MTR Corporation Limited

HONG KONG SECTION OF GUANGZHOU – SHENZHEN – HONG KONG EXPRESS RAIL LINK

(Environmental Permit No. EP-349/2009/N)

Environmental Monitoring and Audit Report No. 106
(December 2018)

Verified by: _____

(Mr. Eric Ching)

Position: Independent Environmental Checker

Date: 11 January 2019

MTR Corporation Limited

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(Mr. Raymond Wong)

Position: Environmental Team Leader

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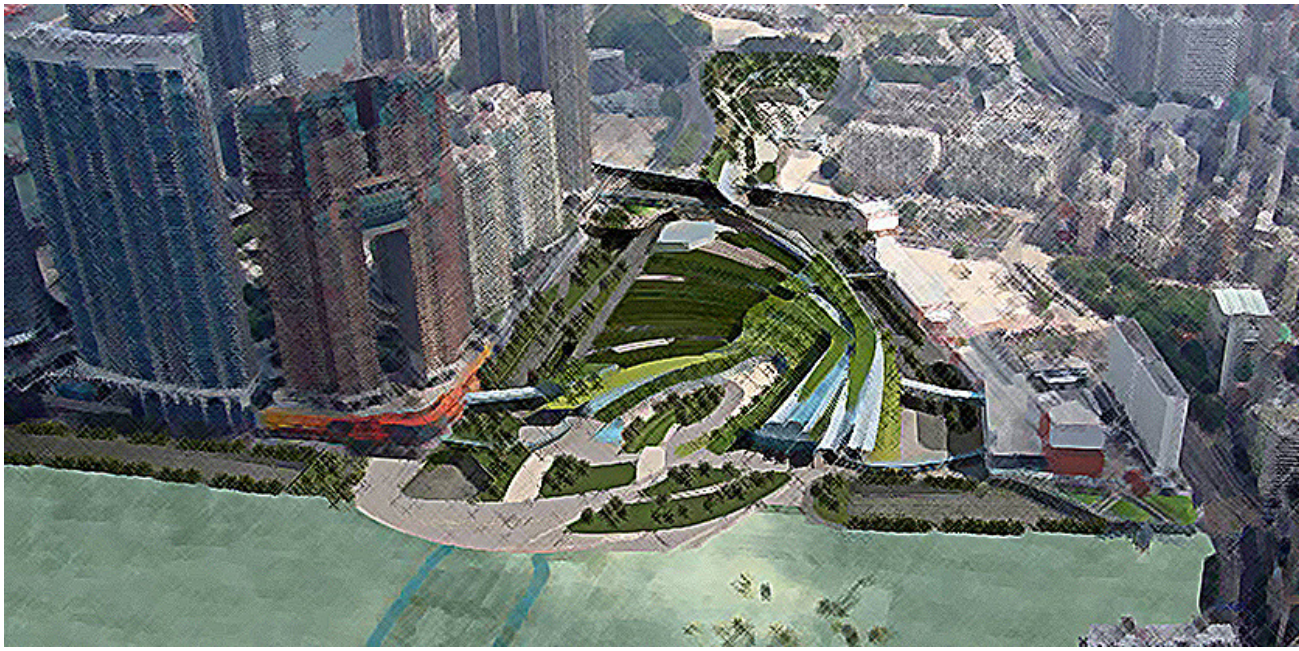

Environmental Monitoring and Audit Report

December 2018

EXECUTIVE SUMMARY

This is the 106th monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works undertaken during the period from 1 to 31 December 2018 for the Hong Kong Section of Guangzhou - Shenzhen - Hong Kong Express Rail Link (hereinafter referred to "the XRL" or "the Project") in accordance with the EM&A Manual and the requirement under EP-349/2009/N issued on 20 August 2018.

The passenger service of the XRL has been commenced on 23 September 2018, all the related construction activities and its subsequent EM&A programme (Part 1) have been completed on 29 September 2018. The Final Environmental Monitoring and Audit Report (Part1) has been submitted to EPD on 31 October 2018 in accordance with EM&A Manual Section 13.11.

Apart from the above, the reinstatement works in Nam Cheong Park (i.e. Works Area T) is the only exception after the commencement of XRL passenger service. EM&A programme (Part 2) for the design and construction of Nam Cheong Park reinstatement (i.e. Works Area T) would be commenced from 2 October 2018 and maintained until the completion of reinstatement.

Airborne Noise

Airborne noise was measured in terms of $L_{eq(30min)}$ dB(A) with L_{10} and L_{90} measurements as reference at the noise monitoring location in the vicinity of Works Area T once every week.

Please refer to the section "Environmental Complaints/Exceedance/Non-compliance/ Summons and Prosecution" below for the noise exceedance in the reporting month.

Landscape and Visual

Regular inspections and audits conducted by Certified Arborist confirmed that the tree protection works were carried out in accordance with the requirements of EP and EIA by civil works contractors.

Environmental Audits

In this reporting month, regular site inspections attended by representative from MTRCL and Contractors were carried out for Contract 8209 in Works Area T. In addition to the regular site inspections, IEC environmental audits attended by IEC,

MTRCL and Contractors were held on monthly basis. Issues observed during these audits are detailed in Section 6.

Environmental Complaints / Exceedance / Non-compliance / Summons and Prosecution

For the reporting month, no environmental complaint was referred from EPD. Complaint investigation would be conducted in accordance with the complaint handling procedure in the EM&A Manual when complaint has been received

In the reporting month, no exceedance of air-borne noise Action and Limit Levels were recorded in the reporting month.

No notification of summons, non-compliance and prosecution was received during the reporting period.

Works for Coming Month

Construction works were started in Works Areas T. Please refer to Table 8-1 for the major works in the respective works area. Impact monitoring would be continued in coming reporting month accordingly with reference to the EM&A Manual.

Further Environmental Key Issues

Airborne noise at NSR, landscape and visual monitoring shall continue in the following month. Considering the nature of construction activities, key environmental issues in the coming months include the followings:

- Disposal of C&D waste;
- Dust generation from site activities;
- Noise impact from operating equipment;
- Site water discharge;
- Chemical wastes;
- Tree protection.

Reporting Changes

In the reporting period, there was no reporting change.

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1 INTRODUCTION

1.1 Project Background

Further to the Government's decision made in April 2008, MTR Corporation (MTR) commenced to plan and design the Hong Kong Section of Guangzhou - Shenzhen - Hong Kong Express Rail Link (hereinafter referred to "the XRL" or "the Project"), which is a committed cross boundary transport infrastructure project.

The operation of the Project commenced on 23 September 2018. It provides high speed rail services between Hong Kong and Guangzhou, and a connection to the national high-speed passenger rail network serving major mainland cities outside of Guangdong province. The Hong Kong section of the XRL is about 26km from new terminus located in West Kowloon (i.e. West Kowloon Terminus (WKT)) to the boundary at Huang gang. Along the railway corridor, there are a total of eight ventilation buildings/ emergency access point (EAP), stabling sidings and a maintenance facility at Shek Kong Stabling Sidings (SSS) and an Emergency Rescue Station (ERS) next to SSS serving the operation of the XRL.

In connection of the operation of the Project, all the related construction activities and its subsequent EM&A programme (Part 1) have been completed on 29 September 2018. The Final Environmental Monitoring and Audit Report (Part1) has been submitted to EPD on 31 October 2018 in accordance with EM&A Manual Section 13.11.

Apart from the above, the reinstatement works in Nam Cheong Park (i.e. Works Area T) is the only exception after the commencement of XRL passenger service. EM&A programme (Part 2) - the design and construction of Nam Cheong Park reinstatement (i.e. Works Area T) would be maintained from 2 October 2018 until the completion of reinstatement.

1.2 Coverage

This is the 106th monthly Environmental Monitoring and Audit (EM&A) Report presenting the EM&A works undertaken during the period from 1 to 31 December 2018 for XRL in accordance with the EM&A Manual and the

requirement under Environmental Permit No. EP-349/2009/N, which was issued on 20 August 2018.

2 PROJECT INFORMATION

2.1 Project Management Organisation and Management Structure

The project management organisation chart and contact of key personnel are shown in Appendix B.

