MTR Corporation Limited

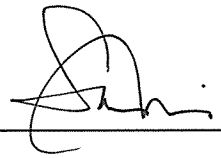
South Island Line (East)

Final EM&A Report

Part 1

February 2017

Verified by:



Sam Tsoi

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15/2/2017

MTR Corporation Limited

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EXECUTIVE SUMMARY

With the main civil works contracts of the South Island Line (East) (SIL(E)) Project awarded in May 2011, the commencement date of construction of the Project was 25 June 2011. The Environmental Monitoring and Audit (EM&A) programme of the Project also commenced on 25 June 2011. All works area, except Harcourt Garden, has been substantially completed on or before November 2016 under Contract 902, 903, 904, 907 and 908. The SIL(E) passenger service commenced on 28 December 2016. The tentative schedule for completion of Harcourt Garden is December 2017.

This is the SIL(E) Project Final EM&A Report Part 1. The Report presents the results of EM&A works undertaken during the period of June 2011 to 31 December 2016. Separate submission for the Final EM&A Report Part 2, covering Harcourt Garden, will be prepared and submitted after works completion in Q1 2018. Further, in accordance with the condition 2.13 of EP, the Final Monitoring Report for EPLP Monitoring will be submitted after completion of the 3 years post-planting care and maintenance period in Q1 2019.

As there would be some remaining construction works for Contract 914 – Harcourt Garden, the EM&A programme and regular site inspections conducted by the Environmental Team (ET) will continue until completion of the construction works.

No notification of summon or prosecution related to the environmental issue was received in the reporting period of June 2011 to December 2016.

No non-conformance to the environmental requirements was identified in the reporting period of June 2011 to December 2016.

An Environmental Permit (EP-407/2010/F), which is being used for the SIL(E) Project, was granted by EPD dated 21 Oct 2016.

In the reporting period, there was no reporting change of circumstances for Works Area 902, 903, 904, 907 and 908 which may affect the compliance with the recommendations of the EIA Report.

It is concluded that the environmental monitoring and audit works for the South Island Line (East) Project has been performing in an acceptable standard complying with the requirements of the EM&A Manual and the construction works at 902, 903, 904, 907 and 908 were undertaken in an appropriately environmentally sensitive manner. The environmental protection and pollution control measures provided by contractors were found to be effective and efficient.

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1. INTRODUCTION

1.1 Project Background

The South Island Line (East) (SIL(E)) of 7.0km approximately is a new medium capacity railway with stations at South Horizons (SOH), Lei Tung (LET), Wong Chuk Hang (WCH), Ocean Park (OCP) and Admiralty (ADM), comprising underground and elevated structures. A depot is required at Wong Chuk Hang to provide maintenance support for the SIL(E).

1.2 Project Programme

Main civil works contracts of the SIL(E) were awarded in May 2011. The commencement date of construction of the Project was on 25 June 2011. All the construction works for railway operation under Contract 902, 903, 904, 907 and 908 have been completed and the commencement of operation was 28 Dec 2016. The remaining construction works of Contract No. 901 was handed over to Contract No. 914 in Mid January 2017 and is expected to complete in 2017.

1.3 Coverage of Final EM&A Report Part 1

The Environmental Monitoring and Audit (EM&A) programme of the Project commenced on 25 June 2011. With consideration of the completion of construction works under Contract 902, 903, 904, 907 and 908, this Final EM&A Report Part1 is prepared to present the results of EM&A works and the associated impact monitoring for the construction works undertaken by the contractors during the period of Jun 2011 to Dec 2016. Separate submission for the Final EM&A Report Part 2, covering Harcourt Garden, will be prepared and submitted after works completion in Q1 2018. Further, in accordance with the condition 2.13 of EP, the Final Monitoring Report for EPLP Monitoring will be submitted after completion of the 3years post-planting care and maintenance period in Q1 2019.

2. PROJECT INFORMATION

2.1 Project Organization and Management Structure

The project organization is shown in Appendix A1. Contacts of key personnel of the Project are shown in Appendix A2.

2.2 Project Areas and Environmental Monitoring Locations

The works areas of the Project are shown in Figures 1 and 2. All works area, except Harcourt Garden, has been substantially completed on or before November 2016. Reinstatement works for the Telegraph Bay barging point were completed in June 2015 and the work site was handed over to the relevant government department. The major construction works at Wong Chuk Hang Depot under Contract 908 was substantially completed in July 2015. The major construction works at Ocean Park Station & Wong Chuk Hang Station under Contract 903 were substantially completed in September 2015. The major construction works at Nam Fung Portal and Nam Fung Ventilation Building under Contract 902 were substantially completed in January 2015 and May 2016 respectively. Major construction works at Hong Kong Park Ventilation Shaft and Building under Contract 902 were substantially completed in September 2016. Major construction works at Admiralty Station and Tunnel Section from Aberdeen Channel Crossing to South Horizon, including Lei Tung Station ,South Horizons Station and Plant Building as well as Lee Wing Street Ventilation Building under Contract 904 were also substantially completed in November 2016.

In view of completion of construction works of viaduct Section from Nam Fung Portal to Aberdeen Channel Crossing with Nam Fung Ventilation Building, OCP Station, WCH Station & WCH Depot, impact monitoring for air quality (CD1, CD2 and CD3) and noise (CN1, CN2 and CN5) and regular site inspections for such works areas were ceased since 21 July 2016. A letter of notification to EPD has been issued on 26 July 2016. In view of completion of construction works at Hong Kong Park Ventilation Shaft and Building, regular site inspection for works area near Hong Kong Park has been ceased after September 2016. A letter of notification to EPD has been issued on 14 October 2016. In view of completion of construction works at Lei Tung Station and South Horizons Station and Plant Building, impact monitoring for air quality (CD4 and CD5) and noise (CN3 and CN4) and regular site inspection for works area at Admiralty Station and Tunnel Section from Aberdeen Channel Crossing to South Horizon, including Lei Tung Station ,South Horizons Station and Plant Building as well as Lee Wing Street Ventilation Building has been ceased after November 2016. A letter of notification to EPD has been issued on 2 December 2016. Regular site inspections for works areas in Harcourt Garden would continue until construction works completed.

The locations of environmental monitoring stations are shown in **Figures 3 to 9**. Tables 1 and 2 below shows the details of monitoring stations as reported in Sections 3.1 to 3.3 below.

