MTR Corporation Limited

# Tsim Sha Tsui Station Northern Subway

Monthly Environmental Monitoring and Audit Report

March 2014

Verified By: Coleman Ng

Independent Environmental Checker

Date:

- 9 APR 2014

MTR Corporation Limited

Tsim Sha Tsui Station Northern Subway

Monthly Environmental Monitoring and Audit Report

March 2014

Certified By:

Richard Kwan Environmental Team Leader

Date:

- 9 APR 2014

#### 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 fourteenth 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 March 2014.

The impact monitoring for air quality and noise were conducted for the weeks of March 2014. 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/A), which is a variation to the original permit and issued on 6 January 2014, 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 installation of pipe piles and demolition of existing A1 Entrance.

#### 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						20	13										20	)14											201	5				-
	D	J	F	Μ	[ A	Μ	IJ	J	А	S	0	Ν	D	J	F ]	MA	A N	IJ	J	Α	s	0	Ν	D	J	F	М	А	М	J	J	A S	S C	) N	I D
Contract Award	•	Γ											Т																						Т
Site Clearance		¥	-	↦	•																											Τ			Τ
Construction of Temperory Entrance		Г	•	-	-	-	-	-		-	•																								
Construction Commencement		Г	٠																																
Construction of Temperory Ramp		Г	+	-	->	•																													
Installation of Sheet Piles & Pipe Piles		Г			-	-	-	→																											T
Construct Temperory Entrance		Г						•		→			Т																			Τ	Т	Τ	Τ
E&M Installation											¢																								
ABWF											¢																								
Construction of New Entrance												+	_	_	-	-	-	-	-	-		_				_	_	ł				Т		Τ	Τ
Demolition Existing A1 Entrance												-	-	_	-	_		•																	
Installation of Pipe Piles		Г										-	4		-	_	-	>																	
Excavation & Erecting Lift Shaft		Г														+	-	-	-	→															
Construction of New Lift and Entrance																					+					_	+								
ABWF Works & E&M Works																								t			_	¥							
Demolition of Temporary Entrance & Reinstate	ment																											-	•	+	-	→			Ι

#### 1.3 Coverage of the EM&A Report

The EM&A programme for the TNS Project commenced on 8 Feb 2013. This is the twelfth 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 March 2014.

#### 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.

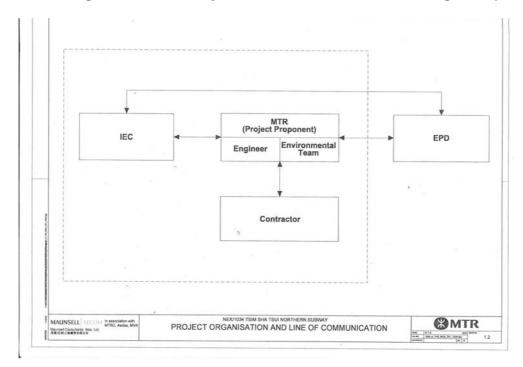


Figure 1. Project Organization

Table 1a Contact List of Key Personnel for P	Project Management
----------------------------------------------	--------------------

Organization	Name	Telephone
Engineer's Representative		
Construction Manager	PH Tang	3547 0001
Senior Construction Engineer	Stephen Tai	3547 0086
Construction Engineer	KM Wong	3547 0003
Independent Environmental Checker		
Consultant – Arup	Coleman Ng	2268 3097
Environmental Team		
Environmental Team Leader	Richard Kwan	2688 1179

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

Organization	Name	Telephone		
<b>Environmental Protection I</b>				
Assistant Environmental (Regional East) 61	Protection	Officer	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

Contract C6564-11C Works Site and Area							
Works Site	Tsim Sha Tsui Entrance A						

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

 Table 3
 Summary of impact air quality and noise monitoring stations

#### 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.

Parameters	Descriptions	Locations	Monitoring	Duration
			Frequencies	
Air Quality	24-hr TSP	Shown in Table 3	Once a week	Construction stage
Noise	L <sub>eq(30min)</sub>	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

 Table 4
 Summary of impact EM&A Requirements

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)

- Installation of Sheet Piles
- Excavation and Erection of Lift Shaft

#### 2.6 Construction Activities in the Coming Month

- Installation of Sheet Piles
- Excavation and Erection of Lift Shaft

#### 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 88 to  $210 \ \mu g/m^3$  recorded in the monitoring period shows that the dust levels generated by the active construction activities were within the Action Levels.

Date	TSP (µg/m3)	Action Level (µg/m3)	Limit Level (µg/m3)	Compliance to limit level	Weather Condition
7-Mar-14	88	226	260	Yes	Overcast
11-Mar-14	210	226	260	Yes	Overcast
18-Mar-14	171	226	260	Yes	Overcast
25-Mar-14	198	226	260	Yes	Sunny

#### D1 Hai Phong Road

#### 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 64.4 to 69.4 dBA are presented in the following table and **Appendix F** for graphical plot.