2.2 Construction Activities

This report marked the 106th month of civil construction under the XRL Project for December 2018. The construction activity for upcoming month is provided in Section 8. Construction activities undertaken in the reporting month is summarized in the following table.

Contract	**Works Area**	**Major Construction Activities / Other Works**
Nam Cheong		
8209	T	Site formation; Tree felling; Site hoarding replacement by water filled barriers; and Breaking and removal of existing concrete blocks

Table 2-1 Major construction activities in the reporting month

3 ENVIRONMENTAL STATUS

3.1 Status of Implementation of mitigation measures

Environmental mitigation measures recommended in the EIA report were implemented and their implementation statuses are summarized in Appendix C.

3.2 Status of Submissions under EP

A summary of the submissions submitted under the EP for this Project during the reporting month is presented in Table 3-1 below:

EP-349/2009/N Clause No.	Document Title	Status
2.46	Monthly EM&A Report (November 2018)	Submitted on 12 December 2018
2.49	Environmental Monitoring and Audit Report on the Implementation of the Mitigation Measures for Operation Stage of the Project	Submitted on 21 December 2018

Table 3-1 Summary of the status of submissions submitted under the EP in the reporting month

3.3 Status of Permit/License/Notifications

A summary of the status of permits, licences and notifications on environmental protection made, applied or approved under this Project during the previous and reporting month is presented in Table 3-2 below. The Environmental Permit No. EP-349/2009/N issued by EPD was used for the XRL project.

Item	Item Description	Application Date	Permit Status
Contract 8209 (Works Area T)			
1	Billing account for disposal of construction waste	24 Sep 2018	Account activated on 25 October 2018 (Account No. 7032120)

Item	Item Description	Application Date	Permit Status
2	Notification Pursuant to Section 3(1) of The Air Pollution Control (Construction Dust) Regulation	7 Dec 2018	Submitted and acknowledged by EPD on 10 December 2018 (Ref. No. 440182)
3	Chemical Waste Producer Registration for Area T	21 Dec 2018	Submitted and acknowledged by EPD on 24 December 2018 (Ref. No. RW201801-5)
4	WPCO License for Area T	21 Dec 2018	Submitted and acknowledged by EPD on 24 December 2018 (Ref. No. RW201802-5)
5	Environmental Permit for Hong Kong Section of Guangzhou-Shenzhen- Hong Kong Express Rail Link (XRL)	5 Jun 2014	Environmental Permit No. EP-349/2009/N under section 13(5) of the EIA Ordinance was amended on 6 Aug 2018

Table 3-2 Summary of the status of permits, licences and notifications made, applied and approved under this Project during the previous and reporting month

4 SUMMARY OF EM&A REQUIREMENT

4.1 Air-borne Noise

4.1.1 Noise Parameters

In accordance to the EM&A Manual, construction noise monitoring shall be conducted to obtain one set of 30-minute measurement at each monitoring station between 0700 and 1900 hours on normal weekdays at a frequency of once per week when construction activities are underway. The L_{eq}, L_{10} and L_{90} were also recorded at the specified interval.

4.1.2 Monitoring Methodology and Calibration

As referred to the Technical Memorandum (TM) issued under the NCO, sound level meters in compliance with the International Electrotechnical Commission Publications 651: 1979 (Type 1) and 804: 1985 (Type 1) specifications shall be used for carrying out the noise monitoring. B&K 2250 sound level meters, which complies with the above-mentioned specifications, were used for construction noise monitoring.

Before and after each series of measurements, the accuracy of the sound level meter should be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the difference between calibration levels obtained before and after the noise measurement is less than 1.0 dB.

The sound level meters and calibrator are verified by the certified laboratory or manufacturer at a regular interval to ensure they perform to the same level of accuracy as stated in the manufacturer's specifications. Detail of calibration is shown in Table 4-1 below.

Monitoring Station ID	Noise Monitoring Location	Serial Number	Last Calibration Date
Sound Level Meters			
CN 28	Tower 6, Harbour Green	2701817	07/04/2017

Monitoring Station ID	Noise Monitoring Location	Serial Number	Last Calibration Date
Calibrator			
Serial Number		**Last Calibration Date**	
3014997		22/03/2017	

Table 4-1 Calibration details of noise monitoring equipment

4.1.3 Monitoring Location

According to Table 4-4 in the EM&A Manual, noise monitoring was carried out at the selected location(s). The monitoring location for the reporting month is illustrated in Appendix D.

4.1.4 Action and Limit Levels

The Action and Limit Levels for the construction noise are shown in Table 4-5 below. In the case of non-compliance of Action and/or Limit level, the Event and Action Plan stipulated in the EM&A Manual shall be implemented.

Time Period	Action	Limit
0700-1900 hours on normal weekdays	When one documented complaint is received	75 dB(A) for residential premises
		70 dB(A) for school and 65 dB(A) during examination period

Table 4-5 Action and Limit Levels for Airborne Construction Noise

4.2 Landscape and Visual

Monitoring of the implementation of the tree protection measures during construction phase was conducted in accordance with the requirements of EP condition 2.15 (iv). The landscape and visual monitoring and auditing were conducted in accordance with the requirement in Section 5.6 of the EM&A Manual throughout the construction stage.

5 MONITORING RESULT

5.1 Air-borne Noise

The monitoring schedule is shown in Appendix E. Results of measured noise level, in terms of L_{eq}(30min) and graphical presentations are presented in Appendix F.

In the reporting month, no exceedance of air-borne noise Action Level and no exceedance of air-borne Limit Level were recorded in the reporting month.

5.2 Waste Management

The quantities of waste disposed from this Project during the reporting month and the previous 2 months, if applicable are summarized in the table below. Inert C&D materials are disposed to public fills unless otherwise specified.

Reporting Month	Inert C&D [1] Materials (tonnes)	Non-inert C&D [2] Materials (tonnes)	Chemical Waste (Litre)
Contract 8209			
October 2018	0	0	0
November 2018	0	80	0
December 2018	285	30	0

Table 5-3 Summary of construction waste generated and disposed

Notes:

1. Inert C&D materials include bricks, concrete, building debris, rubble and excavated soil.
2. Non-inert C&D materials include steel, paper / cardboard packaging waste, plastics and other wastes such as general refuse.

The cumulative quantities are summarized as follows.

Inert C&D Materials (tonnes)	Marine Sediment Materials (tonnes)	Non-inert C&D Materials (tonnes)[2]	Chemical Waste (Litre)	Chemical Waste (Kg)
22,347,640.18	1,765,151.24	170,717.54	391,249.50	19,792.00

5.3 Landscape and Visual

5.3.1 Monitoring Requirement

A Certified Arborist was employed and has conducted inspection and audits and found that the tree protection works being carried out by the civil works contractor were in accordance with EP/EIA.

5.3.2 Audit Result

Regular monitoring and audit was undertaken in accordance with the requirement of EP condition 2.15 and Section 5.6 of the EM&A Manual.

Tree Protection Work under Contract No.	**Status**
8209	No specific observation

6 SITE INSPECTION

6.1 Regular Site Inspection

Regular site inspections on all environmental aspects under the EM&A Manual were attended by representatives from ET and Contractors. The site inspections were carried out for Contract 8209 in Works Area T and dates are shown in the following table. In addition to the regular site inspections attended by ET and Contractors, monthly IEC environmental audits attended by IEC, ET and Contractors were held on 18 December 2018 for 8209.

Contract	Date of Site Inspections
8209	4/12, 12/12, 18/12 and 28/12

Table 6-1 Date of site inspection

All observations have been recorded in the audit checklist and passed to the Contractor together with the appropriate recommended mitigation measures where necessary. The key observations from these site inspections and Contractor's follow-up action are summarized in Table 6-2 below.

Item	Description	Contractor's Follow-up Action(s) Undertaken
Contract 8209		
1	The cover for the excavated waste/materials on site was observed not sufficient for all stockpiles	The stockpile has been covered accordingly.

Table 6-2 Summary of site inspections, recommendations and follow-up actions

7 NON-COMPLIANCE AND DEFICIENCY

7.1 Summary of Complaint

For this reporting month, no environmental complaint was referred from EPD. There are a total of 268 environmental complaints since commencement of the construction. The complaints would be handled in accordance to the EM&A Manual and relevant parties including the Engineer's Representative and IEC were informed of the complaint when receive.

