

EIA Ordinance Register Office  
Environmental Protection Department  
27<sup>th</sup> Floor, Southorn Centre  
130 Hennessy Road  
Hong Kong

Our ref: TNS-COR-ENVM-ENV-031031

Attn: Mr. Keith Lam

11 October 2013

Dear Mr. Lam,

**Tsim Sha Tsui Northern Subway (TNS)**  
**Environmental Permit No.: EP-317/2009**  
**Monthly EM&A Report**

Attached please find the Monthly EM&A Report of Tsim Sha Tsui Northern Subway (TNS) for your review.

Should there be any queries, please feel free to contact the undersigned at 26881950.

Yours sincerely,



Raymond Wong  
Environment Engineer

Encl.

c.c. LCSD - Ms LEE Kar Mei, Camay

RW/KC/ic

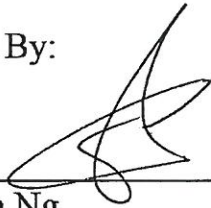
MTR Corporation Limited

Tsim Sha Tsui Station Northern Subway

Monthly Environmental Monitoring and Audit Report

September 2013

Verified By:



\_\_\_\_\_  
Coleman Ng

Independent Environmental Checker

Date:

9-Oct-2013

\_\_\_\_\_

MTR Corporation Limited

Tsim Sha Tsui Station Northern Subway

Monthly Environmental Monitoring and Audit Report

September 2013

Certified By:



---

Richard Kwan

Environmental Team Leader

Date:

- 9 OCT 2013

---

## ***EXECUTIVE SUMMARY***

The Tsim Sha Tsui Northern Subway Project (TNS) was awarded to the respective contractor in late Dec 2012. The EM&A programme for (TNS) Project commenced on 8 Feb 2013, the commencement date of construction of the Project. This is the eighth monthly Environmental Monitoring and Audit (EM&A) Report for TNS Project. The Report presents the results of EM&A works for the project works undertaken during the period of September 2013.

The impact monitoring for air quality and noise were conducted for the weeks of September 2013. Both noise and dust monitoring results were below action limits. No environmental notification of summon, prosecution and valid complaint were received in the reporting period.

Regular joint site inspections, led by the ER with the presence with representatives from the Contractor and Environmental Team, were conducted on weekly basis to monitor Contractors' performance on environmental management and implementation of environmental pollution control and mitigation measures for the Project.

The Environmental Permit (EP-317/2009) dated on 8 January 2009 is being used for the TNS Project.

In the reporting period, no non-conformance was identified and no reporting change of circumstances which may affect the compliance with the recommendations of the EIA Report.

In next reporting period, the key issues are excavation for temporary exit and installation of sheet piles.

## **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 Month**
- 2.6 Construction Activities for the Coming Month**

### **3 IMPACT MONITORING**

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

### **4 LANDSCAPE AND VISUAL**

- 4.1 Monitoring Requirements**
- 4.2 Audit Results**
- 4.3 Action Taken in Event of Non-Conformance**

### **5 WASTE MANAGEMENT**

### **6 WATER QUALITY**

### **7 Built Heritage**

### **8 RECORD OF ENVIRONMENTAL COMPLAINTS**

### **9 RECORD OF NON- COMPLIANCES**

### **10 NOTIFICATION OF SUMMONS AND 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*

**13 FUTURE KEY ISSUES**

- 13.1 Key Issues for the Coming Month*
- 13.2 Effectiveness and Efficiency of Mitigation Measures*

**14 CONCLUSIONS**

**List of Appendices**

Appendix A	Figures
Appendix B	Environmental Quality Performance Limits
Appendix C	Event Action Plans
Appendix D	Implementation of Environmental Mitigation Measures
Appendix E	Calibration Details
Appendix F	Impact Monitoring Graphical Plots
Appendix G	Monitoring Schedule for the Present and Next Reporting Period

## 1 INTRODUCTION

### 1.1 Project Background

MTR Corporation Limited (MTRCL) proposes to construct Tsim Sha Tsui Station Northern Subway, otherwise referred ‘TNS’. This EM&A report is for the phase 1 of the TNS, which is the modification of existing Tsim Sha Tsui Station Entrance A1. The scope of this phase 1 work is to upgrade the Entrance A1 to replace the existing concrete structure with a new transparent box reconstructed on the same site with improved access to the station with new disable lift serving Tsim Sha Tsui concourse level, street and Kowloon Park; and escalators serving street and the existing Entrance A1 Adit. The remaining subway running from the north end of Tsim Sha Tsui Station to the new satellite concourse at The One shopping (previous Tung Ying Building) and then to Miramar Shopping Centre will be grouped at the phase 2 of the TNS project. The phase 2 is still under planning stage and the status will be updated later.

### 1.2 Project Programme

The TNS Project Phase 1 contract with contract number C6564-11C was awarded to the Goldfield N&W Construction Company Limited (GNW) in late Dec 2012. The commencement of construction was on 8 Feb 2013. The commencement of operation of the Project is scheduled to be in 2015. Contractors’ tentative programme for the construction is presented below.

Activities	2012	2013												2014												2015													
	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D		
Contract Award	♦																																						
Site Clearance		→																																					
Construction of Temporary Entrance		→	→	→	→	→	→	→	→	→	→	→	→																										
Construction Commencement		♦																																					
Construction of Temporary Ramp		→																																					
Installation of Sheet Piles & Pipe Piles		→	→	→	→	→	→	→	→	→	→	→	→																										
Construct Temporary Entrance							→	→	→	→	→	→	→																										
E&M Installation																																							
ABWF																																							
Construction of New Entrance														→	→	→	→	→	→	→	→	→	→	→	→														
Demolition Existing A1 Entrance														→	→	→	→	→	→	→	→	→	→	→	→														
Installation of Pipe Piles														→	→	→	→	→	→	→	→	→	→	→	→														
Excavation & Erecting Lift Shaft														→	→	→	→	→	→	→	→	→	→	→	→														
Construction of New Lift and Entrance														→	→	→	→	→	→	→	→	→	→	→	→														
ABWF Works & E&M Works																											→	→	→	→	→	→	→	→	→	→	→	→	→
Demolition of Temporary Entrance & Reinstatement																																							

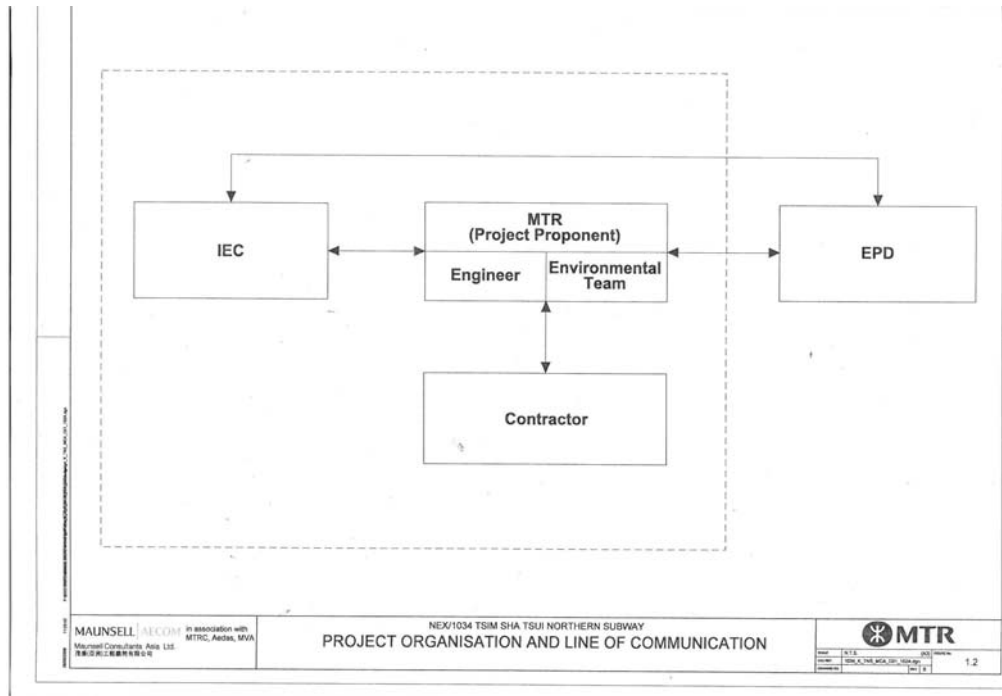
### 1.3 Coverage of the EM&A Report

The EM&A programme for the TNS Project commenced on 8 Feb 2013. This is the third Monthly Environmental Monitoring and Audit (EM&A) Report for the Project. The Report presents the results of EM&A works and the impact monitoring for the construction works undertaken by the Contractor during the period of September 2013.

