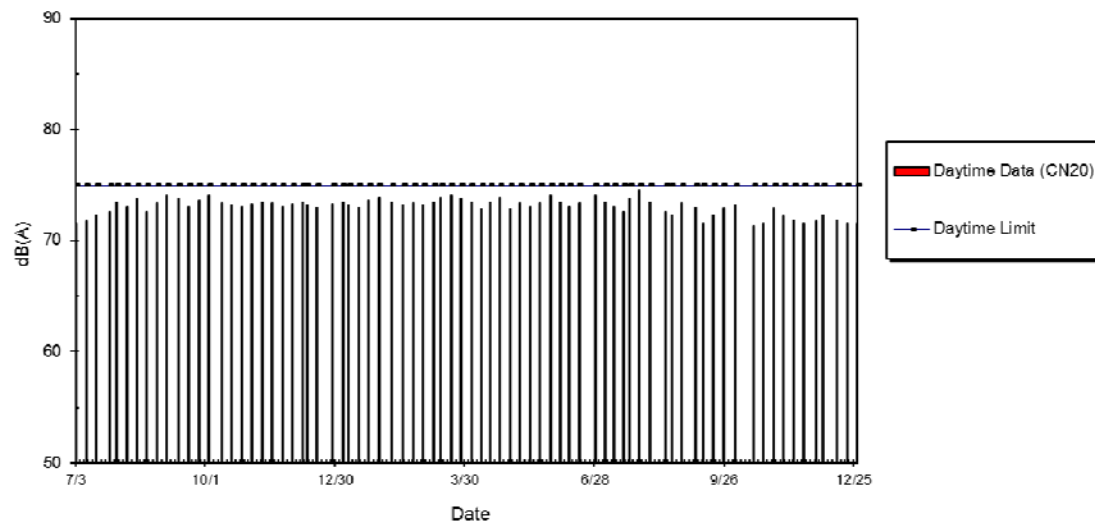
Major Activities: a. Preparation work (September 2010 to December 2011)
 b. TBM tunneling work (January 2012 to December 2012)

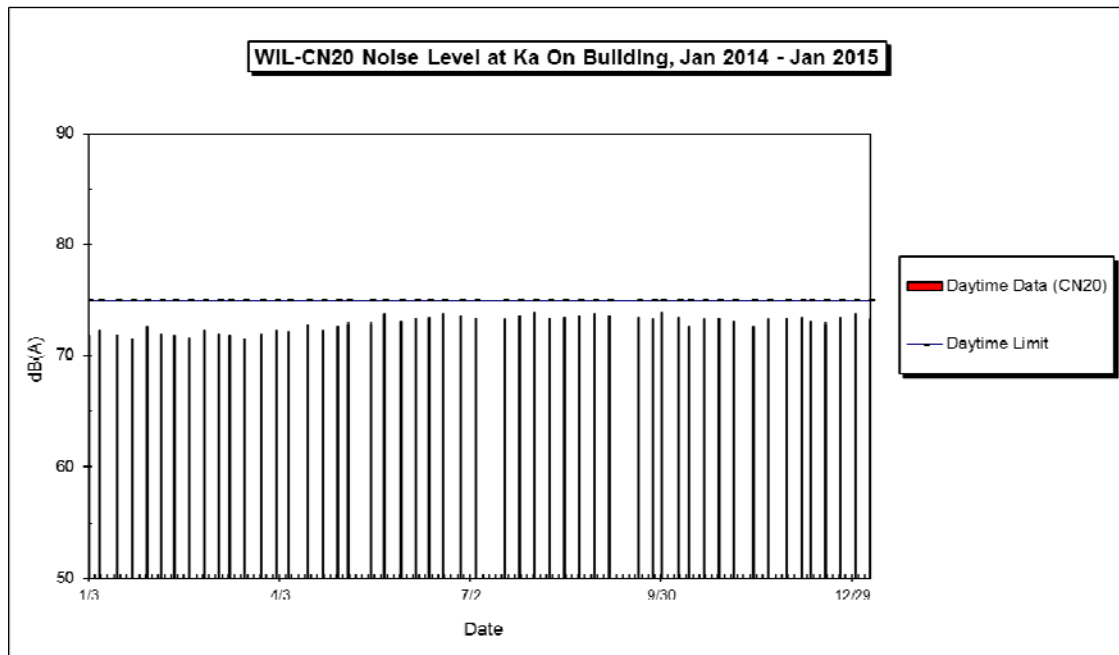
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-CN20 Noise Level at Ka On Building, Sep 2010 - Jun 2012



WIL-CN20 Noise Level at Ka On Building, Jul 2012 - Dec 2013





Annotation

Major Activities: a. Preparation work (September 2010 to December 2011)
 b. TBM tunneling work (January 2012 to December 2012)

Weather Conditions: Typical fine and occasionally raining during the monitoring periods

MTR Corporation Limited

West Island Line Project

Final Environmental Monitoring and Audit Report
(Part 2)

Verified by:



Sam Tsoi

Independent Environmental Checker

Date:

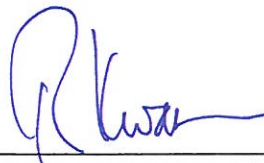
10 May 2016

MTR Corporation Limited

West Island Line Project

Final Environmental Monitoring and Audit Report
(Part 2)

Certified by:



Richard Kwan

Environmental Team Leader

Date: 10 MAY 2016

EXECUTIVE SUMMARY

The West Island Line Project commenced on 10 July 2009. The EM&A program for the West Island Line (WIL) Project commenced on 10 August 2009, the commencement date of construction of the Project. As the construction works for the WIL Project had been substantially completed and the operation commenced on 28 December 2014; majority of the Works Areas for construction is no longer exist, thus the WIL final Environmental Monitoring and Audit (EM&A) Report Part 1 presented the results of EM&A works and the impact monitoring for the construction works for the period of 10 August 2009 to 9 January 2015, except for Works Areas B, L1, M1 and N1.

Operation of Sai Ying Pun Station commenced on 29 March 2015 except Sai Ying Pun Entrance B3 (i.e. Works Area L1). Works in the Project Site Office work site (i.e. Works Area B) has been completed in December 2015. Remaining construction works in Sai Ying Pun Entrance B3 (i.e. Works Area L1) was also completed in February 2016 and Entrance B3 has been in service since 27 March 2016. This final Environmental Monitoring and Audit (EM&A) Report Part 2 for WIL Project presents the results of EM&A works and the impact monitoring for the construction works undertaken during the period of 10 August 2009 to 9 April 2016 for the WIL Project Works Areas B, L1, M1 and N1.

In view of completion of construction works for Works Area B, M1 and N1 in December 2015, no construction noise and air quality monitoring as well as regular site inspection for the above areas was conducted after 9 January 2016, the reporting month of January 2016. A letter of notification to EPD has been issued on 15 January 2016.

In view of completion of construction works for Works Area L1 in February 2016 and hence completion of all construction works for WIL project, a proposal for termination of WIL EM&A programme, which was certified by ET Leader and verified by IEC, has been submitted on 12 April 2016. Remaining noise monitoring together with the regular site inspection for Works Area L1 had been proposed to terminate immediately.

Impact monitoring for air quality and noise were conducted in accordance with the EM&A Manual in the reporting period, there was no breach of Limit Levels for air quality and noise monitoring.

There was no successful environmental prosecution in the reporting period of 10 August 2009 to 9 April 2016.

Site inspections were conducted by the Environmental Team on a weekly basis to monitor proper implementation of environmental pollution control and mitigation measures for the WIL Project.

There was no non-compliance identified in the reporting period of 10 August 2009 to 9 April 2016 for the WIL Project Works Areas B, L1, M1 and N1.

The Environmental Permit (EP-313/2008/J) issued by EPD on 1 September 2014 is used for the WIL Project.

In the reporting period, there was no reporting change of circumstances which may affect the compliance with the recommendations of the EIA Report.

EXECUTIVE SUMMARY

1 INTRODUCTION

- 1.1 Project Background***
- 1.2 Project Program***
- 1.3 Coverage of the Final EM&A Report Part 2***

2 PROJECT INFORMATION

- 2.1 Project Management Organization***
- 2.2 Project Works Areas and Environmental Monitoring Locations***
- 2.3 Summary of EM&A Requirements***
- 2.4 Implementation of Environmental Mitigation Measures***
- 2.5 Construction Activities in the Reporting Period***

3 IMPACT MONITORING

- 3.1 Air Quality***
- 3.2 Noise***
- 3.3 Action taken in Event of Exceedence***
- 3.4 Ground-borne Noise for TBM operation***

4 LANDSCAPE AND VISUAL

- 4.1 Monitoring Requirements***
- 4.2 Audit Results***

5 WASTE MANAGEMENT

6 WATER QUALITY

7 CULTURAL HERITAGE

8 RECORD OF ENVIRONMENTAL COMPLAINTS

9 RECORD OF NON- COMPLIANCES

10 NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

11 STATUS OF STATUTORY SUBMISSIONS

- 11.1 Submissions required under Environmental Permits***
- 11.2 Statutory Permits and Licenses***

12 SITE INSPECTIONS

12.1 Observations

12.2 Other Notable Events

12.3 Solid and Liquid Waste Management

12.4 Effectiveness and Efficiency of Mitigation Measures

12.5 Review of WIL EIA Predictions

13 CONCLUSIONS

List of Appendices

Appendix A *Environmental Quality Performance Limits*

Appendix B *Event Action Plans*

Appendix C *Implementation of Environmental Mitigation Measures*

Appendix D *Impact Monitoring Graphical Plots*

1 INTRODUCTION

1.1 Project Background

MTR Corporation Limited (MTRCL) proposes to build a new railway line, the West Island Line (WIL) which is an extension of the Island Line to the Western District. The route length of the fully underground WIL is approximately 3 km with three new underground stations namely Sai Ying Pun Station (SYP), HKU Station (HKU) and Kennedy Town Station (KET).

1.2 Project Program

The West Island Line Project commenced on 10 July 2009. Commencement of construction was on 10 August 2009. The commencement of operation of the Project was on 28 December 2014.

1.3 Coverage of the EM&A Report Part 2

The EM&A program for the WIL Project commenced on 10 August 2009. This final Environmental Monitoring and Audit (EM&A) Report Part 2 for the WIL Project presents the results of EM&A works and the impact monitoring for the construction works undertaken during the period of 10 August 2009 to 9 April 2016 for the WIL Project Works Areas B, L1, M1 and N1.

2 PROJECT INFORMATION

2.1 Project Management Organization

The WIL Project organization chart is presented in Figure 1. Contacts of key environmental personnel of the Project are shown in **Table 1**.

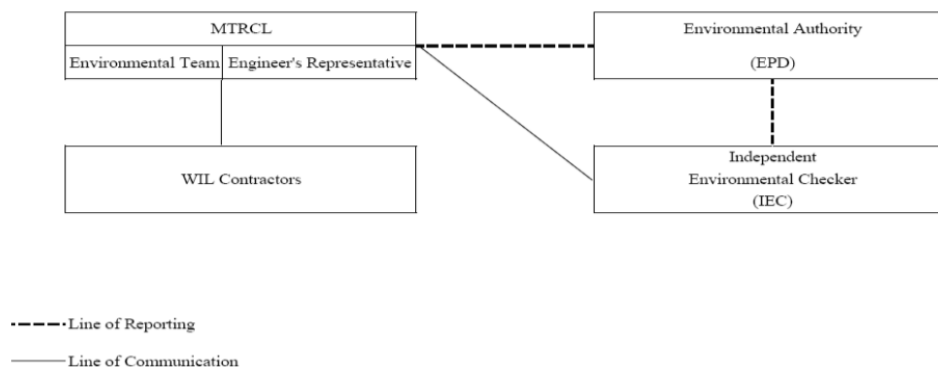


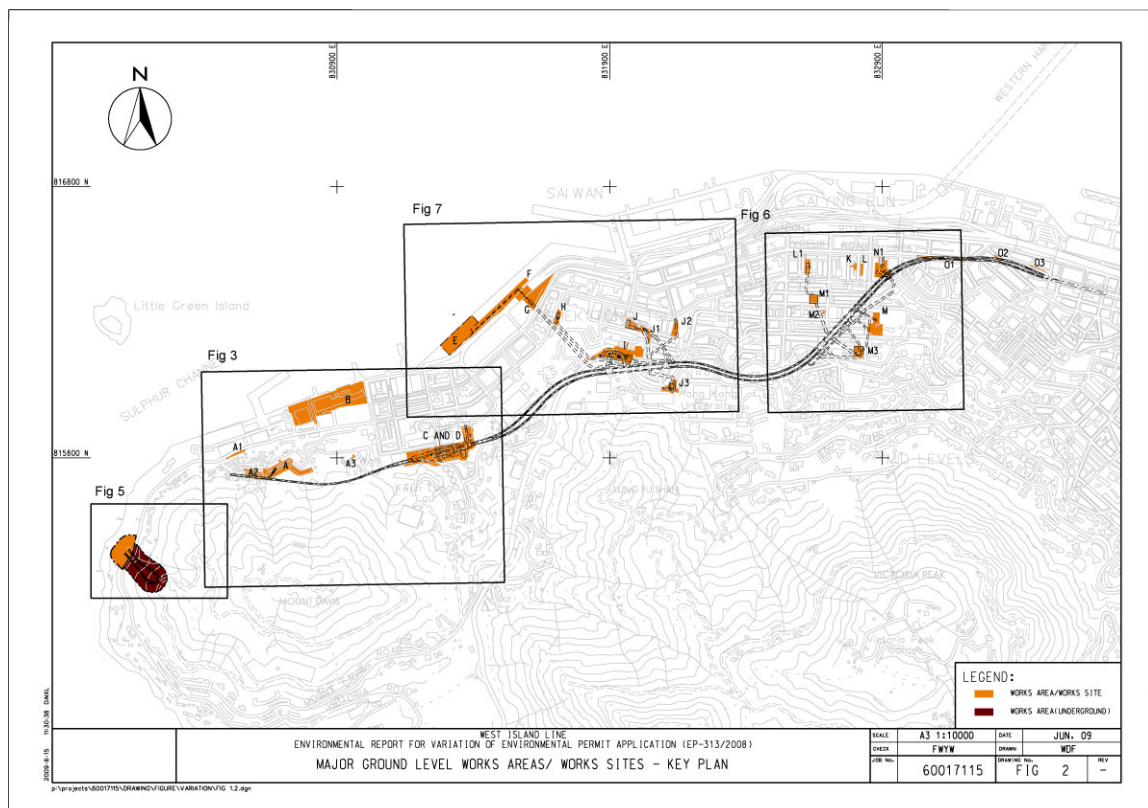
Figure 1 PROJECT ORGANIZATION

Table 1 Contact List of Key Personnel for Project Management

Organization	Name	Telephone
Engineer's Representative		
Project Manager – WIL Civil	Mr. Stephen Hamill	3529 6000
Independent Environmental Checker	Mr. Sam Tsoi	2268 3208
Environmental Team		
Environmental Team Leader	Mr. Richard Kwan	2688 1283
Contact 704 Contractor		
Project Director	Mr. C.C. Hau	3559 9003
Contact 705 Contractor		
Project Director	Mr. Brian Gowran	9865 0100

2.2 Project Works Areas and Environmental Monitoring Locations

The WIL Project Works Areas B, L1, M1 and N1, and the locations of environmental monitoring stations are shown in **Figures 2**, and **3** and **6** respectively. **Table 2** shows the details of the active monitoring stations as reported in **Sections 3.1** and **3.2** below.



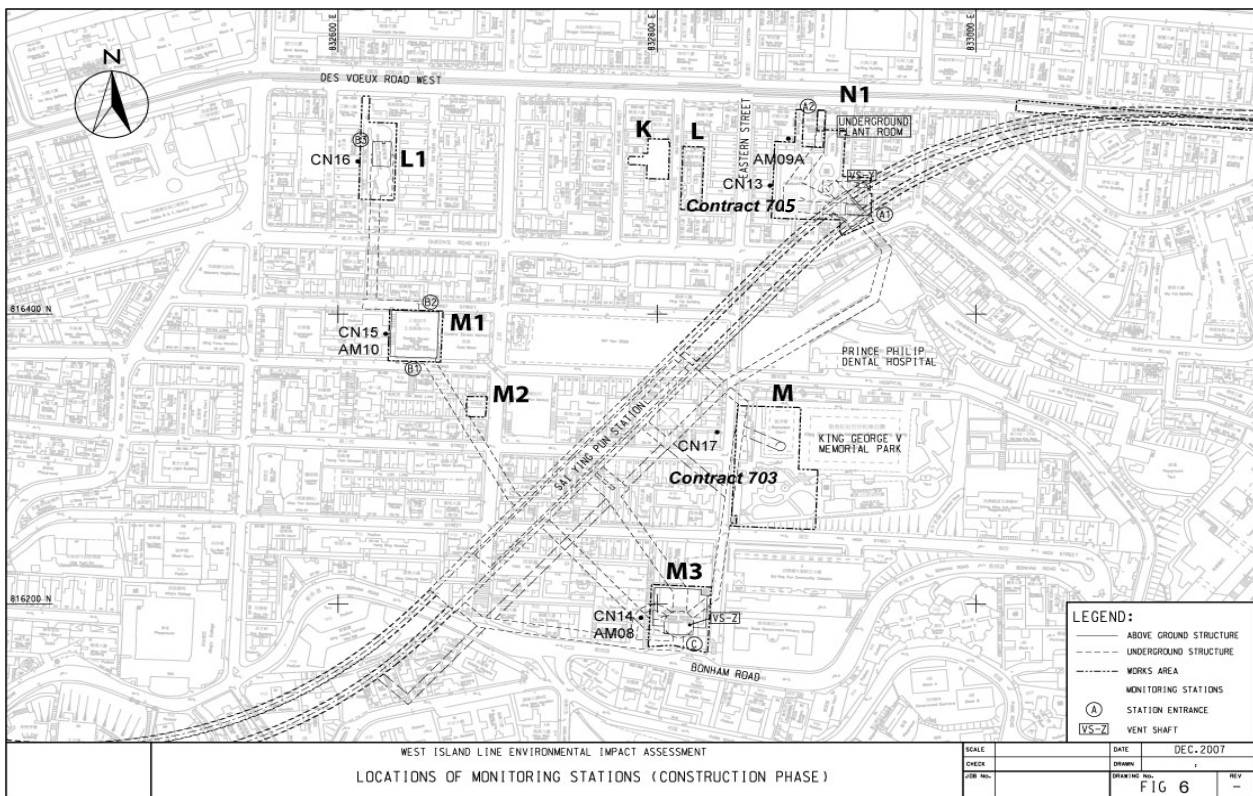
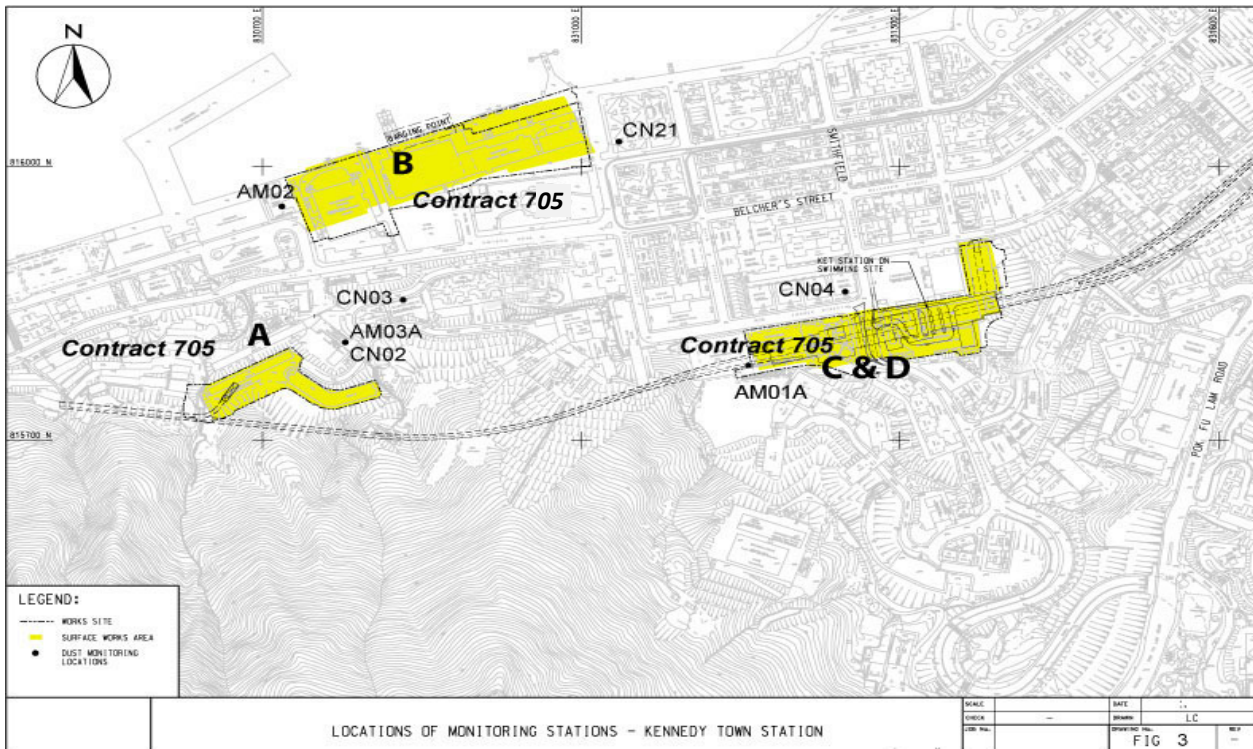


Table 2 Summary of impact air quality and noise monitoring stations

ID	Premise	Monitoring Location
Air		
AM2	Victoria Public Mortuary	Building facing Works Area B
AM9a^	No. 28 Sai Woo Lane	Building facing Works Area N1
AM10	Western Garden, Ivy Tower	Building facing Works Area M1
Noise		
CN3	Lui Ming Choi Primary School	Building facing Works Area B
CN13	No. 18-20 Eastern Street	Building facing Works Area N1
CN15	Ivy Tower	Building facing Works Area M1
CN16	CN16- No.9-11 Ki Ling Lane	Building facing Works Area L1
CN21	The Merton (Block 2)	Building facing Works Area B

^The alternative air monitoring station AM9a was approved by EPD on 26 November 2009

2.3 Summary of EM&A Requirements

The EM&A program requires environmental monitoring for air quality, noise, water quality and waste management as specified in the EM&A Manual.