7.2 Summary of Exceedance

In the reporting month, no air-borne noise exceedance of Action and Limit Levels were recorded. Actions stipulated under the Event and Action Plan (Table 2.3 of the EM&A Manual) would be undertaken when exceedance was recorded.

7.3 Summary of Notification of Summons, Prosecutions, Non-compliance and Corrective Actions

No notification of summons, non-compliance and prosecution was received during the reporting period.

8 FUTURE KEY ISSUES

8.1 Construction Works in Coming Months

Works to be undertaken for the following month are summarized below. The works presented below is tentative and subject to change in actual construction programme.

Contract	Works Area	Major Construction Activities / Other Works
8209	T	Excavation for underground utilities; Construction of catchpits, U-channel and precast kerbs; Construction of drawpits, lamp posts and wire ducts; Drainage laying and setting up of water points; Construction of foundation of fencing, and RC slabs of Community Garden

Table 8-1 Summary of construction works in coming months

Impact monitoring would be continued according to the construction programme.

8.2 Monitoring Schedule for Next Month

The tentative schedule of noise monitoring for the next reporting period is presented in Appendix E.

9 CONCLUSIONS

The Report presents the results of EM&A works and the impact monitoring for the construction works of the XRL project undertaken during the period of from 1 to 31 December 2018. The major construction activities in the reporting period included works in Works Area T.

Impact monitoring for noise were conducted in accordance with the EM&A Manual in the reporting period. No exceedance of air-borne noise Action and Limit Levels was recorded in the reporting month.

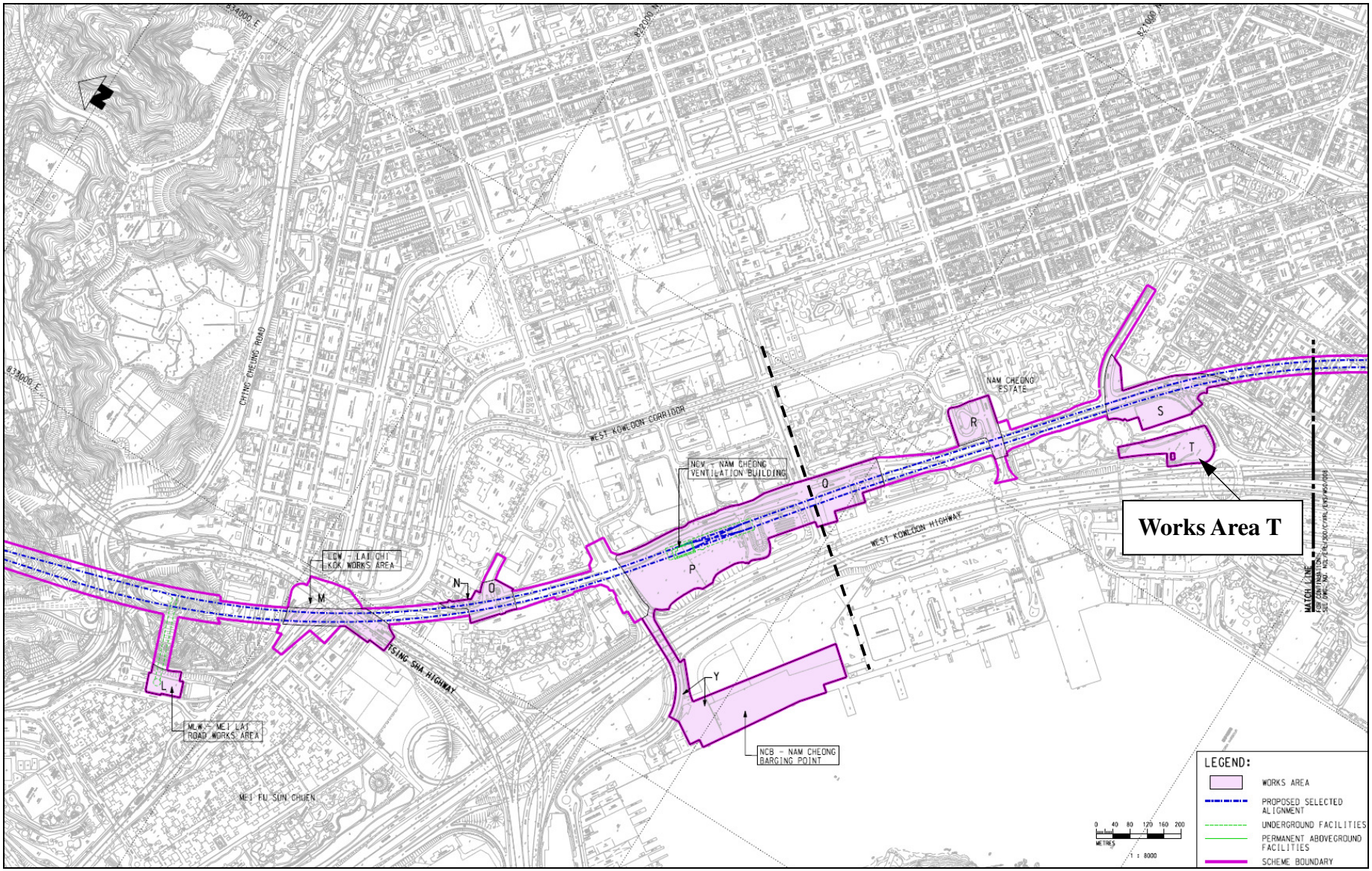
No notification of summons, non-compliance and prosecution was received during the reporting period.

For the reporting month, no environmental complaint was referred from EPD. Complaint investigations would be conducted in accordance with the complaint handling procedure in the EM&A Manual when receive.

Site inspections were conducted regularly to monitor proper implementation of environmental pollution control and mitigation measures for the Project. The ET would continue the implementation of the environmental monitoring and audit programme in accordance to the EM&A Manual and to a level consistent with MTRCL's Corporate Sustainability Policy.

Appendix A

Works Area


Works Area T
CHING CHEUNG ROAD
WEST KOWLOON CORRIDOR
WEST KOWLOON HIGHWAY
TSING SHA HIGHWAY
NAM CHEONG ESTATE
NCV - NAM CHEONG VENTILATION BUILDING
LCW - LAI CHI KOK WORKS AREA
MLW - MEI LAI ROAD WORKS AREA
NCB - NAM CHEONG BARGING POINT
MEI FU SUN CHUEN
MATCH LINE
LEGEND:
WORKS AREA
PROPOSED SELECTED ALIGNMENT
UNDERGROUND FACILITIES
PERMANENT ABOVEGROUND FACILITIES
SCHEME BOUNDARY
METRES
1 : 8000

Appendix B

Project Management Organization and Contacts of Key Personnel

Title	Name	Telephone
Engineer's Representative		
Acting Construction Manager (8209)	Mr. PH TANG	2208 3238
Senior Construction Engineer	Mr. Angus CHAU	2208 3918
Independent Environmental Checker		
Independent Environmental Checker	Mr. Eric CHING	2828 5825
Environmental Team		
Environmental Team Leader	Mr. Raymond WONG	2688 1094
Contractor		
Contract 8209 Contractor		
Project Manager	Mr. Tom CHUNG	2741 4851
Senior Engineer / Environmental Officer	Mr. CM CHAN	2741 4851