## 2 PROJECT INFORMATION

### 2.1 Project Management Organization and Contact Details

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



**Figure 1.** Project Organization



**Table 1a** Contact List of Key Personnel for Project Management

<b>Organization</b>	<b>Name</b>	<b>Telephone</b>
<b>Engineer's Representative</b>		
Construction Manager	PH Tang	3929 3213
Senior Construction Engineer	Stephen Tai	3929 3266
Construction Engineer	Jacky Lee	3929 3283
<b>Independent Environmental Checker</b>		
Consultant – Arup	Coleman Ng	2268 3097
<b>Environmental Team</b>		
Environmental Team Leader	Richard Kwan	2688 1179

**Table 1b** Contact List of Environmental Authority

<b>Organization</b>	<b>Name</b>	<b>Telephone</b>
<b>Environmental Protection Department</b>		
Assistant Environmental Protection Officer (Regional East) 61	Arthur Lee	2150 8021

**2.2 Project Works Sites and Areas and Environmental Monitoring Locations**

- The TNS Project work site and areas are summarized in Table 2 below and shown in Appendix A Figures 1.
- The locations of environmental monitoring stations are indicated in Appendix A Figures 2.
- Table 3 shows the details of the active monitoring stations as reported in Sections 3.1 and 3.2.

**Table 2** Summary of TNS Project Works Sites and Areas

<b>Contract C6564-IIC Works Site and Area</b>	
Works Site	Tsim Sha Tsui Entrance A

**Table 3 Summary of impact air quality and noise monitoring stations**

ID	Monitoring Station
<b>Air</b>	
D1	Hai Phong Road
<b>Noise</b>	
M1	Hai Phong Mansion
M2	Comfort Building
M3	Burlington Arcade

### 2.3 Summary of EM&A Requirements

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

A summary of impact EM&A requirements as applicable to this EM&A Report is presented in Table 4 below.

**Table 4 Summary of impact EM&A Requirements**

Parameters	Descriptions	Locations	Monitoring Frequencies	Duration
Air Quality	24-hr TSP	Shown in Table 3	Once a week	Construction stage
Noise	$L_{eq(30min)}$	Shown in Table 3	Once a week	Construction stage
Landscape and visual	On-Site Audit	Active Works Sites	Bi-weekly	Construction stage
Built Heritage	On-Site Audit	Active Works Sites	Bi-weekly	Construction stage
Waste	On-Site Audit	Active Works Sites	Weekly	Construction stage
General Site Conditions	Environmental Site Inspection	Active Works Sites	Weekly	Construction stage

Environmental Quality Performance Limits for air quality and noise are shown in **Appendix B**.

The Event Action Plans for air quality and noise are shown in **Appendix C**.

### 2.4 Implementation of Environmental Mitigation Measures

The TNS 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. A schedule of the implementation of mitigation measures identified in the TNS EM&A Manual is given in **Appendix D**.

## **2.5 Construction Activities in the Reporting Month**

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

### **Works Sites and Areas**

#### Works Site (Tsim Sha Tsui Entrance A)

- Excavation for Temporary Exit
- Installation of Sheet Piles

## **2.6 Construction Activities in the Coming Month**

- Excavation for Temporary Exit
- Installation of Sheet Piles

## **3 IMPACT MONITORING**

### **3.1 Air Quality**

#### 24-Hour TSP Levels Monitoring

The TSP was measured by Andersen High Volume Sampler, model G25A. 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) will be conducted upon installation and prior to commissioning. Calibration will be carried out every six months. Calibration certificates are attached in **Appendix E**.

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. The monitoring location is subjected to construction dust impact from Works Site, is available to check the environmental performance of the work site and assess the effectiveness of the mitigation measures.

Monitoring results are presented in the following table and **Appendix F** for graphical plot. The 24-hour TSP monitoring results in the range from 72 to 156  $\mu\text{g}/\text{m}^3$  recorded in the monitoring period shows that the dust levels generated by the active construction activities were within the Action Levels.

**D1 Hai Phong Road**

Date	TSP ( $\mu\text{g}/\text{m}^3$ )	Action Level ( $\mu\text{g}/\text{m}^3$ )	Limit Level ( $\mu\text{g}/\text{m}^3$ )	Compliance to limit level	Weather Condition
3-Sep-13	108	226	260	Yes	Occasional Rain
10-Sep-13	156	226	260	Yes	Sunny
17-Sep-13	111	226	260	Yes	Sunny
24-Sep-13	72	226	260	Yes	Occasional Rain

**3.2 Noise**

B&K 2238/2250 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. In this reporting period, all relevant calibration certificates are attached in **Appendix E**.

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. 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 whole dB, with values of 0.5 or more being rounded up.

Impact noise monitoring of  $L_{Aeq(30min)}$  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.

The monitoring results in the range from 62.6 to 66.6 dBA are presented in the following table and **Appendix F** for graphical plot.

**M1- Hai Phong Mansion**

Date	Time	Measured Leq(dBA)	Baseline Leq (dBA)	Limit Level (dBA)	Exceedance of Limit Level	Weather Condition	Wind Speed (m/s)
3-Sep-13	11:00	62.6	71	75	No	Occasional Rain	<2
10-Sep-13	10:30	63.1	71	75	No	Sunny	<2
17-Sep-13	11:00	63.8	71	75	No	Sunny	<2
24-Sep-13	11:00	63.3	71	75	No	Occasional Rain	<2

**M2- Comfort Building**

Date	Time	Measured Leq(dBA)	Baseline Leq (dBA)	Limit Level (dBA)	Exceedance of Limit Level	Weather Condition	Wind Speed (m/s)
3-Sep-13	10:45	65.8	70	75	No	Occasional Rain	<2
10-Sep-13	09:30	66.6	70	75	No	Sunny	<2
17-Sep-13	09:30	66.6	70	75	No	Sunny	<2
24-Sep-13	09:15	66.2	70	75	No	Occasional Rain	<2

**M3- Burlington Arcade**

Date	Time	Measured Leq(dBA)	Baseline Leq (dBA)	Limit Level (dBA)	Exceedance of Limit Level	Weather Condition	Wind Speed (m/s)
3-Sep-13	11:15	63.2	68	75	No	Occasional Rain	<2
10-Sep-13	10:00	63.4	68	75	No	Sunny	<2
17-Sep-13	10:00	64.0	68	75	No	Sunny	<2
24-Sep-13	09:45	63.7	68	75	No	Occasional Rain	<2

**3.3 Action taken in Event of Exceedance**

There was no exceedance in air quality and noise monitoring for the monitoring locations in the reporting period.

**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 will be conducted once every two weeks throughout the construction stage.

## 4.2 *Audit Results*

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

OVT T30 and T31 had fallen due to non-project related causes since the EIA Report, other OVTs were in good health.

The transplantation of the two *Elaeocarpus balansae* in front of Entrance A1 was carried out in May 2013, to sites within Kowloon Park as pre-agreed with LCSD.

T69, T70 and T71 (all *Delonix Regia*) at Hai Phong Road were removed on 14 September 2013 as approved under the Tree Removal Applications.

### Bi-weekly inspection

The Registered Landscape Architect of Environmental Team or his representatives conducted inspections and audits and the tree protection works were implemented by the respective contractor. No non-conformance was identified in the reporting period.

## 4.3 *Action Taken in Event of Non-Conformance*

No actions on landscape and visual were required to be taken in this reporting period.