In the reporting months, 24-hour TSP levels at the air monitoring stations shown in **Table 2** were monitored during the construction stage.

In the reporting months, construction noise levels at the noise monitoring stations shown in **Table 2** were monitored during the construction stage.

A summary of impact EM&A requirements as applicable to this EM&A Report is presented in **Table 3** below.

Table 3 Summary of impact EM&A Requirements

Parameters	Descriptions	Locations	Frequencies	Duration
Air Quality	24-hr TSP	Shown in Table 2	Once every 6 days	During construction stage
Noise	LAeq(30min)	Shown in Table 2	Once a week	During construction stage
Waste	On-Site Audit	Active Works Sites	Monthly	During construction stage
Wastewater	On-Site Audit	Active Works Sites	Monthly	During construction stage
General Site Conditions	Environmental Site Inspection	Active Works Sites	Weekly	During construction stage

Environmental Quality Performance Limits for air quality and noise are shown in **Appendix A**. The Event Action Plan for air quality and noise are shown in **Appendix B**.

The environmental impact hypotheses with respect to construction air quality and construction noise detailed in the WIL EIA Report are tested throughout the construction stage of the WIL

Project by the regular construction impact monitoring.

The WIL Civil Works Contractors are required to implement the mitigation measures as specified in the EP, EIA Report and EM&A Manual. A schedule of the implementation of mitigation measures identified in the WIL Project EIA Report is given in **Appendix C**.

2.4 Implementation of Environmental Mitigation Measures

The WIL Civil Works Contractors are required to implement the mitigation measures as specified in the EP, EIA Report and EM&A Manual. During the regular environmental site inspections, the Contractors' implementation of mitigation measures were inspected and reviewed. It is concluded that the environmental mitigation measures as recommended in the approved WIL Project EIA Report had been implemented satisfactorily. The implementation of mitigation measures identified in the WIL Project EIA Report is given in **Appendix C**.

2.5 Construction Activities in the Reporting Period

Major construction activities carried out by the WIL Civil Works Contractors in Works Area B, L1, M1, and N1 during the reporting period include:

Contract 705 - Works Area B

- Operation of barging point completed
- Dismantling of barging point completed
- Management of Works Area B completed
- Removal of project site office and the additional concrete paving completed

Contract 704 - Works Area L1

- Adit excavation completed
- Entrance construction completed

Contract 704 - Works Area M1

- Bored piling completed
- Decking installation completed
- Shaft excavation completed
- Shaft construction completed
- Entrance construction completed
- Finishing work completed
- Reinstatement completed

Contract 703 & 704 - Works Area N1

- Down track tunnel excavation by TBM towards SHW completed
- Shaft construction completed
- Entrance construction completed
- Finishing work completed
- Reinstatement completed

3 IMPACT MONITORING

3.1 Air Quality

24-Hour TSP Levels Monitoring

The sampling procedure follows that described in the App. B of Pt 50 in 40CFR Ch.1 (U.S. Environmental Protection Agency). TSP is sampled by drawing air through a conditioned, pre-weighed filter paper inside the high volume sampler at a controlled rate. After 24-hour sampling the filter paper with retained particles is collected and returned to the laboratory for drying in a desiccator followed by weighing. TSP levels are calculated from the ratio of the mass of particulate retained on the filter paper to the total volume of air sampled.

The samplers should be properly maintained. Prior to dust monitoring commencing, appropriate checks should be made to ensure that all equipment and necessary power supply are in good working condition.

Calibration Requirements

The flow rate of the high volume sampler with mass flow controller will be calibrated using an orifice calibrator. Initial calibration (five points) was conducted upon installation and prior to commissioning. Calibration was carried out every six months.

Monitoring results

To examine the construction dust levels, 24-hour TSP monitoring was undertaken according to the EM&A Manual. The dust monitoring locations are shown in the **Section 2.2** above. Monitoring results are presented in **Appendix D** as graphical plot. The 24-hour TSP levels when there were construction activities during the monitoring period were within the Action Level. No exceedance was found. This indicates that the construction activities did not have a noticeable adverse effect on the general air quality for the WIL Project Works Areas. The statistical analysis of air quality monitoring data for these monitoring stations within the reporting period are summarized in **Table 4** below.

Table 4 Statistical Analysis of Air Quality Monitoring Data

Number of measurement	Average (µg/m ³)	Maximum (µg/m ³)	Minimum (µg/m ³)	Action Level (µg/m ³)	Limit Level (µg/m ³)
AM2 - Victoria Public Mortuary					
408	88.6	151.5	27.7	155	260
AM9a^ - No. 28 Sai Woo Lane					
396	92.3	166.3	30.0	168	260
AM10 - Western Garden, Ivy Tower					
320	89.8	176.5	31.8	187	260

^The alternative air monitoring station AM9a was approved by EPD on 26 November 2009

3.2 Noise

B&K 2236 sound level meters which complied with the International Electrotechnical Commission Publication 651:1979 (Type 1) and 804:1985 (Type 1), specification as referred to in the Technical

Memoranda to the NCO were used for the construction noise impact monitoring. The B&K sound level meters and B&K 4231 calibrator are verified by the certified laboratory or manufacturer on biennial basis and annual basis respectively to ensure they perform to the same level of accuracy as stated in the manufacturer's specifications.

Immediately prior to and following each set of measurements at any NSR, the accuracy of the sound level meter was checked using an acoustic calibrator generating a known sound pressure level at a known frequency. If the calibration levels before and after the measurement differs by more than 1.0dB the measurement shall be repeated to obtain a reliable result (note: maximum deviation during this initial baseline monitoring period was 0.3dB). Periods of prolonged or repeated overloading of the sound level meter detector were avoided by setting the meter with adequate headroom prior to commencing measurements. Measurements were recorded to the nearest 0.1 dB, with values of 0.05 being rounded up.

Impact noise monitoring of $L_{A,eq30}$ was undertaken to measure construction noise levels in accordance with the EM&A Manual. The noise monitoring locations are shown in **Section 2.2** above. Monitoring results are presented in **Appendix D** as graphical plot. The statistical analysis of noise monitoring data for these monitoring stations within the reporting period are summarized in **Table 5** below.

Table 5 Statistical Analysis of Noise Monitoring Data

Number of measurement	Average (dBA)	Maximum (dBA)	Minimum (dBA)	Limit Level (dBA)
CN3 - Lui Ming Choi Primary School				
337	66.7	69.9	62.0	70
CN13 - No. 18-20 Eastern Street				
324	73.4	75.0	66.7	75
CN15 - Ivy Tower				
267	72.5	74.3	65.0	75
CN16 - No. 9-11 Ki Ling Lane				
305	73.7	75.0	71.0	75
CN21 - The Merton (Block 2)				
338	71.0	74.9	65.2	75

3.3 Action taken in Event of Exceedence

There was no exceedance in air quality parameter recorded in the reporting period for the air monitoring stations shown in **Section 3.1**.

There was no exceedance in noise parameter recorded in the reporting period for the noise monitoring stations shown in **Section 3.2**.

3.4 Ground-borne Noise for TBM operation

Ground-borne noise measurement had been conducted for TBM tunneling work in accordance with EP condition 6.1(i) and the approved Construction Ground-borne Noise Monitoring Plan submitted as per EM&A Manual Clause 3.1 requirement. There was no exceedance in ground-borne noise monitoring parameters recorded in the reporting period. The TBM tunneling work had been completed in December 2012.

4 LANDSCAPE AND VISUAL

4.1 Monitoring Requirements

Monitoring of the implementation of the landscape and visual mitigation measures during construction phase was conducted in accordance with the requirements as stipulated in the EM&A Manual.

The landscape and visual monitoring and audit had been conducted once a month throughout the construction stage covering the entire project site areas.

4.2 Audit Results

Monthly monitoring and audit was undertaken in accordance with the EM&A Manual.

Tree Felling at Works Area B

2 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Works Area L1

19 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Works Area M1

16 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Felling at Works Area N1

29 nos. of trees were removed in accordance with the approved Tree Removal Application during the site clearance work.

Tree Transplantation in the reporting period

3 nos. of trees were transplanted from Works Area N1 to the Receptor Sites at Sheung Wan Pumping Station site, road side planter at Shing Sai Road and Connaught Road West.

The Certified Arborist as required by the EP has conducted inspections and audits and found that the transplanting works and the tree protection works being carried out by the civil works and transplanting contractors were in accordance with the EP/EIA, Tree Protection Plan and contract requirements. No non-compliance was identified in the reporting period.

Compensatory Tree Planting in reporting period

46 nos. trees had been planted for Works Areas N1.

5 WASTE MANAGEMENT

Mitigation measures on waste management had been implemented in accordance with the Waste Management Plans for the respective civil works contracts submitted under the Environmental Permit. The C&D materials were disposed of at the public filling reception facilities while C&D wastes are to be disposed of at the landfills. Quantities of wastes disposed in the reporting period are summarized in the following table:

Amount of Construction Wastes Disposed				
Reporting Period	Inert C&D Materials to Public Fill (ton)	Inert C&D Materials Reused (ton)	Non-inert Waste to Landfill (ton)	Chemical Waste to designated treatment facility (litre)
WIL Cumulative (10 August 2009 to 9 April 2016)	723,476.9	1,737,203.9	35877.8	3,679m3 [^] + 777kg + 51,125 litres

[^]ACM disposal from buildings demolition

6 WATER QUALITY

Monitoring of the implementation of the water quality mitigation measures during construction phase was conducted in accordance with the requirements as stipulated in the EM&A Manual.

Weekly site inspection was conducted throughout the construction stage covering the entire project site areas to ensure the recommended mitigation measures are properly implemented.

In the reporting period, the water quality mitigation measures were implemented in accordance with the requirements as stipulated in the EM&A Manual.

7 CULTURAL HERITAGE

Vibration monitoring at the identified vibration sensitive historical buildings within 100m in plan of the blast location in accordance with the requirements stipulated in Chapter 5 of the EM&A Manual had been completed. From the monitoring results obtained in the reporting period, the measured PPV were far below the PPV criterion of 25mm/s. As such, it is considered that there was no adverse indirect vibration impact on the vibration sensitive historical buildings due to the use of drill and blast method for the WIL tunnel construction.

8 RECORD OF ENVIRONMENTAL COMPLAINTS

211 cases of environmental complaints were referred from EPD in the reporting period of 10 August 2009 to 9 April 2016 for the WIL Project. The complaints had been handled in accordance with the requirements specified in the EM&A Manual. The ET had provided feasible solutions to the ER and Contractors in mitigating the environmental disturbances/concerns lodged by the

complainants. All complaint cases had been resolved and closed. Details of the environmental complaints including investigation and follow-up actions can be referenced in the respective Monthly EM&A Reports.

9 RECORD OF NON-COMPLIANCES

There was no non-compliance identified in the reporting period of 10 August 2009 to 9 April 2016 for Works Areas B, L1, M1, and N1 of the WIL Project.

10 NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS

There was no successful prosecution related to environmental issue recorded for the WIL Project in the reporting period of 10 August 2009 to 9 April 2016.

There is one number of cumulative environmental prosecution since commencement of construction. ER/ET was informed by EPD in August 2010 that an environmental notification of summon had been served on Contract 706 Contractor for the non-compliance with the CNP no. GW-R0703-09 found on 10 November 2009. Legal proceedings had been instituted and trial hearing had been proceeded in September 2010. This prosecution case was not successful. Investigation had been carried out by ER and found that the Contractor had used a PME not approved in the CNP. The ER had instructed the Contractor to improve their site management and training to site personnel in relation to plant and equipment operation in restricted hours for compliance with CNP requirements.

11 STATUS OF STATUTORY SUBMISSIONS

11.1 Submissions required under Environmental Permit

A summary of the submissions made under the WIL Environmental Permit in the reporting period of 10 August 2009 to 9 April 2016 is shown below:

EP-313/2008/J Clause No.	Description		Status
1.11	1	Commencement date of construction	submitted on 10 July 2009
1.14	2	Commencement date of operation	submitted on 16 December 2014
2.1 & 2.2	3	Employment of IEC, ET Leader	submitted on 23 June 2009
2.1	4	Employment of ET Leader	submitted on 19 September 2011
2.3	5	Contractor Management Organization for Civil Works Contracts 706, 708 and 714	submitted on 24 July 2009
2.3	6	Contractor Management Organization for Civil Works Contract 703	submitted on 14 September 2009 and 6 October 2009
2.3	7	Contractor Management Organization for Civil Works Contracts 705 and 706A	submitted on 22 January 2010
2.3	8	Contractor Management Organization for Civil Works Contract 704	submitted on 16 April 2010
2.5 & 2.7	9	Certified Arborist and Tree Protection Plan	submitted on 24 July 2009 and 5 August 2009
2.5 & 2.7	10	Certified Arborist and Tree Protection Plan – Responses to Comments	submitted on 10 September 2009
2.5 & 2.7	11	Certified Arborist and Tree Protection Plan – Certified Arborist	submitted on 3 November 2009
2.5 & 2.7	12	Tree Protection Plan Rev A	submitted on 19 July 2010
2.5 & 2.7	13	Tree Protection Plan Rev B	submitted on 13 October 2010
2.5 & 2.7	14	Tree Protection Plan Rev C	submitted on 11 January 2013
2.5 & 2.7	15	Tree Protection Plan Rev D	submitted on 3 March 2014
2.5 & 2.7	16	Tree Protection Plan Rev E	submitted on 6 October 2014
2.5 & 2.7	17	Tree Protection Plan Rev F (Part 1)	submitted on 11 November 2014
2.5 & 2.7	18	Tree Protection Plan (Complete Set)	submitted on 21 January 2015
2.5 & 2.7	19	Tree Protection Plan (Complete Set)	submitted on 24 April 2015
2.5	20	Certified Arborist	submitted on 22 June 2010
2.6	21	Set up of Community Liaison Groups and designated complaint hotline	submitted on 20 July 2009
2.11.1	22	Archaeological Watching Brief Proposal	submitted on 31 August 2009
2.11.1	23	Revised Archaeological Watching Brief Proposal	submitted on 23 September 2009
2.11.1	24	Revised Archaeological Watching Brief Proposal	submitted on 16 October 2009
2.12	25	Waste Management Plans for Civil Works Contracts 706, 708 and 714	submitted on 24 July 2009
2.12	26	Revised Waste Management Plans for Civil Works Contracts 706, 708 and 714 Rev A	submitted on 7 September 2009
2.12	27	Revised Waste Management Plans for Civil Works Contracts 706, 708 and 714 Rev B	submitted on 16 October 2009
2.12	28	Waste Management Plan for Civil Works Contract 703	submitted on 2 December 2009

EP-313/2008/J Clause No.	Description		Status
2.12	29	Revised Waste Management Plan for Civil Works Contract 703 Rev A	submitted on 14 January 2010
2.12	30	Waste Management Plan for Civil Works Contract 706A	submitted on 22 January 2010
2.12	31	Waste Management Plan for Civil Works Contract 705	submitted on 5 February 2010
2.12	32	Revised Waste Management Plan for Civil Works Contract 705 Rev A	submitted on 2 September 2010
2.12	33	Waste Management Plan for Civil Works Contract 704	submitted on 22 July 2010
2.12	34	Waste Management Plan for Civil Works Contract 704 Rev A	submitted on 14 April 2011
2.12	35	Waste Management Plan for Civil Works Contract 704 Rev B	submitted on 7 October 2011
2.12	36	Waste Management Plan for Civil Works Contract 704 Rev C	submitted on 22 May 2012
3.1.1(a) & 2.4	37	Works Area B programme, site layout plan and drawings of mitigation measures	submitted on 23 June 2009
3.1.1(a)	38	Remediation Report for Works Area B	submitted on 10 June 2009
3.1.2(a) & 3.1.2(b)	39	Appointment of ISC and certification of additional concrete paving for the small western portion of Works Area B occupied by HyD Depot	submitted on 13 July 2009 and 25 August 2009
3.1.2(a) & 3.1.2(b)	41	Appointment of ISC and certification of additional concrete paving for Works Area B for WIL Project	submitted on 30 October 2009
3.3.2(a)	42	Sampling and Testing Proposal	submitted on 14 May 2014
3.3.2(a)	43	Revised Sampling and Testing Proposal	submitted on 4 August 2014
3.3.2(a)	44	Revised Sampling and Testing Proposal	submitted on 6 October 2014
3.3.2(b)	45	Sampling and Testing Report	submitted on 11 December 2014
3.3.2(c)	46	Method Statement for Removal of additional concrete paving	submitted on 25 March 2015
3.3.2	47	Removal Plan	submitted on 13 May 2015
3.3.3	48	Record of the Inspection	submitted on 28 October 2015
4.1.4	49	As-built Drawing of Track / Trackform / Baseplate	submitted on 13 September 2013
4.1.4	50	As-built Drawings for Operation Ground-borne Noise Mitigation Measures	submitted on 9 January 2014
4.1.5	51	Noise Performance Test Proposal	submitted on 28 February 2014
4.1.5	52	Noise Performance Test Proposal Re-submission	submitted on 6 June 2014
4.1.5	53	Noise Performance Test Report	submitted on 23 July 2014
4.1.5	54	Noise Performance Test Report Re-submission	submitted on 26 August 2014
4.1.5	55	Noise Performance Test Report Re-submission	submitted on 16 October 2014
4.2.1	56	Aesthetic Landscape and Architectural Proposal	submitted on 11 June 2014

EP-313/2008/J Clause No.	Description		Status
4.2.1	57	Aesthetic Landscape and Architectural Proposal Re-submission	submitted on 18 September 2014
4.2.1	58	Aesthetic Landscape and Architectural Proposal Re-submission	submitted on 19 January 2015
4.2.1	59	Aesthetic Landscape and Architectural Proposal Re-submission	submitted on 14 April 2015
4.2.2	60	Audit Report of Tree Protection Plan Implementation (Part 1)	submitted on 11 November 2014
4.2.2	61	Audit Report of Tree Protection Plan Implementation (Part 2)	submitted on 3 February 2015
5.1.1	62	Record of Public Open Space Reprovisioning/Restoration	submitted on 16 December 2014
6.1(i)	63	Construction Ground-borne Noise Monitoring Plan for TBM	submitted on 27 May 2011
6.1(i)	64	Construction Ground-borne Noise Monitoring Plan for TBM Rev A	submitted on 9 September 2011
6.3	65	Baseline Monitoring Report (Part 1) for Works Area B	submitted on 10 July 2009
6.3	66	Baseline Monitoring Report (Part 1) for Works Area B Rev A	submitted on 10 February 2012
6.3	67	Baseline Monitoring Report (Part 2) for Works Area MA	submitted on 12 August 2009
6.3	68	Baseline Monitoring Report (Part 3) for Works Areas G and J	submitted on 28 August 2009
6.3	69	Baseline Monitoring Report (Part 4) for Works Areas M and N1	submitted on 9 October 2009
6.3	70	Baseline Monitoring Report (Part 5) for Works Area I	submitted on 8 December 2009
6.3	71	Baseline Monitoring Report (Part 6) for Works Area C	submitted on 10 February 2010
6.3	72	Baseline Monitoring Report (Part 7) for Works Areas C and D	submitted on 15 April 2010
6.3	73	Baseline Monitoring Report (Part 7) for Works Areas C and D Rev A	submitted on 11 June 2010
6.3	74	Baseline Monitoring Report (Part 8) for Works Area A	submitted on 23 April 2010
6.3	75	Baseline Monitoring Report (Part 8) for Works Area A Rev A	submitted on 15 June 2010
6.3	76	Baseline Monitoring Report (Part 9) for Works Area L1	submitted on 7 July 2010
6.3	77	Baseline Monitoring Report (Part 10) for Works Areas H and J3	submitted on 6 October 2010
6.3	78	Baseline Monitoring Report (Part 11) for Works Areas O1, O2 and O3	submitted on 12 October 2010
6.3	79	Baseline Monitoring Report (Part 12) for Works Area E	submitted on 4 November 2010
6.3	80	Baseline Monitoring Report (Part 12) Rev A for Works Area E	submitted on 17 December 2010
6.3	81	Baseline Monitoring Report (Part 13) for	submitted on 17 January 2011

EP-313/2008/J Clause No.	Description		Status
		Works Area M1	
6.3	82	Baseline Monitoring Report (Part 14) for Works Area J2	submitted on 1 February 2011
6.3	83	Baseline Monitoring Report (Part 15) for Works Area M3	submitted on 22 July 2011
6.3	84	Baseline Monitoring Report (Part 15) for Works Area M3 Rev A	submitted on 20 October 2011
6.3	85	Baseline Monitoring Report (Part 15) for Works Area M3 Rev B	submitted on 9 December 2011
6.4	86	EM&A Report for September 2009	submitted on 23 September 2009
6.4	87	EM&A Report for October 2009	submitted on 23 October 2009
6.4	88	EM&A Report for November 2009	submitted on 23 November 2009
6.4	89	EM&A Report for December 2009	submitted on 23 December 2009
6.4	90	EM&A Report for January 2010	submitted on 22 January 2010
6.4	91	EM&A Report for February 2010	submitted on 25 February 2010
6.4	92	EM&A Report for March 2010	submitted on 23 March 2010
6.4	93	EM&A Report for April 2010	submitted on 23 April 2010
6.4	94	EM&A Report for May 2010	submitted on 24 May 2010
6.4	95	EM&A Report for June 2010	submitted on 24 June 2010
6.4	96	EM&A Report for July 2010	submitted on 23 July 2010
6.4	97	EM&A Report for August 2010	submitted on 23 August 2010
6.4	98	EM&A Report for September 2010	submitted on 24 September 2010
6.4	99	EM&A Report for October 2010	submitted on 25 October 2010
6.4	100	EM&A Report for November 2010	submitted on 23 November 2010
6.4	101	EM&A Report for December 2010	submitted on 23 December 2010
6.4	102	EM&A Report for January 2011	submitted on 24 January 2011
6.4	103	EM&A Report for February 2011	submitted on 25 February 2011
6.4	104	EM&A Report for March 2011	submitted on 23 March 2011
6.4	105	EM&A Report for April 2011	submitted on 27 April 2011
6.4	106	EM&A Report for May 2011	submitted on 23 May 2011
6.4	107	EM&A Report for June 2011	submitted on 24 June 2011
6.4	108	EM&A Report for July 2011	submitted on 26 July 2011
6.4	109	EM&A Report for August 2011	submitted on 23 August 2011
6.4	110	EM&A Report for September 2011	submitted on 23 September 2011
6.4	111	EM&A Report for October 2011	submitted on 21 October 2011
6.4	112	EM&A Report for November 2011	submitted on 23 November 2011
6.4	113	EM&A Report for December 2011	submitted on 23 December 2011