#### M1- Hai Phong Mansion

Date	Time	Measured	Baseline	Limit	Exceedance	Weather	Wind
		Leq(dBA)	Leq	Level	of Limit	Condition	Speed
		_	(dBA)	(dBA)	Level		(m/s)
5-Mar-14	10:45	64.4	71	75	No	Overcast	<2
12-Mar-14	11:30	65.2	71	75	No	Overcast	<2
18-Mar-14	09:45	68.7	71	75	No	Overcast	<2
25-Mar-14	10:15	65.2	71	75	No	Sunny	<2

#### **M2-** Comfort Building

Date	Time	Measured	Baseline	Limit	Exceedance	Weather	Wind
		Leq(dBA)	Leq	Level	of Limit	Condition	Speed
			(dBA)	(dBA)	Level		(m/s)
5-Mar-14	09:30	67.4	70	75	No	Overcast	<2
12-Mar-14	10:45	69.4	70	75	No	Overcast	<2
18-Mar-14	10:30	68.2	70	75	No	Overcast	<2
25-Mar-14	09:00	68.7	70	75	No	Sunny	<2

#### **M3-** Burlington Arcade

Date	Time	Measured	Baseline	Limit	Exceedance	Weather	Wind
		Leq(dBA)	Leq	Level	of Limit	Condition	Speed
		_	(dBA)	(dBA)	Level		(m/s)
5-Mar-14	10:00	65.5	68	75	No	Overcast	<2
12-Mar-14	10:15	65.2	68	75	No	Overcast	<2
18-Mar-14	11:00	67.3	68	75	No	Overcast	<2
25-Mar-14	09:30	65.2	68	75	No	Sunny	<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 Constructi	on Wastes Disp	oosed		
Reporting Period	Inert C&D	Inert C&D	Non-inert	Chemical Waste
	Materials to	Materials	Waste to	to designated
	Public Fill	Reused (m <sup>3</sup> )	Landfill (m <sup>3</sup> )	treatment facility
	$(m^3)$			(trips)
Year 2013	715	0	92	0
Jan 2014	30	0	6	0
Feb 2014	96	0	0	0
Mar 2014	196	0	0	0
Total	1,037	0	98	0

#### 6 WATER QUALITY

An effluent discharge license was granted in November 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:-

Reporting Period	Frequency	Cumulative	Nature	Status
March 2014	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 March 2014 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 February 2014	Submitted

#### 11.2 Statutory Permits and Licenses

A summary of the status of all relevant environmental permits and licenses as of 31 March 2014 is shown below:

Description	License/ Permit Reference	Issue Date	Expired Date
Environmental Permit for Tsim Sha Tsui Station Northern Subway Project	EP-317/2009/A	6 January 2014	NA
Wastewater Discharge License	WT00017459-2013	1 November 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

A variation to the Environmental Permit has been granted by EPD on 6 January 2014. The variation concerns works near OVT 73 and demolition existing exit.

#### 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
	Contract C6564-11C	
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 was reminded to monitor closely on observing effluent discharge standards.	On going
4	The contractor was reminded to store unused chemicals in the designated storage area.	On-going
5	The contractor was reminded to provide effective noise barrier / enclosure for various equipment to minimise noise nuisance.	On-going
6	The contractor was reminded to provide bunding to prevent water sipping out of the work site onto adjacent pavement.	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 4 March 2014. 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:

- Installation of Sheet Piles
- Excavation and Erection of Lift Shaft

#### 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 March 2014. The major construction activities in the reporting period were:

- Installation of Sheet Piles
- Excavation and Erection of Lift Shaft

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

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

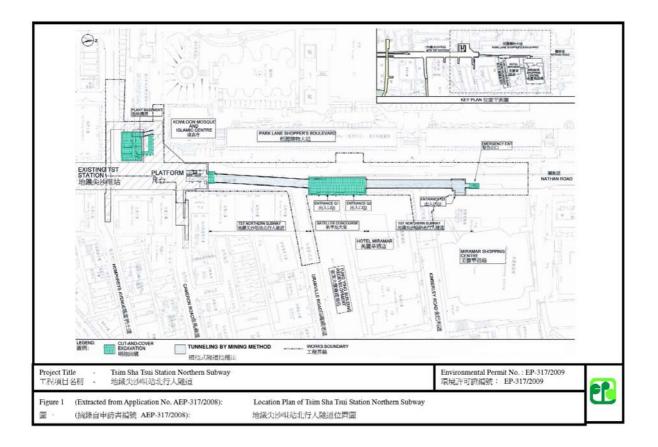
Regular site inspections led by the Engineer's Representative and anticipated by the representatives from ET and the respective Contractors' Team were conducted on a weekly basis to monitor the implementation of environmental pollution control and mitigation measures for the Project. No non-conformance 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.