Appendix C

Implementation Status

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Ecological Impact (Construction Phase)						
S3.364 -S3.369	- Use of quiet construction plant and temporary noise barriers. - Gate and fences should be installed along the construction accesses that are adjacent to public areas. - Gates and hoardings should be provided at the entrances/exits and along the boundary of the works areas respectively to prevent any trespassers from encroaching or will fully disturbing any wild animals and their habitats within the works areas. - A trip-ticket system should be adopted to monitor the disposal of construction and demolition materials. CCTV and warning signs should be provided at the entrance of the proposed temporary and permanent vehicular access.	To minimize impacts to surrounding habitats	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
3.370 -3.371 and 3.373	- Vegetation located within the works areas should be preserved as far as practicable. - To avoid soil compaction, heavy machinery should not be used in close proximity to vegetation. Soils that become compacted through the activities of the development should be loosened to an appropriate depth to allow seed germination. - All temporarily affected habitats should be reinstated after the completion of works. - Placement of equipment or stockpiles should be confined to designated works areas. Access routes should be confined on existing disturbed land, where practicable.	To minimize impacts to vegetation	MTR / Contractor	All works areas	Construction phase	Implemented
	- To mitigate the loss of the vegetation and habitats, planting of native species should be provided in the areas affected by the Project in TSW site, and other works area, where practicable.	To minimize impacts to vegetation	MTR / Contractor	TSW and all other works areas	Construction phase	Proposal of mitigatory planting at TSW was included in the Vegetation Survey Report. Mitigatory planting has been implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S3.374 - S3.377	- Site hoarding of 2.4 m high should be set up along the boundary of the works areas as far as practicable. - Major construction site lighting should point inward and downward. Unnecessary lighting should be turned off outside working hours of the construction sites.	To minimize disturbance to wildlife	Contractor	All works areas	Construction phase	Implemented
S3.378 - S3.380	- Excavation works carried out within waterbodies should be carried out in dry season where practicable. - Excavation works within the watercourse / drainage channel should be restricted when possible to an enclosed dry section of the watercourse / drainage channel, with containment measures such as bunds and barriers used within the watercourse / drainage channel. - Site runoff should be directed towards regularly cleaned and maintained silt traps and oil / grease separators. The silt and oil / grease separators should be appropriately designed for the local drainage and ground conditions. Tightly sealed closed grab excavators should be deployed where material to be handled is wet. - The flow of the watercourse and drainage channel located with the Project Area should be maintained throughout the construction phase.	To minimize pollution to waterbodies	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Airborne Noise Impact (Construction Phase)						
S5.120	The following good site practices should be implemented: ▪ Only well-maintained plant should be operated on-site and plants should be serviced regularly during the construction program; ▪ Silencers or mufflers on construction equipment should be utilized and should be properly maintained during the construction program; ▪ Mobile plant, if any, should be sited as far from noise sensitive receivers (NSRs) as possible; ▪ Machines and plant (such as trucks) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; ▪ Plant known to emit noise strongly in one direction should, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and ▪ Material stockpiles and other structures should be effectively utilized, wherever practicable, in screening noise from on-site construction activities.	To reduce construction noise impact	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S5.121-S 5.122 and Table 5.22	The following quiet PME should be used: ▪ Pneumatic breaker (SWL=110dB(A)) ▪ Tracked Excavator Fitted with Hydraulic Breaker (SWL=110dB(A)) ▪ Truck Mixer (SWL=100dB(A)) ▪ Tracked Crane (SWL=101dB(A)) ▪ Dump Truck (SWL=103dB(A)) ▪ Tracked Excavator/Loader (SWL=105dB(A)) ▪ Dozer (SWL=111dB(A)) ▪ Road Roller (SWL=101dB(A))	To reduce construction noise impact	MTR / Contractor	Works Area T	Construction phase	Implemented
S5.123 - S5.124	Movable noise barrier should be used for the following PME where practicable: ▪ Mini backhoe ▪ Breaker, mini-robot mounted ▪ Handheld breaker ▪ Excavator ▪ Grab ▪ Tracked Crane	To reduce construction noise impact	MTR / Contractor	Works Area T	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S5.125	Noise enclosure/acoustic shed should be used for the following PME where practicable: ▪ Air compressor ▪ Concrete pump ▪ Grout pump ▪ Shotcrete pump	To reduce construction noise impact	MTR / Contractor	Works Area T	Construction phase	Implemented
S5.131	Use of temporary hoardings along the works boundary.	To reduce construction noise impact	MTR / Contractor	Works Area T	Construction phase	Implemented
S5.137	Scheduling of construction works outside school examination periods	To reduce construction noise impact	MTR / Contractor	Works Area T	Construction phase	Implemented
S5.193	Airborne construction noise monitoring should be conducted in accordance with EM&A Manual to monitor the airborne noise impact.	To monitor airborne noise impact	MTR / Contractor	Proposed monitoring locations	Construction phase	Implemented
Landscape and Visual Impact (Construction Phase)						
Table 7.10	All existing trees should be carefully protected during construction as far as possible in accordance with ETWB TCW No. 29/2004 and 3/2006.	To minimize landscape and visual impacts during construction phase	Contractor	Works areas	Detailed design and construction phases	Implemented
	Trees should be retained on site as far as possible. Should removal of trees be unavoidable due to construction impacts, trees will be transplanted or felled depending on stated criteria in the Tree Removal Applications to be submitted					

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Table 7.10	separately in accordance with ETWBC 2/2004 and 3/2006. Wood resulting from tree removal should be recycled as mulch or soil conditioner which could be used within the Project or in other projects as much as possible.	To minimize landscape and visual impacts during construction phase	Contractor	Works areas	Detailed design and construction phases	Implemented
	Control of night-time lighting glare.		Contractor			
	Erection of decorative screen hoarding to screen off undesirable views of the construction site having consideration of safety and security.		Contractor			
	Reuse of existing topsoil where possible for new planting areas within the project.		Contractor			
Landscape and Visual Impact (Operation Phase)						
Table 7.11	Compensatory tree planting should be incorporated into the proposed Project where space is available	To minimize landscape and visual impacts during operational phase	MTR	All works areas	Detailed design and operation phases	Implemented. And for Nam Cheong Park, it is implementing.
	Landscape and visual enhancement treatments					
	Compensatory habitat proposal for natural stream course at SSS					
	Reinstatement of works area in Nam Cheong Park to integrate with the existing park.					
	Tall buffer tree planting should be incorporated provide screening to ventilation buildings, engineering structures and associated facilities.					
	Roof greening to mitigate the visual impact of VB on the VSRs at high level.					

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Table 7.11	Vertical greening would be incorporated where practicable to visually soften the façade of ventilation building and/or noise barrier	To minimize landscape and visual impacts during operational phase	MTR	All works areas	Detailed design and operation phases	Implemented. And for Nam Cheong Park, it is implementing.
	Incorporation of aesthetically pleasing streetscape design which would be responsive to adjacent landscape context.					
	Roadside amenity trees to enhance the landscape and visual quality of the existing and proposed road.					
	Reinstatement of disturbed areas to match adjacent area or to condition to suit future land use.					
	Aesthetically pleasing design as regard to the form, material and finishes shall be incorporated to all buildings, engineering structures and associated infrastructure facilities so as to blend in the buildings and structures to the adjacent landscape and visual context.					
	Control of Operation Night-time Glare					
	Incorporation of aesthetically pleasing design to boundary fence so as to blend in the structure to the adjacent landscape and visual context.					
	The scale, location, disposition and design of the ventilation shafts at WKCD would be further reviewed and submitted to relevant parties (e.g. WKCDA and PlanD) for agreement.					