## 5 **WASTE MANAGEMENT**

The quantities 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 (m <sup>3</sup> )	Inert C&D Materials Reused (m <sup>3</sup> )	Non-inert Waste to Landfill (m <sup>3</sup> )	Chemical Waste to designated treatment facility (trips)
Feb 2013	0	0	0	0
Mar 2013	5	0	10	0
Apr 2013	0	0	10	0
May 2013	25	0	0	0
Jun 2013	85	0	0	0
Jul 2013	138	0	18	0
Aug 2013	18	0	6	0
Sep 2013	276	0	6	0
<b>Total</b>	<b>547</b>	<b>0</b>	<b>50</b>	<b>0</b>

**6 WATER QUALITY**

An effluent discharge license was granted on 11 June 2013. Discharge mainly arose from vehicle washing and dewatering process in the reporting month. Weekly site inspection was conducted to ensure the recommended mitigation measures are properly implemented and license conditions are observed.

**7 Built Heritage**

There are two built heritage resources have been identified in the close proximity to the work site. The two built heritage resources, the retaining wall and the Block S4 of former Whitfield Barracks were inspected visually. They were well kept and no observable impact due to the project was identified. The two granite columns previously relocated to Kowloon Park is in good condition.

**8 RECORD OF ENVIRONMENTAL COMPLAINTS**

There was no complaint received during the reporting month.

**9 RECORD OF NON-COMPLIANCES**

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

**10. NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS**

No summon or prosecution related to environmental issue was recorded in the reporting period. A summary of environmental prosecution since commencement of construction is shown below:-

<b>Reporting Period</b>	<b>Frequency</b>	<b>Cumulative</b>	<b>Nature</b>	<b>Status</b>
September 2013	0	0	N/A	N/A
Cumulative	0	0	N/A	N/A

## 11. STATUS OF STATUTORY SUBMISSIONS

### 11.1 Submissions required under Environmental Permit

A summary of the status of the clauses required under the TNS Environmental Permit as of September 2013 is shown below:

EP-317/2009 Clause No.	Description		Status
1.11	1	Notification of commencement of construction	Construction commenced on 8 Feb 2013
2.1	2	Establishment of ET with ET Leader	ET set up since Oct 2012
2.2	4	Employment of IEC	IEC set up since Oct 2012
2.3	5	Notification of the management organization of main construction companies and/or any form of JV	Set up in Dec 2012
2.4	6	Submission of Waste Management Plan	Comments received and RTC is being prepared. The WMP is being revised accordingly
5.4	7	Submission of Baseline Monitoring Report	Submitted
5.7	8	Notification of setting up A community liaison procedure and channel	Established since Jan 2013
6.2	9	Notification of Internet address to place EM&A data	Established on 7 March 2013
5.5	10	Monitoring Report for August 2013	Submitted

### 11.2 Statutory Permits and Licenses

A summary of the status of all relevant environmental permits and licenses as of 31 September 2013 is shown below:

Description	License/ Permit Reference	Issue Date	Expired Date
Environmental Permit for Tsim Sha Tsui Station Northern Subway Project	EP-317/2009	8 January 2008	NA
Wastewater Discharge License	WT00016228-2013	11 Jun 2013	30 Jun 2018
Registration as a Chemical Waste Producer	Waste Producer Number: 5213-214-G2417-05	12 March 2013	NA
Disposal of Construction Waste	Billing Account no. 7016610 activated	27 Dec 2012	NA
Construction Noise Permit	GW-RE0870-13	16 Aug 2013	3 Sep 2013 – 3 Oct 2013



## 12 SITE INSPECTIONS

### 12.1 Observations

Regular site inspections led by the Engineer's Representative and anticipated by ET and respective Contractors were undertaken in accordance with the EM&A Manual in the reporting period. The contractors' performance on environmental matters were assessed and found in an acceptable manner. 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.

Observations against the implementation of the mitigation measures recommended in the EP/EIA are summarized as follows:

Item	Description	Follow-up Status
	<b><u>Contract C6564-11C</u></b>	
1	The contractor was reminded that the noise and dust mitigation requirements stated in the EP shall be strictly followed.	On going
2	The contractor was reminded to pay special attention to the Heritage Built and the OVT protection.	On going
3	The contractor is to monitor closely on observing effluent discharge standards.	On going

The respective contractors have followed most of concerned items raised during the inspections for rectification in a responsible manner.

### 12.2 Other Notable Events

#### IEC Site Inspections

The IEC conducted site inspections for Works Areas on 3 September 2013. Some observations listed in section 12.1 were noted during the site inspections and the respective Contractors had followed up the issues as identified in the site inspections in a responsible manner.

#### EPD Inspection

EPD inspection was not recorded in this reporting period.

## **13 FUTURE KEY ISSUES**

### **13.1 Key Issues for the Coming Month**

Future key issues envisaged in the coming month include the followings:

- Excavation for Temporary Exit
- Installation of Sheet Piles

### **13.2 Effectiveness and Efficiency of Mitigation Measures**

Based on the environmental monitoring results of the reporting period, the effectiveness and efficiency of the mitigation measures implemented were found to be satisfactory. The respective contractors were reminded to carry out their future construction activities to comply with the requirements of the EP and the relevant contract requirements.

## **14 CONCLUSIONS**

The Report presents the results of EM&A works and the impact monitoring for the construction works undertaken during September 2013. The major construction activities in the reporting period were:

- Excavation for Temporary Exit
- Erection of Temporary Access for Kowloon Park

No exceedance on noise and dust action level and no complaint received

No notification of summon and prosecution were received in the reporting period.

Regular site inspections led by the Engineer's Representative and anticipated by the representatives from ET and the respective Contractors' Team were conducted on a weekly basis to monitor the implementation of environmental pollution control and mitigation measures for the Project. No non-conformance to the environmental requirements was identified by the Environmental Team in the reporting period. The performances of the respective contractors on site environmental management were found in a responsible manner in this reporting period.

It is concluded from the environmental monitoring and audit works for the Tsim Sha Tsui Northern Subway Project were undertaken in a responsible manner. The environmental protection and pollution control measures provided by the contractor were generally acceptable.