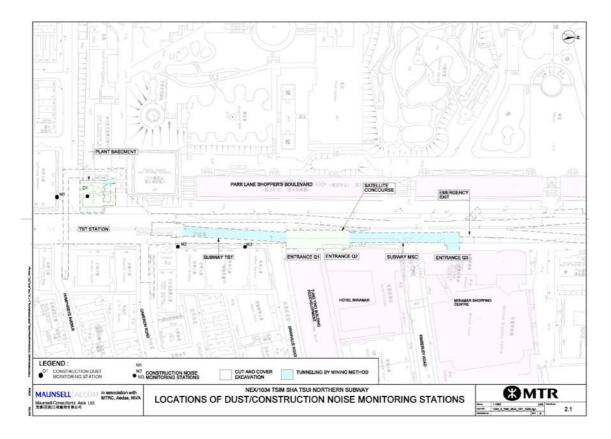
It is concluded from the environmental monitoring and audit works for the Tsim Sha Tsui Northern Subway Project were undertaken in a responsible manner. The environmental protection and pollution control measures provided by the contractor were generally acceptable.

# Appendix A

<u>Figures</u>

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

Monitoring Station	Action Level (µg/m3)	Limit Level (µg/m3)
D1	171	260

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

Monitoring Station	Action Level (µg/m3)	Limit Level (µg/m3)
D1	310	500

#### 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

# Appendix C

**Event Action Plans** 

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

# Event / Action Plan for Air Quality (Dust)

Event	「「「「「「「」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」	Action	いういというためのであるというである	
	ET	Contractor	8	IEC
Action Level	÷	1. Discuss with ET on proper	1. Confirm receipt of	1. Check Contractor's
being	measurement to confirm	remedial actions.	notification of	working method.
exceeded	tinding.	2. Submit proposals for	exceedance.	2. Advise ET on the
	2. Identify source and investigate	remedial actions to ER	2. Notify Contractor.	effectiveness of the
	the causes of exceedance, if	within 3 working days of	3. Check Contractor's	proposed remedial
	caused by MTRCL's work.	notification.	working methods.	measures
	3. Inform IEC, ER and Contractor.	3. Amend proposal if	4. Agree with the Contractor	
	4. Discuss with IEC, ER and	appropriate.	on the remedial measures	
	Contractor on remedial actions	4. Implement the agreed	to be implemented.	
	required.	proposals.	5. Ensure proper	
	5. If necessary, conduct additional	5. Liaise with ER to optimize	implementation of	
	monitoring to assess the	the effectiveness of the	remedial measures.	
	effectiveness of Contractor's	agreed mitigation.	6. Assess the efficiency of	
	remedial actions.		remedial actions and keep	•
	6. If exccedance continues,		the Contractor informed.	
	arrange meeting with IEC and			
	ER to review implementation			
	and identify further appropriate			
	mitigation measures.			
	7. If exceedance stops, cease	~		
	additional monitoring.	6.		

×,

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

	Ħ	Contractor		IEC
Limit level	1. Conduct additional	1 Take immediate action to		
being	measurement to confirm	avoid further evceedence	1. Confirm receipt of	1. Check Contractor's
exceeded	findings.	2 Discusse with ET and ED		
	2. Identify source and investigate		2. Notiry Contractor.	2. Review Contractor's
	the causes of exceedance;	actions		remedial actions
	3. Notify EPD, IEC, ER and	3. Submit proposals for	A Arree with the Contractor	whenever necessary to
	Contractor.			assure their
	4. Check Contractor's working	within 3 working days of	to he implemented	effectiveness and advise
	procedures.	notification	6 Encirco proport	the EI accordingly.
	5. Discuss with IEC, ER and	4. Implement the acreed	v. Litadie proper	
	Contractor on remedial actions	proposals.		
	required.	5. Liaise with FR to ontimize	6 Accord the officiances	
	6. If necessary, conduct additional	-	remedial actions and been	
	monitoring to assess	agreed mitigation.	the Contractor informed	
	effectiveness of Contractor's	0		
	remedial actions.			
	7. Keep EPD, IEC and ER			
	'informed of the monitoring			
	results.			
U	8. If exccedance continues,			
	arrange meeting with IEC and		Ļ	
	ER to review implementation			
	and identify further appropriate			
	mitigation measures.			
	<ol><li>If exceedance stops, cease</li></ol>			
	additional monitoring.			