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Waste Management Implications (Construction Phase)						
S10.107	Recommendations for good site practices: ▪ Prepare a Waste Management Plan approved by the Engineer/Supervising Officer of the Project based on current practices on construction sites; ▪ Training of site personnel in, site cleanliness, proper waste management and chemical handling procedures; ▪ Provision of sufficient waste disposal points and regular collection of waste; ▪ Appropriate measures to minimize windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; ▪ Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors; and ▪ Separation of chemical wastes for special handling and appropriate treatment.	To implement good site practice for handling, sorting reuse and recycling of C&D materials	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.108	Recommendations for waste reduction measures: ▪ Sorting of demolition debris and excavated materials from demolition works to recover reusable/ recyclable portions (i.e. soil, broken concrete, metal etc.); ▪ Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal; ▪ Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the workforce; ▪ Proper storage and site practices to minimize the potential for damage or contamination of construction materials; ▪ Plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste; and ▪ Training should be provided to workers about the concepts of site cleanliness and appropriate waste management procedures, including waste reduction, reuse and recycle.	To implement on-site sorting facilitating reuse and recycling of materials as well as proper disposal of waste	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.109	The Contractor should prepare and implement a Waste Management Plan (WMP) as a part of the Environmental Management Plan (EMP) in accordance with ETWB TCW No. 19/2005 which describes the arrangements for avoidance, reuse, recovery, recycling, storage, collection, treatment and disposal of different categories of waste to be generated from the construction activities.	To keep trace of the generation, minimization, reuse and disposal of C&D materials in the Project	Contractor	All works areas	Construction phase	Implemented
S10.112	Storage of materials on site may induce adverse environmental impacts if not properly managed, recommendations to minimise the impacts include: ▪ Waste, such as soil, should be handled and stored well to ensure secure containment, thus minimising the potential of pollution; ▪ Maintain and clean storage areas routinely; ▪ Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; and ▪ Different locations should be designated to stockpile each material to enhance reuse.	To minimize potential impacts of waste storage and enhance reusable volume	Contractor	All works areas	Construction phase	Implemented
S10.113	Waste hauliers must hold a valid permit for the collection of waste as stipulated in their permits. Removal of waste should be done in a timely manner.	To collect and remove waste generated	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.114-115	- Implementation of trip-ticket system to monitor waste disposal and control fly-tipping. - Set up warning signs at vehicular access points reminding drivers of designated disposal sites and penalties of an offence. - Installation of close-circuited television at access points of vehicles to monitor and prevent illegal dumping.	To monitor disposal of waste and control fly-tipping	Contractor	All works areas	Construction phase	Implemented
S10.120	Wheel wash facilities should be provided before the trucks leave the works area.	To minimize dust impact	Contractor	All works areas	Construction phase	Implemented
S10.121	- The Contractor should ensure the on-site separation from inert portion. - The waste delivered to landfill should not contain any free water or have water content more than 70% by weight. - The haulier must ensure suitable amount of waste would be loaded on different types of trucks used. - A one-week notice should be given to EPD with information on Contractor's name and respective contact details.	To meet the requirement for disposal at landfill	Contractor and Waste haulier	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.136	If chemical wastes are produced at the construction site, the Contractor would be required to register with the EPD as a chemical waste producer and to follow the guidelines stated in the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes*. Containers used for storage of chemical waste should : ▪ Be compatible with the chemical wastes being stored, maintained in good condition and securely sealed; ▪ Have a capacity of less than 450 litres unless the specifications have been approved by EPD; and ▪ Display a label in English and Chinese in accordance with instructions prescribed in Schedule 2 of the *Waste Disposal (Chemical Waste) (General) Regulation*.	To properly store the chemical waste within works areas	Contractor	All works areas	Construction phase	Implemented
S10.137	The chemical storage areas should: ▪ Be clearly labelled to indicate corresponding chemical characteristics of the chemical waste and used for storage of chemical waste only; ▪ Be enclosed on at least 3 sides; ▪ Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest; ▪ Have adequate ventilation;	To prepare appropriate storage areas for chemical waste at works areas	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.137	▪ Be covered to prevent rainfall from entering; and ▪ Be properly arranged so that incompatible materials are adequately separated.	To prepare appropriate storage areas for chemical waste at works areas	Contractor	All works areas	Construction phase	Implemented
S10.138	Lubricants, waste oils and other chemical wastes would be generated during the maintenance of vehicles and mechanical equipments. Used lubricants should be collected and stored in individual containers which are fully labelled in English and Chinese and stored in a designated secure place.	To provide clearly label the chemical waste at works areas	Contractor	All works areas	Construction phase	Implemented
S10.139	A trip-ticket system should be operated in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation* to monitor all movements of chemical waste. The Contractor should employ a licensed collector to transport and dispose of the chemical wastes, to either the approved CWTC at Tsing Yi, or another licensed facility, in accordance with the *Waste Disposal (Chemical Waste) (General) Regulation*.	To monitor the generation, reuse and disposal of chemical waste	Contractor	All works areas	Construction phase	Implemented
S10.140	General refuse should be stored in enclosed bins or compaction units separate from C&D materials and chemical waste. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D materials and chemical wastes.	To properly store and separate from other C&D materials for subsequent collection and disposal	Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S10.141	The recyclable component of general refuse, such as aluminium cans, paper and cleansed plastic containers should be separated from other waste. Provision and collection of recycling bins for different types of recyclable waste should be set up by the Contractor. The Contractor should also be responsible for arranging recycling companies to collect these materials.	To facilitate recycling of recyclable portions of refuse	Contractor	All works areas	Construction phase	Implemented
S10.142	The Contractor should carry out a training programme for workers in avoiding, reducing, reusing and recycling of materials generation. Posters and leaflets advising on the use of the bins should also be provided in the sites as reminders.	To raise workers' awareness on recycling issue	Contractor	All works areas	Construction phase	Implemented
Water Quality Impact (Construction Phase)						
S11.128 - S11.153	Construction site run-off and general construction activities: ▪ The mitigation measures as outlined in the ProPECC PN 1/94 Construction Site Drainage should be adopted where applicable.	To control water quality impact from construction site runoff and general construction activities	MTR / Contractor	All works areas	Construction phase	Implemented
S11.154	Groundwater seepages from uncontaminated area: ▪ In case seepage of uncontaminated groundwater occurs, groundwater should be pumped out from the works areas and discharged into the storm system via silt removal facilities. Uncontaminated groundwater from dewatering process should also be discharged into the storm system via silt traps.	To control water quality impact from groundwater from uncontaminated area	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.161	Effluent discharge: There is a need to apply to EPD for a discharge licence for discharge of effluent from the construction site under the WPCO. The discharge quality should meet the requirements specified in the discharge licence. Minimum distances of 100 m should be maintained between the discharge points of construction site effluent and the existing seawater intakes. If monitoring of the treated effluent quality from the works areas is required during the construction phase of the Project, the monitoring should be carried out in accordance with the WPCO license which is under the ambit of regional office (RO) of EPD.	To control water quality impact from effluent discharge from construction site	MTR / Contractor	All works areas	Construction phase	Implemented
S11.162	Accidental spillage of chemicals: Contractor should register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	To control water quality impact from accidental chemical spillage	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.163	Any service shop and maintenance facilities should be located on hard standings within a bunded area, and sumps and oil interceptors should be provided. Maintenance of vehicles and equipment involving activities with potential for leakage and spillage should only be undertaken within the areas appropriately equipped to control these discharges.	To control water quality impact from accidental chemical spillage	MTR / Contractor	All works areas	Construction phase	Implemented
S11.164	Disposal of chemical wastes should be carried out in compliance with the Waste Disposal Ordinance. The Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes published under the Waste Disposal Ordinance details the requirements to deal with chemical wastes. General requirements are given as follows: ▪ Suitable containers should be used to hold the chemical wastes to avoid leakage or spillage during storage, handling and transport. ▪ Chemical waste containers should be suitably labelled, to notify and warn the personnel who are handling the wastes, to avoid accidents. ▪ Storage area should be selected at a safe location on site and adequate space should be allocated to the storage area.	To control water quality impact from accidental chemical spillage	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.165	Surface construction works at or in close proximity of watercourses or seafront: ▪ The proposed surface construction works should be carried out in dry season as far as practicable where the flow in the river channel or stream is low. ▪ The use of less or smaller construction plants may be specified to reduce the disturbance to the riverbed or pond deposits. ▪ Temporary sewerage system should be designed to prevent wastewater from entering the river, streams and sea. ▪ Temporary storage of materials (e.g. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction materials should be located well away from any water courses during carrying out of the construction works. ▪ Stockpiling of construction materials and dusty materials should be covered and located away from any water courses. ▪ Construction debris and spoil should be covered up and/or disposed of as soon as possible to avoid being	To control water quality impact from construction works at or in close proximity of watercourses or seafront	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.165	washed into the nearby water receivers. ▪ Construction activities, which generate large amount of wastewater, should be carried out in a distance away from the waterfront, where practicable. ▪ Mitigation measures to control site run-off from entering the nearby water environment should be implemented to minimize water quality impacts. Surface channels should be provided along the edge of the waterfront within the work sites to intercept the run-off. ▪ Construction effluent, site run-off and sewage should be properly collected and/or treated. ▪ Any works site inside the water courses should be temporarily isolated. The water flow should be temporarily diverted to downstream by using PVC pipes, steel arrays in concrete case or similar, restricting the excavation works to be conducted within an enclosed dry section of the channel. This works arrangement would provide a dry zone for excavation works within the river channel and would prevent the conveyance of suspended sediment downstream. Dewatering at works section should	To control water quality impact from construction works at or in close proximity of watercourses or To control water quality impact from construction works at or in close proximity of watercourses or seafront	MTR/Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S11.165	be conducted prior to the commencement of works. Further limiting or reducing the works area inside the water courses should be considered during wet season or rainstorm event in order to reduce the area of exposed surface. ▪ Silt curtain should be installed around the construction activities at or near the watercourses to minimize the potential impacts due to accidental spillage of construction wastes and excavated materials. ▪ Proper shoring may need to be erected in order to prevent soil or mud from slipping into the watercourses. ▪ Supervisory staff should be assigned to station on site to closely supervise and monitor the works.	To control water quality impact from construction works at or in close proximity of watercourses or seafront	MTR/Contractor	All works areas	Construction phase	Implemented
S11.166	Surface construction works close to water gathering grounds: ▪ The conditions as specified in WSD guidelines on protection of Water Gathering Ground should be followed or observed where practicable	To control water quality impact from surface construction works close to Water Gathering Ground	MTR / Contractor	Works areas close to water gathering ground	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S. 11.169 - 11.173	Hydrogeological Impact: For the cut and cover tunnels and associated excavations for vent buildings and emergency access/escape points, the following measures should be in place in order to mitigate any drawdown effects to the groundwater table during the operation of the temporary dewatering works: ▪ Toe grouting should be applied beneath the toe level of the temporary/permanent cofferdam walls as necessary to lengthen the effective flow path of groundwater from outside and thus control the amount of water inflow to the excavation. ▪ Recharge wells should be installed as necessary outside the excavation areas. Water pumped from the excavation areas should be recharge back into the ground. The bored tunnels should be constructed using a closed face tunnel boring machine to limit water inflow into the excavation face. The cutter head for the machine will be sealed during excavation and therefore the water inflow from the face will be very small. Precast undrained linings should be installed and back grouted behind the	To control groundwater hydrogeological impact and groundwater drawdown	MTR/ Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S. 11.169 - 11.173	tunnel boring machine as it advances along the alignment to minimize the potential inflow of water behind the cutter head. The Contractor should initially adopt suitable water control strategies while undertaking the excavation works. The water control strategies are shown as follow: ▪ Probing Ahead: As normal practice, the Contractor will undertake rigorous probing of the ground ahead of tunnel excavation works to identify zones of significant water inflow. The probe drilling results will be evaluated to determine specific grouting requirements in line with the tunnel advance. In such zones of significant water inflow that could occur as a result of discrete, permeable features, the intent would be to reduce overall inflow by means of cut-off grouting executed ahead of the tunnel advance. ▪ Pre-grouting: Where water inflow quantities are excessive, pre-grouting will be required to reduce the water inflow into the tunnel. The pre-grouting will be achieved via a systematic and carefully specified protocol of grouting.	To control groundwater hydrogeological impact and groundwater drawdown	MTR/ Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S. 11.169 - 11.173	▪ In principle, the grout pre-treatment would be designed on the basis of probe hole drilling ahead of the tunnel face. In the event of excessive drawdown being observed within the ground water table as a result of the tunnelling works even after incorporation of the water control strategies, post-grouting will be applied as described below: ▪ Post-grouting: Groundwater drawdown will be most likely due to inflows of water into the tunnel that have not been sufficiently controlled by the pre-grouting measures. Where this occurs post grouting will be undertaken before the lining is cast. Whilst unlikely to be required in significant measure, such a contingency should be allowed for reduction in permeability of the tunnel surround (by grouting) to limit inflow to acceptable levels. A detailed groundwater monitoring programme should be developed in detailed design stage to monitor both the proposed works and the impact of those works on the adjacent area.	To control groundwater hydrogeological impact and groundwater drawdown	MTR/Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Air Quality (Construction Phase)						
Table 12.10	(1) Cut & Cover Areas and Stockpiles in the vicinity of adits/shafts: (a) Heavy construction activities at Cut & Cover Areas, Storage of materials at Stockpiles - Active areas for heavy construction activities, loading & unloading materials at stockpiles ▪ The specified requirements for cut & cover areas and stockpiles at Shek Kong, Nam Cheong and West Kowloon works areas are as follows: (i) Shek Kong works area – active area minimized to 15% of total area, watering with complete coverage of active area ten times a day. (ii) Nam Cheong works area – active area minimized to 30% of total area, watering with complete coverage of active stockpile area four times a day. (iii) West Kowloon works area – active area minimized to 15% of total area, watering with complete coverage of active area eight times a day. ▪ For other sites, the active area would be minimized to 30% of the total area, water spraying system would be applied on the active area and watering with complete coverage of active area four times a day would be required.	To minimize dust impacts	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
Table 12.10	▪ The remaining inactive area would be well covered with impervious sheeting at all work sites. (b) Trucks - Transportation of materials ▪ Wheel wash facilities provided at the site exit. The vehicles should be washed before leaving the stockpiles. The spoils should also be well covered before leaving the site in order to minimise generation of dusty materials. ▪ The haul roads within the site should be paved and water spraying would be provided to keep the wet condition. ▪ For the Shek Kong works area, watering paved haul roads once per hour would be provided. (2) Temporary stockpiles within barging facilities: (a) Loading point - Loading of spoils from trucks onto stockpile ▪ Water spraying should be provided at the loading points to suppress the dust impact. (b) Storage of materials - Active area for loading & unloading materials ▪ Water spraying system should be applied on the active area and watering with complete coverage of active area four times a day is required.	To minimize dust impact	MTR / Contractor	All works areas	Construction phase	Implemented