EP-313/2008/J Clause No.	Description		Status
6.4	114	EM&A Report for January 2012	submitted on 20 January 2012
6.4	115	EM&A Report for February 2012	submitted on 23 February 2012
6.4	116	EM&A Report for March 2012	submitted on 23 March 2012
6.4	117	EM&A Report for April 2012	submitted on 23 April 2012
6.4	118	EM&A Report for May 2012	submitted on 23 May 2012
6.4	119	EM&A Report for June 2012	submitted on 22 June 2012
6.4	120	EM&A Report for July 2012	submitted on 23 July 2012
6.4	121	EM&A Report for August 2012	submitted on 23 August 2012
6.4	122	EM&A Report for September 2012	submitted on 21 September 2012
6.4	123	EM&A Report for October 2012	submitted on 22 October 2012
6.4	124	EM&A Report for November 2012	submitted on 23 November 2010
6.4	125	EM&A Report for December 2012	submitted on 21 December 2010
6.4	126	EM&A Report for January 2013	submitted on 23 January 2013
6.4	127	EM&A Report for February 2013	submitted on 27 February 2013
6.4	128	EM&A Report for March 2013	submitted on 22 March 2013
6.4	129	EM&A Report for April 2013	submitted on 23 April 2013
6.4	130	EM&A Report for May 2013	submitted on 24 May 2013
6.4	131	EM&A Report for June 2013	submitted on 24 June 2013
6.4	132	EM&A Report for July 2013	submitted on 23 July 2013
6.4	133	EM&A Report for August 2013	submitted on 23 August 2013
6.4	134	EM&A Report for September 2013	submitted on 24 September 2013
6.4	135	EM&A Report for October 2013	submitted on 23 October 2013
6.4	136	EM&A Report for November 2013	submitted on 22 November 2013
6.4	137	EM&A Report for December 2013	submitted on 23 December 2013
6.4	138	EM&A Report for January 2014	submitted on 23 January 2014
6.4	139	EM&A Report for February 2014	submitted on 21 February 2014
6.4	140	EM&A Report for March 2014	submitted on 23 March 2014
6.4	141	EM&A Report for April 2014	submitted on 25 April 2014
6.4	142	EM&A Report for May 2014	submitted on 23 May 2014
6.4	143	EM&A Report for June 2014	submitted on 23 June 2014
6.4	144	EM&A Report for July 2014	submitted on 23 July 2014
6.4	145	EM&A Report for August 2014	submitted on 23 August 2014
6.4	146	EM&A Report for September 2014	submitted on 23 September 2014
6.4	147	EM&A Report for October 2014	submitted on 23 October 2014
6.4	148	EM&A Report for November 2014	submitted on 23 November 2014
6.4	149	EM&A Report for December 2014	submitted on 23 December 2014
6.4	150	EM&A Report for January 2015	submitted on 23 January 2015
6.4	151	EM&A Report for February 2015	submitted on 25 February 2015
6.4	152	EM&A Report for March 2015	submitted on 23 March 2015

EP-313/2008/J Clause No.	Description		Status
6.4	153	EM&A Report for April 2015	submitted on 23 April 2015
6.4	154	EM&A Report for May 2015	submitted on 23 May 2015
6.4	155	EM&A Report for June 2015	submitted on 23 June 2015
6.4	156	EM&A Report for July 2015	submitted on 23 July 2015
6.4	157	EM&A Report for August 2015	submitted on 21 August 2015
6.4	158	EM&A Report for September 2015	submitted on 19 September 2015
6.4	159	EM&A Report for October 2015	submitted on 20 October 2015
6.4	160	EM&A Report for November 2015	submitted on 24 November 2015
6.4	161	EM&A Report for December 2015	submitted on 24 December 2015
6.4	162	EM&A Report for January 2016	submitted on 22 January 2016
6.4	163	EM&A Report for February 2016	submitted on 22 February 2016
6.4	164	EM&A Report for March 2016	submitted on 22 March 2016
6.4	165	EM&A Report for April 2016	submitted on 22 April 2016
6.1	166	Final EM&A Report for Works Area MA	submitted on 29 December 2010
6.1	167	Final EM&A Report for Works Area MA Rev A	submitted on 16 January 2012
6.1	168	Final EM&A Report Part 1 for WIL Project	submitted on 25 February 2015
6.1	169	Revised Final EM&A Report Part 1 for WIL Project	submitted on 8 July 2015
7.2	170	Internet address of web site for environmental monitoring and project data	submitted on 23 September 2009

11.2 Statutory Permits and Licenses

A summary of the status of valid environmental permits and licenses as per the last monthly EM&A report no. 80 (April 2016) is shown below:

Description	Status
Environmental Permit for West Island Line Project (EP-313/2008/J)	Issued on 1 September 2014
<u>Contract 704</u>	
Wastewater Discharge License	WT00022679-2015
Registration as a Chemical Waste Producer	Licence no. 5213-112-G2525-03 Approved on 25 May 2011 Licence no. 5213-112-G2712-01 Approved on 15 Oct 2015
Disposal of Construction Waste	Billing Account no. 7010555 activated on 8 April 2010, Billing Account no. 7011159 (by vessel)

	activated on 10 September 2010
Construction Noise Permit	GW-RS1465-15 (21-Jan-16 to 20-Jul-16) GW-RS1386-15 (16-Dec-15 to 12-Jun-16)

12 SITE INSPECTIONS

12.1 Observations

Regular site inspections were undertaken by the ET in accordance with the EM&A Manual. The contractors' performance on environmental matters were assessed. The inspection findings and the associated recommendations on improvement to the environmental protection and pollution control works were raised to the contractors for reference and/or action. It is concluded that the environmental protection and pollution control works had been implemented satisfactorily.

12.2 Other Notable Events

WIL Operation

Operation of WIL commenced on 28 December 2014; and Sai Ying Pun Station also opened to public on 29 March 2015. SYP Entrance B3 (i.e. Works Areas L1) has also been opened in service since 27 March 2016. A notification letter to EPD regarding commencement of service of SYP Entrance B3 has been issued on 7 March 2016.

IEC Site Inspections

The IEC conducted site inspections for WIL Project Works Areas on monthly basis, minor irregularities were observed during the site inspections and the respective civil works contractors had followed up and satisfactorily rectified the issues as identified in the site inspections promptly.

Works Area B

The small western portion of Works Area B had been occupied by Highways Department as a depot upon the completion of the additional concrete paving and certification of the paving design by ISC in accordance with the EP requirements. Monthly inspections on the condition of the additional paving, site drainage and foul sewerage systems had been carried out in accordance with EP Condition 3.2.2. The structural integrity of the additional concrete paving had been maintained.

Regular soil monitoring had been conducted at 3-month intervals in accordance with EP Condition 3.2.8 in order to monitor any possible migration of contaminants beneath and across the additional concrete paving in Works Area B. The soil monitoring results had been certified by the ET Leader and verified by the IEC. From the monitoring results obtained, there was no evidence of any possible migration of contaminants beneath and across the additional concrete paving in Works Area B.

The temporary use of this site had been suspended in early 2015. The additional concrete

paving and the layer of general fill material inside the area, along with the temporary site office and the facilities have been completely removed in accordance with the EP Condition 3.3.1. The general fill material was sampled and tested following the approved Sampling and Testing proposal under EP Condition 3.3.2. The test results showed that general fill material is uncontaminated. Soil monitoring has been ceased since June 2015 as no longer use of the works area and commencement on removal of additional concrete paving. Removal of additional concrete paving has been completed in accordance with the approved method statement for removal of additional concrete paving under EP Condition 3.3.2(c).

Community Liaison Groups

The Community Liaison Groups were established on 10 July 2009 in accordance with the EP Condition 2.6. Three CLGs, namely, Sai Ying Pun, HKU and Kennedy Town have been set up to provide direct communication channel for the local communities to MTR during the construction stage of the Project on the project matters including enquiries and complaints handling on all environmental issues. Members of CLGs include the Central & Western District Councillors, Chairmen of Area Committees, representatives of local groups and government departments. Property management office, schools, and other local committees will be invited to participate in the CLGs. The first CLG meetings had been held in July 2009. The eighteenth CLG meeting had been held in June 2014.

In addition, a MTR Project hotline at 2993 3333 is in operation for public enquiries on the WIL Project and it also serves as the complaint hotline during the construction stage of the Project.

Termination of WIL EM&A Programme

In accordance with clauses 2.16, 9.19 and 11.1 under EM&A Manual of the Project, impact monitoring of construction noise and air quality as well as site inspection shall be carried out when construction activities are underway. In view of completion of construction works for Works Area B, M1 and N1 in December 2015, no air quality and noise monitoring as well as regular site inspection for the above areas was conducted after 9 January 2016, the reporting month of January 2016. The respective monitoring stations include AM2, AM9a, AM10, CN3, CN13, CN15 and CN21 as mentioned in **Section 2.2** and **Table 2**. A letter of notification to EPD has been issued on 15 January 2016.

In view of completion of construction works for Works Area L1 in February 2016 and hence completion of all construction works for WIL project, a proposal for termination of WIL EM&A programme, which was certified by ET Leader and verified by IEC, has been submitted on 12 April 2016. Remaining noise monitoring at the monitoring station CN16 as mentioned in **Section 2.2** and **Table 2** together with the regular site inspection for Works Area L1 had been proposed to terminate immediately.

12.3 Solid and Liquid Waste Management

Base on the findings of the weekly site inspections, the Contractors' performance in solid and liquid waste management were acceptable and compliance with the EIA requirements were demonstrated. Solid wastes and liquid waste were properly disposed of. The current management standard should be maintained.

12.4 Effectiveness and Efficiency of Mitigation Measures

Based on the environmental monitoring results, the effectiveness and efficiency of the mitigation measures implemented were found to be satisfactory. It is concluded that the environmental mitigation measures as recommended in the approved WIL Project EIA Report had been implemented satisfactorily.

12.5 Review of WIL EIA Predictions

The environmental impact hypotheses with respect to construction air quality and construction noise detailed in the WIL EIA Report had been tested throughout the construction stage of the WIL Project by the regular construction impact monitorings. The environmental impact hypotheses are found to be in order generally throughout the construction stage of the WIL Project.

Based on the findings of the regular construction impact monitorings, the validity of the WIL EIA predictions can be concluded. In conclusion, the current practices regarding the performance of the environmental management system are found to be satisfactory and should be maintained.

13 CONCLUSIONS

This final Environmental Monitoring and Audit Report Part 2 presents the results of EM&A works and the impact monitoring for the construction works undertaken during the period of 10 August 2009 to 9 April 2016 for the WIL Project Works Areas B, L1, M1 and N1. A proposal for termination of EM&A programme has been submitted on 12 April 2016.

Impact monitoring for air quality and noise were conducted in accordance with the EM&A Manual in the reporting period, there was no breach of Limit Levels for air quality and noise monitoring.

There was no successful environmental prosecution in the reporting period of 10 August 2009 to 9 April 2016.

Site inspections were conducted by the Environmental Team on a weekly basis to monitor proper implementation of environmental pollution control and mitigation measures for the Project.

There was no non-compliance identified in the reporting period of 10 August 2009 to 9 April 2016 for the WIL Project Works Areas B, L1, M1 and N1.

The Environmental Permit (EP-313/2008/J) issued by EPD on 1 September 2014 is used for the WIL Project.

In the reporting period, there was no reporting change of circumstances which may affect the compliance with the recommendations of the EIA Report.

It is concluded from the environmental monitoring and audit works for the West Island Line Project that the construction works were undertaken in an appropriately environmentally sensitive manner in the reporting period. The environmental protection and pollution control measures provided by the contractors were generally acceptable apart from some minor irregularities which were rectified timely by the respective civil works contractors.

Appendix A

Environmental Quality Performance Limits

Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level (µg/m3)	Limit Level (µg/m3)
AM2	155	260
AM9a	168	260
AM10	187	260

Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level (dB(A)), Leq(30min)
0700-1900 hr on normal weekdays	When one documented complaint is received	75*
0700-2300 hr on holidays including Sundays and 1900-2300 hr on all other days		Subject to requirements stipulated in Construction Noise Permits
2300-0700 hr of next day		

* Limit for school is 70 dB(A) and 65 dB(A) during school examination periods.

Appendix B
Event Action Plans

Table 2.4 Event and Action Plan for Construction Noise Monitoring

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
Action Level	<ol style="list-style-type: none"> 1. Notify IEC and ER 2. Carry out investigation 3. Report the results of investigation to the IEC and ER 4. Discuss jointly with the ER and Contractor and formulate remedial measures 5. Increase monitoring frequency to check mitigation effectiveness 	<ol style="list-style-type: none"> 1. Review the analysed results submitted by the ET 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly 3. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to ER with copy to IEC 2. Implement noise mitigation proposals
Limit Level	<ol style="list-style-type: none"> 1. Notify IEC, ER, EPD and Contractor 2. Identify source 3. Repeat measurement to confirm findings 4. Increase monitoring frequency 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented 6. Inform IEC, ER, EPD the causes and actions taken for the exceedances 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. Require Contractor to propose remedial measures for the analysed noise problem 4. Ensure remedial measures are properly implemented 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to ER with copy to IEC 3. Implement the agreed proposals 4. Revise and resubmit proposals if problem still not under control 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated

Table 9.4 Event and Action Plan for Ambient Air Quality Monitoring (Construction)

EVENT	ACTION			ER	CONTRACTOR
ACTION LEVEL					
1. Exceedance for one sample	1. Identify source, investigate the causes of complaint and propose remedial measures; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method.	1. Notify Contractor.	1. Rectify any unacceptable practice; 2. Amend working methods if appropriate.	
2. Exceedance for two or more consecutive samples	1. Identify source; 2. Inform IEC and ER; 3. Advise the ER on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily; 6. Discuss with IEC and ER (together with the Contractor) on remedial actions required; 7. If exceedance continues, arrange meeting with IEC and ER; 8. If exceedance stops, cease additional monitoring.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and ER (together with the Contractor) on possible remedial measures; 4. Advise the ET/ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Submit proposals for remedial to ER within three working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate.	
LIMIT LEVEL					
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC, ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and ER (together with the Contractor) on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to ER with a copy to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate.	
2. Exceedance for two or more consecutive samples	1. Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to ER with a copy to IEC within three working days of notification; 3. Implement the agreed proposals; 4. Revise and resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by the ER until the exceedance is abated.	

Appendix C

Implementation of Environmental Mitigation Measures

Table C1 **Project Implementation Schedule for All Works Areas (Status as of 8 Apr 2016)**

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
Airborne Noise Impact (Construction Phase)							
S 3.55	S 2.23	<p>The following good site practices shall be implemented:</p> <ul style="list-style-type: none"> - Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program - Silencers or mufflers on construction equipment shall be utilized and shall be properly maintained during the construction program - Mobile plant, if any, shall be sited as far from NSRs as possible - Machines and plant (such as trucks) that may be in intermittent use shall be shut down between work periods or shall be throttled down to a minimum - Plant known to emit noise strongly in one direction shall, wherever possible, be orientated so that the noise is directed away from the nearby NSRs - Material stockpiles and other structures shall be effectively utilized, wherever practicable, in screening noise from on-site construction activities. 	To reduce construction noise impact	MTRC / Contractor	All works areas	Construction phase	Implemented
S 3.56-3.57, Table 3.10	S 2.23	<p>Quieter plant shall be used for the following PME:</p> <ul style="list-style-type: none"> - Truck - Crane/ Mobile Crane - Backhoe/Excavator/Wheel Loader/ Front-end-loader - Breaker - Concrete Mixer Truck - Pokers, vibratory, hand held - Pile Extractor - Roller, vibratory - Asphalt Paver - Hydraulic Breaker 	To reduce construction noise impacts	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<ul style="list-style-type: none"> - Pile Rig - Crawler Crane - Sheet Piling Machine/ Piling, Hydraulic 					
S 3.58-3.59	S 2.23	<p>Movable noise barrier shall be used for the following PME where practicable:</p> <ul style="list-style-type: none"> - Breaker - Mini Backhoe - Generator, super silenced - Backhoe - Crane - Poker, vibratory, hand-held - Hydraulic Breaker - Wheel Loader - Crusher - Hand Held Breaker - Compressor - Grout Plant - Grout Mixer - Concrete Pump - Excavator - Lorry Crane - Mobile Crane - Crawler Crane 	To reduce construction noise impacts	MTRC / Contractor	Works areas A, C, D, H, I, J, J1, L1, M1, N1, M3, O1, O2 and O3.	Construction phase	Implemented
S 3.60	S 2.23	<p>Noise enclosure/acoustic shed shall be used for the following PME where practicable:</p> <ul style="list-style-type: none"> - Air Compressor - Concrete Pump - Shotcrete Pump - Hand Held Breaker - Grout Pump - Concrete Corer 	To reduce construction noise impacts	MTRC / Contractor	All works areas	Construction phase	Implemented
S 3.61	S 2.23	Acoustic Enclosure shall be used for enclosing the rock drill as fully as possible.	To reduce construction noise	MTRC / Contractor	Works areas H,	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
			impacts		N1 and M		
S 3.62	S 2.23	Noise insulating cover shall be used to cover the following PME: <ul style="list-style-type: none"> - Breaker - Backhoe - Water pump, submersible (electric) - Crawler mounted rock drill trucks - Rock drill - Air compressor - Electric Winch - Concrete pump - Poker, vibratory, hand-held - Hand Held Breaker - Crane - Shotcrete pump 	To reduce construction noise impacts	MTRC / Contractor	Works areas J1, N1, M1 and M3	Construction phase	Implemented
S 3.63	S 2.23	Silencer shall be used for the ventilation fan	To reduce construction noise impacts	MTRC / Contractor	Works areas MA, A, C, D, G, H, I, J, J1, J2, J3, L1, M, M1, M3, N1, O1, O2 and O3.	Construction phase	Implemented
S 3.64	S 2.23	Noise insulating fabric shall be applied where practicable to cover the following PME: <ul style="list-style-type: none"> - Pile Rig - Drill rig - Pile Extractor - Power Rammer - Piling, earth auger - Piling, hydraulic 	To reduce construction noise impacts	MTRC / Contractor	Works areas MA, C, D, G, H, I, J, J1, J2, J3, L1, M, M1, M3, N1, O1, O2 and O3.	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		- Sheet Piling Machine					
S 3.65	S 2.23	Use of "Noise Control Curtain" - a noise insulating fabric to be mounted on the steel scaffold erected on the buildings to be demolished to an extent such that the line of sight between the noise source and NSR would be blocked	To reduce construction noise impacts	MTRC / Contractor	Works area A	Construction Phase – during the demolition of Block A & C of Kennedy Town Ex-Police Quarter	Implemented
S 3.67-3.70, Figure 3.17 and 3.18.	S 2.23	Temporary noise barriers shall be erected at the works areas of West of KET Station and SYP Entrance A1 & A2.	To reduce construction noise impacts	MTRC / Contractor	Works areas C and N1	Construction phase	Implemented
S 3.71	S 2.23	Decking over would be provided to cover the excavation area.	To reduce construction noise impacts	MTRC / Contractor	Works areas J, J3, G and L1	Construction phase	Implemented
S3.72	S 2.23	Full enclosure of entire works area	To reduce construction noise impacts	MTRC / Contractor	Works area J2	Construction Phase (after piling is completed)	Alternative noise mitigation measure implemented
S3.73 – 3.74	S 2.23	Use of concrete crusher instead of hydraulic breaker	To reduce construction noise	MTRC / Contractor	Works area J2, M1 and	Construction Phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
			impacts		M3		
Airborne Noise Impact (Operation Phase)							
S 3.50-3.51, Table 3.9	Appendix B	The maximum permissible sound power levels (Max SWLs) for the fixed plant shall be complied with during the selection of equipment and mitigation measures.	To comply with the noise criteria of Noise Control Ordinance	MTRC / Contractor	Vent shafts and chiller plants at KET Station, UNI Entrance C1 and SYP Entrance C, and vent shafts at KET Ex-Police Quarter, UNI Vent Shaft-Y and SYP Entrance A1&A2.	Design and operation phases	Implemented before operation; to be implemented in operation phase as necessary
S 3.77	Appendix A	<p>The following shall be considered as far as possible in the detailed design of fixed plant:</p> <ul style="list-style-type: none"> - Choose quieter plant such as those which have been effectively silenced. - Include noise levels specification when ordering new plant (including chiller and E/M equipment). 	To comply with the noise criteria of Noise Control Ordinance	MTRC / Contractor	Vent shafts and chiller plants at KET Station, UNI Entrance	Design and operation phases	Implemented before operation; to be implemented in operation phase as necessary