Table 1 Summary of impact dust and noise monitoring stations

ID	Monitoring Station
Dust	
CD1	Wong Chuk Hang San Wai
CD2	Police College – Police Quarters
CD3	San Wui Commercial Society of HK Chan Pak Sha School
CD4	Shan On House
CD5*	South Horizons Phase IV – Block 25
Noise	
CN1	San Wui Commercial Society of HK Chan Pak Sha School (Educational Institution)
CN2	Holy Spirit Seminary (Education Institution)
CN3*	Shun Fung Building (Residential)
CN4*	South Horizons Phase IV – Block 25 Dover Court (Residential)
CN5*	TWGHs Jockey Club Rehabilitation Complex Block A (Convalescent Home)

* Location updated due to site access problem, or as per the agreement with the premises landlord, and agreed with EPD

Table 2 Summary of impact water quality monitoring stations

ID	Location	Easting	Northing
WM1	Aberdeen West Typhoon Shelter	833953	811923
WM2	Wong Chuk Hang Nullah	834547	811966
WM3	WSD Brick Hill Seawater Intake	834896	811567
WM4	Aberdeen South Typhoon	834761	811292

	Shelter		
CS1	Control Station	832689	811967
CS2	Control Station	834852	810689

2.3 Summary of EM&A Requirements

The EM&A programme as specified in the EM&A Manual have been implemented during the construction stage.

In addition, regular site inspection to active works areas was carried out. The areas of inspection included the pollution control and mitigation measures within the site. Waste management and landscape and visual aspects were covered.

3. Implementation of Environmental Mitigation Measures

Regular site inspections were undertaken by the ET in accordance with the EM&A Manual to check the implementation of environmental mitigation measures in the EIA. The contractors' performance on environmental matters was assessed. The environmental mitigation measures are being implemented by the civil works contractors where appropriate. A schedule of the implementation of mitigation measures identified in the SIL(E) EIA is given in **Appendix D**.

4. IMPACT MONITORING

4.1 Air Quality

Monitoring Methodology

24-hour TSP samples were collected by High Volume Sampler (Graseby-Andersen) following United Sates Environmental Protection Agency regulations.
The sampling procedure follows to 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 desiccators 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 have been properly maintained. Prior to dust monitoring commencing, appropriate checks have been 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 is calibrated using an orifice calibrator. Initial calibration (five points) is conducted upon installation and prior to commissioning. Calibration was carried out every six months.

Monitoring Results

To examine the construction dust levels, 24-hour TSP monitoring was undertaken at the monitoring locations as shown in Table 1 according to the EM&A Manual.

The statistical analyses of air quality monitoring data for the monitoring stations within the reporting periods are presented in the following table (see **Appendix C** for graphical plots). The 24-hour TSP levels were within the Action Level. No exceedance was found.

Table 3 statistical analyses of air quality monitoring data for the monitoring stations

Number of measurement	Average ($\mu g/m^3$)	Maximum ($\mu g/m^3$)	Minimum ($\mu g/m^3$)	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
CD1 Wong Chuk Hang San Wai					
266	63.4	168.9	12.9	173	260
CD2 Police College – Police Quarters					
266	93.5	182.7	25.7	184	260
CD3 San Wui Commercial Society of HK Chan Pak Sha School					
266	60.8	158.9	16.0	169	260
CD4 Shan On House					
285	53.6	113.6	19.6	176	260
CD5 South Horizons Phase IV – Block 25					
285	61.7	157.6	21.3	169	260

Note: Please refer to Figures 3 to 6 for the location of construction air quality monitoring stations

4.2 Noise

Monitoring Methodology

Monitoring was conducted using B&K sound analysis equipment – B&K SLM 2250. Microphone was extended 1 meter from building facades and oriented towards the works area.

Calibration Requirements

B&K 2250 sound level meters and B&K 4231 calibrators 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 impact monitoring. The sound level meters and calibrators are verified by the certified laboratory or manufacturer once every two years and once every year respectively to ensure they perform to the same level of accuracy as stated in the manufacturer's specifications.

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

Monitoring Results

Impact monitoring of LAeq, 30min noise levels was undertaken to measure construction noise levels in accordance with the Updated EM&A Manual at the monitoring locations as

shown in Table 1. The monitoring was conducted during the course of construction works. Weather conditions throughout the monitoring period were mild with light wind of not exceeding 2-3m/s on average.

The statistical analysis of noise monitoring data for these monitoring stations within the reporting period are presented in the following table and graphical plot for are presented in **Appendix C**.

Table 4 Statistical analyses of noise quality monitoring data for the monitoring stations

Number of measurement	Average (dBA)	Maximum (dBA)	Minimum (dBA)	Limit Level (dBA)
CN1 San Wui Commercial Society of HK Chan Pak Sha School				
265	67.7	75.0	61.5	70
CN2 Holy Spirit Seminary				
264	66.1	76.4	59.0	70
CN3 Shun Fung Building				
284	69.0	75.0	60.6	75
CN4 South Horizons Phase IV – Block 25 Dover Court				
264	70.6	75.2	63.8	75
CN5 TWGHs Jockey Club Rehabilitation Complex Block A				
264	66.3	74.2	57.6	75

Note:

1. (#) Or updated prediction of noise levels as contained in Construction Noise Mitigation Measures Plan

Furthermore, construction noise monitoring in term of continuous monitoring of LAeq, 30min noise levels were conducted at South Horizons Phase IV Block 25 Dover Court monitoring station CN4 during normal construction working hour (0700-1900 Monday to Saturday) from 1 April to 30 June 2012 and 1 August to 15 September 2012. Predicted noise level as stated in the Construction Noise Mitigation Measures Plan is adopted as the limit level for construction noise at CN4. Noise monitoring results has been reported in the respective monthly EM&A reports.

Noise Commissioning Test

Operational fixed plant noise and airborne and ground-borne noise commissioning test were conducted before SIL(E) operation in accordance with EM&A Manual requirement. All commissioning test results comply with relevant criteria. The Operation Airborne and Groundborne Noise Performance Test Report was approved by EPD on 10 Aug 2016 and the Fixed Plant Noise Audit Report was approved by EPD on 22 Nov 2016.

4.3 Water Quality

Monitoring Methodology

Water quality was monitored in terms of the following parameters: Dissolved Oxygen (DO, mg/L) and Dissolved Oxygen Saturation (DO %), temperature (oC), pH, turbidity (NTU), salinity (ppt), suspended solids (mg/L) and water depth (m). All parameters were measured in-situ whereas SS shall be determined by the laboratory.

Water samples were taken with a water sampler, consisting of a transparent PVC cylinder of 2 litres that can be effectively sealed with cups at both ends. The water sampler has a positive latch system to keep it open and prevent premature closure until released by a messenger when the sampler arrives is at the pre-determined depth.