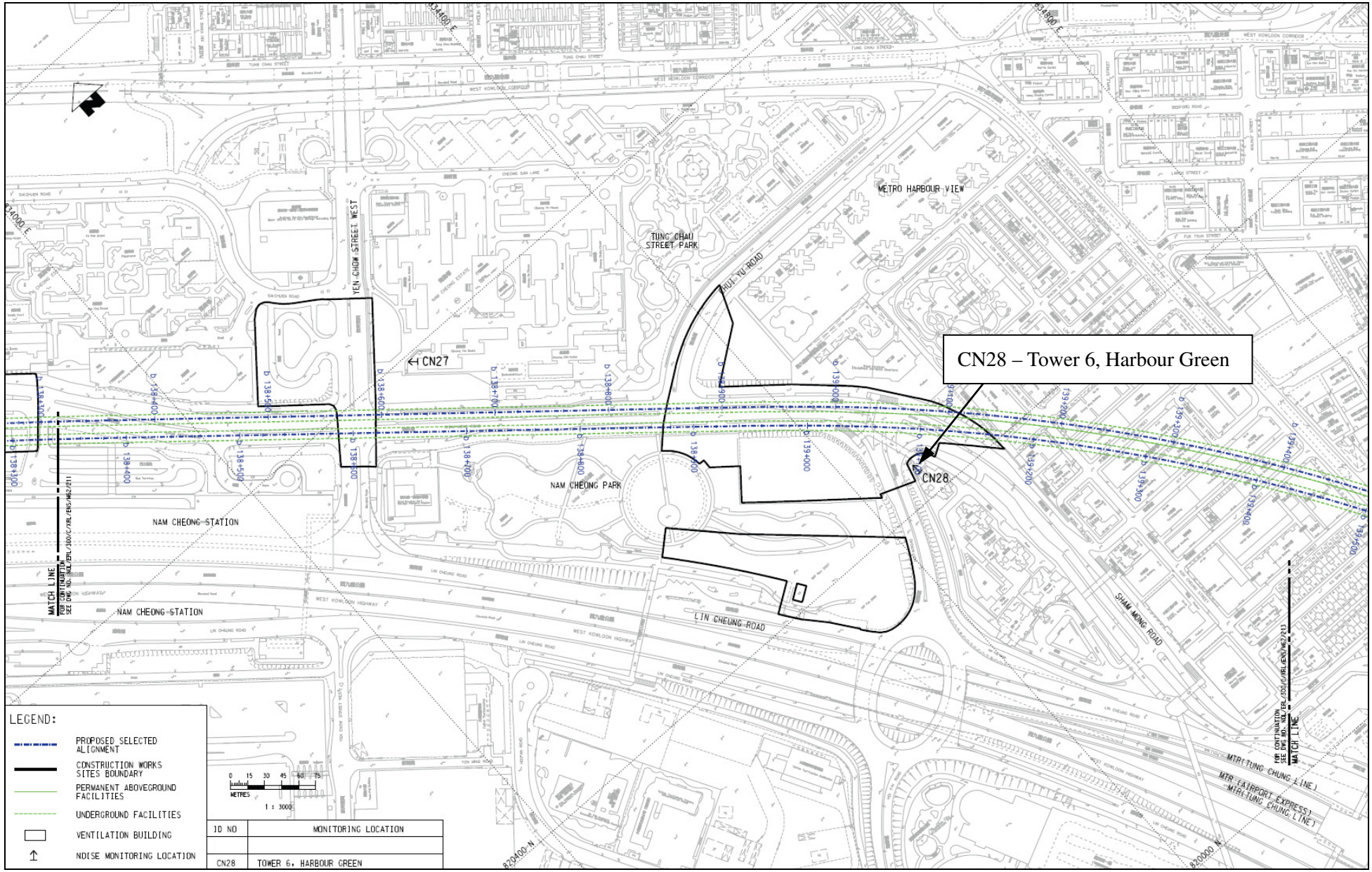
EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S12.78	Dust suppression measures stipulated in the Air Pollution Control (Construction Dust) Regulation and good site practices: ▪ Use of regular watering, with complete coverage, to reduce dust emissions from exposed site surfaces and unpaved roads, particularly during dry weather. ▪ Use of frequent watering for particularly dusty construction areas and areas close to ASRs. ▪ Side enclosure and covering of any aggregate or dusty material storage piles to reduce emissions. Where this is not practicable owing to frequent usage, watering should be applied to aggregate fines. ▪ Open stockpiles should be avoided or covered. Where possible, prevent placing dusty material storage piles near ASRs. ▪ Tarpaulin covering of all dusty vehicle loads transported to, from and between site locations. ▪ Establishment and use of vehicle wheel and body washing facilities at the exit points of the site. ▪ Provision of wind shield and dust extraction units or similar dust mitigation measures at the loading points, and use of water sprinklers at the loading area	To minimize dust impacts	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S12.78	where dust generation is likely during the loading process of loose material, particularly in dry seasons/ periods. ▪ Imposition of speed controls for vehicles on unpaved site roads. 8 kilometers per hour is the recommended limit. ▪ Where possible, routing of vehicles and positioning of construction plant should be at the maximum possible distance from ASRs. ▪ Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by impervious sheeting or placed in an area sheltered on the top and the 3 sides. ▪ Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed. ▪ Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system.	To minimize dust impacts	MTR / Contractor	All works areas	Construction phase	Implemented