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<ul style="list-style-type: none"> - Locate fixed plant/louver away from any NSRs as far as practicable. - Locate fixed plant in walled plant rooms or in specially designed enclosures. - Locate noisy machines in a basement or a completely separate building. - Install direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosure where necessary. 			C1 and SYP Entrance C, and vent shafts at KET Ex-Police Quarter, UNI Vent Shaft-Y and SYP Entrance A1&A2.		
Groundborne Noise Impact							
S4.91	S3.1	Ground-borne construction noise monitoring shall be conducted. The measurement locations shall be above the cutting face of the TBM, and shall be located as close to the cutting face as practicable.	To comply with the noise criteria of Noise Control Ordinance	MTRC / Contractor	Works areas of tunneling by TBM	Construction phase	Implemented
S 4.88 & Table 4.10	S 3.2	Type 1a Trackform – Resilient Baseplate with stiffness of about 25 KN/mm shall be installed at both the west- and east-bounds starting from turnout in proximity of Hongway Garden towards the Sai Ying Pun Station and also the alignment under Po Shu Lau to Sai Wan Estate. A commissioning test shall be included in the Contract document in order to ensure compliance of the operational ground-borne noise criteria.	To comply with the noise criteria of Noise Control Ordinance	MTRC	Tunnel alignment	Operation phase	Implemented
Landscape and Visual Impact (Construction Phase)							
Table 5.4	Table 4.2	Re-use of Existing Soil Existing topsoil shall be re-used where possible for new planting areas within the project. The construction program shall consider	To reduce the volume of soil for disposal	MTRC / Contractor	All Works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		using the soil removed from one phase for backfilling another. Suitable storage ground, gathering ground and mixing ground may be set up on-site as necessary. ▪					
Table 5.4	Table 4.2	No-intrusion Zone To maximize protection to existing trees, ground vegetation and the associated understory habitats, construction contracts may designate "No-intrusion Zone" to various areas within the site boundary with rigid and durable fencing for each individual no-intrusion zone. The contractor should close monitor and restrict the site working staff not to enter the "no-intrusion zone", even for non-direct construction activities and storage of equipment.	To protect the existing trees, ground vegetation and the associated understory habitats.	MTRC / Contractor	All Works areas	Construction phase	Implemented
Table 5.4	Table 4.2	Decorative Hoarding Erection of decorative screen hoarding should be designed to be compatible with the existing urban context.	To reduce visual impact due to construction	MTRC / Contractor	All Works areas	Construction phase	Implemented
Table 5.4	Table 4.2	Minimize light pollution and control of night-time glare All security floodlights for construction sites shall be equipped with adjustable shield, frosted diffusers and reflective covers, and be carefully controlled to minimize light pollution and night-time glare to nearby residences and GIC users. The Contractor shall consider other security measures which shall minimize the visual impacts.	To minimize the visual impacts.	MTRC / Contractor	All Works areas	Construction phase	Implemented
Table 5.4	Table 4.2	Aesthetic design of the conveyor belt system The removal of excavated material requires installation of a conveyor and a barging point. The conveyor will be covered, except the portion where it meets the barging point. The aim of covering or	To minimize the visual intrusion as well as the air and noise quality issues	MTRC / Contractor	Works areas E & F	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		enclosing the conveyor is to avoid noise and air quality issues; however, the conveyor where above-ground should be adequately screened and /or constructed of suitable materials and in colours/tones that minimize visual intrusion.					
Table 5.4	Table 4.2	<p>Protection of Retained Trees</p> <p>All retained trees should be recorded photographically at the commencement of the Contract, and carefully protected during the construction period. Detailed tree protection specification shall be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and the tree monitoring system.</p> <p>In addition, the Contractor shall be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in contractor's works areas.</p> <p>All implementation of tree protection works and tree preservation measures shall be supervised by a landscape specialist on site.</p>	To protect the retained trees within the site boundary	MTRC / Contractor	All Works areas	Construction phase	Implemented
Table 5.4	Table 4.2	<p>Protection of Registered Old and Valuable Trees</p> <p>Detailed tree protection measures as stipulated in WBTC No. 29/2004 – Registration of Old and Valuable Trees, and Guidelines for their Preservation, shall be allowed and included in the Contract Specification. All implementation of OVT protection measures shall be supervised by a landscape specialist on site.</p>	To protect the OVT within the site boundary	MTRC / Contractor	All Works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
Table 5.4	Table 4.2	Protection of Old Stone Wall-cum-trees Detailed tree protection specification shall be allowed and included in the Contract Specification, which specifying the tree protection requirement, submission and approval system, and the tree monitoring system. All implementation of Old stone wall-cum-trees protection measures shall be supervised by a landscape specialist on site.	To protect the existing trees-cum-wall	MTRC / Contractor	All Works areas	Construction phase	Implemented
Landscape and Visual Impact (Operation Phase)							
Table 5.5	Table 4.3	Tree Transplanting Trees of high to medium survival rate after transplanting to be affected by the works shall be transplanted where possible and practicable. Tree transplanting proposal including final location for transplanted trees will be submitted separately to seek relevant government department's approval.	Tree preservation	MTRC / Contractor	All Works areas	Detail design and operation phase	Implemented
Table 5.5	Table 4.3	Compensation Tree Planting Compensatory tree planting should be provided to compensate for felled trees. Compensatory tree planting proposal including location of compensation will be submitted separately to seek relevant government department's approval.	To reduce impact to existing trees.	MTRC / Contractor	All Works areas	Detail design and operation phase	Implemented
Table 5.5	Table 4.3	Aesthetic landscape and architectural treatment on Station / Entrance / vent shaft All station entrances, vent shafts and all above ground structures shall be sensitively designed to ensure the element with colour, texture and tonal quality being compatible to the existing urban context, which shall include tree planting where space permits, to minimize the potential adverse landscape and visual impacts. For	To ensure the elements are compatible to the existing urban context and minimize the landscape and	MTRC / Contractor	Stations / Entrances / Vent Shafts	Detail design and operation phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		example, roof greening and vertical greening would be applied where possible subject to technical operational and maintenance constraints.	visual impacts.				
Table 5.5	Table 4.3	Re-instatement of excavated Area All excavated area and disturbed area for utilities diversion, temporary road diversion, and pipeline works shall be reinstated to former conditions or even better, to the satisfaction of the relevant Government departments.	To minimize the visual impacts.	MTRC / Contractor	All Works areas	Operation phase	Implemented
Table 5.5	Table 4.3	Re-provision of public open space Every effort should be made to so that no public open space would be unnecessarily affected by the Project and if affected, they should be reprovided as far as possible and practicable. Sensitive design and re-provision of the affected Public Open Space (Forbes Street Playground, Hill Road Rest Garden, Ki Ling Lane Children's Playground, Mui Fong Street Children Playground, Sai Woo Lane Playground, Centre Street Market Sitting-out Area, King George V Memorial Park) incorporating replacement facilities for those provided at present, using materials of quality suitable for long term use and acceptable to relevant Government authority. Relevant government departments including LCSD and PlanD should be consulted on the design of the re-provisioned public open spaces at the early stage of the design process.	Re-provision of landscape amenity area and facilities	Contractor	All Works areas	Operation phase	Being implemented (Ki Ling Lane Children's Playground)
Cultural Heritage Impact (Construction Phase)							
S6.45, S6.51-6.55	S 5.4 – 5.11	The construction vibration control limits shall be followed. Compliance monitoring of vibration limits shall be conducted and reported as a requirement of EM&A programme The location and installation of the monitoring stations should be	To minimize vibration impacts on the identified vibration sensitive	MTRC / Contractor	All Works Areas	Detail design, construction and operational	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		discussed and agreed with AMO before installation.	historical buildings.			phase	
S6.46	S5.3	Hoardings or boundary fencing shall be designed in a manner that responds to the existing urban context.	To minimize visual impacts	MTRC / Contractor	All Works Area	Detailed design and operational phase	Implemented
S6.44	S5.12-5.14	Archaeological watching brief shall be conducted for the identification of any historical finds in the directly impacted works areas which might have a potential for finds and remains of archaeological interest to be found. Details of the frequency of inspection shall be provided to AMO for review and comment once the detailed construction programme has been finalized. The inspection should be carried out by the qualified archaeologist who have applied to the Antiquities Authority for a License	To identify any historical finds in the works areas	MTRC / Qualified Archaeologist	Works Area C, H, I, J, J1, J2, J3, M and M2	Construction phase	Implemented
Cultural Heritage Impact (Operation Phase)							
Table 6.2	5.3	Aboveground structures shall be designed in a manner that responds to the existing urban context.	To minimize visual impacts	MTRC / Contractor	Stations / Entrances / Vent Shafts	Detail design and operation phase	Implemented
S6.60	S 5.15	Recommended measures for mitigating operational phase landscape and visual impacts shall be implemented.	To minimize potential visual impact on heritage sites	MTRC / Contractor	Stations / Entrances / Vent Shafts	Detail design and operational phase	Being implemented
Waste Management Implications (Construction Phase)							
S7.30	S 6.5	Good site practices - 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	To reduce waste management impacts	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>wastes generated at the site</p> <ul style="list-style-type: none"> - Training of site personnel in proper waste management and chemical handling procedures - Provision of sufficient waste disposal points and regular collection of waste - 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. - Separation of chemical wastes for special handling and appropriate treatment at the Chemical Waste Treatment Centre. 					
S7.31 & S7.32	S 6.6 – S 6.7	<p>Waste reduction measures</p> <ul style="list-style-type: none"> - Sort C&D waste from demolition of existing facilities to recover recyclable portions such as metals - 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 work force - Proper storage and site practices to minimise the potential for damage or contamination of construction materials 	To achieve waste reduction	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<ul style="list-style-type: none"> - Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. - A recording system for the amount of wastes generated, recycled and disposed (including disposal sites) should be proposed - Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle. - A Waste Management Plan shall be prepared by the Contractor prior to the commencement of construction work to provide an overall framework for waste management and reduction. 					
S7.34 & S7.35	S 6.9 & S6.10	<p>C&D Material</p> <ul style="list-style-type: none"> - In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the excavated materials arising from station and tunnel construction shall be reused on-site as backfilling material and for landscaping works as far as practicable. - Surplus rock generated from the tunnelling works, shafts/adits construction and the stations cavern construction should be reused in reclamation and site formation projects either in the Mainland or Macau, or disposed of at a PFRF, as agreed with the Secretary of the Public Fill Committee, for other beneficial uses. - C&D waste generated site clearance from the proposed works areas would require disposal to the designated landfill site. 	To minimize environmental impacts during the handling, transportation and disposal of C&D material	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<ul style="list-style-type: none"> - In order to monitor the disposal of inert C&D material and C&D waste at PFRFs and landfills, respectively, and to control fly-tipping, a trip-ticket system shall be established in accordance with ETWB TCW No. 31/2004. - Material delivered to PFRFs should be of size less than 250mm or other sizes as agreed with the Secretary of the Public Fill Committee. 					
S7.36	S 6.11	<p>General refuse</p> <ul style="list-style-type: none"> - General refuse shall be stored in enclosed bins or compaction units separate from C&D material and chemical wastes. - A reputable waste collector shall be employed by the contractor to remove general refuse from the site, separately from C&D material and chemical wastes. Preferably an enclosed and covered area shall be provided to reduce the occurrence of 'wind blown' light material. 	To minimize environmental impacts during the handling, transportation and disposal of general refuse	MTRC / Contractor	All works areas	Construction phase	Implemented
S7.37	S 6.12	<p>Chemical waste</p> <ul style="list-style-type: none"> - Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i>. - Good quality containers compatible with the chemical wastes shall be used, and incompatible chemicals shall be stored separately. - Appropriate labels shall be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. 	To minimize environmental impacts during the handling, transportation and disposal of chemical refuse	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<ul style="list-style-type: none"> The Contractor shall use a licensed collector to transport and dispose of the chemical wastes, either to the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the <i>Waste Disposal (Chemical Waste) (General) Regulation</i>. 					
Waste Management Implications (Operation Phase)							
S7.39	S 6.11	<p>General Refuse and Industrial Waste</p> <ul style="list-style-type: none"> A reputable waste collector should be employed to remove general refuse and industrial wastes from the stations on a daily basis to minimise odour, pest and litter impacts. 	Storage and handling of waste	MTRC	Stations and entrances	Operational stage	To be implemented in operation phase
S7.40	S 6.12	<p>Chemical Waste</p> <ul style="list-style-type: none"> The requirements given in the <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i> should be followed in handling of these chemical wastes. A trip-ticket system should be operated in accordance with the <i>Waste Disposal (Chemical Waste) (General) Regulation</i> to monitor all movements of chemical wastes which would be collected by a licensed collector to a licensed facility for final treatment and disposal. The guidelines covered under the construction phase mitigation of chemical wastes should be referred. 	Storage and handling of the chemical waste to avoid environmental and health hazard	MTRC	Stations and entrances	Operational stage	To be implemented in operation phase
Water Quality Impact (Construction Phase)							

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
S9.31	S 8.4	<p>Construction Site Run-off and Drainage</p> <p>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. The following measures are recommended to protect water quality and sensitive uses of the coastal area i.e. WSD flushing water intakes along the harbour front, and when properly implemented should be sufficient to adequately control site discharges so as to avoid water quality impacts:</p> <ul style="list-style-type: none"> - At the start of site establishment (including the barging facilities), perimeter cut-off drains to direct off-site water around the site shall be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers shall be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system would be undertaken by the contractor prior to the commencement of construction. - The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a site/sediment trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates - Sand/silt removal facilities such as sand/silt traps and sediment basins shall be provided to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of efficient silt removal facilities shall be based on the guidelines in Appendix A1 of ProPECC PN 1/94, which states that the retention time for silt/sand traps shall be 5 	To minimize water quality impacts	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>minutes under maximum flow conditions. Sizes may vary depending upon the flow rate, but for a flowrate of 0.1m³/s a sedimentation basin of 30m³ would be required and for a flow rate of 0.5 m³/s the basin would be 150m³. The detailed design of the sand/silt traps shall be undertaken by the contractor prior to the commencement of construction.</p> <ul style="list-style-type: none"> - All drainage facilities and erosion and sediment control structures shall be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit shall be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. - Measures shall be taken to minimize the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations shall be discharged into storm drains via silt removal facilities. - If surface excavation works cannot be avoided during the wet season (April to September), temporarily exposed slope/soil surfaces shall be covered by a tarpaulin or other means, as far as practicable, and temporary access roads shall be protected by crushed stone or gravel, as excavation proceeds. Interception channels shall be provided (e.g. along the crest/edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. Arrangements shall always be in place to ensure that adequate surface protection measures can be safely carried out well before the arrival of a rainstorm. Other measures that need to be implemented before, during and after rainstorms are summarized in ProPECC PN 1/94. - The overall slope of the site should be kept to a minimum to 					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>reduce the erosive potential of surface water flows, and all trafficked areas and access roads protected by coarse stone ballast. An additional advantage accruing from the use of crushed stone is the positive traction gained during prolonged periods of inclement weather and the reduction of surface sheet flows</p> <ul style="list-style-type: none"> - All vehicles and plant shall be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facility shall be provided at every construction site exit where practicable. Wash-water shall have sand and silt settled out and removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road shall be paved with sufficient backfill toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. - Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. - Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. - Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94. 					

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.</p> <ul style="list-style-type: none"> - Bentonite slurries used in diaphragm wall construction shall be reconditioned and reused wherever practicable. Temporary enclosed storage locations shall be provided on-site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC PN 1/94 shall be adhered to in the handling and disposal of bentonite slurries. 					
S9.32 & S9.33	S 8.5 & S 8.6	<p>General Construction Activities</p> <ul style="list-style-type: none"> - Construction solid waste, debris and refuse generated on-site shall be collected, handled and disposed of properly to avoid entering any nearby stormwater drain. Stockpiles of cement and other construction materials shall be kept covered when not being used. Requirements of the solid waste management are described in Section 7 of this EIA Report. - Oils and fuels shall only be used and stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to nearby stormwater drain, all fuel tanks and storage areas shall 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 shall be drained of rainwater after a rain event. 	To minimize water quality impacts	MTRC / Contractor	All works areas	Construction phase	Implemented
S9.34	S 8.7	<p>Sewage from Construction Workforce</p> <ul style="list-style-type: none"> - Temporary sanitary facilities, such as portable chemical toilets, shall be employed on-site where necessary to handle sewage from the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and would be responsible for appropriate disposal of waste matter and 	To minimize water quality impacts	MTRC / Contractor	All works areas with on-site sanitary facilities	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		maintenance of these facilities.					
S9.35	S 8.8	<p>Tunnelling Wastewater Discharge</p> <p>Wastewater with a high level of suspended solids should be treated before discharge by settlement in tanks with sufficient retention time. Oil interceptors would also be required to remove the oil, lubricants and grease from the wastewater. In case of very high levels of suspended solids, an on-site pre-packaged treatment plant may be required with the addition of flocculants to improve the settlement of solids. A discharge licence under the WPCO would be required for discharge to the stormwater drain. It may be a stipulation of the WPCO licence to require the Contractor to monitor the quality / quantity of the discharge to show compliance with the conditions of the licence.</p>	To minimize water quality impacts	MTRC / Contractor	All works areas with tunneling works	Construction phase	Implemented
S9.36	S8.9	<p>Groundwater Monitoring</p> <p>Monitoring of groundwater table shall be conducted on a weekly basis and recharge wells will be installed.</p>	To control the potential impact on tree walls at Forbes Street due to groundwater drawdown induced by tunneling	MTRC / Contractor	Works Areas C & D	Construction phase	Implemented
Water Quality Impact (Operation Phase)							
S9.27	S8.10-S8.11	<p>Runoff from Rail Track and operational tunnel drainage</p> <ul style="list-style-type: none"> - The tunnel wall would be equipped with water-tight liner and designed for no seepage. - Standard designed silt trap or grease trap (if necessary) and oil interceptor would be provided to remove the oil, lubricants, grease, silt and grit from the tunnel runoff before discharge into 	To control runoff from rail track and tunnel seepage	MTRC	Tunnels and rail tracks	Operation phase	To be implemented in operation phase

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
S9.37	S8.12-S8.14	<p>stormwater drainage.</p> <ul style="list-style-type: none"> - Track drainage channels discharge should pass through oil/grit interceptors/chambers to remove oil, grease and sediment before being pumped to the public stormwater drainage system. - The silt traps and oil interceptors should be cleaned and maintained regularly. - Oily contents of the oil interceptors should be transferred to an appropriate disposal facility, or to be collected for reuse, if possible. 					
S9.27	S8.15-S8.16	<p>Sewage from Station</p> <ul style="list-style-type: none"> - Sewage and wastewater effluents generated from the staff at stations and food and beverage outlets, if any, would be connected to the existing foul sewerage system. - Runoff from cleaning activities at the stations which would enter floor drains would also be connected to the foul sewer. 	To control sewage from stations	MTRC	WIL Stations	Operation phase	To be implemented in operation phase
Hazard to Life							
S10	S10.1	Blasting activities regarding transport, storage and use of explosives should be supervised and audited by competent site staff to ensure strict compliance with the blasting permit conditions.	To ensure that the risks from the proposed explosives storage, handling and transport would be acceptable	MTRC / Contractor	Works areas at which explosives would be stored and/or used.	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
S10	S10.1	Delivery vehicles shall not be permitted to remain unattended within the magazine. In addition, they shall not be allowed to park overnight, or when not in use, within the magazine and its audits	To reduce the risk of fire within the magazine	MTRC / Contractor	Explosive Magazine	Operational phase	Implemented
S10	S10.1	Blast doors or heavy duty blast curtains should be installed at the access adits and shafts to prevent flyrock, and control the air over-pressure	To reduce the risk of injury due to flyrock during the WIL construction	MTRC / Contractor	At suitable locations, access adits and shafts	Construction phase	Implemented
S10	S10.1	Detonators shall not be transported in the same vehicle with other Class 1 explosives	To reduce the risk of explosion during the transport of cartridged emulsion	MTRC / Contractor	-	Construction phase	Implemented
Air Quality (Construction Phase)							
Table 11.6	Table 9.5	<p>Rock Crushing Plants</p> <p>The unloading process would be undertaken within enclosed rock crushing facility. Water spraying would be provided at the unloading point.</p> <p>The crushing process is the secondary crushing. The rock crushing plant is enclosed and water spraying system would be installed. Dust extraction and collection system with 80% dust removal efficiency would be provided.</p> <p>The crushed stone/rock would be screened by the screening and sorting facility before transporting to the temporary stockpile via enclosed conveyor. Water spraying system would be installed. Dust extraction and collection system with 80% dust removal efficiency would be provided.</p>	To minimize dust impacts	MTRC / Contractor	Rock crushing plants at works areas B and E	Construction phase	Implemented at Works Area E
Table 11.7	Table 9.6	<p>Temporary Stockpiles</p> <p>Kennedy Town Abattoir Site:</p>	To minimize dust impacts	MTRC / Contractor	Temporary stockpiles at works	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>Loading point – Loading of crushed materials from rock crushing facility onto stockpile</p> <ul style="list-style-type: none"> - The transportation would be via an enclosed conveyor belt system and water spraying and flexible dust curtains would be provided at the loading point to suppress the dust impact. <p>Storage of materials - Active area for loading & unloading materials</p> <ul style="list-style-type: none"> - The active area would be minimized to 20% of the total area of the stock piles. The 80% inactive area would be well covered with impervious sheeting. Water spraying system would be applied on the active area and watering with complete coverage of active area four times a day would be required. <p>Transportation of materials to Barging Point 1</p> <ul style="list-style-type: none"> - Wheel wash facilities provided at the site exit. The vehicles would be washed before leaving the stockpiles. The spoils would also be well covered before leaving the site in order to minimise generation of dusty materials. - The haul roads within the site would be all paved and water spraying would be provided to keep the wet condition. <p>Western PCWA:</p> <p>Loading point – Loading of crushed materials from rock crushing facility onto stockpile</p> <ul style="list-style-type: none"> - The transportation would be via an enclosed conveyor belt system and water spraying and flexible dust curtains would be provided at the loading point to suppress the dust impact. <p>Storage of materials - Active area for loading & unloading materials</p> <ul style="list-style-type: none"> - Water spraying system would be applied on the active area and watering with complete of active area four times a day would be required. 			areas B and E		

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>Transportation of materials to Barging Point 2</p> <ul style="list-style-type: none"> - The vehicles would be washed before leaving the stockpiles. The spoils would also be well covered before leaving the site in order to minimise generation of dusty materials. - The haul road would be paved and water spraying would be provided to keep the wet condition 					
Table 11.8	Table 9.7	<p>Barging Facilities</p> <p>Kennedy Town Abattoir Site</p> <p>Transportation of spoils to Barging Point 1</p> <ul style="list-style-type: none"> - All road surfaces within the barging facilities would be paved and water spraying would be provided to keep the wet condition. <p>Unloading of spoil materials</p> <ul style="list-style-type: none"> - The unloading process would be undertaken within enclosed tipping hall. Flexible dust curtains and water spraying would be provided at the discharge point for dust suppression. <p>Vehicles leaving the barging facility</p> <ul style="list-style-type: none"> - Vehicle wheel washing facilities provided at site exit <p>Western PCWA</p> <p>Transportation of spoils to Barging Point 2</p> <ul style="list-style-type: none"> - All road surfaces within the barging facilities would be paved and water spraying would be provided to keep the wet condition. <p>Unloading of spoil materials from trucks to Barging Point 2</p> <ul style="list-style-type: none"> - The unloading process should be undertaken within the enclosed tipping hall. Flexible dust curtains and water spraying would be provided at the discharge point for dust suppression. <p>Unloading of spoil materials from enclosed tipping hall to Barging</p>	To minimize dust impacts	MTRC / Contractor	Barging points at works areas B and E	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>Point 3</p> <ul style="list-style-type: none"> The tipping hall would be enclosed structure. The conveyor from tipping hall to the Barging Point 3 would be enclosed. Water spraying and flexible dust curtains would be provided at the receiving point of the tipping hall. Flexible dust curtains and water spraying would be provided at the discharge point of barging facilities for dust suppression. <p>Vehicles leaving the barging facility</p> <ul style="list-style-type: none"> Vehicle wheel washing facilities provided at site exit 					
Table 11.9	S 9.26	<p>Rock Crushing Plant at Kennedy Town Abattoir Site</p> <ul style="list-style-type: none"> Dust extraction and collection system (80% dust removal efficiency) should be installed at the rock crushing facility and the discharge point is located at least 39m away from the west boundary of the rock crushing facility under the preliminary design 	To minimize dust impacts	MTRC / Contractor	Rock Crushing Plant at works area B - Kennedy Town Abattoir Site	Construction phase	N/A
Table 11.10	S 9.27	<p>Works areas at KET station construction site</p> <p>Active operating area of 50%</p> <p>Watering four times a day with complete coverage of active construction area</p>	To minimize dust impacts	MTRC / Contractor	Works area A, C and D	Construction phase	Implemented
Table 11.10	S9.27	<p>Open work areas at temporary magazine site</p> <p>Active operating area of 50%</p> <p>Watering two times a day with complete coverage of active construction area</p>	To minimize dust impacts	MTRC / Contractor	Open works area at magazine site	Construction phase	Implemented
S 11.42	S 9.28	For both rock crushing plants, the requirements and mitigation measures stipulated in the <i>Guidance Note on the Best Practicable</i>	To minimize dust impacts	MTRC / Contractor	Rock crushing	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<i>Means for Mineral Works (Stone Crushing Plants) BPM 11/I</i> should be followed and implemented.			plants		
S 11.42	S 9.28	<p>Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices:</p> <ul style="list-style-type: none"> - Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. - Use of frequent watering for particularly dusty construction areas and areas close to ASRs. - Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering shall be applied to aggregate fines. - Open stockpiles shall be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. - Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. - Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. - Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading points, and use of water sprinklers at the loading area where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. - Imposition of speed controls for vehicles on unpaved site roads. 8 kilometers per hour is the recommended limit. - Where possible, routing of vehicles and positioning of 	To minimize dust impacts	MTRC / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Implementation Status
		<p>construction plant shall be at the maximum possible distance from ASRs.</p> <ul style="list-style-type: none"> - Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) shall be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. - Cement or dry PFA delivered in bulk shall be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed. - Loading, unloading, transfer, handling or storage of bulk cement or dry PFA shall be carried out in a totally enclosed system or facility, and any vent or exhaust shall be fitted with an effective fabric filter or equivalent air pollution control system. 					