Measurement was taken at 3 water depths, namely, 1m below water surface, mid-depth

and 1m above sea bed, except where the water depth less that 6m, the mid-depth station may be omitted. Should the water depth be less than 3m, only the mid-depth station was monitored.

Duplicate in-situ measurements and samples were collected and analyzed to ensure a robust statistically interpretable dataset. Where the difference in value between the first and second measurement of DO or turbidity parameters is more than 25% of the value of the first reading, the reading was discarded and further readings were taken.

Water samples for all monitoring parameters were collected, stored, preserved and analyzed according to APHA Standard Methods. Water samples were stored in high-density polythene bottles, packed in ice and delivered to the laboratory of ETS-Testconsult Limited, a HOKLAS accredited laboratory.

The SS determination work was start within 24 hours after collection of the water samples. The SS analyses followed the standard method APHA 2540D with a detection limit of 1mg/L as described in APHA Standard Methods for the Examination of Water and Wastewater.

A digital depth detector was employed to determine the water depth at selected stations when flows permit.

Calibration Requirements
On-site monitoring equipment namely the salinity meter, pH meter, turbidity meter, dissolved oxygen meter and temperature meter were calibrated before use. The methodologies for the calibration are referred to the instruction manual provided by the manufactures respectively. The calibration records are shown in Appendix C. Response of sensors and electrodes was checked with certified standard solutions before each use.

Monitoring Results
Impact water quality monitoring was undertaken in accordance with the EM&A Manual at the six designated monitoring locations at Aberdeen Channel as shown in Table 2 during the course of marine-based works at Aberdeen Channel from the periods Jul 2011 to Sep 2012 and Sep 2013 to Nov 2013.
Monitoring locations WM1-WM4 cover the Aberdeen West Typhoon Shelter, Wong Chuk Hang Nullah, WSD Brick Hill Seawater intake and Aberdeen South Typhoon Shelter while monitoring location CS1 and CS2 are the control stations. CS1 and CS2 are the upstream control stations for the Ebb and Flood tide conditions respectively.

Graphical plots are presented in Appendix D and impact water quality monitoring results have been reported in the respective monthly EM&A reports.

4.4 Action taken in Event of Exceedance

There was no exceedance in air quality parameter recorded in the reporting period for the air monitoring stations shown in Section 6.1.

During the reporting period, there were 39 and 1 numbers of exceedance of the Limit Level for the noise monitoring conducted at the monitoring station CN1 and CN2 respectively.

Construction noise exceeding the predicted noise levels as stated in the Construction Noise Mitigation Measures Plan was recorded on 2, 3 and 12 April 2012, 18, 29, 30 and 31 May 2012, 2, 4, 5, 13, 22 and 25 June 2012, 8 and 13 August 2012, 13 September 2012 and 17 October 2013 at monitoring station CN4. Investigation and necessary remedial action(s) have also been conducted following the procedures specified in the Event and Action plan under the Updated EM&A Manual. Noise mitigation measures as recommended were implemented already. The Contractors had also been reminded to

enhance the noise mitigation measures as far as possible.

Exceedances in water quality monitoring against Action/ Limit Levels were recorded at the monitoring stations WM1 to WM4 from Jul 2011 to Sep 2012 and Sep 2013 to Nov 2013. The exceedances were reviewed and considered not related to the project, please refer to respective monthly EM&A reports for the review of exceedances in water quality monitoring.

5. LANDSCAPE AND VISUAL

5.1 EM&A Requirements

The landscape and visual mitigation measures undertaken by the contractors during the construction phase have been audited on a regular basis according to the EM&A Manual.

5.2 Site Audit Results

Regular inspections and audits were conducted by the Certified Arborist as required by the EP and it was found that the transplanting works and the tree protection works being carried out by the civil works and transplantation contractors were in accordance with the EP/ EIA. Necessary tree removal or protection works were being carried out in accordance with the EP/ EIA or approved Tree Removal Application. No non-compliance was identified in the reporting period.

6. ECOLOGY

6.1 EM&A Requirements

Auditing of the ecological mitigation measures during the construction phase have been carried out on a regular basis according to the EM&A Manual.

6.2 Site Audit Results

Ardeid Night Roost

Regular inspections to the works areas around the ardeid night roost have been conducted by the ecologist to check the ecological mitigation measures with regard to the ardeids at Wong Chuk Hang Nullah throughout the reporting period. Inspections of the ardeid night roost have been made for any active ardeid nests. Whilst ardeids have never been recorded nesting at this site, precautionary checks for active nests or signs of breeding have been made.

Monthly monitoring of the ardeid night roost location was also conducted by the ecologist from a vantage point, at Ap Lei Chau Bridge (on the Wong Chuk Hang side), with an unobstructed view over the area. According to the EM&A Manual, the surveys will commence approximately one hour before sunset and continue for 20 minutes after sunset, or until nightfall, which comes sooner. Any aggregation of night roosting ardeid in the degraded woodland or adjacent area have been located and counted.

During the reporting period, monthly night ardeid survey was conducted. No ardeids was observed roosted at this location since Sep 2012.

Nevertheless, the roosting site at Wong Chuk Hang has been maintained in good condition, and proper mitigation measures were kept for the tree protection within the site throughout the reporting period.

Plant Species of Conservation Interest

Detailed field survey led by the ecologist was undertaken in March and early May 2011 to ascertain the presence of any rare or protected flora species to be affected. The surveys covered all above ground works areas of the project and the survey results were presented in the Detailed Transplanting Baseline Survey Report submitted under the Environmental Permit.

As in the Detailed Transplantating Baseline Survey Report, two plant species of conservation interest recorded in the degraded woodland to the south of Wong Chuk Hang Nullah, namely herb *Houttuynia cordata* and tree *Aquilaria sinensis* (including seedlings), and planted young tree *Ailanthus fordii* (including seedlings) recorded in a plantation area near Hong Kong Park will be influenced by the project works. Other plant species of conservation interest identified will be protected on-site and appropriate tree protection measures would be established if needed. Health condition of the most plant species protected in-situ generally remained unchanged as in the Detailed Transplanting Baseline Survey Report. However, it is noted that an *Ailanthus fordii* (tree no. OCP-T2231), which is outside the active works area at Wong Chuk Hang San Wai, was found removed by unknown party during inspection on 17th April 2015 and it is outside SIL(E) STT. The man-made slopes with three rare/protected plants (four *Gleditsia australis*, two dead *Aquilaria sinensis*, and one *Lagerstroemia fordii*) located to the north of Nam Fung Road was formally handed over to LandsD on 2nd March 2016. No inspection was undertaken in May 2016.The two transplanted *Aquilaria sinensis* in the woodland of WCH nullah have been removed in Nov 2013.