EIA Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measures & Main Concern to Address	Who to implement the measures?	Location of the measures	When to implement the measures?	Implementation Status
S12.94	Environmental monitoring and audit for dust emission should be conducted in accordance with EM&A Manual during the construction phase of the Project to check compliance with legislative requirements.	To monitor dust impact	MTR / Contactor	Proposed monitoring locations	Design and operation phases	Implemented

Appendix D

Monitoring Locations


CN28 – Tower 6, Harbour Green
CN27
CN28
METRO HARBOUR VIEW
TUNG CHAU STREET PARK
YEN CHOW STREET WEST
NAM CHEONG PARK
NAM CHEONG STATION
LIN CHEUNG ROAD
SHAM MONG ROAD
MTR (TUNG CHUNG LINE)
MTR (AIRPORT EXPRESS)
MTR (TUNG CHUNG LINE)
MATCH LINE
LEGEND:
PROPOSED SELECTED ALIGNMENT
CONSTRUCTION WORKS SITES BOUNDARY
PERMANENT ABOVEGROUND FACILITIES
UNDERGROUND FACILITIES
VENTILATION BUILDING
NOISE MONITORING LOCATION
METRES
1 : 3000
ID NO
MONITORING LOCATION
CN28
TOWER 6, HARBOUR GREEN

Appendix E

Monitoring Schedule

Monitoring Schedule in the Reporting Month (01 Dec 2018 - 31 Dec 2018)

Date	CN28
	Tower 6, Harbour Green
01-Dec-18	
02-Dec-18	
03-Dec-18	
04-Dec-18	
05-Dec-18	✓
06-Dec-18	
07-Dec-18	
08-Dec-18	
09-Dec-18	
10-Dec-18	
11-Dec-18	
12-Dec-18	✓
13-Dec-18	
14-Dec-18	
15-Dec-18	
16-Dec-18	
17-Dec-18	
18-Dec-18	
19-Dec-18	✓
20-Dec-18	
21-Dec-18	
22-Dec-18	
23-Dec-18	
24-Dec-18	
25-Dec-18	
26-Dec-18	
27-Dec-18	
28-Dec-18	✓
29-Dec-18	
30-Dec-18	
31-Dec-18	

Notes:

Monitoring Schedule in the Next Reporting Month (01 Jan 2019 - 31 Jan 2019)

Date	CN28
	Tower 6, Harbour Green
01-Jan-19	
02-Jan-19	✓
03-Jan-19	
04-Jan-19	
05-Jan-19	
06-Jan-19	
07-Jan-19	
08-Jan-19	
09-Jan-19	✓
10-Jan-19	
11-Jan-19	
12-Jan-19	
13-Jan-19	
14-Jan-19	
15-Jan-19	
16-Jan-19	✓
17-Jan-19	
18-Jan-19	
19-Jan-19	
20-Jan-19	
21-Jan-19	
22-Jan-19	
23-Jan-19	✓
24-Jan-19	
25-Jan-19	
26-Jan-19	
27-Jan-19	
28-Jan-19	
29-Jan-19	
30-Jan-19	✓
31-Jan-19	

Notes:

Appendix F

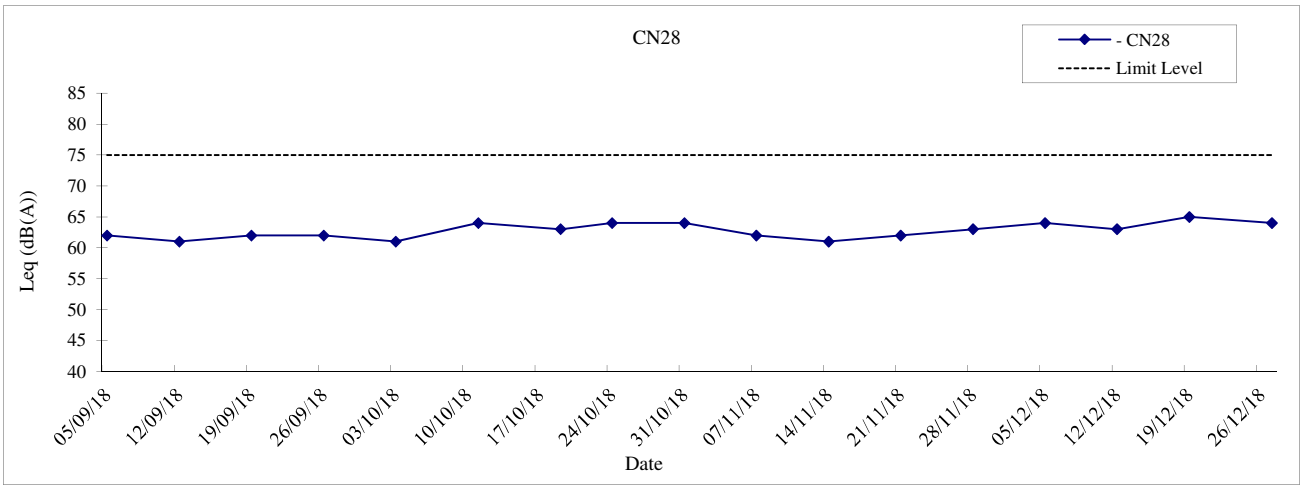
Graphical Plots of Monitoring Results

APPENDIX F: Noise Monitoring Results

- CN28

Date	Noise Monitoring Results	Limit Level	Exceedance?
	Leq, dB(A)	Leq, dB(A)	
2018-12-05	64	75	N
2018-12-12	63	75	N
2018-12-19	65	75	N
2018-12-27	64	75	N

Notes:


CN28
- CN28
Limit Level
Leq (dB(A))
85
80
75
70
65
60
55
50
45
40
05/09/18
12/09/18
19/09/18
26/09/18
03/10/18
10/10/18
17/10/18
24/10/18
31/10/18
07/11/18
14/11/18
21/11/18
28/11/18
05/12/18
12/12/18
19/12/18
26/12/18
Date