September 2008

2-7

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

Event and Action Plan for Construction Noise

	「「「「「「「」」」」」」」」」」」」」」」」」」」」」」」」」」」」」」	Action	u	
Event	ET	Contractor	æ	lec
Action Level being exceeded	<ol> <li>Undertake measurement to establish validity of complaint.</li> <li>Identify source(s) of complaint.</li> <li>Notify IEC, ER and Contractor.</li> <li>Discuss with the IEC, ER and Contractor on remedial measures required.</li> <li>Increase monitoring frequency to check mitigation effectiveness.</li> <li>If exceedance continues, arrange meeting with IEC and ER to review implementation and identify further appropriate mitigation measures.</li> <li>If exceedance stops, cease additional monitoring.</li> </ol>	<ol> <li>Submit noise mitigation proposals to ER within three working days of notification.</li> <li>Amend proposal if appropriate.</li> <li>Implement noise mitigation proposals.</li> <li>Liaise with ER to optimize the effectiveness of the agreed mitigation.</li> </ol>	<ol> <li>Confirm receipt of notification of complaint.</li> <li>Notify Contractor.</li> <li>Check Contractor's working methods.</li> <li>Agree with the Contractor on the remedial measures to be implemented.</li> <li>Ensure proper implementation of remedial measures.</li> <li>Assess the efficiency of remedial actions and keep the Contractor informed.</li> <li>Inform complainant of actions taken.</li> </ol>	<ol> <li>Check Contractor's working methods.</li> <li>Review the proposed remedial measures by the Contractor and advise the ET accordingly.</li> </ol>

September 2008

à

3-4

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

	E	Contractor	B	IEC
Limit	1. Repeat measurement to confirm	1. Take immediate action to	1. Confirm receipt of	1. Check Contractor's
Level	findings.	avoid further	notification of exceedance.	working methods.
being	<ol><li>Identify source and investigate</li></ol>	exceedance.		2. Review Contractor's
exceeded	the cause of exceedance.	2. Submit proposals for		
	<ol><li>Inform EPD, IEC, ER and</li></ol>	remedial actions to ER	methods.	whenever necessary to
	Contractor.	within 3 working days of	4. Agree with the Contractor	assure their effectiveness
	<ol><li>Check Contractor's working</li></ol>	notification.	on the remedial measures	and advise the ET
	procedures.	<ol><li>Implement the agreed</li></ol>	to be implemented.	accordingly
	5. Discuss with the IEC, Contractor	proposals.	5. Ensure proper	
	and ER on remedial measures	4. Liaise with ER to	implementation of remedial	
	required.	optimize the	measures.	
	<ol><li>Increase monitoring frequency to</li></ol>	effectiveness of the	6. Assess the efficiency of	
	assess effectiveness of	agreed mitigation.	remedial actions and keep	
	Contractor's mitigation actions		the Contractor informed.	a.
	and keep EPD, IEC and ER			
	informed the results.			
	7. If exccedance continues, arrange			
	meeting with IEC and ER to			
	review implementation and			
	identify further appropriate		I	
- 14	mitigation measures.			
	<ol><li>If exceedance stops, cease</li></ol>			
	additional monitoring.			

September 2008

ŝ,

t

3-5

# Appendix D

# Implementation of Environmental Mitigation Measures

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

# IMPLEMENTATION SCHEDULE OF THE PROPOSED MITIGATION MEASURES

EIA Ref.	EM&A Ref.	and the second se	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
Constructi	Construction Air Quality Impact	ality Impa	ct				
3.10.1	2.9.2	• we • ski by	watering of active construction works area twice a day skip hoist for material transport shall be totally enclosed by impervious sheeting	Contractor	Works Area	Construction Phase	EIAO-TM Air Pollution Control
		e e e	every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving a construction site	1			(Construction Dust) Regulation
		• the the the	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			Υ.	
		<ul> <li>wt ac hiç</li> </ul>	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				
		• co are	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			•	
		an all	all dusty materials shall be sprayed with water prior to any loading, unloading or transfer operation so as to maintain the dusty materials wet			v	
	6.08.02.00	• fuce the fuce the f	the height from which excavated materials are dropped shall be controlled to a minimum practical height to limit fugitive dust generation from unloading	4		1	
		• co	stockpile of excavated or dusty materials shall be covered entirely by clean impervious sheeting		v		
	1 Martin and an and a state of the state of	• 4 == 8 = 4	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 vahicle	S. N			
		•	instigation of an environmental monitoring and auditing				

September 2008

App B.1/1

Rev. A

2. .