Regular monitoring on the transplanted *A. fordii within the works area* was conducted. The transplanted *A. fordii* were decay and a protection fence has been maintained in acceptable condition. Condition of both transplanted *A. fordii* S2 and the retained tree T3 remain in satisfactory condition.

According to the Transplanting Proposal for *H. cordata* submitted in Sep 2011, post transplantation maintenance period were undertaken throughout the 12-month and have been completed.

6.3 Implementation of Ecological Planting and Landscape Plan

Planting of compensatory trees along the nullah side was substantially completed in January 2016. In compliance of condition 2.13 of the Environmental Permit and section 5.1 of the approved EPLP "The success of the compensatory planting will be monitored by the Qualified Ecologist for three years after completion of the planting works at the compensatory planting area for ardeid roosting site, which is the same in the SIL EP diagonal-stripped red Figure 7 & Figure 1&1d of the revised EPLP". January 2016 was the first post planting care and maintenance covering the entire Ecological Planting and Landscape Plan area. And according to the approved Ecological Planting and Landscape Plan, the results and findings of the monitoring along the proposed habitat compensation/enhancement work areas should be reported to EPD on a quarterly basis. The quarterly report for the period between Jan to Dec 2016 was presented in Appendix G of the EM&A monthly report in a quarterly basis.

In accordance with the condition 2.13 of EP and section 5.1 of approved Ecological Planting and Landscape Plan (EPLP), quarterly report on the implementation of EPLP will be submitted separately from 2017 to 2018 and the final report will be submitted in January 2019.

7. WASTE MANAGEMENT

Mitigation measures on waste management have been implemented in accordance with the site waste management plans for the respective civil works contracts. The C&D materials have been disposed of at the public fill reception facilities while C&D wastes have been disposed of at the landfills. Quantities of wastes disposed in the reporting period are summarized in the following table:

Table 5 Statistics of Wastes Disposal from SIL(E)

Reporting Period	**Inert C&D Materials Disposed at Public Fill (m^3)**	**Inert C&D Materials Reused (m^3)**	**Non-inert Waste Disposed at Landfill (m^3)**	**Chemical Waste to Designated Treatment Facility (litre/ kg)**
Reporting Period: June to December 2011				
June to December 2011	165,197	48,781	3,415	6,257
Reporting Period: Jan to December 2012				
Reporting Period: Jan to December 2012	523,153	86,584	3,320	4,850
Reporting Period: Jan to December 2013				
Reporting Period: Jan to December 2013	292,469	325,536	15,682	11,264
Reporting Period: Jan to December 2014				
Reporting Period: Jan to December 2014	58,254	176,852	18,275	13,555
Reporting Period: Jan to December 2015				
Reporting Period: Jan to December 2015	48,731	15,597	8,196	8,633
Reporting Period: Jan to December 2016				
Reporting Period: Jan to December 2016	15,025	0	2,995	2,795

8. RECORD OF ENVIRONMENTAL COMPLAINTS

Total 88 cases of environmental complaints were received in the reporting period except for 901. One of them are classified as valid and 87 of them are classified as invalid complaints after investigations. The complaints had been handled in accordance with the requirements specified in the EM&A Manual. The ET had provided feasible solutions to the ER and Contractors in mitigating the environmental distrubances/concerns lodged by the complainants. All complaint cases had been resolved and closed. Details of the environmental complaints including investigation and follow-up actions can be referenced in the respective Monthly EM&A Reports. A complaint summary is shown in below table:

Table 6 Complaint Summary

Reporting Period	Invalid Complaint			
	Location	Frequency	Details of Complaint	File Closed
10-Oct-11	903 - Heung Yip Road, Wong Chuk Hang	1	Soil/ muddy water discharging from construction site	Closed
18-Oct-11	904 - Lee Nam Road	1	Night time construction noise	Closed
27-Oct-11	907 - Ex-Wong Chuk Hang Estate	1	Night time construction noise	Closed
4-Nov-11	902 - Hong Kong Park	1	Percussive piling noise from construction site	Closed
9-Nov-11	907 - Ex-Wong Chuk Hang Estate	1	Daytime construction noise	Closed
12-Dec-11	904 - Ap Lei Chau Main Street	1	Daytime construction noise	Closed
20-Dec-11	904 - South Horizons	1	Noise from construction site	Closed
1-Feb-12	904 - Marina Square	1	Percussive piling noise from construction site	Closed
7-Feb-12	904 - Block 25, South Horizons	1	Air quality and noise nuisance from stationary plants	Closed
28-Feb-12	903 - Ocean Park Station	1	Night time construction noise	Closed
12-Mar-12	903 - between HSS and Seawall	1	Piling noise and noise nuisance on Sunday	Closed
22-Mar-12	904 - Block 25, South Horizons	1	percussive piling noise and query about the blasting works	Closed
29-Mar-12	904 - Block 25, South Horizons	1	Daytime construction noise	Closed
3-Apr-12	904 - Block 33A, South Horizons	1	air emission from generator	Closed
30-Apr-12	904 - Block 33, South Horizons	1	smell from exhaust of diesel engine	Closed
8-May-12	903 - Wong Chuk Hang	1	Construction dust & soil/muddy water	Closed
21-May-12	904 - Blocks 23&26, SOH	2	Noise from construction site	Closed
31-May-12	904 - Blocks 23, SOH	1	Noise from construction site at Yuk Kwai Shan	Closed
1-Jun-12	903 - Wong Chuk Hang	1	Mud leakage from construction site	Closed
4-Jun-12	903 - Wong Chuk Hang	1	Mud leakage from construction site	Closed