Appendix G

Certified Arborist Inspection Record

MTR Express Rail Link

Monthly Audit Inspection Record

Dec 2018

Audit of tree protection works

Date	Contract	Activity Description	Purpose
20/12/18	8209 Nam Cheung Park re-provisioning work	Review of tree management and preservation measures	Regular audit of tree works

Signed by:

Season Sit (CA)

Appendix H

Meteorological Data

EXTRACT OF METEOROLOGICAL OBSERVATIONS FOR HONG KONG, DECEMBER 2018 (Table 1)

Date DECEMBER	Mean Pressure (hPa)	Air Temperature			Mean Dew Point Temperature (deg. C)	Mean Relative Humidity (%)	Mean Amount of Cloud (%)	Total Rainfall (mm)
		Maximum (deg. C)	Mean (deg. C)	Minimum (deg. C)				
1	1018.3	24.2	22.1	21.1	18.1	78	56	-
2	1016.4	24.3	22.4	21.2	19.3	83	51	-
3	1016.5	26.0	23.7	22.0	19.8	79	58	-
4	1016.0	27.1	24.8	22.7	20.6	78	58	-
5	1015.5	24.8	23.6	22.5	20.3	82	82	Trace
6	1015.5	25.1	23.3	21.6	20.4	84	83	0.1
7	1018.5	23.3	21.1	18.5	19.1	88	90	1
8	1021.6	19.7	18.0	16.7	13.7	76	88	-
9	1021.5	18.3	17.0	16.4	12.6	75	90	Trace
10	1019.7	18.3	17.0	15.1	12.6	75	88	0.2
11	1020.3	20.4	18.0	16.5	12.0	68	84	Trace
12	1024.2	16.5	14.9	13.7	8.9	67	84	-
13	1025.1	18.1	15.6	13.5	9.6	68	86	-
14	1025.3	18.2	16.8	15.5	11.7	72	88	-
15	1023.5	21.2	18.9	17.2	14.3	75	64	-
16	1022.0	20.9	19.3	18.0	14.6	74	88	Trace
17	1022.2	21.0	18.0	15.6	9.1	56	38	-
18	1022.2	20.2	18.1	16.2	10.1	60	38	-
19	1019.5	21.5	19.9	18.5	16.0	78	78	-
20	1016.5	23.2	21.6	20.1	18.8	84	80	-
21	1016.1	25.0	22.4	21.4	19.9	86	68	-
22	1017.0	25.2	22.2	20.0	18.0	77	66	-
23	1017.6	22.5	20.1	17.5	18.2	89	96	10.5
24	1017.5	19.0	18.0	16.8	15.6	86	99	0.1
25	1015.5	21.1	19.7	18.5	16.3	81	90	-
26	1014.3	23.6	20.9	18.7	18.0	84	27	-
27	1016.6	22.8	20.6	18.9	16.7	79	77	Trace
28	1021.6	20.2	18.1	16.3	12.6	70	79	Trace
29	1026.1	16.3	14.0	12.5	8.2	68	87	Trace
30	1026.5	15.4	12.6	10.3	6.7	67	83	Trace
31	1027.0	15.6	13.2	11.8	7.4	68	77	-
Mean/Total	1019.9	21.3	19.2	17.6	14.8	76	75	11.9
Normal*	1020.5	20.2	17.9	15.9	11.9	69	52	26.8

The minimum pressure recorded at the Hong Kong Observatory was 1012.2 hectopascals at 1455 HKT on 26 December.

The maximum air temperature recorded at the Hong Kong Observatory was 27.1 degrees C at 1226 HKT on 4 December.

The minimum air temperature recorded at the Hong Kong Observatory was 10.3 degrees C at 0827 HKT on 30 December.

The maximum gust peak speed recorded at Waglan Island was 62 kilometres per hour from 040 degrees at 0104 HKT on 30 December.

The maximum 1-minute mean rainfall rate recorded at King's Park was 13 millimetres per hour at 1937 HKT on 23 December.

Reduced visibility refers to visibility below 8 kilometres when there is no fog, mist or precipitation.

- The visibility readings at the Hong Kong International Airport are based on hourly observations by professional meteorological observers in 2004 and before, and average readings over the 10-minute period before the clock hour of the visibility meter near the middle of the south runway from 2005 onwards. The change of the data source in 2005 is an improvement of the visibility assessment using instrumented observations following the international trend.

- Before 10 October 2007, the number of hours of reduced visibility at the Hong Kong International Airport in 2005 and thereafter displayed in this web page was based on hourly visibility observations by professional meteorological observers. Since 10 October 2007, the data have been revised using the average visibility readings over the 10-minute period before the clock hour, as recorded by the visibility meter near the middle of the south runway.

^ In case the data are not available from Waglan Island, observations of Cheung Chau or other nearby weather stations will be incorporated in computing the Prevailing Wind Direction and Mean Wind Speed.

* 1981-2010 Climatlogical Normal, unless otherwise specified

§ 1997-2017 Mean value

EXTRACT OF METEOROLOGICAL OBSERVATIONS FOR HONG KONG, DECEMBER 2018 (Table 2)

Date DECEMBER	Number of hours of Reduced Visibility# (hours)	Total Bright Sunshine (hours)	Daily Global Solar Radiation (MJ/m^2)	Total Evaporation (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
1	0	6.2	13.00	2.1	060	27.7
2	0	9.3	15.31	1.9	060	21.5
3	2	7.2	13.66	2.3	040	15.0
4	0	9.1	17.37	2.9	020	10.5
5	0	0.6	4.79	1.7	070	35.0
6	0	2.0	9.40	1.6	070	25.2
7	1	-	1.21	1.9	070	34.3
8	0	0.2	6.09	2.3	010	29.7
9	0	0.5	4.26	1.3	010	24.9
10	0	0.1	3.74	1.2	360	21.4
11	0	4.9	12.68	3.9	350	29.7
12	0	-	4.58	1.7	360	33.6
13	0	2.6	10.85	2.6	360	27.8
14	0	-	4.94	1.5	010	25.6
15	11	6.6	12.90	1.8	050	22.6
16	6	1.2	8.41	3.6	360	20.5
17	0	8.4	15.07	2.6	360	22.9
18	0	8.5	14.90	2.5	070	27.9
19	0	6.4	13.78	2.5	060	31.5
20	0	2	8.02	1.5	040	16.9
21	2	8.7	15.47	3	070	21.2
22	0	7.1	13.52	2.4	050	21.9
23	0	-	4.34	1.5	360	27.9
24	0	-	3.90	1.3	360	27.8
25	6	0.1	7.02	0.8	060	25.8
26	17	9.4	16.11	2.1	110	5.9
27	6	3.5	10.06	2.7	070	27.3
28	0	6.8	14.58	4.5	360	34.8
29	0	0.6	7.31	3.1	360	40.3
30	1	5.6	12.23	2.6	360	37.6
31	0	4.4	11.52	2.6	360	26.8
Mean/Total	52	122	10.03	70.0	360	25.9
Normal*	212.8§	172.2	10.89	83.7	070	26.0
Station	Hong Kong International Airport	King's Park			Waglan Island^	

Notes:

Reduced visibility refers to visibility below 8 kilometres when there is no fog, mist, or precipitation.

- The visibility readings at the Hong Kong International Airport are based on hourly observations by professional meteorological observers in 2004 and before, and average readings over the 10-minute period before the clock hour of the visibility meter near the middle of the south runway from 2005 onwards. The change of the data source in 2005 is an improvement of the visibility assessment using instrumented observations following the international trend.

- Before 10 October 2007, the number of hours of reduced visibility at the Hong Kong International Airport in 2005 and thereafter displayed in this web page was based on hourly visibility observations by professional meteorological observers. Since 10 October 2007, the data have been revised using the average visibility readings over the 10-minute period before the clock hour, as recorded by the visibility meter near the middle of the south runway.

^ In case the data are not available from Waglan Island, observations of Cheung Chau or other nearby weather stations will be incorporated in computing the Prevailing Wind Direction and Mean Wind Speed.

* 1981 - 2010 Climatological Normal, unless otherwise specified

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