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
		program to monitor the construction process in order to enforce controls and modify method of work if dusty conditions arise				
Construction Noise Impact	on Noise	mpact		and the second second second		
4.9.2- 4.9.3	3.8.1	Adoption of Quieter PME	Contractor	Works Area	Construction Phase	EIAO-TM Noise Control Ordinance
4.9.4	3.8.1	Use of Movable Noise Barrier	Contractor	Works Area	Construction	EIAO-TM
		<ul> <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> </ul>			Phase	Noise Control Ordinance
		- Barrier material of surface mass in excess of 7 kg/m <sup>2</sup> is recommended to achieve the predicted screening effect				
4.9.5	3.8.1	Use of Noise Enclosure/Acoustic Shed	Contractor	Works Area	Construction	EIAO-TM
		<ul> <li>Noise Enclosure or Acoustic Shed is to cover stationary PME such as air compressor and concrete pump.</li> </ul>			Phase 🕴	Noise Control Ordinance
		<ul> <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>				
4.9.6	3.8.1	Use of Silencer	Contractor	Works Area	Construction	EIAO-TM
		- 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.			Phase	Noise Control Ordinance
4.9.7	3.8.1	<ul> <li>Use of Noise Insulating Fabric</li> </ul>	Contractor	Works Area	Construction	EIAO-TM
		- Noise insulating fabric (the Fabric) can be adopted for certain PME (e.g. drill rig, pilling auger etc)			Phase	Noise Control Ordinance
		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	-5			

September 2008

App B.1/2

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

EIA Ref.	EM&A Ref.	recommenced mitigation measures	<b>&gt;</b>	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
		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.	t Tsui Station 2001/C). As 1 of 10 dB(A) Imed.				
4.6.6	3.8.1	Decking over the excavation areas at the Entrance A1 and satellite concourse		Contractor	Works Area	Construction Phase	EIAO-TM Noise Control Ordinance
4.10.8	3.8.1	Good Site Practices	0	Contractor	Works Area	Construction Phase	EIAO-TM Noise Control
		<ul> <li>Only well-maintained plant shall be operated on-site and plant shall be serviced regularly during the construction program.</li> </ul>	d on-site and construction				Ordinance
		<ul> <li>Silencers or mufflers on construction equipment shall be utilised and shall be properly maintained during the construction program.</li> </ul>	nent shall be during the			Þ	
		<ul> <li>Mobile plant, if any, shall be sited as far away from NSRs as possible.</li> </ul>	y from NSRs		n		
		<ul> <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> </ul>	may be in ween works um.			<b>6</b> .	
		<ul> <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> </ul>	rection shall, the noise is				
		<ul> <li>Material stockpiles and other structures shall be effectively utilised, wherever practicable, in screening noise from on-site construction activities.</li> </ul>	s shall be n screening				
peration	Operation Noise Impact	act			The second second second second second	のないないであっていたのである	
Table 4.8	Table 3.4	<ul> <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

September 2008

App B.1/3

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and
4.9.10	3.9.2	Choose quieter plant such as those which have been	Designer /	Station.	Design /	Guidelines
		effectively silenced.	Contractor	ventilation	Onerational	
		<ul> <li>Include noise levels specification when ordering new plant (including chillier and E/M equipment).</li> </ul>		shafts and E&M plant	Phase	Noise Control Ordinance
		<ul> <li>Locate fixed plant/louver away from any NSRs as far as practicable.</li> </ul>				
		<ul> <li>Locate fixed plant in walled plant rooms or in specially designed enclosures.</li> </ul>				
		<ul> <li>Locate noisy machines in a basement or a completely separate building.</li> </ul>		4	-	
		<ul> <li>Install direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosure where necessary.</li> </ul>				
		<ul> <li>Develop and implement a regularly scheduled plant</li> </ul>				
*		maintenance programme so that equipment is properly			1	×
		operated and serviced in order to maintain controlled			÷.	
		by properly trained personnel.				
Constructio	on Water (	Construction Water Quality Impact				and the second
5.13.2	4.3.2	Construction runoff and site drainage should be prevented or minimized in accordance with the guidelines stipulated in	Contractor	Works Area	Construction	ProPECC PN 1/94 Construction
		mitigation measures and practices include the following:				Site Drainage
		Provision of perimeter drains to intercept off-site water				EIAO-TM Water Pollition
		and the site with internal drainage works and erosion and sedimentation control facilities implemented. These				Control
		shall be constructed in advance of site formation works and earthworks. Earth bunds or sand han harriers shall				Waste Disposal
		be provided on-site to direct storm water to silt removal				Ordinance
		system will be undertaken by the Contractor prior to the				
		commencement of construction.				
		<ul> <li>All drainage facilities and erosion and sediment control</li> </ul>				

September 2008

App B.1/4

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation Guidelines	and
		<ul> <li>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.</li> <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> </ul>					
		<ul> <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> </ul>		*		1	
		<ul> <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> </ul>			•		
		<ul> <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> </ul>					
		<ul> <li>Precautions be taken at any time of year when rainstorms are likely, actions to be taken when a</li> </ul>	x				

September 2008

App B.1/5

Rev. A

1

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and
		<ul> <li>rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarised in Appendix A2 of ProPECC PN 1/94.</li> <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 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 oilfuel pollution sources. The oil interceptors shall be provided for the oil interceptors shall be construction sources. The sufficient backful be under 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> </ul>				Guidelines
5.13.6 5.13.6	4.3.3 - 4.3.5	<ul> <li>Underground Work</li> <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 increasion</li> </ul>	Contractor	Works Area	Construction Phase	ProPECC PN 1/94 Construction Site Drainage EIAO-TM Water Pollution Control Ordinance

MAUNSELL AFCOM

i.