8-Jun-12	904 - Block 20, SOH	2	Noise generated at 19:00 and YKS	Closed
19-Jun-12	903 - Near HSS / 904 - SWT	2	903 - Dust during breaking works / 904 - Dust during breaking works	Closed
29-Jun-12	903 - Junction of Nam Long Shan Road and Heung Yip Road 907 - Depot Site	2	903 - Dust nuisance at the road junction 907 - Noise from construction site	Closed
9-Oct-12	902 - Hong Kong Park	1	902 - Noise nusiance from HKB site	Closed
8-Nov-12	904 - Yuk Kwai Shan	1	904 - Noise nuisance from YKS site	Closed
12-Nov-12	904 - South Horizons	1	904 - Dust Nuisance from SOH site	Closed
19-Nov-12	904 - Yuk Kwai Shan	1	904 - Noise nuisance from YKS site	Closed
6-Dec-12	902/904/903/908	1	Noise nuisance from nighttime works/ blasting	Closed
3-Dec-12	908 - WCH Depot	1	Night time construction noise	Closed
27-Dec-12	904 - LWS tunnel	1	GB Noise nuisance at nighttime due to tunnel blasting	Closed
31-Dec-12	904 - LWS tunnel	1	GB Noise nuisance at nighttime due to tunnel blasting	Closed
17-Jan-13	904 - LWS tunnel	1	GB Noise nuisance at nighttime due to tunnel blasting	Closed
21-Jan-13	902 - Telegraph Bay BP	1	MTRC dump trucks using incorrect route from Telegraph Bay Barging Point	Closed
5-Feb-13	904 - Yuk Kwai Shan	1	904 - Noise nuisance from YKS site	Closed
22-Feb-13	904 - Yuk Kwai Shan	1	904 - Noise nuisance from YKS site	Closed
14-Feb-13	904 - LWS tunnel	1	GB Noise nuisance at nighttime due to tunnel blasting	Closed
15-Feb-13	904 - LWS tunnel	1	GB Noise nuisance to Tung at Tung Mau House in nighttime due to tunnel blasting	Closed
20-Feb-13	904 - Yuk Kwai Shan/ SOH	1	904 - Noise nuisance from YKS/ SOH site	Closed
27-Feb-13	904 - South Horizons	1	904 - Nighttime hammering/	Closed

			Vibration Noise from SOH site	
5-Mar-13	904 - South Horizons	1	904 - Nighttime hammering/ Vibration Noise from SOH site	Closed
11-Mar-13	904 - South Horizons	1	904 - Dust nuisance from SOH site near HEC builiding	Closed
11-Mar-13	904 - LWS Barging Point	1	904 - Dust Nuisance from LWS BP	Closed
11-Mar-13	904 - Yuk Kwai Shan	1	904 - Noise nuisance from YKS site	closed
18-Mar-13	904 - LWS Barging Point	1	Daily truckloads to BP exceeded 240 as agreed to skateholders.	closed
15-Mar-13	903 - Heung Yip Road, Wong Chuk Hang	1	Dark Smoke from the excavator	closed
23-Apr-13	903 - Wong Chuk Hang Station site	1	Air nuisance from construction site of WCH MTR Station	closed
29-May-13	904 - Yuk Kwai Shan	1	Daytime construction noise from YKS site	closed
6-Jun-13	904 - South Horizons	1	Wastewater from 904 SOH discharge to SOH sea shore	closed
22-Jul-13	904 - South Horizons	1	noise within restricted hours from MTR's construction site at SOH	closed
6-Aug-13	904 - South Horizons	1	percussive piling noise from MTR construction site in the vicinity of SOH	closed
16-Aug-13	903-Nam Long Shan Road	1	Blue smoke from dynamo/generator from the construction site of MTR- South Island Line at Nam Long Shan Road	closed
27-Aug-13	908 - WCH Depot	1	Night time construction noise from concreting works at WCH Depot	closed
24-Sep-13	904 - Ap Lei Chau Main St	1	Dark smoke and noise from construction site	closed
25-Oct-13	902 - Hong Kong Park	1	902 - Noise from blasting works	closed
4-Nov-13	904 - Lei Tung Estate	1	904 - percussive noise from site	closed

5-Dec-13	913- Ap Lei Chau Bridge	1	913 - Noise from Ap Lei Chau Bridge viaduct	closed
30-Dec-13	904 - South Horizons	1	Blue smoke from the plant from the construction site of SOH	closed
31-Dec-13	904 - LWS Barging Point	1	Dust nuisance from barging point	closed
6-Jan-14	904 - South Horizons	1	Dust nuisance from SOH Package 3	closed
14-Jan-14	903/913 - Welfare Road	1	Conreting noise after 7pm near Welfare Road	closed
23-Jan-14	904 - LWS Barging Point	1	Smoke from the barge	closed
24-Jan-14	904 - South Horizons	1	904 - Nighttime noise from SOH site	closed
11-Feb-14	904 - Ap Lei Chau Lei Tung Estate Road	1	904 - Nighttime noise noise from cutting of the road surface and workers' noise	closed
25-Feb-14	902 - Nam Fung Portal	2	Dark Smoke and Malodour at Nam Fung Tunnel Portal	closed
28-Mar-14	904 - Lei Tung Entrance B	1	Daytime noise from trimming of the concrete slab	closed
24-Apr-14	902 - Telegraph Bay BP	1	Daytime noise from unloading of spoil to barge	closed
12-Aug-14	902 - Nam Fung Portal	1	Nighttime noise from vehicle entering / leaving the site entrance	closed
6-Feb-15	904 - South Horizons	1	Excessive lighting and glare from EPIW footbridge to Ap Lei Chau Estate	closed
9-Feb-15	904 - LET B	1	Odour from the chemical toilet	closed
17-Feb-15	902 - Telegraph Bay BP	1	Black water flowing to the open sea	closed
24-Feb-15	904 - Ap Lei Chau Drive	1	Nighttime noise from the plant in the site	closed
12-Mar-15	902 - Telegraph Bay BP	1	Dust during unloading from the barge	closed
26-Aug-15	908 - WCD	1	Dust during grinding	closed
28-Aug-15	904 - South Horizons	1	Daytime noise from SOHPB	closed

23-Sep-15	904 - LET B	1	Wastewater discharged from LET-B	closed
27-Nov-15	904 - LET A	1	Nighttime noise near Ap Lei Chau Bridge Road	closed
31-Dec-15	904 - LET A	2	Nighttime noise near Ap Lei Chau Bridge Road	closed
14-Jan-16	904 - South Horizons	2	High frequency noise nuisance from source at near 20 and 23A SOH	closed
17-Feb-16	902 - Hong Kong Park	1	Daytime noise from breaking works at HKB	closed
29-Mar-16	902 - Hong Kong Park	1	Daytime noise from breaking works at HKB	closed
22-Apr-16	32 Heung Yip Road	1	Train noise near WCH Station around midnight	closed
5-May-16	904 - South Horizons	1	Dark dust emission	closed
19-May-16	904 - Yuk Kwan Shan	1	Dust emission from shotcreting at YKS	closed
26-May-16	904 - South Horizons	1	Daytime breaking noise at SOH	closed
26-May-16	904 - South Horizons	1	Daytime breaking noise at SOH before 9am	closed
6-Jul-16	904 - South Horizons	1	Daytime breaking noise at SOH	closed
16-Dec-16	Aberdeen Channel Crossing of the viaduct section	1	High frequency noise from source at nearnoise near Aberdeen Channel Crossing of the viaduct section	closed

Reporting Period	**Valid Complaint**			
	Location	**Frequency**	**Details of Complaint**	**File Closed**
25-Sep-13	904 - Block 25, South Horizons	1	904 - Noise from YKS site	Closed

9. RECORD OF NON-COMPLIANCES

There was no non-compliance identified in the reporting period of June 2011 to December 2016 for SIL(E) Project which exceedances of the Action or Limit Levels for noise and water quality impact monitoring were detailed in Section 4.