## **Appendix A**

### **Figures**

Figure 1. TNS Project Works Area

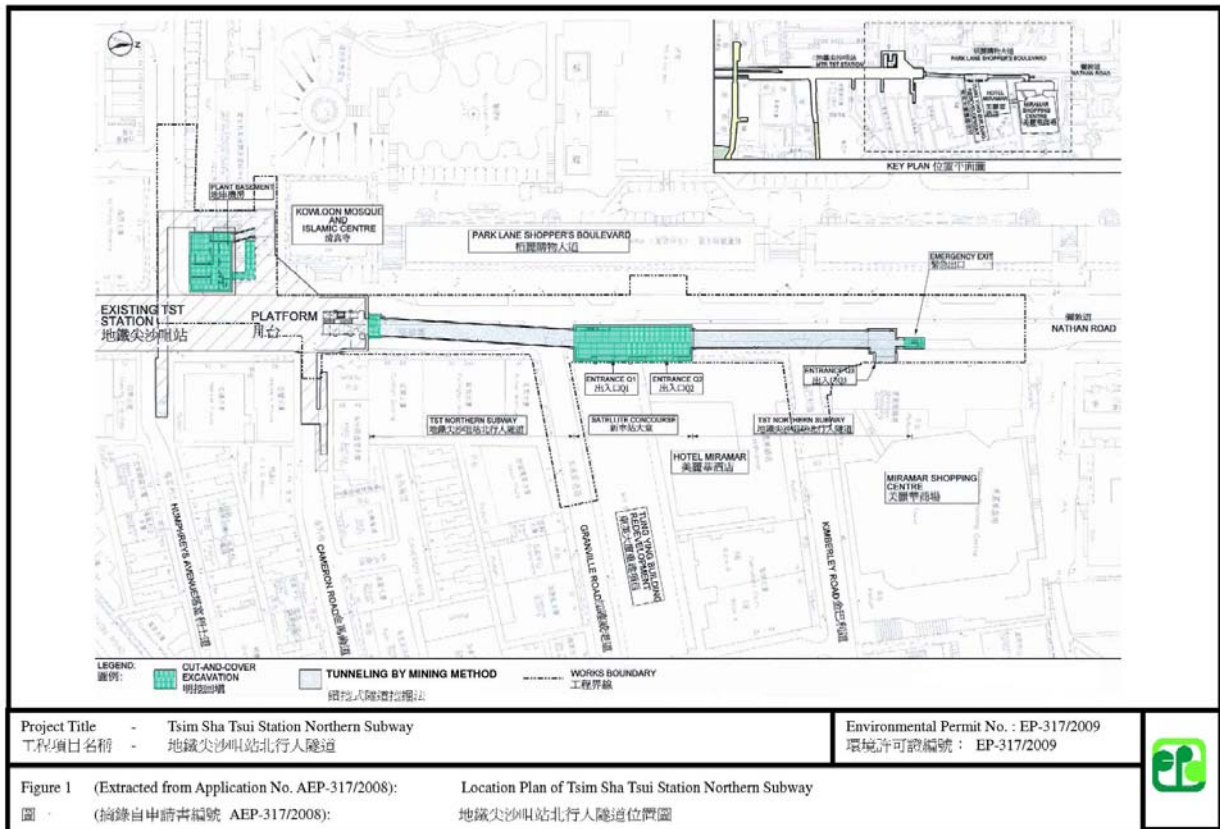
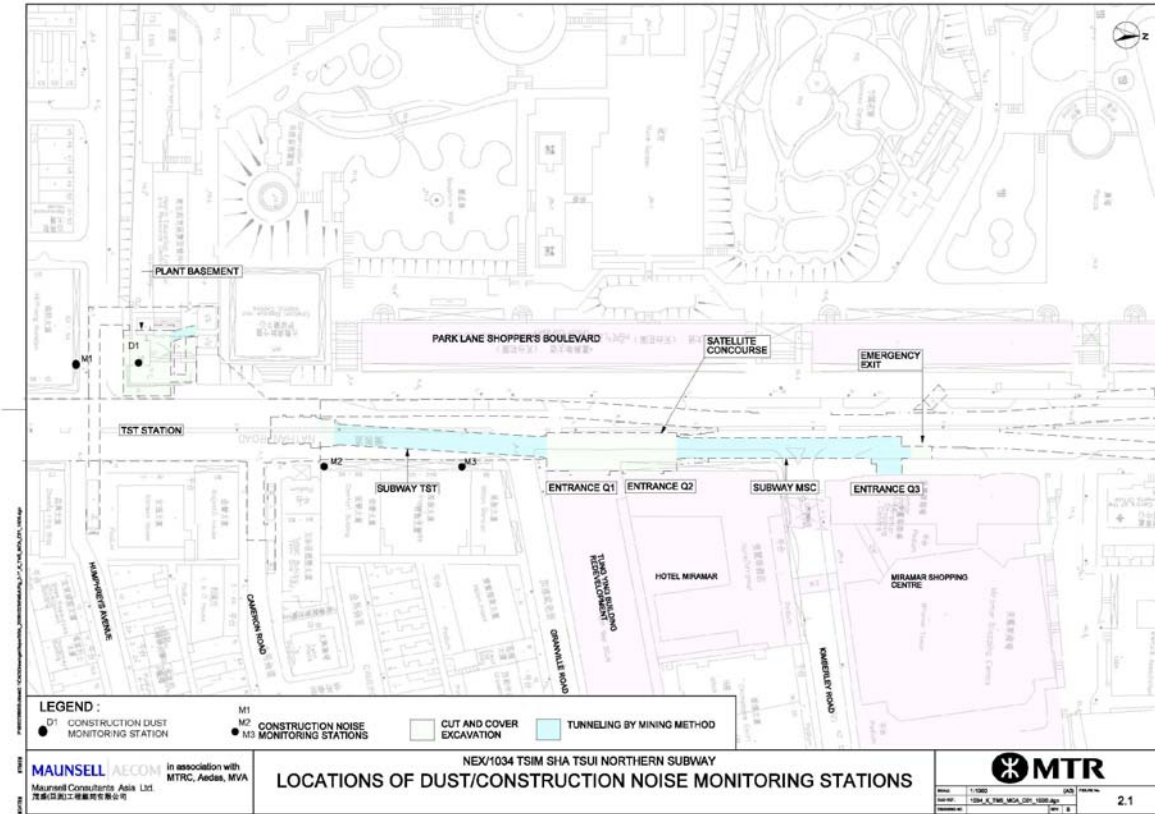


Figure 2. TNS Project Dust and Noise Monitoring Location Plan



## **Appendix B**

### **Environmental Quality Performance Limits**

#### **Action and Limit Levels for 24-hour TSP**

<b>Monitoring Station</b>	<b>Action Level (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Limit Level (<math>\mu\text{g}/\text{m}^3</math>)</b>
D1	171	260

#### **Action and Limit Levels for 1-hour TSP for Complaint Handling**

<b>Monitoring Station</b>	<b>Action Level (<math>\mu\text{g}/\text{m}^3</math>)</b>	<b>Limit Level (<math>\mu\text{g}/\text{m}^3</math>)</b>
D1	310	500

#### **Action and Limit Levels for Construction Noise**

<b>Time Period</b>	<b>Action Level</b>	<b>Limit Level (dB(A)), Leq(30min)</b>
0700-1900 hr on normal weekdays	When one documented complaint is received	75

## **Appendix C**

### **Event Action Plans**

**Event / Action Plan for Air Quality (Dust)**

Event	Action			IEC
	ET	Contractor	ER	
<p>Action Level being exceeded</p> <ol style="list-style-type: none"> <li>1. Conduct additional measurement to confirm finding.</li> <li>2. Identify source and investigate the causes of exceedance, if caused by MTRCL's work.</li> <li>3. Inform IEC, ER and Contractor.</li> <li>4. Discuss with IEC, ER and Contractor on remedial actions required.</li> <li>5. If necessary, conduct additional monitoring to assess the effectiveness of Contractor's remedial actions.</li> <li>6. If exceedance continues, arrange meeting with IEC and ER to review implementation and identify further appropriate mitigation measures.</li> <li>7. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Discuss with ET on proper remedial actions.</li> <li>2. Submit proposals for remedial actions to ER within 3 working days of notification.</li> <li>3. Amend proposal if appropriate.</li> <li>4. Implement the agreed proposals.</li> <li>5. Liaise with ER to optimize the effectiveness of the agreed mitigation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance.</li> <li>2. Notify Contractor.</li> <li>3. Check Contractor's working methods.</li> <li>4. Agree with the Contractor on the remedial measures to be implemented.</li> <li>5. Ensure proper implementation of remedial measures.</li> <li>6. Assess the efficiency of remedial actions and keep the Contractor informed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check Contractor's working method.</li> <li>2. Advise ET on the effectiveness of the proposed remedial measures.</li> </ol>	



Event	Action		
	ET	Contractor	ER
<p>Limit level being exceeded</p> <ol style="list-style-type: none"> <li>1. Conduct additional measurement to confirm findings.</li> <li>2. Identify source and investigate the causes of exceedance;</li> <li>3. Notify EPD, IEC, ER and Contractor.</li> <li>4. Check Contractor's working procedures.</li> <li>5. Discuss with IEC, ER and Contractor on remedial actions required.</li> <li>6. If necessary, conduct additional monitoring to assess effectiveness of Contractor's remedial actions.</li> <li>7. Keep EPD, IEC and ER informed of the monitoring results.</li> <li>8. If exceedance continues, arrange meeting with IEC and ER to review implementation and identify further appropriate mitigation measures.</li> <li>9. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance.</li> <li>2. Discuss with ET and ER on proper remedial actions.</li> <li>3. Submit proposals for remedial actions to ER within 3 working days of notification.</li> <li>4. Implement the agreed proposals.</li> <li>5. Liaise with ER to optimize the effectiveness of the agreed mitigation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance.</li> <li>2. Notify Contractor.</li> <li>3. Check Contractor's working methods.</li> <li>4. Agree with the Contractor on the remedial measures to be implemented.</li> <li>5. Ensure proper implementation of remedial measures.</li> <li>6. Assess the efficiency of remedial actions and keep the Contractor informed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check Contractor's working method.</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ET accordingly.</li> </ol>