Rev. A

September 2008

App B.1/6

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
		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.				
5.13.7	4.3.6	Sewage Effluent	Contractor	Works Area	Construction Phase	ProPECC PN 1/94 Construction
		<ul> <li>Temporary sanitary facilities, such as portable chemical toilets, shall be employed on-site where necessary to handle sewage from the workforce.</li> </ul>				Site Drainage EIAO-TM Writer Dollitition
		<ul> <li>A licensed contractor would be responsible for appropriate disposal of waste matter and maintenance of these facilities.</li> </ul>				Control Ordinance
5.14.2	4.3.8	<ul> <li>General Construction Site Activities</li> <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</li> </ul>			*	
laste M	Waste Management	Sec.		INV		LIAO TAA
0.7.1	£.2.c	<ul> <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	EIAU-1M Waste Disposal Ordinance ETWB TCW No. 19/2005

App B.1/7

September 2008

3
8
8
154
_
Ш
S
5
AI
Σ

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

	Ref.		Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and	p
		<ul> <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> </ul>				ouncellies	and the second s
		<ul> <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> </ul>					
		<ul> <li>Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors.</li> </ul>					
		<ul> <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> </ul>			de:		
		<ul> <li>A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be proposed.</li> </ul>					and a second second
6.7.2	5.2.4	In order to monitor the disposal of C&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.			-		
6.7.3	5.2.5	Waste Reduction Measures	Contractor	Works Area	Construction	EIAO-TM	T
		<ul> <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> </ul>			Phase		
		<ul> <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> </ul>		•			
		<ul> <li>Any unused chemicals or those with remaining functional capacity shall be recycled.</li> </ul>					
		<ul> <li>Proper storage and site practices to minimise the potential for damage or contamination of construction materials.</li> </ul>		1			

September 2008

App B.1/8

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and Guidelines
	A	<ul> <li>Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.</li> </ul>				×
6.7.6 & 6.7.7	5.2.8	Construction and Demolition Material	Contractor	Works Area	Construction	ETWB TCW No.
		Within stockpile areas, the following measures shall be taken to control potential environmental impacts or nuisance:				
		<ul> <li>covering stockpile of C&amp;D material entirely by clean impervious sheet to reduce potential dust impact.</li> </ul>				
		<ul> <li>locating stockpiles to minimise potential visual impacts.</li> </ul>			•	
		<ul> <li>minimizing land intake of stockpile areas as far as possible.</li> </ul>				
		When disposing C&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.	7			
		<ul> <li>The material shall be free from marine mud, household</li> </ul>			÷	
		refuse, plastic, metals, industrial and chemical waste, animal and vegetable matter, and other material				
		red to be unsuitable by the Filling				
6.7.8	5.2.9	Chemical Wastes	Contractor	Works Area	Construction	EIAO-TM
		<ul> <li>After use, chemical wastes (for example, cleaning fluids,</li> </ul>		4.		(Chemical Waste)
		solvents, lubrication oil and fuel) should be handled				(General)
	k	according to the <i>Code</i> of Practice on the Packaging, Labelling and Storage of Chemical Wastes.				Regulation
		Spent chemicals should be collected by a licensed		n		
		- collector for disposal at the CWTC or other licensed facility.				
6.7.9	5.2.10	General Refuse	Contractor	Works Area	Construction	Public Health and
		General refuse shall be stored in enclosed bins or compaction units separate from C&D material.			Phase	Municipal Services
		<ul> <li>A licensed waste collector shall be employed by the</li> </ul>				

September 2008

App B.1/9

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

EIA Dot	TARO A					
	rmčA Ref.	Recommended Mitigation Measures	Implementation Agent	Location of the Measure	When to implement	Relevant Legislation and
		contractor to remove general refuse from the site, separately from C&D material.				Guidelines
	1	<ul> <li>Preferably an enclosed and covered area shall be provided to reduce the occurrence of 'wind blown' light material.</li> </ul>				
Landscape	Landscape and Visual Impact	limpact				×
Table 7.5	6.3.1	11: Existing trade				
		maintained on site should be carefully protected during construction. Encroachment of any works close to the drip line of OVTs should be avoided	Contractor	Works Area	Construction Phase	EIAO-TM
		CM2: Trees of high amenity and survival rate after				
		transplanting which unavoidably affected by the works should be transplanted where provised				
		CM3: Control-of night – time lighting.				
		<ul> <li>CM4: Erection of decorative screen hoarding compatible with surrounding setting</li> </ul>				
Table 7.6	6.3.1		Controctor		•	
		building bulk and adoption of transparent material) and	CUIIIacior	Works Area	Operation	EIAO-TM
		Emergency Exit			rnase	
		OM2: Heinstatement of Entrance to Kowloon Park OM3: Planting of 4 nos. of <i>Delonix regia</i> or species as				
Built Heritage Impact	ge Impact			- - 		
8.7.4	7.1.1	Temnorary removal of the two accusts				and the second se
		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.	Contractor	Works Area	Construction Phase	EIAO-TM
8.8.1 -	7.2.1 - •	Precautions shall be taken throughout the construction				
	7.2.4		Contractor	Works Area	Construction Phase	EIAO-TM; Building Ordinance
		Registered Structural Engineer to ensure compliance with the Building Ordinance				
	•	Consult AMO on any other mitigation measures that	1	X		
					_	-