10. RECORD OF NOTIFICATIONS OF SUMMONS AND PROSECUTIONS

No summon or prosecution related to environmental issue was received or made against the Project in the reporting period.

11. STATUS OF STATUTORY SUBMISSIONS

11.1 Submissions required under Environmental Permit

A summary of the status of submissions required under the SIL(E) Environmental Permit in as of Jan 2017 is shown below:

EP Clause No.	Description of Submission	Status
1.11	Commencement date of construction	Submitted on 25 May 2011
1.14	Commencement date of operation	Submitted on 30 Sep 2016
2.1 & 2.2	Employment of IEC & ET	Submitted on 6 Apr 2011 Replacement of IEC submitted on 12 Mar 2015 and approved on 20 Mar 2015 Replacement of ET submitted on 12 Dec 2016 Replacement of ET for EPLP area submitted on 16 Jan 2017
2.3	Employment of Qualified Ecologist	Submitted on 6 Apr 2011
2.4	Employment of Certified Arborist	Updated Certified Arborist submitted on 19 Aug 2013
2.5	Management organization of main construction companies	Updated main construction companies submitted on 15 Jun 2012
2.6	Construction programme & EP submission schedule	Submitted on 10 Jun 2011
2.7	Set up of Community Liaison Group	Submitted on 20 Apr 2011
2.8	Updated EM&A Manual	EP Condition fulfilled dated 13 February 2012
2.9	Construction Noise Mitigation Measures Plan	Updated Construction Noise Mitigation Measures Plan submitted on 11 May 2012 and EP Condition fulfilled date 22 May 2012
2.11	Construction & demolition materials management plan for barging points	Revised Construction & Demolition Materials Management Plan re-submitted on 7 January 2014.
2.13 (a)	Ecological planting & landscape plan	Revised plan submitted on 15 June 2014, EP Condition fulfilled dated 22 Jun 2016
2.13 (b)	As built drawings of ecological planting & landscape works	Re-submitted on 15 Jul 2016
2.13 (c)	Final monitoring report of ecological planting & landscape works	To be submitted no later than 1 month after completion of the 3-year post

EP Clause No.	Description of Submission	Status
		planting care and maintenance period
2.14 (a)	Detailed transplanting baseline survey report for plant species of conservation interest	Resubmitted on 8 Sep 2011 and no further comment received
2.14 (b)	Transplantation proposal for plant species of conservation interest	H. cordata: EP Condition fulfilled dated 15 Sep 2011 Aq. sinensis: EP Condition fulfilled dated 21 Feb 2012 Ai. fordii: EP Condition fulfilled dated 18 Oct 2011
2.14 (c)	As built drawings of transplanting works for plant species of conservation interest	H. cordata: EP Condition fulfilled dated 15 Sep 2011 Aq. sinensis: EP Condition fulfilled dated 2 May 2012 Ai. fordii: EP Condition fulfilled dated 22 Dec 2011
2.15	Tree protection plan	Updated Tree protection plan submitted on 4 May 2012 and EP Condition fulfilled dated 30 May 2012
2.16(a)	Silt curtain plan	For Aberdeen Channel: EP Condition fulfilled dated 12 Aug 2011 For Telegraph Bay: EP Condition fulfilled dated 14 Dec 2011 Water Quality Baseline Monitoring Report for Marine-based Demolition work of the temporary pier at Telegraph Bay was submitted to EPD on 26 Nov 2014 and deposited in EIAO Registered Office on 4 Dec 2014
2.17(b)	Sample test results for on-site re-use of marine sediment	EP Condition fulfilled dated 26 Apr 2013
2.17(c)	Sediment Sampling Report	EP Condition fulfilled dated 11 Jun 2014
2.25	Operational groundborne noise review plan	Resubmitted on 2 Jul 2014 and EP Condition fulfilled dated 22 Jul 2014
2.26	Operational groundborne noise mitigation measures plan	Resubmitted on 2 Jul 2014 and EP Condition fulfilled dated 22 Jul 2014
2.27	As built drawings for operational groundborne noise mitigation measures	Submitted on 18 Feb 2016 and EP Condition fulfilled dated 15 Apr 2016.
2.29	As built drawings for operational airborne noise mitigation measures on viaduct section	Submitted on 21 Jul 2016. Condition fulfilled dated 23 Dec 2016.
2.30	Noise performance test report	Operational Ground-borne Noise Performance Test Report submitted on 12 Apr 2016. Operational Air-borne Noise Performance Test Report submitted 21 Jul 2016. Condition fulfilled dated 10 Aug 2016.
2.31	Fixed plant noise audit report	Proposal of updating maximum sound power levels for fixed plant noise

EP Clause No.	Description of Submission	Status
		sources and fixed plant noise audit report submitted on 1 Nov 2016. Re-submitted on 21 Nov 2016. Condition fulfilled on 22 Nov 2016.
2.32	Visual & landscape plan	• Part1 - Site No.6 Nam Fung Portal: EP Condition fulfilled dated 25 Jun 2013 • Part2 - Chung Hom Shan Magazine Site: EP Condition fulfilled dated 13 Oct 2014 • Part3 - EPIW Footbridge to Ap Lei Chau Esate: EP Condition fulfilled dated 27 Feb 2015 • Part4- Wong Chuk Hang Depot: Re-submitted on 23 Dec 2016 • Part 5 – Viaduct Section from Nam Fung Portal to Ocean Park Station Re-submitted on 15 Jun 2016 • Part 6 - Ap Lei Chau Cut and Cover Tunnel, Ex-Harbour Mission School and Sham Wan Towers Yellow Area: Resubmitted on 24 Jun and 22 Jul 2015; no comments confirmed on 10 Jul 2015 • Part 7- Viaduct Section from Ocean Park Station to Aberdeen Channel Re-submitted on 24 May • Part 8- Dragon Boat Area Re-submitted on 23 Jun 2016 • Part 9 – Ocean Park Station and Wong Chuk Hang Station Re-submitted on 21 Jul 2016 • Part 10 – South Horizons Station Plant Building Submitted on 4 Sep 2015; no comments confirmed on 5 Nov 2015 • Part 11 – Nam Fung Portal site Submitted on 4 Aug 2015; no comments confirmed on 3 Mar 2016 • Part 12 – Lee Wing Street Ventilation Building and Lee Nam Road Sitting-out Areas Submitted on 13 Aug 2015; no comments confirmed on 24 May 2016 • Part 13 – Temp. Bus Terminus at J/O Nam Long Shan Road and Police School Road Re-submitted on 19 Jul 2016 • Part 14 – Lei Tung Station Re-submitted on 17 Jun 2016 • Part 15 – Nam Fung Building Submitted on 27 Apr 2016; no comments confirmed on 1 Aug 2016