**Event and Action Plan for Construction Noise**

Event	ET	Contractor	ER	IEC
<p>Action Level being exceeded</p>	<ol style="list-style-type: none"> <li>1. Undertake measurement to establish validity of complaint.</li> <li>2. Identify source(s) of complaint.</li> <li>3. Notify IEC, ER and Contractor.</li> <li>4. Discuss with the IEC, ER and Contractor on remedial measures required.</li> <li>5. Increase monitoring frequency to check mitigation effectiveness.</li> <li>6. If exceedance continues, arrange meeting with IEC and ER to review implementation and identify further appropriate mitigation measures.</li> <li>7. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Submit noise mitigation proposals to ER within three working days of notification.</li> <li>2. Amend proposal if appropriate.</li> <li>3. Implement noise mitigation proposals.</li> <li>4. Liaise with ER to optimize the effectiveness of the agreed mitigation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of complaint.</li> <li>2. Notify Contractor.</li> <li>3. Check Contractor's working methods.</li> <li>4. Agree with the Contractor on the remedial measures to be implemented.</li> <li>5. Ensure proper implementation of remedial measures.</li> <li>6. Assess the efficiency of remedial actions and keep the Contractor informed.</li> <li>7. Inform complainant of actions taken.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check Contractor's working methods.</li> <li>2. Review the proposed remedial measures by the Contractor and advise the ET accordingly.</li> </ol>

Event	Action		
	ET	Contractor	ER
Limit Level being exceeded	<ol style="list-style-type: none"> <li>1. Repeat measurement to confirm findings.</li> <li>2. Identify source and investigate the cause of exceedance.</li> <li>3. Inform EPD, IEC, ER and Contractor.</li> <li>4. Check Contractor's working procedures.</li> <li>5. Discuss with the IEC, Contractor and ER on remedial measures required.</li> <li>6. Increase monitoring frequency to assess effectiveness of Contractor's mitigation actions and keep EPD, IEC and ER informed the results.</li> <li>7. If exceedance continues, arrange meeting with IEC and ER to review implementation and identify further appropriate mitigation measures.</li> <li>8. If exceedance stops, cease additional monitoring.</li> </ol>	<ol style="list-style-type: none"> <li>1. Take immediate action to avoid further exceedance.</li> <li>2. Submit proposals for remedial actions to ER within 3 working days of notification.</li> <li>3. Implement the agreed proposals.</li> <li>4. Liaise with ER to optimize the effectiveness of the agreed mitigation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Confirm receipt of notification of exceedance.</li> <li>2. Notify Contractor.</li> <li>3. Check Contractor's working methods.</li> <li>4. Agree with the Contractor on the remedial measures to be implemented.</li> <li>5. Ensure proper implementation of remedial measures.</li> <li>6. Assess the efficiency of remedial actions and keep the Contractor informed.</li> </ol>
			<ol style="list-style-type: none"> <li>1. Check Contractor's working methods.</li> <li>2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ET accordingly.</li> </ol>

## **Appendix D**

### **Implementation of Environmental Mitigation Measures**

**IMPLEMENTATION SCHEDULE OF THE PROPOSED MITIGATION MEASURES**

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
3.10.1	2.9.2	<p>Construction Air Quality Impact</p> <ul style="list-style-type: none"> <li>• watering of active construction works area twice a day</li> <li>• skip hoist for material transport shall be totally enclosed by impervious sheeting</li> <li>• every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving a construction site</li> <li>• the area where vehicle washing takes place and the section of the road between the washing facilities and the exit point shall be paved with concrete, bituminous materials or hardcores</li> <li>• where a site boundary adjoins a road, streets or other accessible to the public, hoarding of not less than 2.4m high from ground level shall be provided along the entire length except for a site entrance or exit</li> <li>• every stack of more than 20 bags of cement shall be covered entirely by impervious sheeting places in an area sheltered on the top and the 3 sides</li> <li>• all dusty materials shall be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet</li> <li>• the height from which excavated materials are dropped shall be controlled to a minimum practical height to limit fugitive dust generation from unloading</li> <li>• stockpile of excavated or dusty materials shall be covered entirely by clean impervious sheeting</li> <li>• the load of dusty materials carried by vehicle leaving a construction site shall be covered entirely by clean impervious sheeting to ensure dust materials do not leak from the vehicle</li> <li>• instigation of an environmental monitoring and auditing</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM Air Pollution Control (Construction Dust) Regulation

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
4.9.2-4.9.3		program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise				
<b>Construction Noise Impact</b>						
4.9.4	3.8.1	<ul style="list-style-type: none"> <li>Adoption of Quieter PME</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM Noise Control Ordinance
4.9.4	3.8.1	<ul style="list-style-type: none"> <li>Use of Movable Noise Barrier</li> <li>5 dB(A) reduction for movable PME and 10 dB(A) for stationary PME can be achieved depending on the actual design of movable noise barrier</li> <li>Barrier material of surface mass in excess of 7 kg/m<sup>2</sup> is recommended to achieve the predicted screening effect</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM Noise Control Ordinance
4.9.5	3.8.1	<ul style="list-style-type: none"> <li>Use of Noise Enclosure/Acoustic Shed</li> <li>Noise Enclosure or Acoustic Shed is to cover stationary PME such as air compressor and concrete pump.</li> <li>With the adoption of the noise enclosure, the PME could be completely screened, and noise reduction of 15 dB(A) can be achieved according to the GW-TM</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM Noise Control Ordinance
4.9.6	3.8.1	<ul style="list-style-type: none"> <li>Use of Silencer</li> <li>Silencers are recommended to be used in fan ventilation system to attenuate noise generated during fan operation to achieve a noise reduction of 15dB(A). The Contractor shall be responsible for selection of appropriate silencers for the ventilation fans.</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM Noise Control Ordinance
4.9.7	3.8.1	<ul style="list-style-type: none"> <li>Use of Noise Insulating Fabric</li> <li>Noise insulating fabric (the Fabric) can be adopted for certain PME (e.g. drill rig, piling auger etc)</li> <li>The Fabric should be lapped such that no opening or gaps on the joints. Technical data from manufacturer states that by using the Fabric, a noise reduction of over 10 dB(A) can be achieved on noise level (Reference was</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM Noise Control Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
4.6.6	3.8.1	made from Modifications to MTRC Tsim Sha Tsui Station Variation of Environmental Permit EP-113/2001/C). As an conservative approach, a noise reduction of 10 dB(A) for the PME lapped with the Fabric was assumed. <ul style="list-style-type: none"> <li>Decking over the excavation areas at the Entrance A1 and satellite concourse</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM Noise Control Ordinance
4.10.8	3.8.1	<u>Good Site Practices</u> <ul style="list-style-type: none"> <li>Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program.</li> <li>Silencers or mufflers on construction equipment shall be utilised and shall be properly maintained during the construction program.</li> <li>Mobile plant, if any, shall be sited as far away from NSRs as possible.</li> <li>Machines and plant (such as trucks) that may be in intermittent use shall be shut down between works periods or shall be throttled down to a minimum.</li> <li>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.</li> <li>Material stockpiles and other structures shall be effectively utilised, wherever practicable, in screening noise from on-site construction activities.</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM Noise Control Ordinance
Operation Noise Impact Table 4.8	Table 3.4	<ul style="list-style-type: none"> <li>The maximum Sound Power Levels (SWLs) for the ventilation shaft openings shall be complied with during the selection of ventilation fans and mitigation measures.</li> </ul>	Designer	Station, ventilation shafts and E&M plant items	Design Phase	EIAO-TM

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
4.9.10	3.9.2	<ul style="list-style-type: none"> <li>Choose quieter plant such as those which have been effectively silenced.</li> <li>Include noise levels specification when ordering new plant (including chiller and E/M equipment).</li> <li>Locate fixed plant/louvers away from any NSRs as far as practicable.</li> <li>Locate fixed plant in walled plant rooms or in specially designed enclosures.</li> <li>Locate noisy machines in a basement or a completely separate building.</li> <li>Install direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosure where necessary.</li> <li>Develop and implement a regularly scheduled plant maintenance programme so that equipment is properly operated and serviced in order to maintain controlled level of noise. The programme should be implemented by properly trained personnel.</li> </ul>	Designer / Contractor	Station, ventilation shafts and E&M plant items	Design / Operational Phase	EIAO-TM Noise Control Ordinance
<b>Construction Water Quality Impact</b>						
5.13.2	4.3.2	<p>Construction runoff and site drainage should be prevented or minimized in accordance with the guidelines stipulated in ProPECC PN 1/94 "Construction Site Drainage". The specified mitigation measures and practices include the following:</p> <ul style="list-style-type: none"> <li>Provision of perimeter drains to intercept off-site water around the site with internal drainage works and erosion and sedimentation control facilities implemented. These shall be constructed in advance of site formation works and earthworks. Earth bunds or sand bag barriers shall be provided on-site to direct storm water to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the Contractor prior to the commencement of construction.</li> <li>All drainage facilities and erosion and sediment control</li> </ul>	Contractor	Works Area	Construction Phase	ProPECC PN 1/94 Construction Site Drainage EIAO-TM Water Pollution Control Ordinance Waste Disposal Ordinance



EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
		<p>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.</p> <ul style="list-style-type: none"> <li>• Exposed slope/soil surface shall be covered by tarpaulin as soon as possible to reduce the potential of soil erosion. Arrangements should 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.</li> <li>• Open stockpiles of construction materials (e.g. aggregates, sand and fill material) or construction wastes on-site shall be covered with tarpaulin or similar fabric during rainstorms.</li> <li>• Construction works shall be programmed to minimise surface excavation works during the rainy seasons (April to September). All exposed earth areas shall be completed and vegetated as soon as possible after earthworks have been completed, or alternatively, within 14 days of the cessation of earthworks where practicable. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed surfaces shall be covered by tarpaulin or other means.</li> <li>• Manholes shall 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.</li> <li>• Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a</li> </ul>				

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
		<p>rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94.</p> <ul style="list-style-type: none"> <li>All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequate designed and sited wheel washing facilities 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 backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains.</li> <li>Oil interceptors shall be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors shall be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass shall be provided for the oil interceptors to prevent flushing during heaving rain.</li> <li>Construction solid waste, debris and rubbish on site shall be collected, handled and disposed of properly to avoid water quality impacts.</li> </ul>	Contractor	Works Area	Construction Phase	ProPECC PN 1/94 Construction Site Drainage EIAO-TM Water Pollution Control Ordinance
5.13.4-5.13.6	4.3.3 – 4.3.5	<p><u>Underground Work</u></p> <ul style="list-style-type: none"> <li>Underground works shall be conducted sequentially to limit the amount of construction runoff generated from exposed areas during the wet season (April to September).</li> <li>Uncontaminated discharge shall pass through settlement tanks prior to off-site discharge.</li> <li>The wastewater including surface runoff and ingressive</li> </ul>	Contractor	Works Area	Construction Phase	ProPECC PN 1/94 Construction Site Drainage EIAO-TM Water Pollution Control Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
5.13.7	4.3.6	<p>water in underground area with a high concentration of SS shall be treated (e.g. by settlement in tanks with sufficient retention time) before discharge. Oil interceptors would also be installed to remove the oil, lubricants and grease from the wastewater.</p> <p><u>Sewage Effluent</u></p> <ul style="list-style-type: none"> <li>Temporary sanitary facilities, such as portable chemical toilets, shall be employed on-site where necessary to handle sewage from the workforce.</li> <li>A licensed contractor would be responsible for appropriate disposal of waste matter and maintenance of these facilities.</li> </ul>	Contractor	Works Area	Construction Phase	ProPECC PN 1/94 Construction Site Drainage EIAO-TM Water Pollution Control Ordinance
5.14.1 – 5.14.2	4.3.7 – 4.3.8	<p><u>General Construction Site Activities</u></p> <ul style="list-style-type: none"> <li>Debris and rubbish generated on-site shall be collected, handled and disposed of properly to avoid being flushed or blown by wind into the drainage culvert. Stockpiles of cement and other construction materials should be kept covered when not being used.</li> <li>Oils and fuels shall only be used and stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents, 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.</li> </ul>				
<b>Waste Management</b>						
6.7.1	5.2.3	<p><u>Good Site Practices</u></p> <ul style="list-style-type: none"> <li>Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM Waste Disposal Ordinance ETWB TCW No. 19/2005

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
		<ul style="list-style-type: none"> <li>• Training of site personnel in proper waste management and chemical waste handling procedures.</li> <li>• Provision of sufficient waste disposal points and regular collection for disposal.</li> <li>• Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.</li> <li>• Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> <li>• A Waste Management Plan should be prepared and submitted to the Engineer for approval. One may make reference to ETWB TCW No. 19/2005 for details.</li> <li>• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed.</li> </ul>				
6.7.2	5.2.4	<p>In order to monitor the disposal of C&amp;D materials at public fill reception facilities, as appropriate, and to control fly tipping, a trip-ticket system should be included as one of the contractual requirements.</p>				
6.7.3	5.2.5	<p><u>Waste Reduction Measures</u></p> <ul style="list-style-type: none"> <li>• Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.</li> <li>• Encourage collection of aluminium cans, PET bottles and paper by providing separate labelled bins to enable these wastes to be segregated from other general refuse generated by the work force.</li> <li>• Any unused chemicals or those with remaining functional capacity shall be recycled.</li> <li>• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
6.7.6 & 6.7.7	5.2.7 – 5.2.8	<ul style="list-style-type: none"> <li>Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.</li> </ul> <p><u>Construction and Demolition Material</u></p> <p>Within stockpile areas, the following measures shall be taken to control potential environmental impacts or nuisance:</p> <ul style="list-style-type: none"> <li>covering stockpile of C&amp;D material entirely by clean impervious sheet to reduce potential dust impact.</li> <li>locating stockpiles to minimise potential visual impacts.</li> <li>minimizing land intake of stockpile areas as far as possible.</li> <li>When disposing C&amp;D material at a public fill reception facility, the material shall only consist of soil, rock, concrete, brick, cement plaster/mortar, inert building debris, aggregates and asphalt.</li> <li>The material shall be free from marine mud, household refuse, plastic, metals, industrial and chemical waste, animal and vegetable matter, and other material considered to be unsuitable by the Filling Supervisor.</li> </ul>	Contractor	Works Area	Construction Phase	ETWB TCW No. 33/2002 ETWB TCW No. 19/2005
6.7.8	5.2.9	<p><u>Chemical Wastes</u></p> <ul style="list-style-type: none"> <li>After use, chemical wastes (for example, cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the <i>Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes</i>.</li> <li>Spent chemicals should be collected by a licensed collector for disposal at the CWTC or other licensed facility.</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM Waste Disposal (Chemical Waste) (General) Regulation
6.7.9	5.2.10	<p><u>General Refuse</u></p> <ul style="list-style-type: none"> <li>General refuse shall be stored in enclosed bins or compaction units separate from C&amp;D material.</li> <li>A licensed waste collector shall be employed by the</li> </ul>	Contractor	Works Area	Construction Phase	Public Health and Municipal Services Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
		<p>contractor to remove general refuse from the site, separately from C&amp;D material.</p> <ul style="list-style-type: none"> <li>Preferably an enclosed and covered area shall be provided to reduce the occurrence of 'wind blown' light material.</li> </ul>				
<b>Landscape and Visual Impact</b>						
Table 7.5	6.3.1	<ul style="list-style-type: none"> <li>CM1: Existing trees including OVTs to be retained and maintained on site should be carefully protected during construction. Encroachment of any works close to the drip line of OVTs should be avoided.</li> <li>CM2: Trees of high amenity and survival rate after transplanting which unavoidably affected by the works should be transplanted where practical.</li> <li>CM3: Control of night – time lighting.</li> <li>CM4: Erection of decorative screen hoarding compatible with surrounding setting.</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM
Table 7.6	6.3.1	<ul style="list-style-type: none"> <li>OM1: Aesthetic design of Entrance A1 (Minimisation of building bulk and adoption of transparent material) and Emergency Exit</li> <li>OM2: Reinstatement of Entrance to Kowloon Park</li> <li>OM3: Planting of 4 nos. of <i>Delonix regia</i> or species as agreed with LCSD along Haiphong Road</li> </ul>	Contractor	Works Area	Operation Phase	EIAO-TM
<b>Built Heritage Impact</b>						
8.7.4	7.1.1	<ul style="list-style-type: none"> <li>Temporary removal of the two granite columns (east of brick wall of modern extension of Block S4) and will be stored securely during construction period, and reinstated back to its original location after completion of works.</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM
8.8.1 – 8.8.2	7.2.1 – 7.2.4	<ul style="list-style-type: none"> <li>Precautions shall be taken throughout the construction stage to prevent any damage to the historical building, Structural monitoring system, including preconstruction survey shall be designed and implemented by a Registered Structural Engineer to ensure compliance with the Building Ordinance.</li> <li>Consult AMO on any other mitigation measures that</li> </ul>	Contractor	Works Area	Construction Phase	EIAO-TM; Building Ordinance