Rev. A

Contact - Conno

App B.1/10

NEX/1034 Tsim Sha Tsui Station Northern Subway EM&A Manual

EIA Ref.	EM&A Ref.	EIA Ref. EM&A Recommended Mitigation Measures Ref.	Implementation Location of When to Relevant Agent the Measure implement Legislatio	Location of the Measure	When to implement	Location of When to Relevant the Measure implement Legislation and
				and the state of the second	山田のためであるというないで	Guidelines
		would be required administratively or under Antiquities				
		and Monuments Ordinance. Implement these				
		requirements from AMO during the construction period.				
		<ul> <li>use of sensibly designed hoardings to minimize the</li> </ul>				
		temporary visual impact during construction phase				

September 2008

App B.1/11

es;

# Appendix E

**Calibration Details** 

ANDERSEN	INSTRUMENTS INC.
----------	------------------

GS2310	Series	Sampler	Calibration
--------	--------	---------	-------------

(Dickson Recorder)						
Customer ->	MTRC		SITE	Certificate ->	20140301	
Location ->	TNS			Date ->	8-Mar-14	
Sampler ->	1294-109	)6			Chan Kin Fung	
			ONDITIO			
Sea Level Pressure	(hpa)	1018.8		Sampler Eleva	tion (feet)	50
Sea Level Pressure	(in Hg)	30.09		Corrected Pres	sure (mm Hg)	762.84
Temperature	(deg C)	16.2		Temperature	(deg K)	289.20
Seasonal SL Pressure	(in Hg)	30.09		Corrected Seas	sonal (mm Hg)	762.84
Seasonal Temperature	(deg C)	16,20		Seasonal Tem	perature(deg K)	289.20
		CALIB	RATION			
Make ->	Anderser	Instruments	Inc.		Qstd Slope ->	2.0075
Model ->	G25A				Qstd Intercept ->	-0.038138
Serial# ->	157N				Date Certified ->	
		CA	LIBRAT	ION		
Plate or	H <sub>2</sub> O	Qstd	Ι	IC	LINEAR	
Test #	(in)	(M <sup>3</sup> /min)	(chart)	(corrected)	REGRESSION	
1 18	12,8	1.831	61	62,037	Slope =	33,1656
2 13	10.2	1.637	56	56,952	Intercept =	2.2195
3 10	7.9	1.443	50	50,850	Corr. Coeff. =	0.9977
4 7	5.2	1.174	41	41.697		
5 5	3.3	0.939	32	32,544		
Calculations						

 $\begin{aligned} &Qstd = 1/m \left[ Sqrt \left( H_2O \left( Pa/Pstd \right) \left( Tstd/Ta \right) \right) - b \right] \\ &IC = I \left[ Sqrt \left( Pa/Pstd \right) \left( Tstd/Ta \right) \right] \end{aligned}$ 

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) [Sqrt (298/Tav) (Pav/760)] - b)

KZ J

m = sampler slope b = sampler intercept I = chart response Tav = daily average temperature Pav = daily average pressure

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



# CALIBRATION CERTIFICATE

14 <sup>th</sup> December, 2012	] Certificate Number	MLCN121428S
nation		
8/F, Fo Tan Rail	way House,	
(UUT)		
Brüel & Kjær 2238 2456919	d Level Meter	
r -		
	MTR Corporati &/F, Fo Tan Rail No.9 Lok King : Fo Tan, N.T. Hong Kong (UUT) Integrating Soun Brüel & Kjær 2238 2456919	Aution MTR Corporation Limited &/F, Fo Tan Railway House, No.9 Lok King Street, Fo Tan, N.T. Hong Kong UUT) Integrating Sound Level Meter Brüel & Kjær 2238 2456919

\* Calibration data are detailed on the attached sheet(s).



- 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, 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 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.