EP Clause No.	Description of Submission	Status
		• Part 16 – South Horizons Station Submitted on 22 Jun 2016 • Part 17 – Hong Kong Park Ventilation Building Submitted on 21 Apr 2016; no comments confirmed on 17 Oct 2016 • Part 18- New ADM station Submitted on 21 Nov 2016
3.1	Environmental Monitoring and Audit Requirements	• Termination of water quality monitoring at Aberdeen Channel approved on 23 Dec 2013 • Requirements of noise and air quality impact monitoring at Telegraph Bay as recommended in the C&DMMP was fulfilled on 6 Nov 2014. • Termination of noise and air quality monitoring at Telegraph Bay was submitted on 29 May 2015 • Termination of water quality monitoring at Telegraph Bay was submitted on 19 Jun 2015 • Impact air quality and noise monitoring as well as regular site inspection for viaduct section from Nam Fung Portal to Aberdeen Channel Crossing with Nam Fung Ventilation Building, OCP Station, WCH Station & WCH Depot ceased since 21 Jul 2016 • Impact air quality and noise monitoring as well as regular site inspection for works area at Admiralty Station and Tunnel Section from Aberdeen Channel Crossing to South Horizon, including Lei Tung Station, South Horizons Station and Plant Building as well as Lee Wing Street Ventilation Building have been ceased after November 2016. • EM&A programme for Hong Kong Park Ventilation Building ceased since 1 Oct 2016 • EM&A programme for Lei Tung Station and South Horizons Station and Plant Building as well as Lee Wing Street Ventilation Building ceased since 30 Nov 2016
3.3	Baseline monitoring report	EP Condition fulfilled dated 21 Feb 2012
3.4	Monthly EM&A reports	Submit within 2 weeks after the end of the reporting month
4.2	Internet address of EM&A and project data	Update of internet address submitted on 24 Dec 2014

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 contractor's 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. It is concluded that the environmental protection and pollution control works had been implemented satisfactorily.

12.2 Other Notable Events

SIL(E) Operation

Operation of SIL(E) has been commenced on 28 December 2016.

IEC Site Inspections

The IEC conducted site inspection for SIL(E) projects works area on monthly basis. Observations, if any, were noted during the site inspection and respective Contractors had follow up the issues as identified in the site inspections in a responsible manner.

Remaining works in Harcourt Garden

As there would be some remaining construction works e.g. RC Construction works at station box, ABWF works, E&M works for Contract 914, the EM&A programme and rregular site inspections conducted by the Environmental Team (ET) for works areas in Harcourt Garden would maintain until construction works completed.

Termination of SIL(E) EM&A programme for Contract 902, 903, 904, 907 and 908

As all the construction works under Contract 902, 903, 904, 907 and 908 are completed, this Final EM&A Report Part1 presented the results of EM&A works and the impact monitoring for the construction works undertaken by contractors during the period of Jun 2016 to Dec 2016. Another Final EM&A Report-Part2 would be submitted in due course after completion of works at Harcourt Garden.

13. 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. It is concluded that the environmental mitigation measures as recommended in the approved SIL(E) Project EIA Report had been implemented satisfactorily.

14. CONCLUSIONS

The passenger service of the SIL(E) has been commenced on 28 Dec 2016. As all the SIL(E) related works have been completed under Contract 902, 903, 904, 907 and 908, this final Environmental Monitoring and Audit (EM&A) Report Part 1 presented the results of EM&A works and the impact monitoring for the construction works for the period of Jun 2011 to Dec 2016.

In view of completion of construction works that have the potential to cause significant environmental impact for Contract 902, 903, 904, 907 and 908, all relevant dust and noise monitoring works have been ceased with letters of notification to EPD issued on 26 Jul, 14 Oct and 21 Dec 2016.

As there would be some remaining construction works for Contract 914, the EM&A programme and regular site inspections conducted by the Environmental Team (ET) for works areas in Harcourt Garden would maintain until construction works completed.

Impact monitoring for air quality and noise were conducted in accordance with the EM&A Manual in the reporting period. There was no exceedance in air quality parameter recorded in the reporting period for the air monitoring stations. During the reporting period, there were 39 and 1 numbers of exceedance of the Limit Level for the noise monitoring conducted at the monitoring station CN1 and CN2 respectively. Construction noise exceeding the predicted noise levels as stated in the Construction Noise Mitigation Measures Plan was recorded on 2, 3 and 12 April 2012, 18, 29, 30 and 31 May 2012, 2, 4, 5, 13, 22 and 25 June 2012, 8 and 13 August 2012, 13 September 2012 and 17 October 2013 at monitoring station CN4. Investigation and necessary remedial action(s) have also been conducted following the procedures specified in the Event and Action plan under the Updated EM&A Manual. Noise mitigation measures as recommended were implemented already. The Contractors had also been reminded to enhance the noise mitigation measures as far as possible.

Exceedances in water quality monitoring against Action/ Limit Levels were recorded at the monitoring stations WM1 to WM4 from Jul 2011 to Sep 2012 and Sep 2013 to Nov 2013. The exceedances were reviewed and considered not related to the project, please refer to respective monthly EM&A reports for the review of exceedances in water quality monitoring.

There was no successful environmental prosecution in the reporting period of Jun 2011 to Dec 2016.

Site inspections were conducted by the Environmental Team on a weekly basis to monitor propoer implementation of environmental pollution control and mitigation measures for the SIL(E) project.

There was no non-compliance identified in the reporting period of Jun 2011 to Dec 2016 for SIL(E) project.