**Table C2 Implementation Schedule Specific for Works Area MA - Underground Magazine Site
(Status as of 9 August 2015)**

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Reference
Ecological Impact (Construction Phase)							
App.2.3 – S. 6.1		Proposed works shall be designed to avoid or minimize direct impacts to natural habitats in the works area wherever possible.	To protect the natural habitats in the works area	MTRC / Contractor	Works Area MA	Design and construction of the magazine site	Implemented
App.2.3 – S. 6.2		Planting of vegetation shall be provided to compensate for the unavoidable loss of tall shrubland and woodland habitats. It shall be provided to re-vegetate the areas which would be 1m beyond the security fencing and temporarily affected by the construction works (e.g. slope works, erecting security fence) after the construction phase. The plant species selected for re-vegetation shall make reference to the existing habitats.	To compensate for the ecological impacts associated with the loss of vegetation	MTRC / Contractor	Works Area MA	Construction phase of the magazine site	Implemented
App.2.3 – S. 6.2		Suitable plants, preferably with native species, shall be planted within the boundary of the completed magazine site to compensate for unavoidable loss of understorey vegetation resulting from the proposed works on-site after the decommissioning of the magazine site. The compensatory planting shall make use of native plant species with flowers/fruits to attract wildlife.	To compensate for the ecological impacts associated with the loss of vegetation	MTRC / Contractor	Works Area MA	After completing the construction of the magazine site	Implemented
App.2.3 – S. 6.3		The two individuals of Hong Kong Pavetta (<i>Pavetta hongkongensis</i>) located within the footprint of the proposed tunnel portal and access entrance shall be transplanted to a suitable nearby tall shrubland or woodland habitats. Transplantation shall be supervised by a suitably qualified ecologist/horticulturalist	To protect the 2 species from the proposed works within the works area	MTRC / Contractor	Works Area MA	Prior to the construction phase of the magazine site	Implemented
App.2.3 – S. 6.4		The trees located within the works area shall be preserved as far as practicable. If tree felling is unavoidable, feasibility of tree transplantation and compensatory planting shall be explored shall be implemented.	To protect the existing trees within the works area	MTRC / Contractor	Works Area MA	Prior to the construction phase of the	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Reference
						magazine site	
App.2.3 – S. 6.5		All the existing trees and species of conservation importance (i.e. the two identified Silver-back <i>Artocarpus</i> , <i>Artocarpus hypargyreus</i>) located near the proposed works site shall be fenced off and the trunk shall be protected with hessian sacking as far as possible.	To protect the existing trees and the species of conservation importance near the works area	MTRC / Contractor	Works Area MA	Construction and operation phase of the magazine site	Implemented
App.2.3 – S. 6.6		Noise control measures including the use of quiet excavation methods, quiet construction plant and temporary noise barriers shall be implemented	To minimize the noise disturbance to the wildlife near the works area	MTRC / Contractor	Works Area MA	Construction and operation phase of the magazine site	Implemented
App.2.3 – S. 6.7		Standard good site practice measures shall be implemented, including <ul style="list-style-type: none"> • Placement of equipment or stockpile in designated works areas and access routes selected on existing disturbed land to minimise disturbance to natural habitats. • Construction activities should be restricted to work areas that would be clearly demarcated. The work areas should be reinstated after completion of the works. • Waste skips should be provided to collect general refuse and construction wastes. The wastes would be disposed of timely and properly off-site. • General drainage arrangements should include sediment and oil traps to collect and control construction site run-off. • Open burning on works sites is illegal, and should be strictly prohibited. 	To minimize ecological impacts	MTRC / Contractor	Works Area MA	Construction and operation phase of the magazine site	Implemented

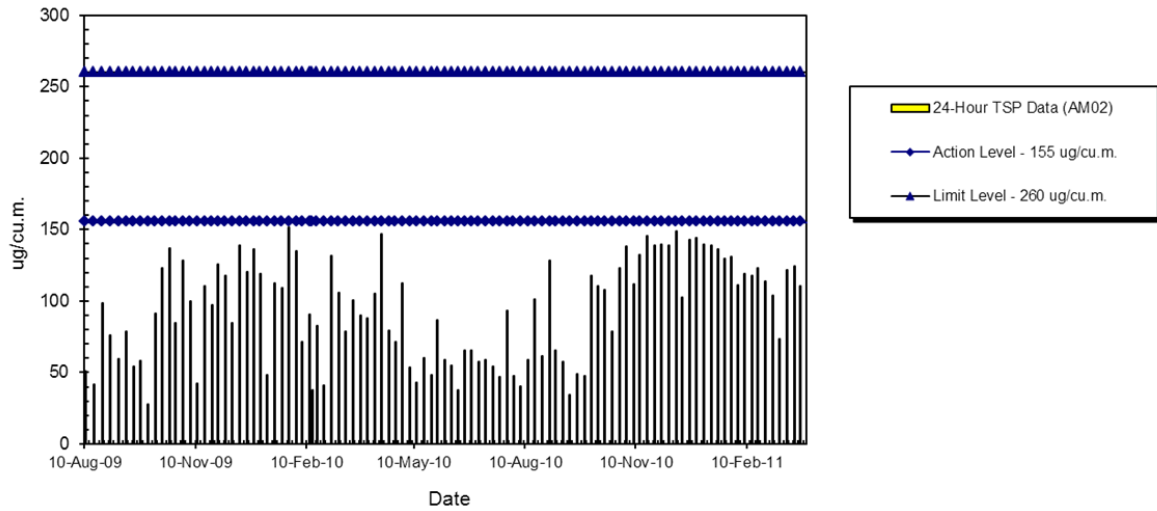
**Table C3 Implementation Schedule Specific for Works Area B – Kennedy Town Abattoir and Incinerator Area
(Status as of 9 August 2015)**

Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concern to Address	Who to implement the measure?	Location of the measure	When to implement the measure?	Reference
The existing ground slab/pavement within the works area shall be kept intact.	To minimize human health risk associated with the contaminated soil and groundwater in the works area.	MTRC / Contractor	Works Area B	Construction phase	Implemented
A reinforced concrete paving of no less than 200mm thick for the cleared site shall be provided after the demolition and clearance works. A debonding layer shall be placed between the existing and new concrete slabs to allow the latter to be removed prior to the former.	To minimize human health risk associated with the contaminated soil and groundwater in the works area.	MTRC / Contractor	Works Area B	Construction phase	Implemented
Monthly site inspection shall be conducted to ensure the integrity of the existing and/or the new paving layer. Any surface cracks identified shall be filled out such that underneath soil would not be exposed.	To minimize human health risk associated with the contaminated soil and groundwater in the works area.	MTRC / Contractor	Works Area B	Construction phase	Implemented
A clear void between the structure slab of the site office and the ground surface shall be created, i.e. the site office is a raised structure.	To allow ventilation by natural air movements to dilute the contaminant vapour released from the soil and groundwater.	MTRC / Contractor	Works Area B	During the construction of the site offices	Implemented
Incorporate gas-resistant membranes into the raised floor of the site office.	To prevent contaminant vapour under the floor slab from entering the site office to protect the staff working in the site office.	MTRC / Contractor	Works Area B	During the construction of the site offices	Implemented
Site hoardings shall be erected around the works area, and they shall be properly maintained to restrict access of trespassers.	To protect the trespassers from the contaminated soil and groundwater in the works area.	MTRC / Contractor	Works Area B	Construction phase	Implemented

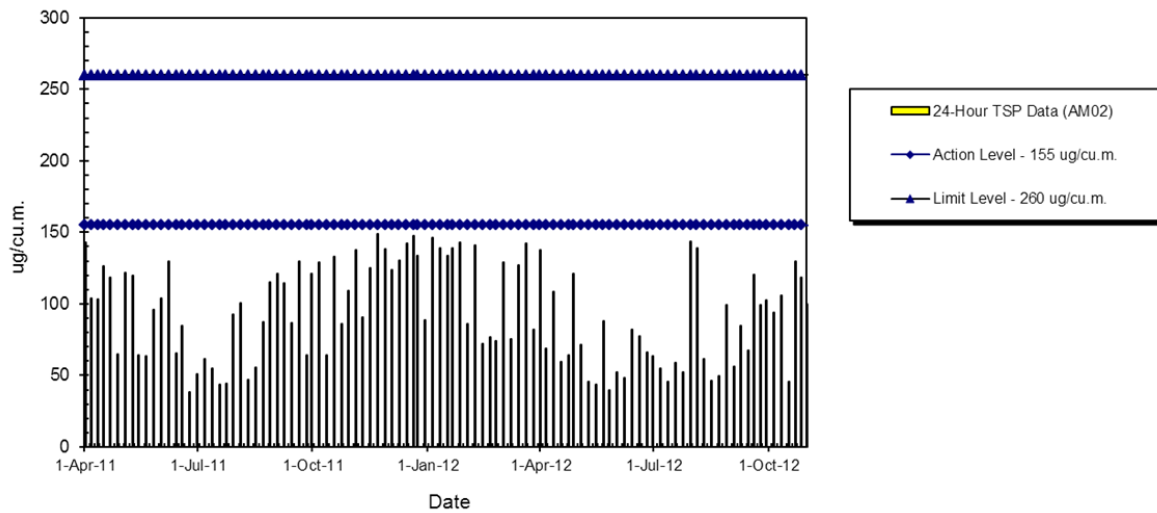
Appendix D

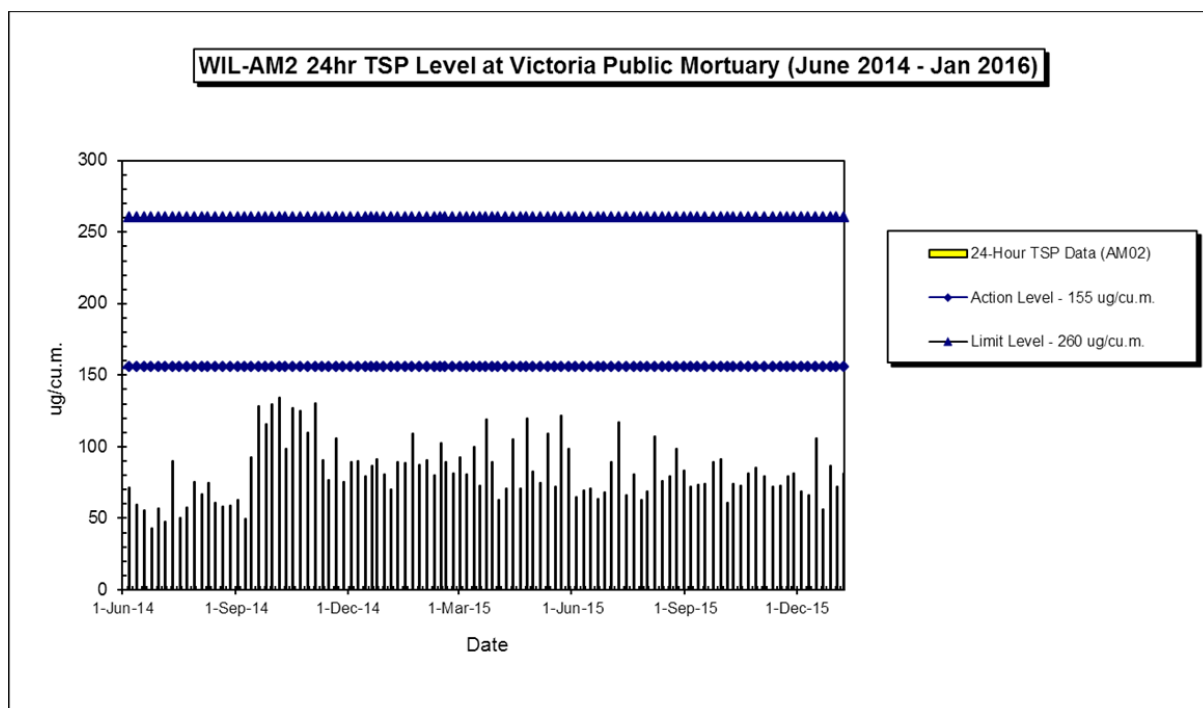
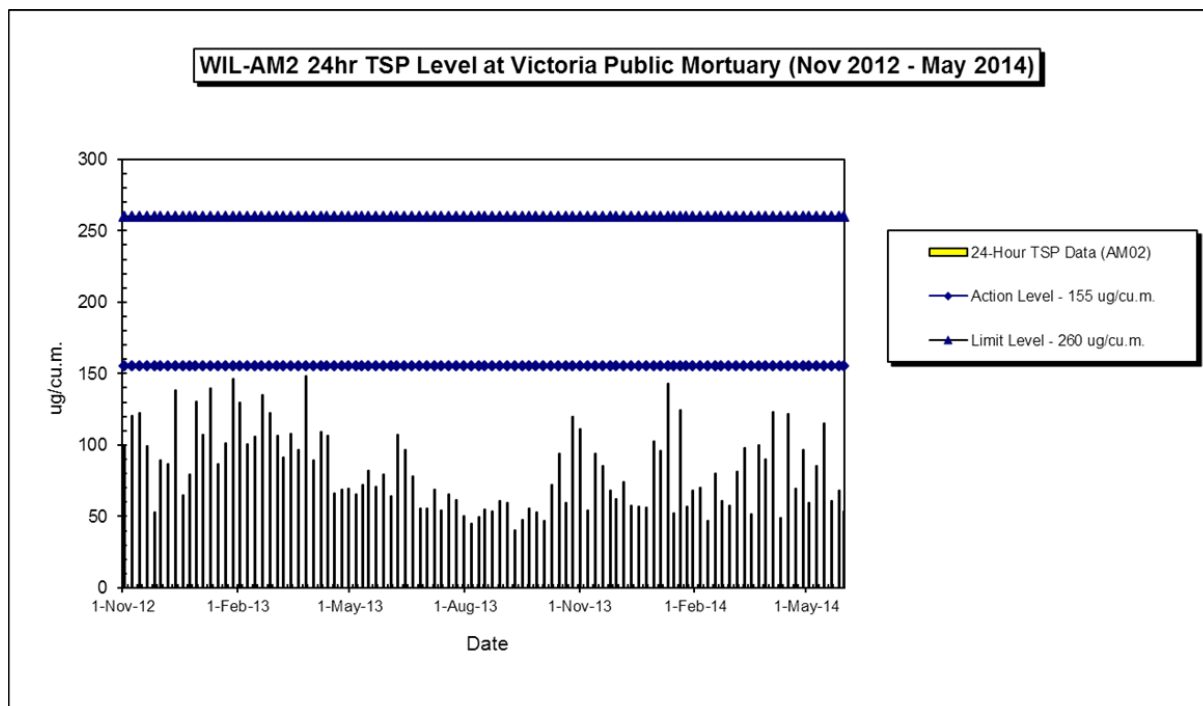
Impact Monitoring Graphical Plots

WIL-AM2 24hr TSP Level at Victoria Public Mortuary (Aug 2009 - Mar 2011)



WIL-AM2 24hr TSP Level at Victoria Public Mortuary (Apr 2011 - Oct 2012)





Annotation

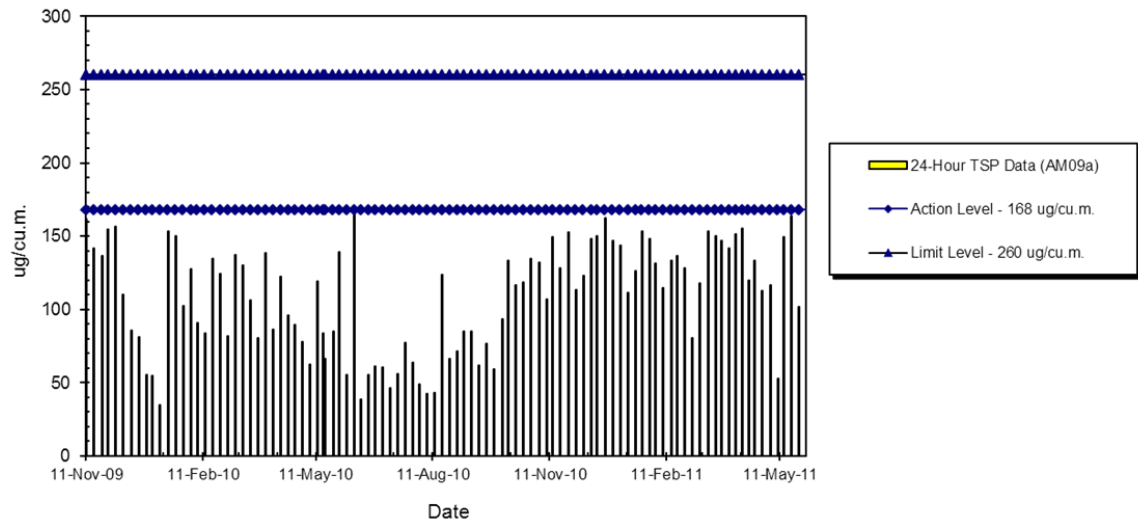
Major Activities:

- Site formation and site office construction (Aug 2009 to Feb 2010)
- Operation of barging point (Dec 2010 to Oct 2013)
- Removal of site office, facilities and the additional concrete paving (Jan 2015 to Oct 2015)

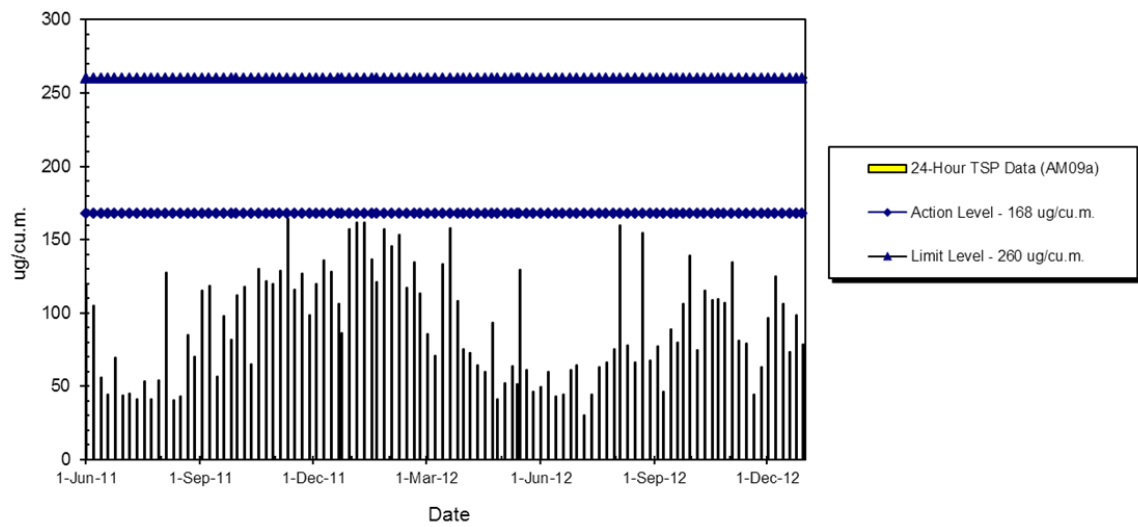
Weather Conditions:

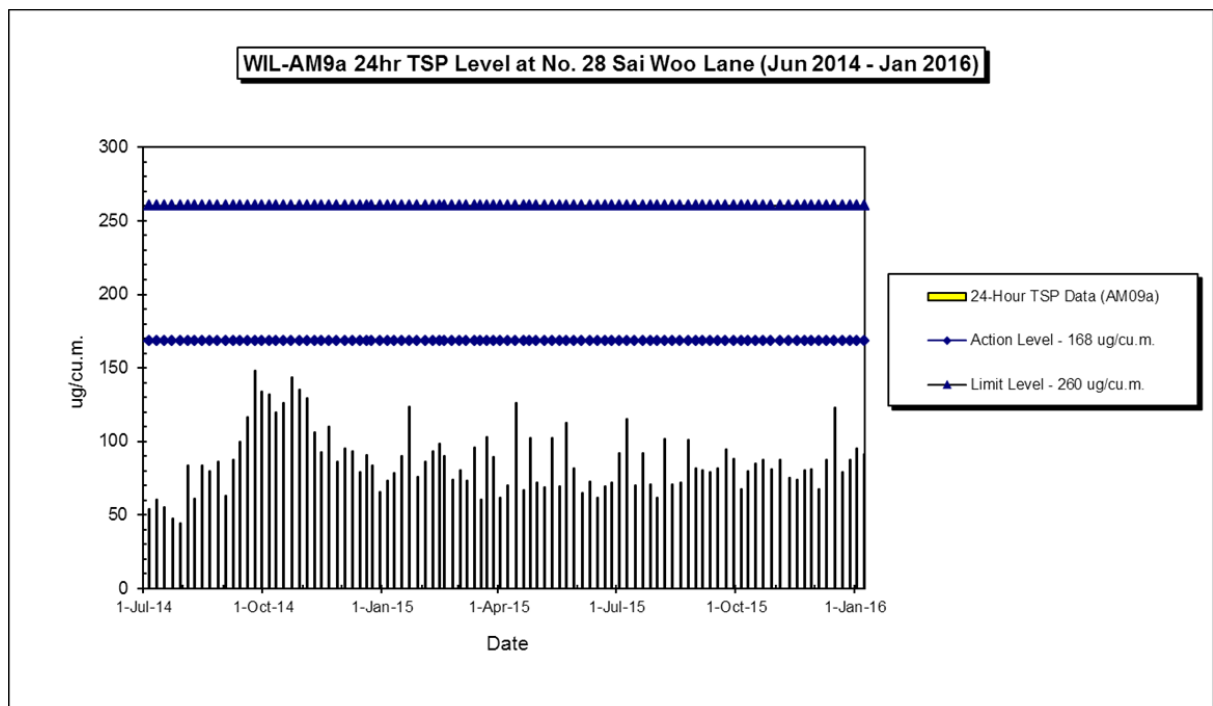
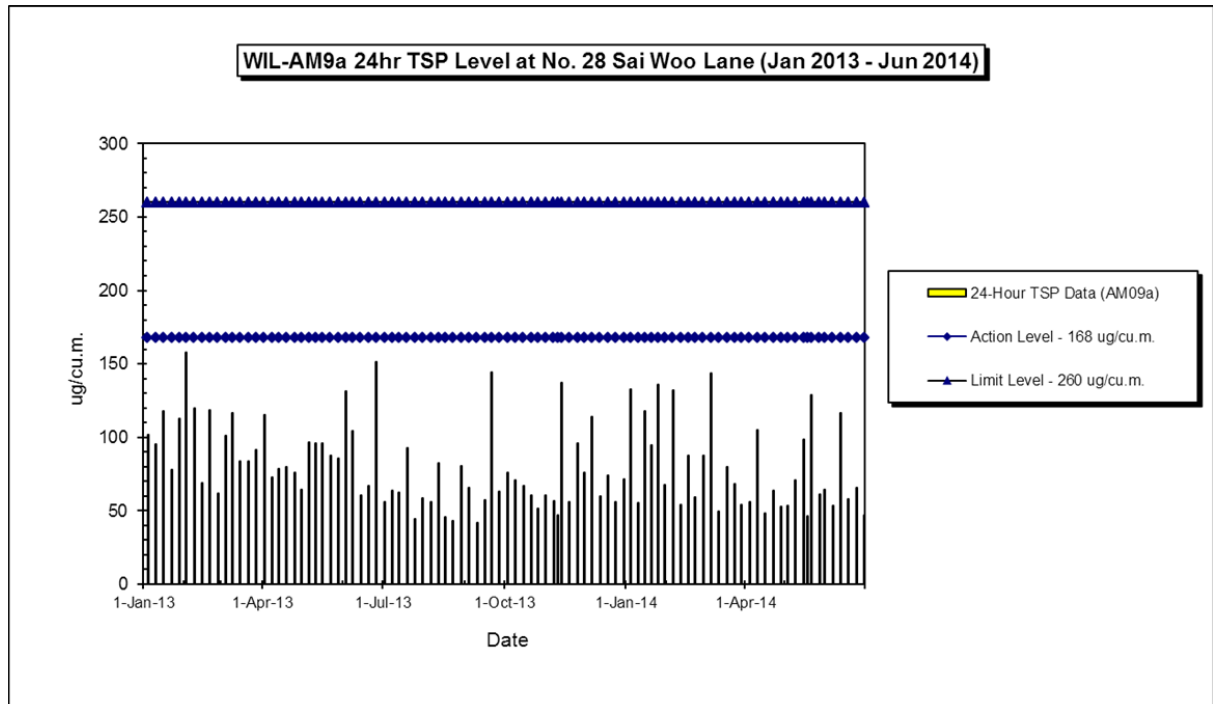
Typical fine and occasionally raining during the monitoring periods

WIL-AM9a 24hr TSP Level at No. 28 Sai Woo Lane (Nov 2009 - May 2011)



WIL-AM9a 24hr TSP Level at No. 28 Sai Woo Lane (Jun 2011 - Dec 2012)





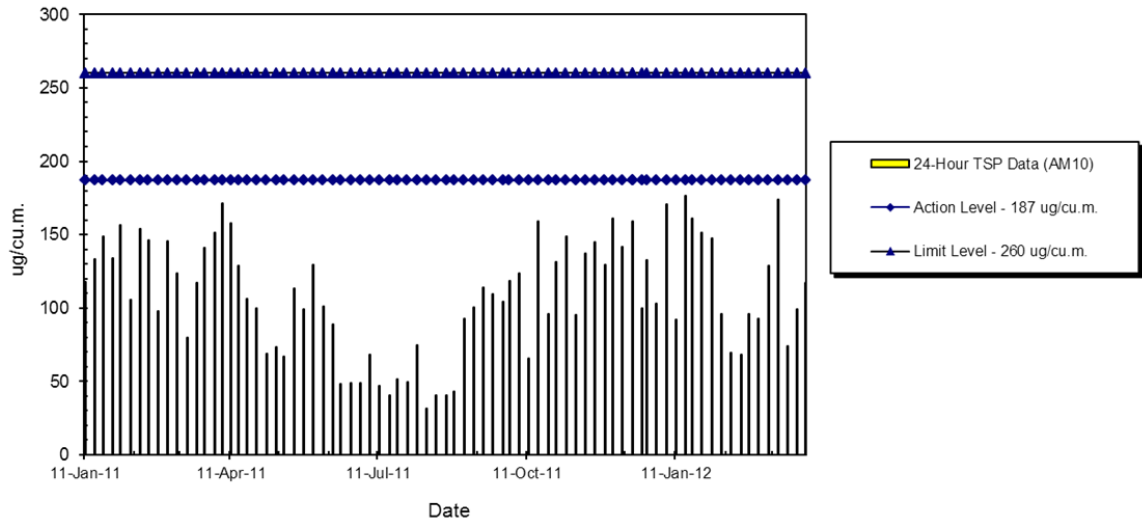
Annotation

Major Activities:

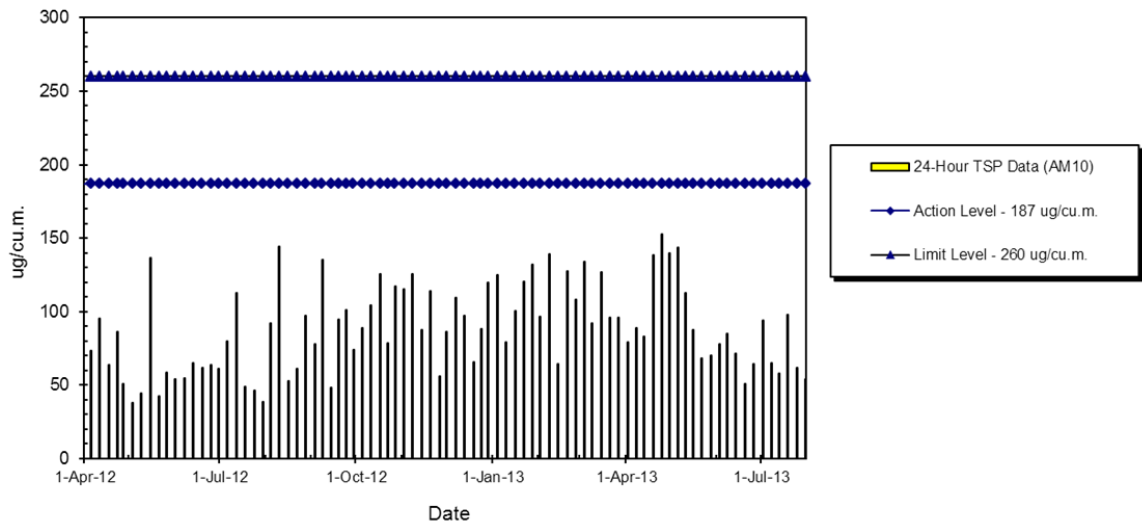
- a. Buildings demolition (Sep 2010 to Nov 2010)
- b. Piling and excavation (Feb 2010 to September 2010)
- c. Shaft construction (Dec 2010 to Jun 2014)
- d. TBM operation (Dec 2012 to Mar 2013)
- e. Entrance construction and finishing work (Jul 2014 to Mar 2015)

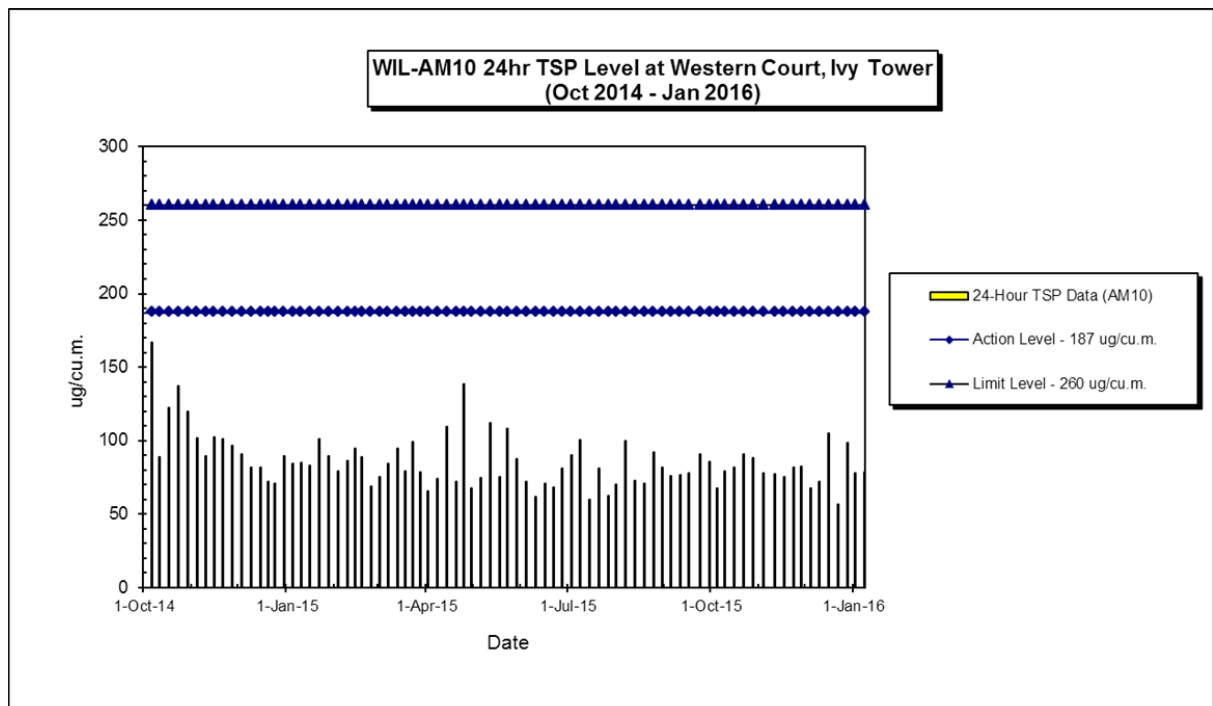
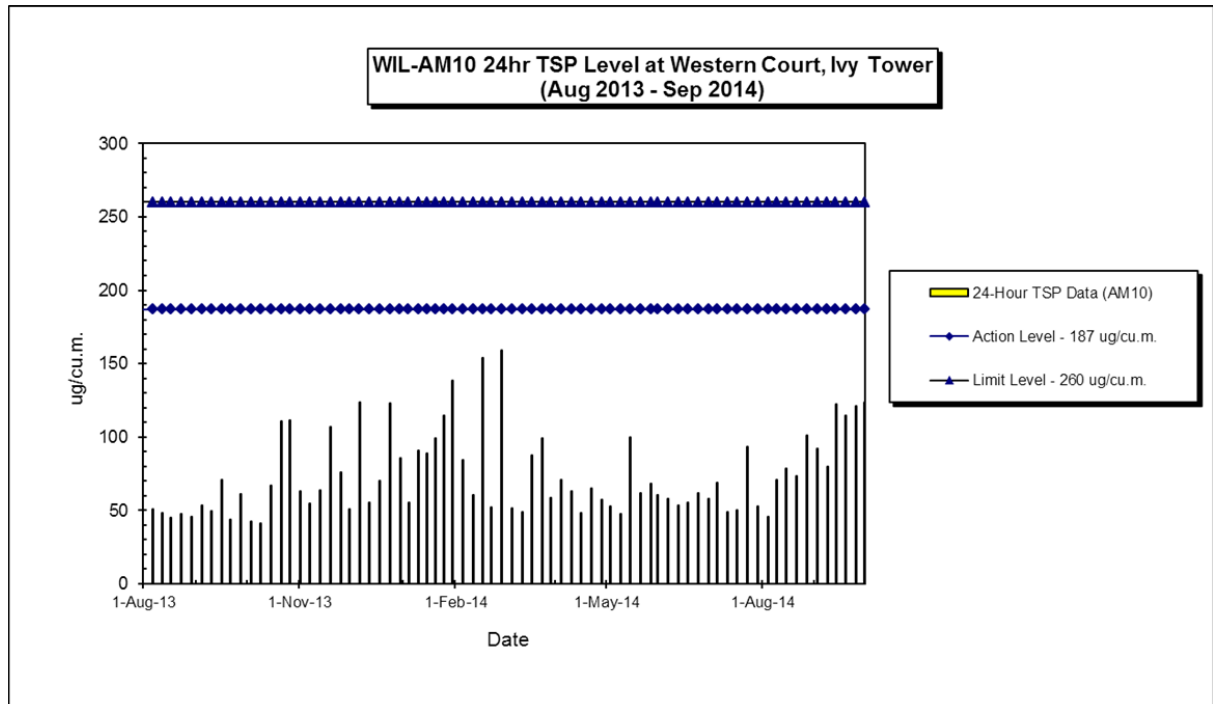
Weather Conditions: Typical fine and occasionally raining during the monitoring periods_Weather

**WIL-AM10 24hr TSP Level at Western Court, Ivy Tower
(Jan 2011 - Mar 2012)**



**WIL-AM10 24hr TSP Level at Western Court, Ivy Tower
(Apr 2012 - Jul 2013)**





Annotation

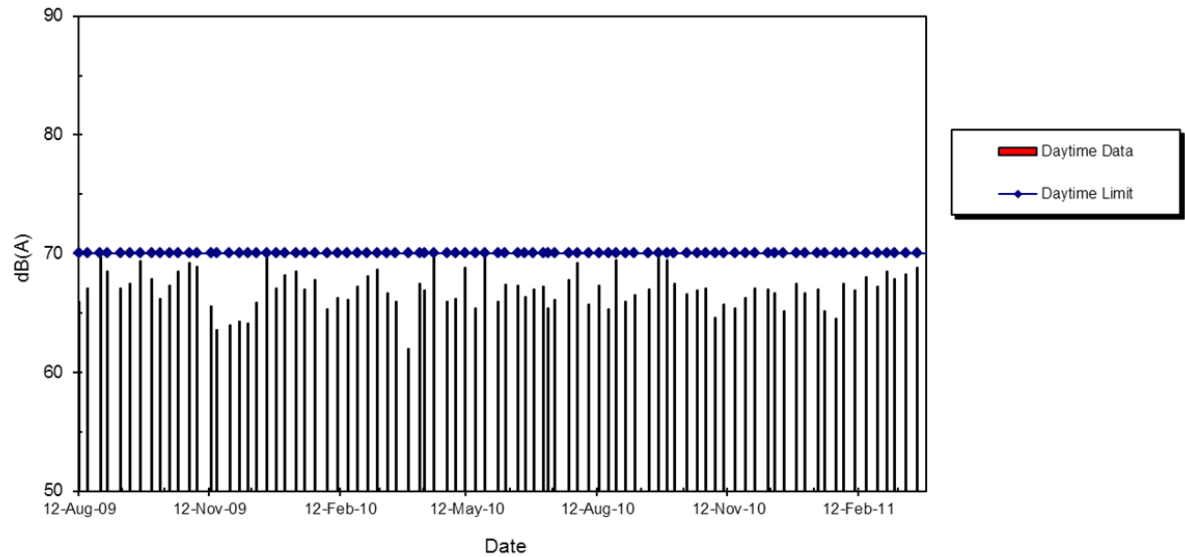
Major Activities:

- a. Piling and deck installation (Apr 2011 to Apr 2013)
- b. Shaft construction (May 2013 to Jun 2014)
- c. Entrance construction and finishing work (July 2014 to Mar 2015)

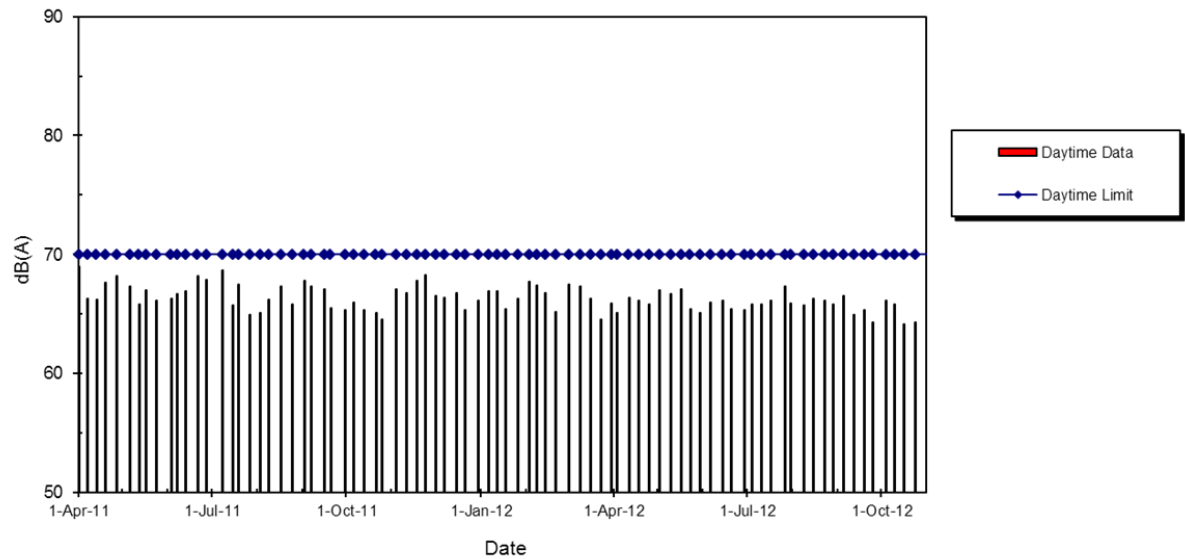
Weather Conditions:

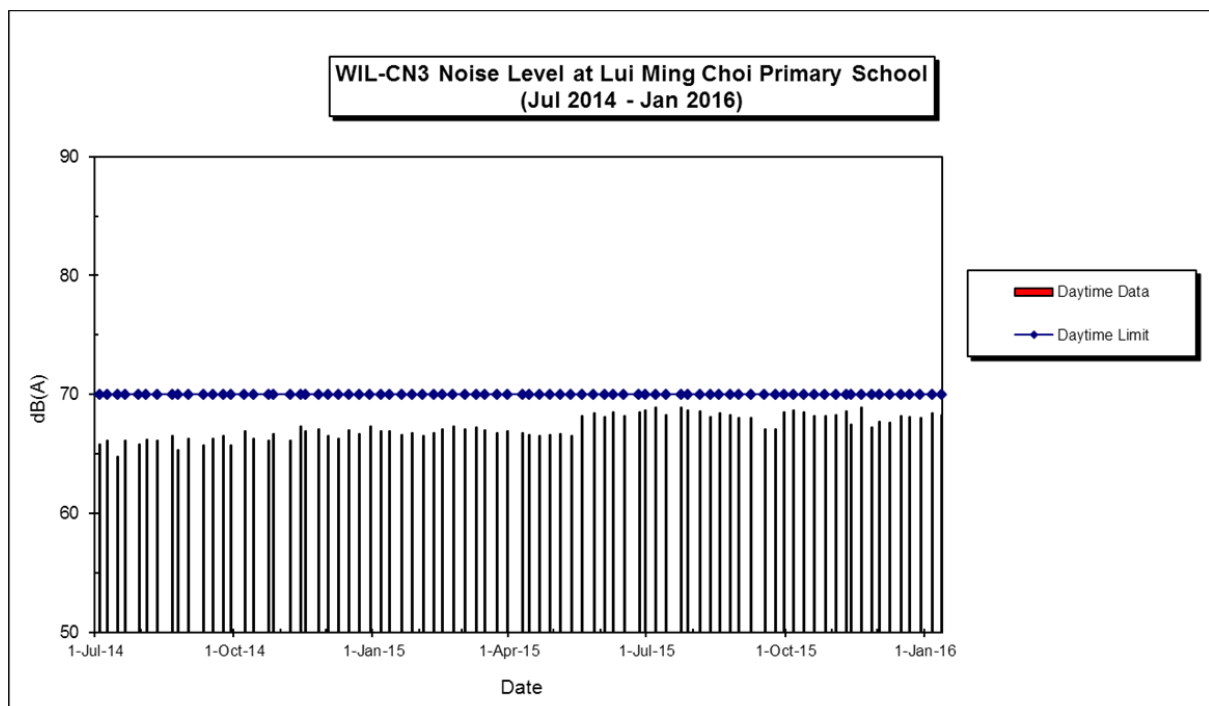
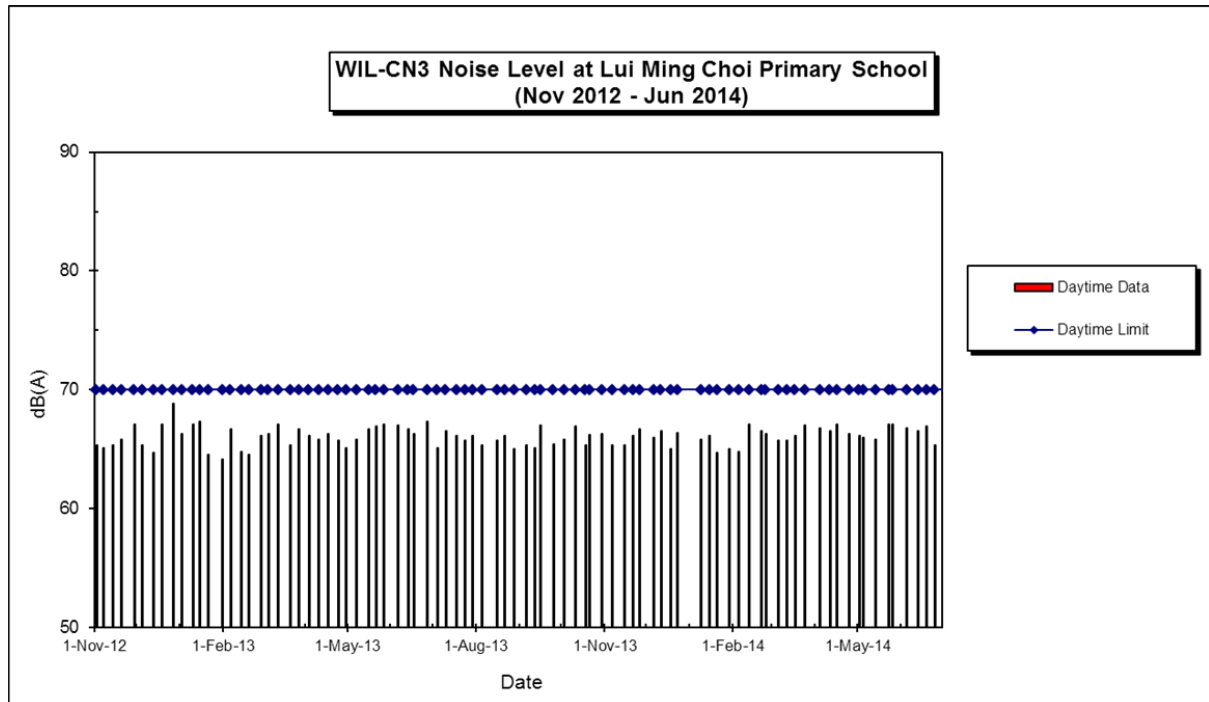
Typical fine and occasionally raining during the monitoring periods

**WIL-CN3 Noise Level at Lui Ming Choi Primary School
(Aug 2009 - Mar 2011)**



**WIL-CN3 Noise Level at Lui Ming Choi Primary School
(Apr 2011 - Oct 2012)**





Annotation

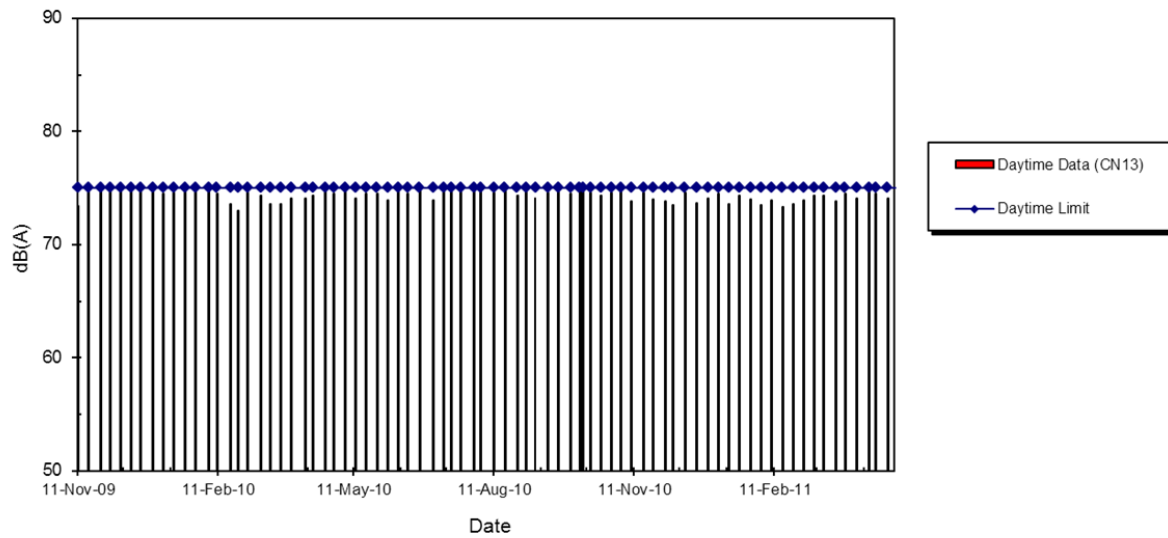
Major Activities:

- Site formation and site office construction (Aug 2009 to Feb 2010)
- Operation of barging point (Dec 2010 to Oct 2013)
- Removal of site office, facilities and the additional concrete paving (Jan 2015 to Oct 2015)

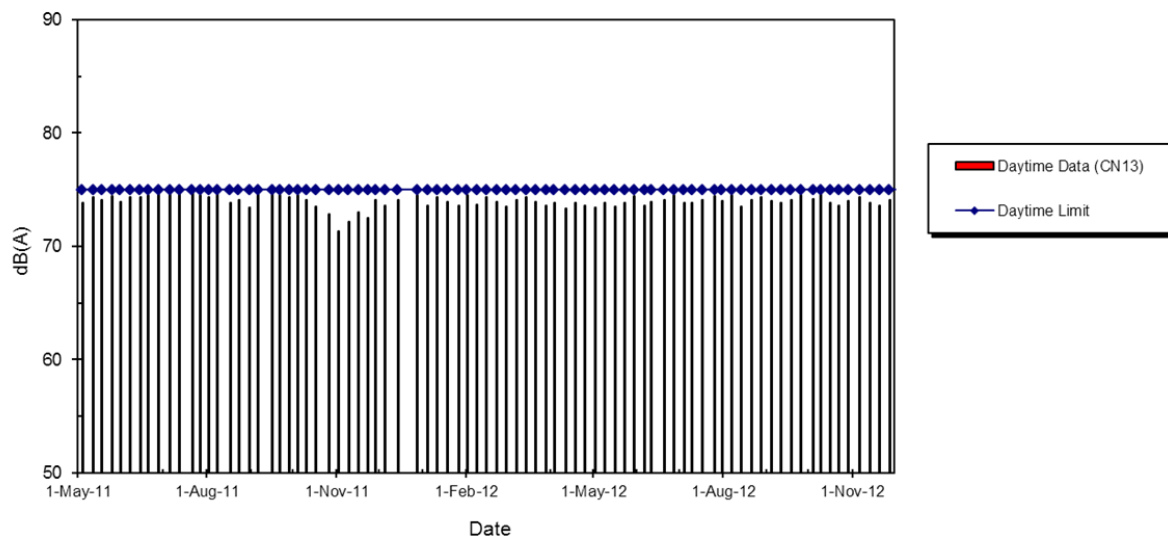
Weather Conditions:

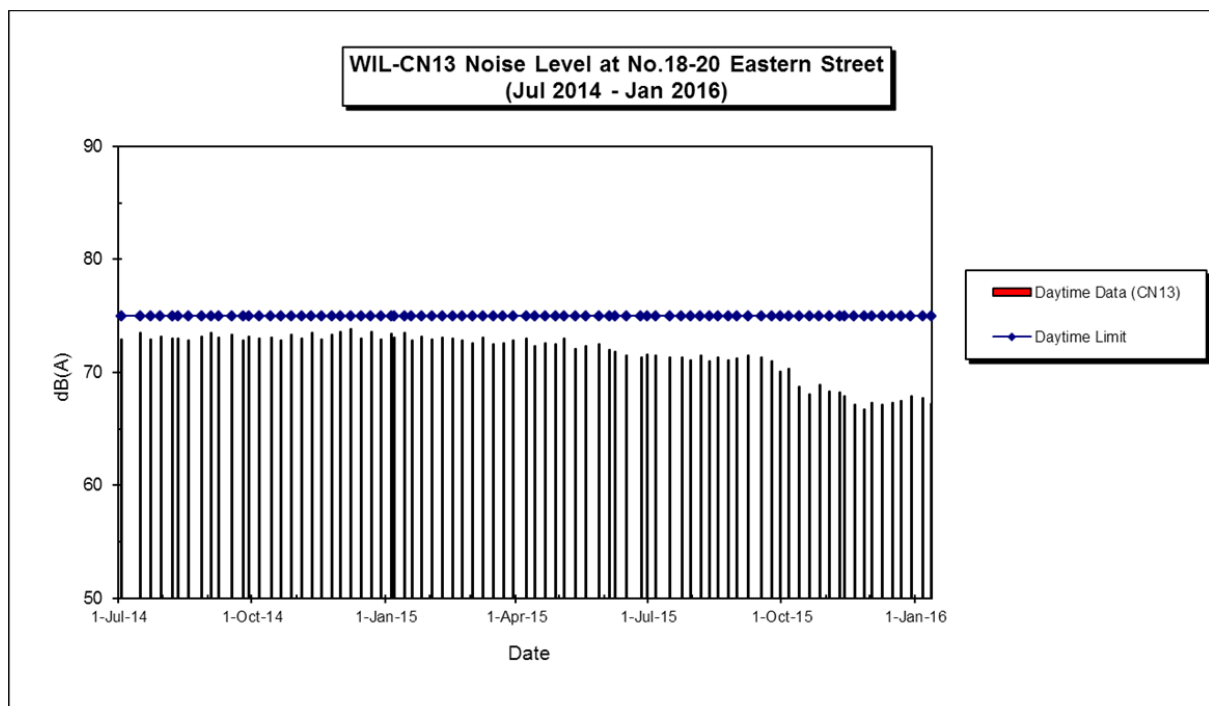
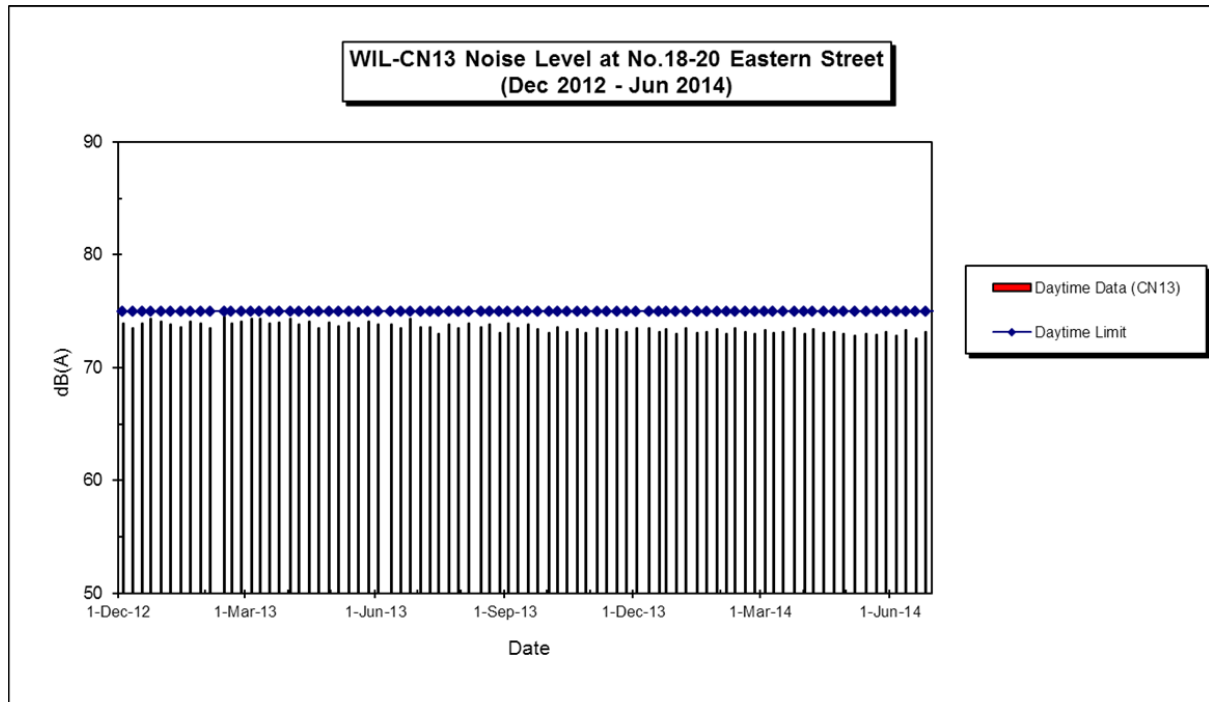
Typical fine and occasionally raining during the monitoring periods

**WIL-CN13 Noise Level at No.18-20 Eastern Street
(Nov 2009 - Apr 2011)**



**WIL-CN13 Noise Level at No.18-20 Eastern Street
(May 2011 - Nov 2012)**





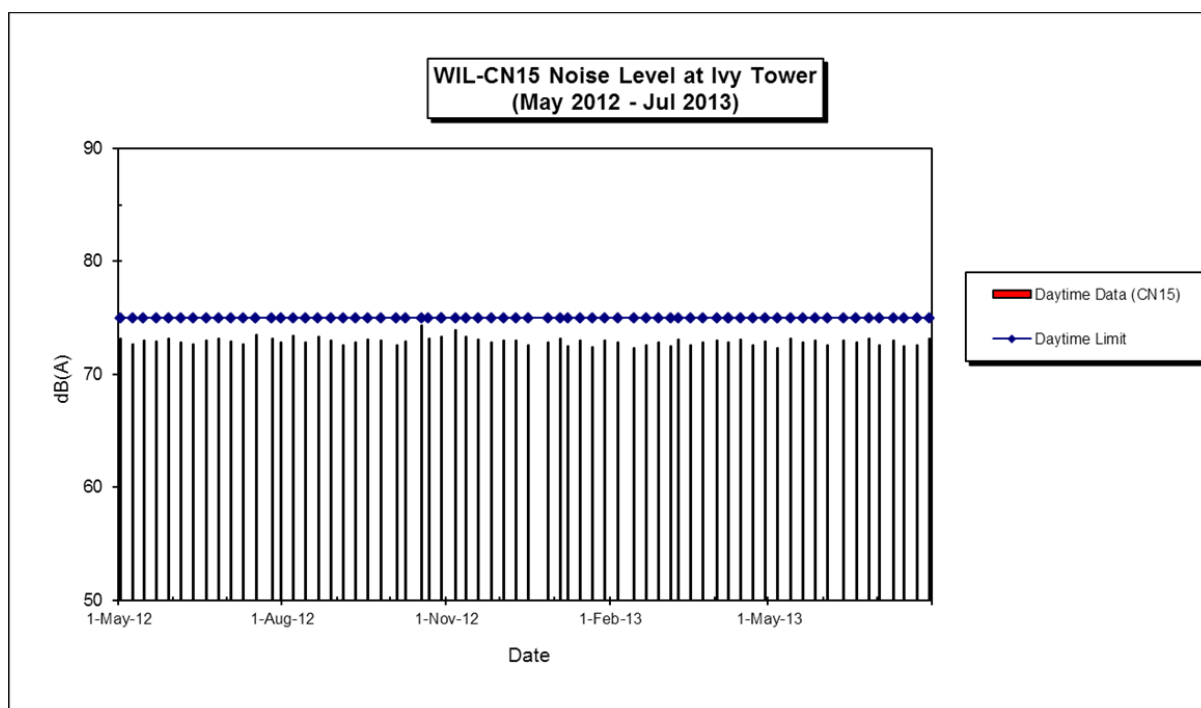
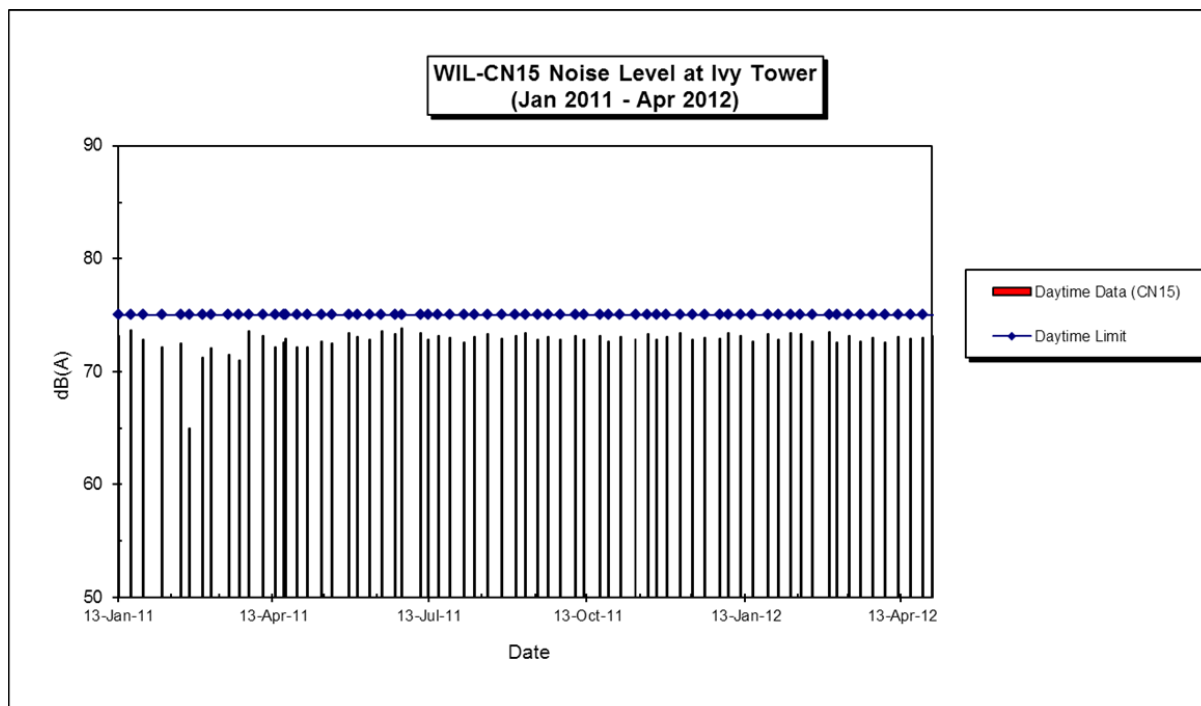
Annotation

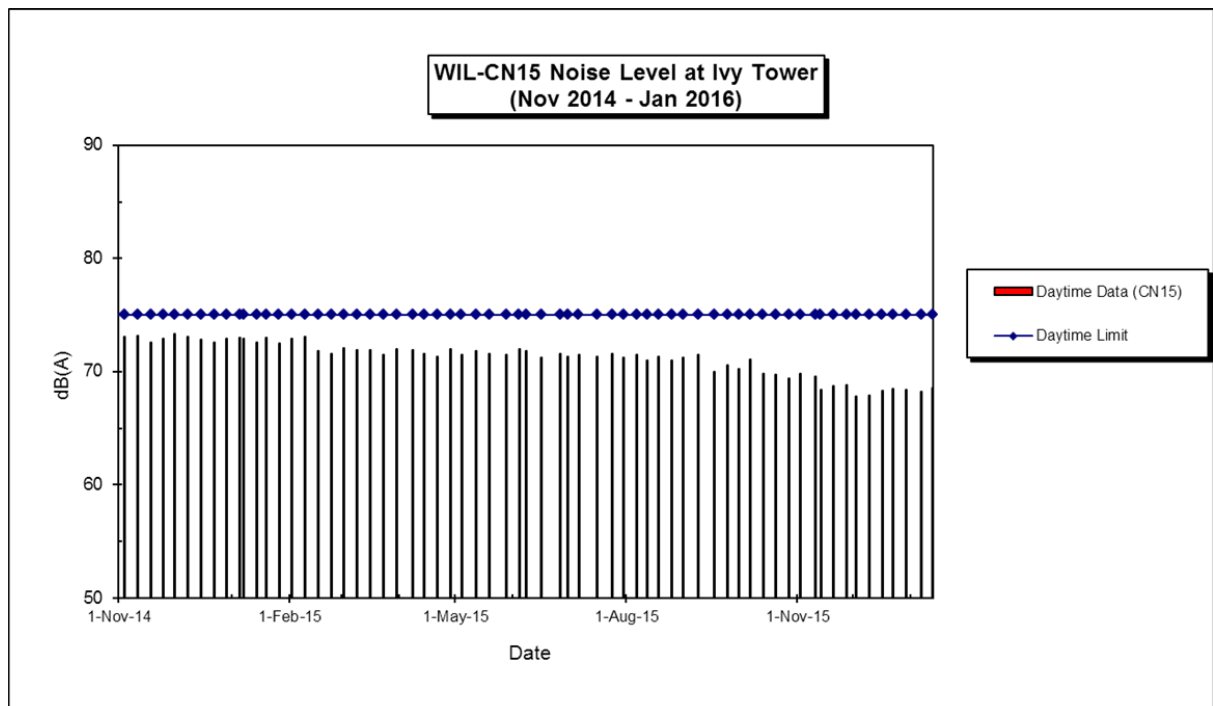
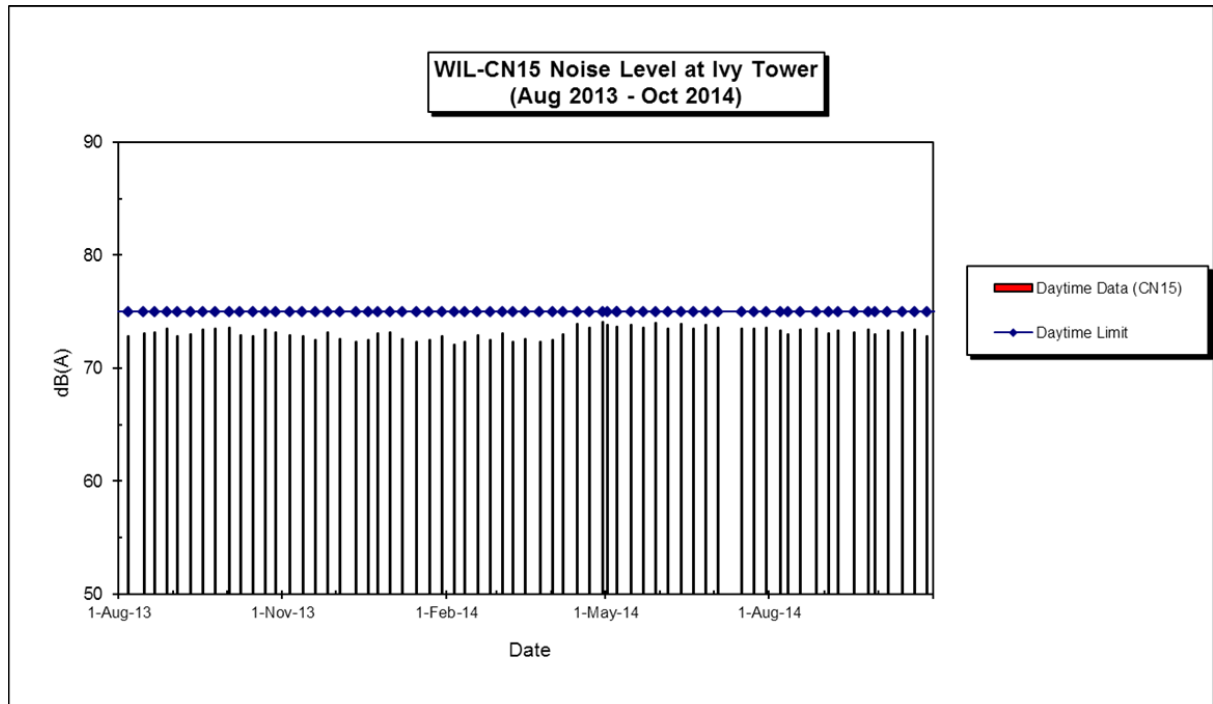
Major Activities:

- a. Buildings demolition (Sep 2010 to Nov 2010)
- b. Piling and excavation (Feb 2010 to September 2010)
- c. Shaft construction (Dec 2010 to Jun 2014)
- d. TBM operation (Dec 2012 to Mar 2013)
- e. Entrance construction and finishing work (Jul 2014 to Mar 2015)

Weather Conditions:

Typical fine and occasionally raining during the monitoring





Annotation

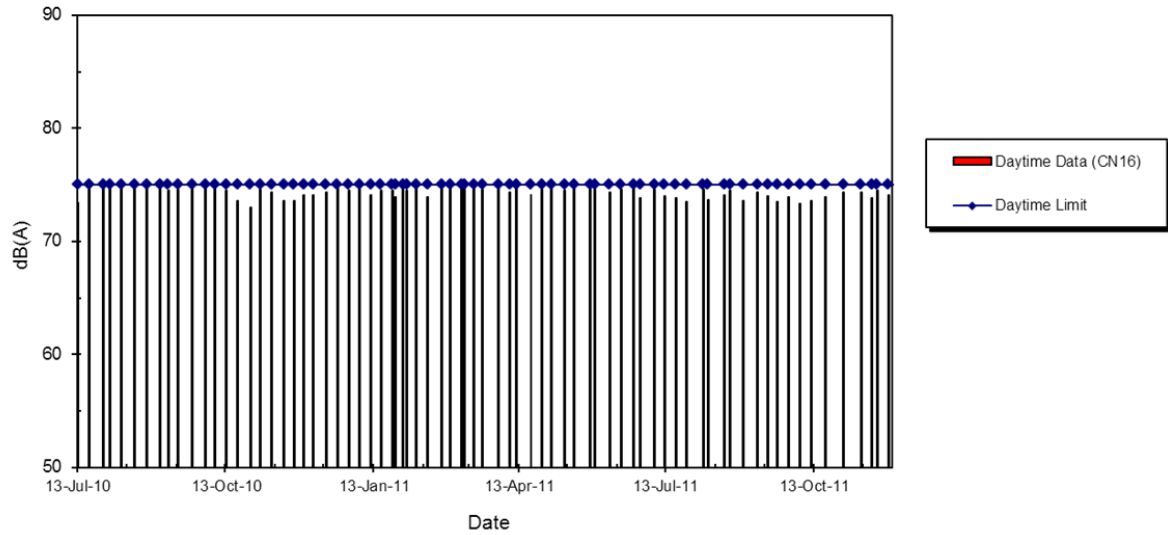
Major Activities:

- Piling and deck installation (Apr 2011 to Apr 2013)
- Shaft construction (May 2013 to Jun 2014)
- Entrance construction and finishing work (July 2014 to Mar 2015)

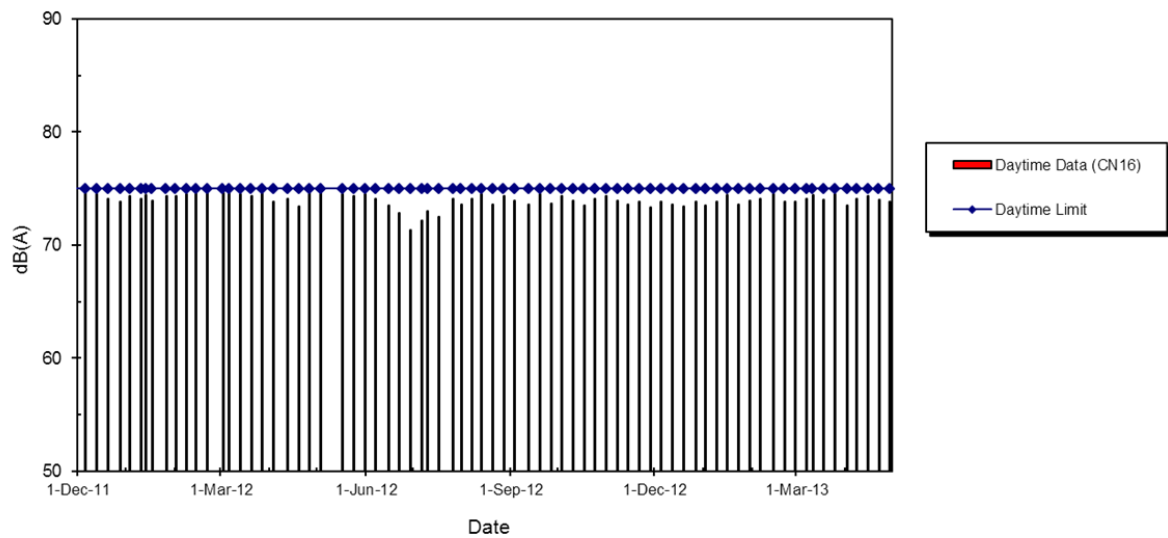
Weather Conditions:

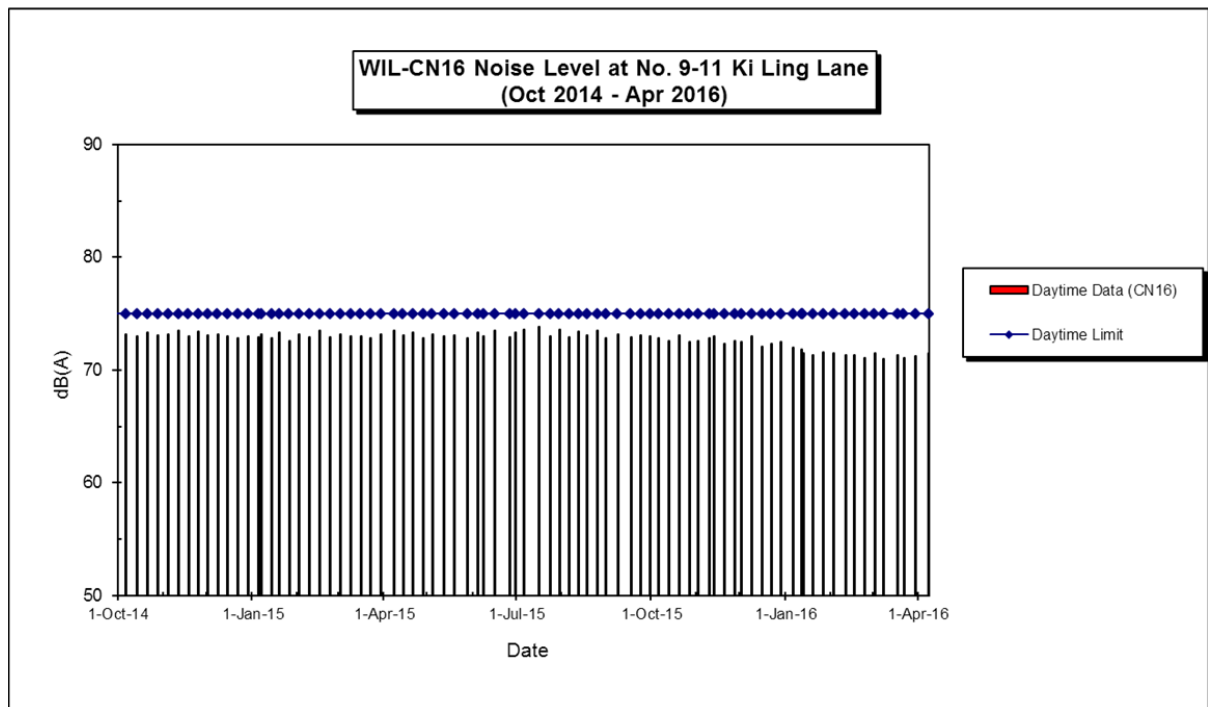
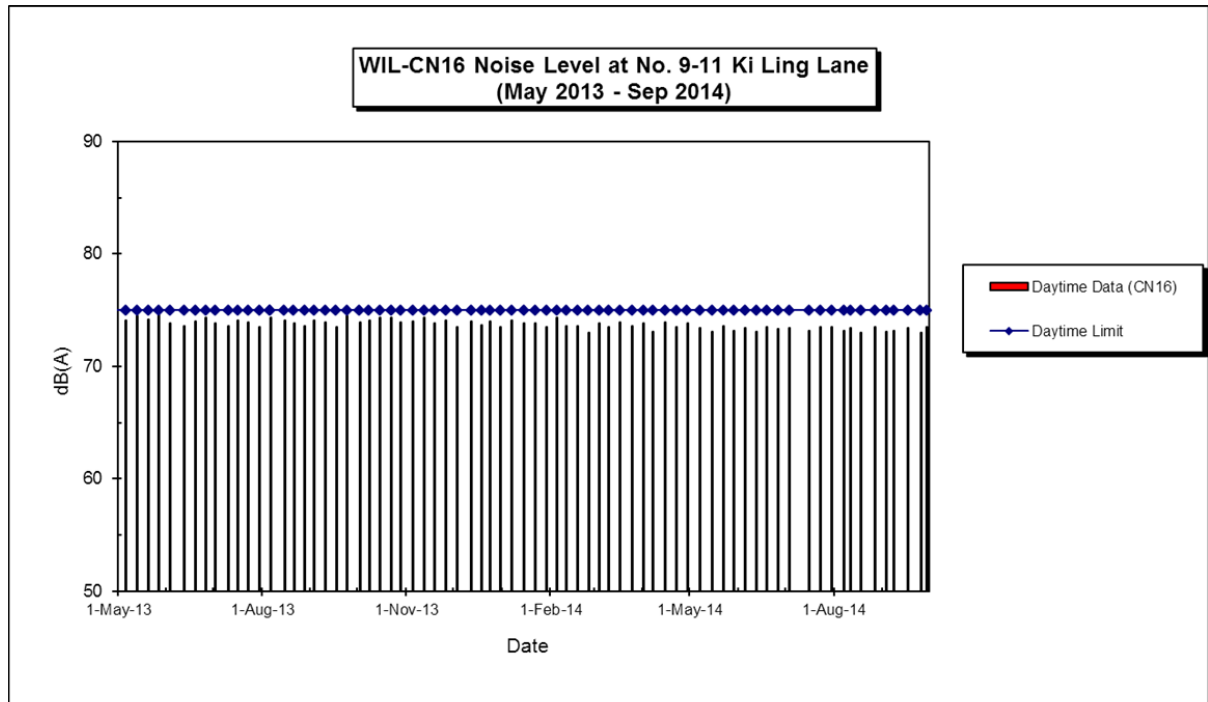
Typical fine and occasionally raining during the monitoring

**WIL-CN16 Noise Level at No. 9-11 Ki Ling Lane
(Jul 2010 - Nov 2011)**



**WIL-CN16 Noise Level at No. 9-11 Ki Ling Lane
(Dec 2011 - Apr 2013)**



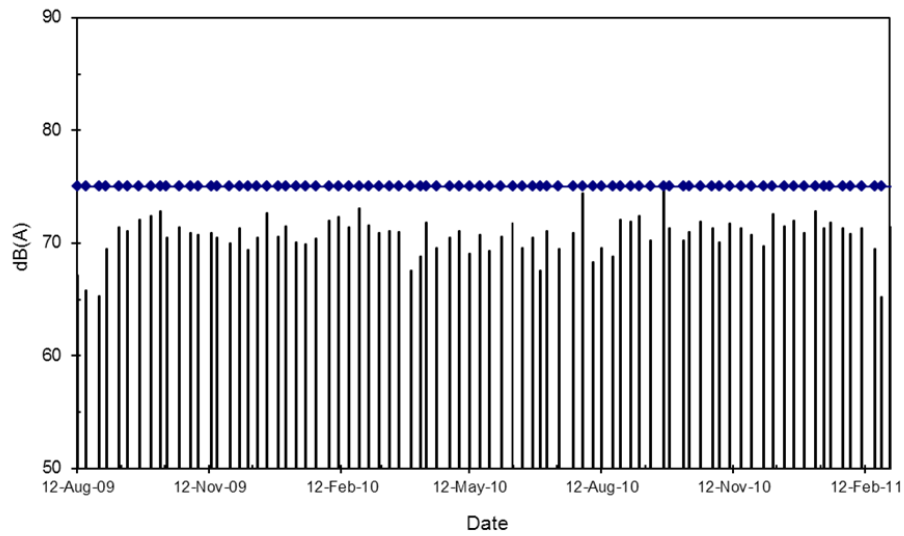


Annotation

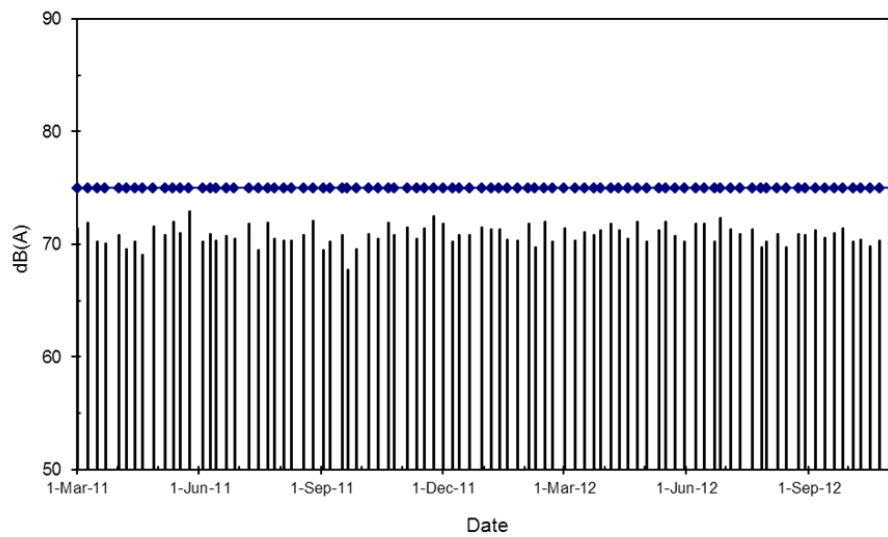
Major Activities: a. Adit excavation (July 2010 to October 2015)
b. Entrance construction (November 2016 to February 2016)

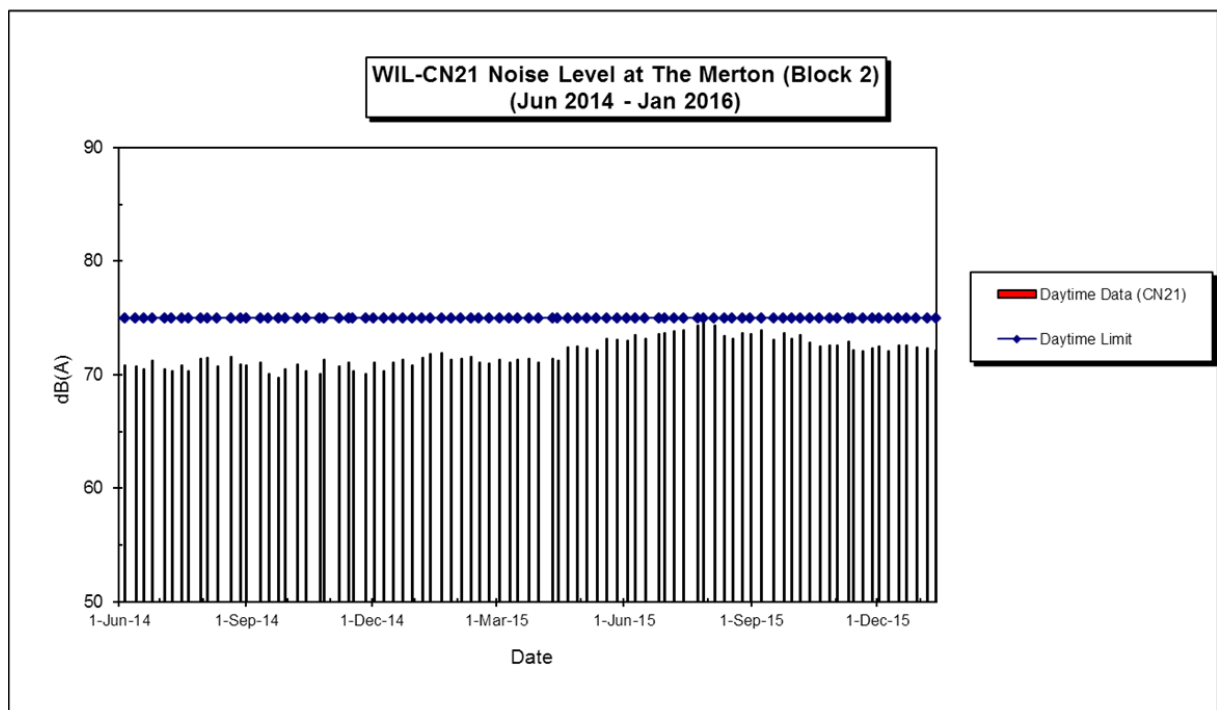
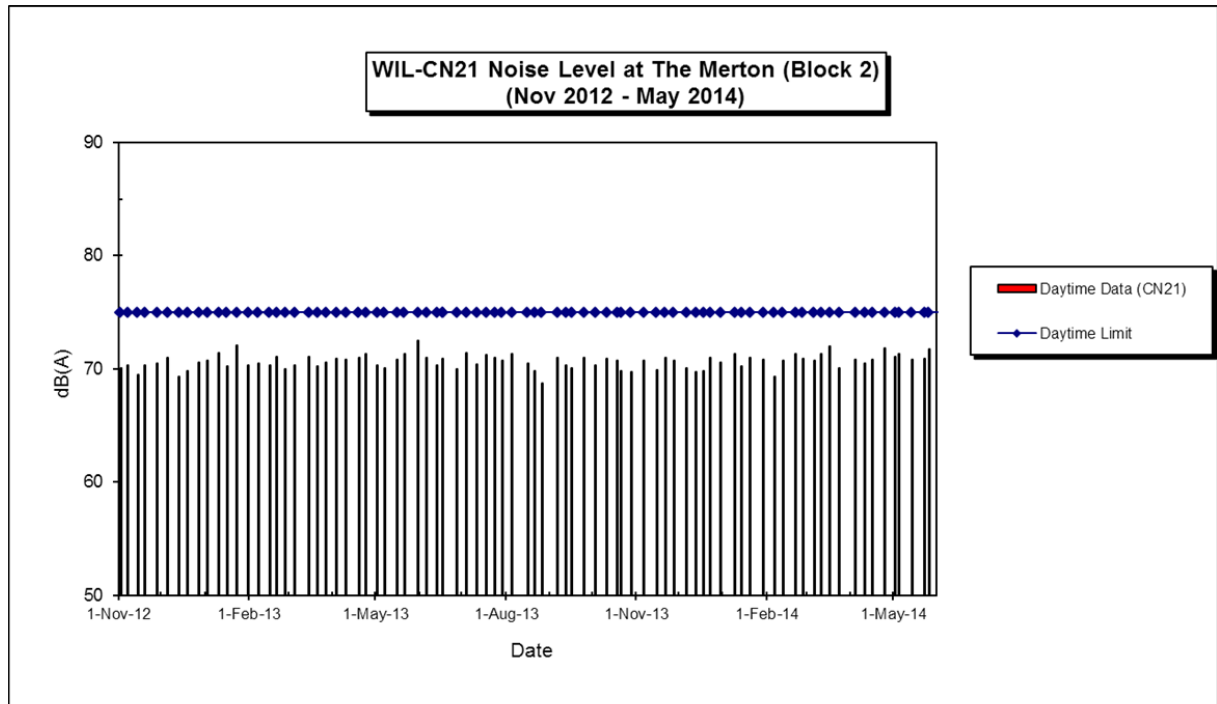
Weather Conditions: Typical fine and occasionally raining during the monitoring periods

WIL-CN21 Noise Level at The Merton (Block 2)
(Aug 2009 - Feb 2011)



WIL-CN21 Noise Level at The Merton (Block 2)
(Mar 2011 - Oct 2012)





Annotation

Major Activities:

- a. Site formation and site office construction (Aug 2009 to Feb 2010)
- b. Operation of barging point (Dec 2010 to Oct 2013)
- c. Removal of site office, facilities and the additional concrete paving (Jan 2015 to Oct 2015)

Weather Conditions:

Typical fine and occasionally raining during the monitoring periods