Page 1 of 2

# 舊 億 校 正 中 心 有 限 公 司 MaxLab Calibration Centre Limited 香港新界葵滿華星街 16-18 號保盈工業大廈 9 樓 82 室

Unit B2, 9/F., Boldwin Industrial Bldg., 16-18 Wah Sing Street, Kwai Chung, N.T., Hong Kong. Tel: (852) 2116 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk



#### CALIBRATION CERTIFICATE

Certificate Informatio	n		
Date of Issue 14 <sup>th</sup> D	ecember,	2012 Certificate N	Mumber MLCN121428S
Calibration Status			
Date of Calibration Calibration Equipment Calibration Procedure Calibration Uncertainty		14 <sup>th</sup> December, 2012 4231 (MLTE008)/ D MLCG00 & MLCG1 ±0.2 dB	C120076/ 29th Mar 2014
Calibration Condition	Lab UUT	Temperature Relative Humidity Stabilizing Time Warm-up Time Supply Voltage	23 °C ± 5 °C 55% ± 25% Over 3 hours 10 minutes Internal battery

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

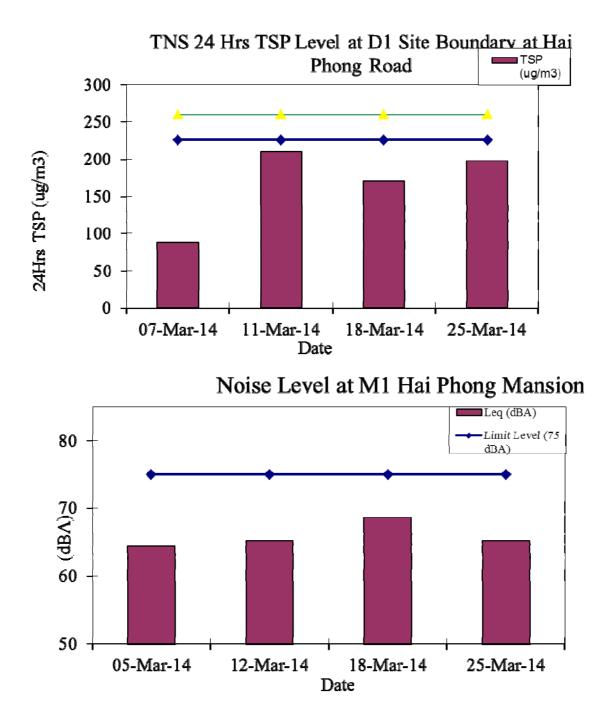
Page 2 of 2

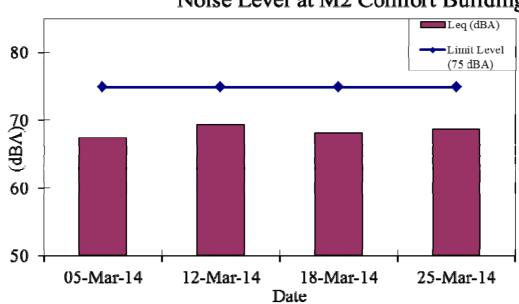


Unit B2, 9/F., Boldwin Industrial Bldg., 16-18 Wah Sing Street, Kwai Chung, N.T., Hong Kong, Tel: (852) 2116 1380 Fax: (852) 2264 6480 Email: info@maxlab.com.hk

# Appendix F

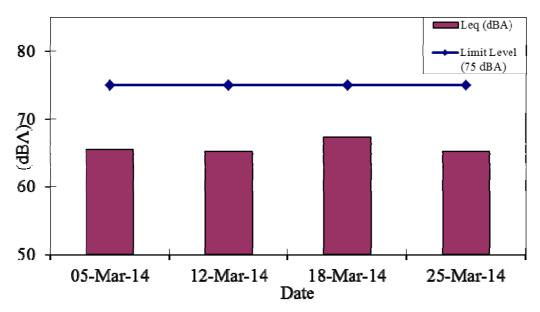
# Impact Monitoring Graphical Plots





Noise Level at M2 Comfort Building

# Noise Level at M3 Burlington Arcade



# Appendix G

# Monitoring Schedule for the Present and Next Reporting Period

Dust Monitoring Schedule for March 2014						
Dust	Noise					
D1	M1	M2	M3			
5 Mar 2014	5 Mar 2014	5 Mar 2014	5 Mar 2014			
12 Mar 2014	12 Mar 2014	12 Mar 2014	12 Mar 2014			
18 Mar 2014	19 Mar 2014	19 Mar 2014	19 Mar 2014			
25 Mar 2014	26 Mar 2014	26 Mar 2014	26 Mar 2014			

Dust Monitoring Schedule for April 2014						
Dust	Noise					
D1	M1 M2 M3					
1 Apr 2014	1 Apr 2014	1 Apr 2014	1 Apr 2014			
8 Apr 2014	8 Apr 2014	8 Apr 2014	8 Apr 2014			
15 Apr 2014	15 Apr 2014	15 Apr 2014	15 Apr 2014			
22 Apr 2014	22 Apr 2014	22 Apr 2014	22 Apr 2014			
29 Apr 2014	29 Apr 2014	29 Apr 2014	29 Apr 2014			

#### Remarks:

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