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
		<p>would be required administratively or under Antiquities and Monuments Ordinance. Implement these requirements from AMO during the construction period.</p> <ul style="list-style-type: none"> <li>• use of sensibly designed hoardings to minimize the temporary visual impact during construction phase</li> </ul>				

## **Appendix E**

### **Calibration Details**



**ANDERSEN INSTRUMENTS INC.**

GS2310 Series Sampler Calibration

(Dickson Recorder)

Customer -> MTRC	SITE	Certificate -> 20121001
Location -> TNS		Date -> 6-Oct-12
Sampler -> 1294-1096		Tech -> Chan Kin Fung

CONDITIONS

Sea Level Pressure	(hpa)	1002	Sampler Elevation	(feet)	50
Sea Level Pressure	(in Hg)	29.59	Corrected Pressure	(mm Hg)	750.24
Temperature	(deg C)	27	Temperature	(deg K)	300.00
Seasonal SL Pressure	(in Hg)	29.59	Corrected Seasonal	(mm Hg)	750.24
Seasonal Temperature	(deg C)	27.00	Seasonal Temperature	(deg K)	300.00

CALIBRATION ORIFICE

Make ->	Andersen Instruments Inc.	Qstd Slope ->	2.0075
Model ->	G25A	Qstd Intercept ->	-0.038138
Serial# ->	157N	Date Certified ->	

CALIBRATION

	Plate or	H <sub>2</sub> O	Qstd	I	IC	LINEAR
	Test #	(in)	(M <sup>3</sup> /min)	(chart)	(corrected)	REGRESSION
1	18	13.6	1.838	60	59.414	Slope = 30.6202
2	13	11.2	1.670	56	55.453	Intercept = 4.2499
3	10	8.2	1.432	50	49.512	Corr. Coeff. = 0.9936
4	7	5.6	1.186	42	41.590	
5	5	3.5	0.942	32	31.688	

Calculations

$$Qstd = 1/m [\text{Sqrt} (H_2O (Pa/Pstd) (Tstd/Ta)) - b]$$

$$IC = I [\text{Sqrt} (Pa/Pstd) (Tstd/Ta)]$$

Qstd = standard flow rate

IC = corrected chart response

I = actual chart response

m = calibrator Qstd slope

b = calibrator Qstd intercept

Ta = actual temperature during calibration (deg K)

Pa = actual pressure during calibration (mm Hg)

Tstd = 298 deg K

Pstd = 760 mm Hg

For subsequent calculation of sampler flow:

$$1/m (I) [\text{Sqrt} (298/Tav) (Pav/760)] - b$$

m = sampler slope

b = sampler intercept

I = chart response

Tav = daily average temperature

Pav = daily average pressure



*Kin Fung*

This is to certify that the above equipment has been calibrated in accordance with manufacturer's procedure.



## CALIBRATION CERTIFICATE

### Certificate Information

Date of Issue 14<sup>th</sup> December, 2012 Certificate Number MLCN121428S

### Customer Information

Company Name MTR Corporation Limited  
Address 8/F, Fo Tan Railway House,  
No.9 Lok King Street,  
Fo Tan, N.T.  
Hong Kong

### Unit Under Test (UUT)

Description Integrating Sound Level Meter  
Manufacturer Brüel & Kjær  
Model Number 2238  
Serial Number 2456919  
Equipment Number -

### Calibration Result

- \* All calibration results were within IEC 60651 Type 1 specification.
- \* Calibration data are detailed on the attached sheet(s).

### Approved By

Laboratory Manager

- \* Calibration equipment used for this calibration are traceable to national / international standards.
- \* The results on this Calibration Certificate only relate to the values measured at the time of the calibration and the uncertainties quoted will not include allowance for the UUT long term drift, variation with environmental changes, vibration and shock during transportation, overloading, mishandling, misuse, and the capacity of any other laboratory to repeat the measurement.
- \* MaxLab Calibration Centre Limited shall not be liable for any loss or damage resulting from the use of the UUT.
- \* The copy of this Certificate is owned by MaxLab Calibration Centre Limited. No part of this Certificate may be reproduced without the prior written approval of MaxLab Calibration Centre Limited.



## CALIBRATION CERTIFICATE

### Certificate Information

**Date of Issue** 14<sup>th</sup> December, 2012      **Certificate Number** MLCN121428S

### Calibration Status

<b>Date of Calibration</b>	14 <sup>th</sup> December, 2012		
<b>Calibration Equipment Used</b>	4231 (MLTE008)/ DC120076/ 29 <sup>th</sup> Mar 2014		
<b>Calibration Procedure</b>	MLCG00 & MLCG15.		
<b>Calibration Uncertainty</b>	±0.2 dB		
<b>Calibration Condition</b>	<b>Lab</b>	<b>Temperature</b>	23 °C ± 5 °C
		<b>Relative Humidity</b>	55% ± 25%
	<b>UUT</b>	<b>Stabilizing Time</b>	Over 3 hours
		<b>Warm-up Time</b>	10 minutes
		<b>Supply Voltage</b>	Internal battery

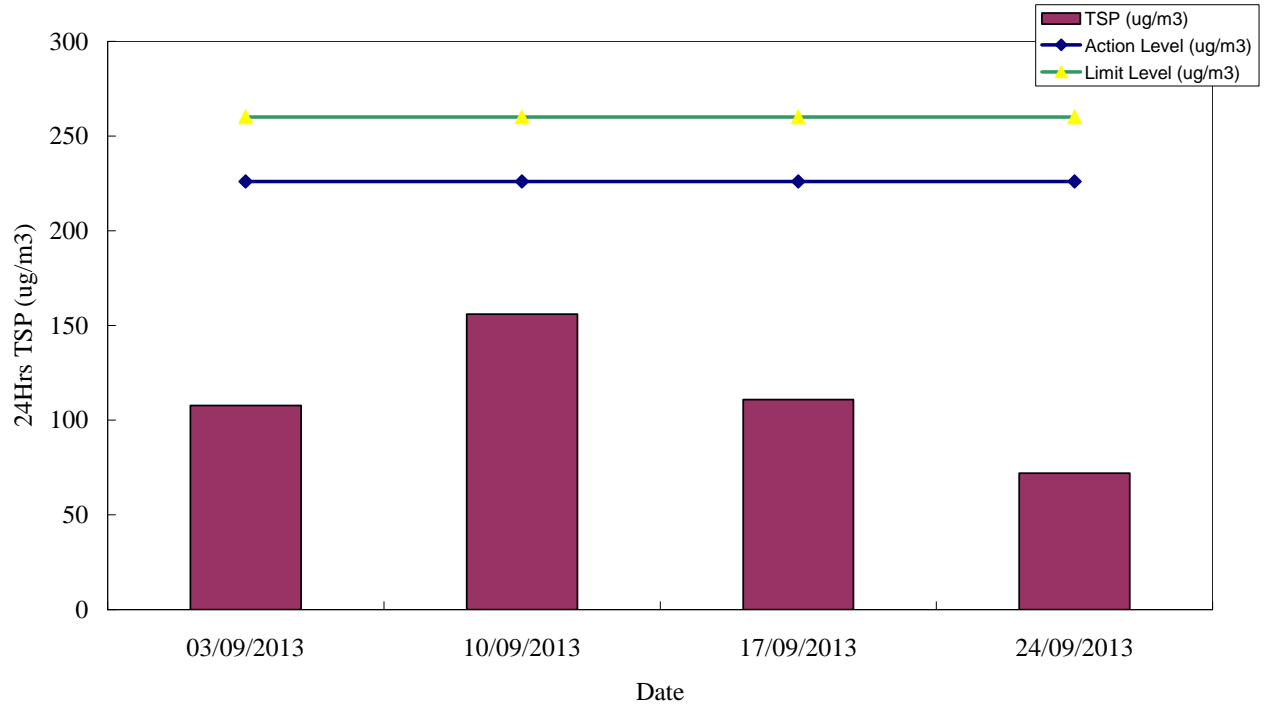
### Calibration Data

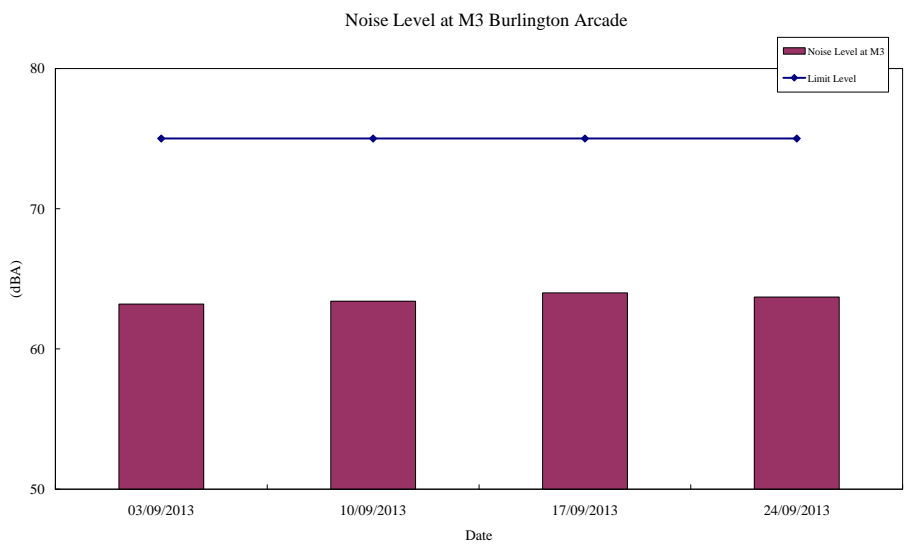
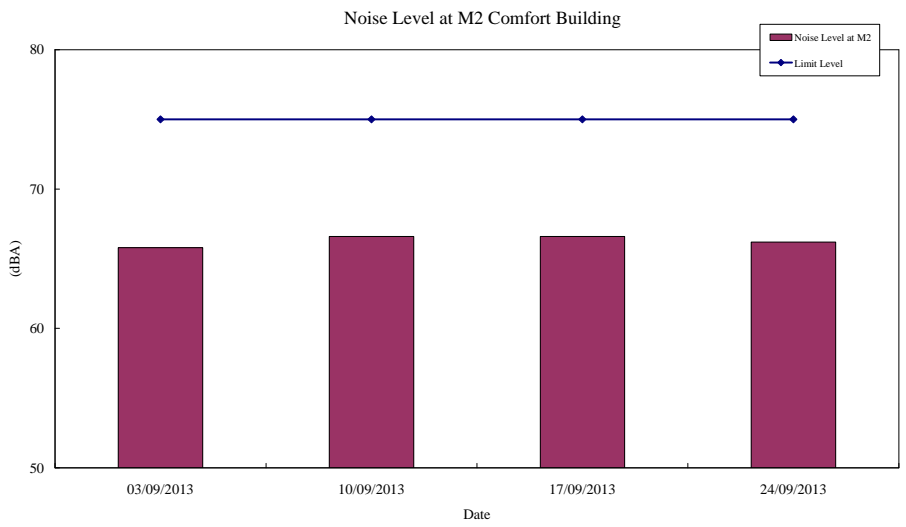
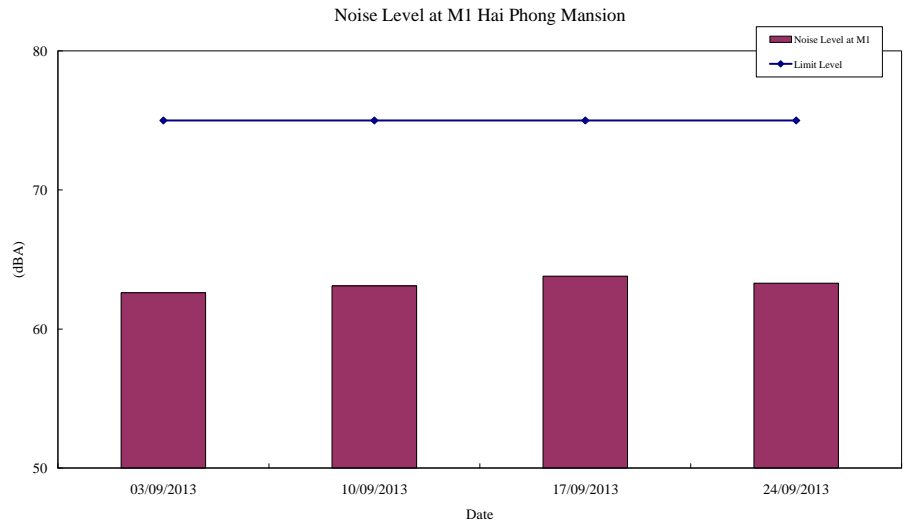
UUT Setting				UUT Rdg	Std Rdg	UUT Error	UUT Error Limit
Detector	Frequency Wt.	Time Wt.	Range (dB)				
RMS	A (1 kHz Input)	F	20 - 100	93.9 dB	94 dB	-0.1 dB	0.7 dB
		S		93.9 dB	94 dB	-0.1 dB	0.7 dB
		I		93.9 dB	94 dB	-0.1 dB	0.7 dB
	C (1 kHz Input)	F	20 - 100	93.9 dB	94 dB	-0.1 dB	0.7 dB
		S		93.9 dB	94 dB	-0.1 dB	0.7 dB
		I		93.9 dB	94 dB	-0.1 dB	0.7 dB
	L (1 kHz Input)	F	20 - 100	93.9 dB	94 dB	-0.1 dB	0.7 dB
		S		93.9 dB	94 dB	-0.1 dB	0.7 dB
		I		93.9 dB	94 dB	-0.1 dB	0.7 dB
	A (1 kHz Input)	F	40 - 120	113.8 dB	114 dB	-0.2 dB	0.7 dB
		S		113.9 dB	114 dB	-0.1 dB	0.7 dB
		I		113.9 dB	114 dB	-0.1 dB	0.7 dB
C (1 kHz Input)	F	40 - 120	113.8 dB	114 dB	-0.2 dB	0.7 dB	
	S		113.8 dB	114 dB	-0.2 dB	0.7 dB	
	I		113.8 dB	114 dB	-0.2 dB	0.7 dB	
L (1 kHz Input)	F	40 - 120	113.8 dB	114 dB	-0.2 dB	0.7 dB	
	S		113.8 dB	114 dB	-0.2 dB	0.7 dB	
	I		113.8 dB	114 dB	-0.2 dB	0.7 dB	

## **Appendix F**

### **Impact Monitoring Graphical Plots**

TNS 24 Hrs TSP Level at D1 Site Boundary at Hai Phong Road





## **Appendix G**

### **Monitoring Schedule for the Present and Next Reporting Period**

<b>Dust Monitoring Schedule for September 2013</b>			
Dust	Dust		
D1	D1	D1	D1
3 Sep 2013	3 Sep 2013	3 Sep 2013	3 Sep 2013
10 Sep 2013	10 Sep 2013	10 Sep 2013	10 Sep 2013
17 Sep 2013	17 Sep 2013	17 Sep 2013	17 Sep 2013
24 Sep 2013	24 Sep 2013	24 Sep 2013	24 Sep 2013

<b>Tentative Dust Monitoring Schedule for October 2013</b>			
Dust	Noise		
D1	M1	M2	M3
2 Oct 2013	2 Oct 2013	2 Oct 2013	2 Oct 2013
8 Oct 2013	8 Oct 2013	8 Oct 2013	8 Oct 2013
15 Oct 2013	15 Oct 2013	15 Oct 2013	15 Oct 2013
22 Oct 2013	22 Oct 2013	22 Oct 2013	22 Oct 2013
29 Oct 2013	29 Oct 2013	29 Oct 2013	29 Oct 2013

Remarks:

The schedule may be changed due to unforeseen circumstances (adverse weather, etc)