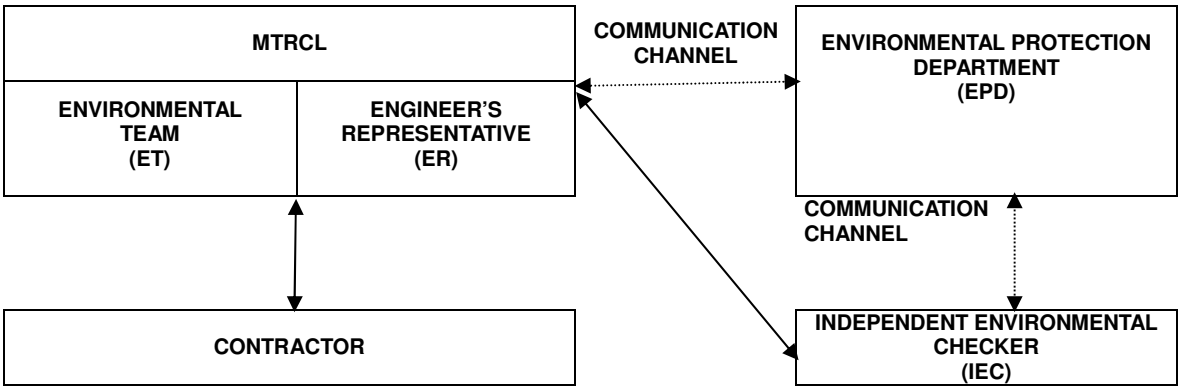
It is concluded from the environmental monitoring and audit works for the SIL(E) Project that the construction works were undertaken in an appropriately environmentally sensitive manner in the reporting period. The environmental protection and pollution control measures provided by the respective civil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

The ET will continue the implementation of the EM&A programme for 914 in accordance to the EM&A Manual and to a level consistent with MTRCL's Corporate Sustainability Policy.

APPENDIX A1

Project Organization

Appendix A1
Project Organization and Lines of Communications



APPENDIX A2

Contact List of Key Personal of the Project

Appendix A2
Contact List of Key Personnel

Table A2.1 Contact List of Key Personnel of Project Management

Organization	Name	Telephone
Independent Environmental Checker	Mr. Sam Tsoi	2268 3208
Environmental Team Leader	Ms. Felice Wong	2688 1760
Engineer's Representative		
Project Manager – SIL	Mr. Ken Wong	853 8506 6466
Construction Manager – SIL (901)	Mr. Mike Bezzano	3963 7282
Sr Construction Engineer – SIL (902, 903, 904, 907, 908)	Mr. Thomas Li	2500 3661
Contract No. 901 **Admiralty Integrated Station and SCL Enabling Works** Main Contractor: Kier – Laing O'Rourke – Kaden Joint Venture		
Project Director	Mr. Viv Jones	9248 8482
QA & Environmental Manager	Mr. Ronald Fung	9777 7667
Contract No. 902 **Nam Fung Tunnel and Ventilation Buildings** Main Contractor: Nishimatsu Construction Co., Ltd.		
Project Manager	Mr. Masanori Ishii	3190 7500
Deputy Project Manager	Mr. Yasunari Honda	3190 7500
Senior Construction Manager (External)	Mr. Yuji Maruoka	3190 7500
Senior Construction Manager	Mr. Hisao Kakegawa	3190 7500
Contract No. 903 **Ocean Park Station, Wong Chuk Hang Station, Viaduct and Aberdeen Channel Bridge** Main Contractor: Leighton Contractors (Asia) Ltd.		
Project Manager	Mr. Au Wing Chung	9319 8198
Construction Manager	Mr. Gary Chow	9162 1142
Contract No. 904 **Lei Tung Station, South Horizons Station and Tunnels** Main Contractor: Leighton – John Holland Joint Venture		
Operation Manager	Mr. Paul Freeman	3975 7688
Project Director	Mr. Jan Torka	6323 9468
Contract No. 908 **Wong Chuk Hang Depot Superstructure** Main Contractor: Hsin Chong Construction Company Limited		

Organization	Name	Telephone
Project Manager	Mr. Eric Chan	6404 0775
Deputy Project Manager	Mr. Foster Tsang	9105 3265
Contract No. 914 **External Works in Harcourt Garden, Admiralty** Main Contractor: Build King Construction Limited		
Project Director	Mr. Hon Yee	9090 3109
QA & Environmental Manager	Mr. Ronald Fung	9777 7667

Table A2.2 Contact List of Key Personnel of EPD

Organization	Name	Telephone
EPD		
Sr Env Protection Offr (Metro Assessment)	Mr. Richard Wong	2835 1128
Sr Env Protection Offr (Regional S)	Dr. Anthony Lee	2516 1802
Sr Env Protection Offr (Regional S)	Mr. Sean Law	2516 1806

APPENDIX B1

Action and Limit Levels for Construction Noise and Air Quality

Appendix B1
Action and Limit Levels for Construction Noise and Air Quality

Action and Limit Levels for 24-hours TSP

Table B1.1 Action and Limit Levels for 24-hour TSP

ID	Description	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
CD1	Wong Chuk Hang San Wai	173	260
CD2	Police College – Police Quarters	184	260
CD3	San Wui Commercial Society of HK Chan Pak Sha School	169	260
CD4	Shan On House	176	260
CD5	South Horizons Phase IV – Block 25	169	260

Note: TSP levels are to the nearest whole number, with values of 0.5 rounded up

Action and Limit Levels for 1-hour TSP

Table B1.2 Action and Limit Levels for 1-hour TSP

ID	Description	Action Level ($\mu g/m^3$)	Limit Level ($\mu g/m^3$)
CD1	Wong Chuk Hang San Wai	315	500
CD2	Police College – Police Quarters	311	500
CD3	San Wui Commercial Society of HK Chan Pak Sha School	322	500
CD4	Shan On House	318	500
CD5	South Horizons Phase IV – Block 25	336	500

Note: 1-hour TSP criterion recommended in the EIAO-TM
TSP levels are to the nearest whole number, with values of 0.5 rounded up

Action and Limit Levels for Construction Noise

Table B1.3 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
Daytime (0700-1900), Monday through Saturday excluding Public Holidays	When one document complaint received.	$L_{Aeq\ 30mins}$75dB(A)[(1)(2)]
All evenings (1900-2300)		Subject to control under the Noise Control Ordinance
General Holidays (including all Sundays) during the daytime and evening (0700-2300)		Subject to control under the Noise Control Ordinance
All night time periods (2300-0700)		Subject to control under the Noise Control Ordinance

(1) 70dB(A) for schools and 65dB(A) during school examination periods.
(2) Updated prediction of noise levels as contained in the construction noise mitigation measures plan.

APPENDIX B2

Action and Limit Levels for Water Quality

Appendix B2
Action and Limit Levels for Water Quality

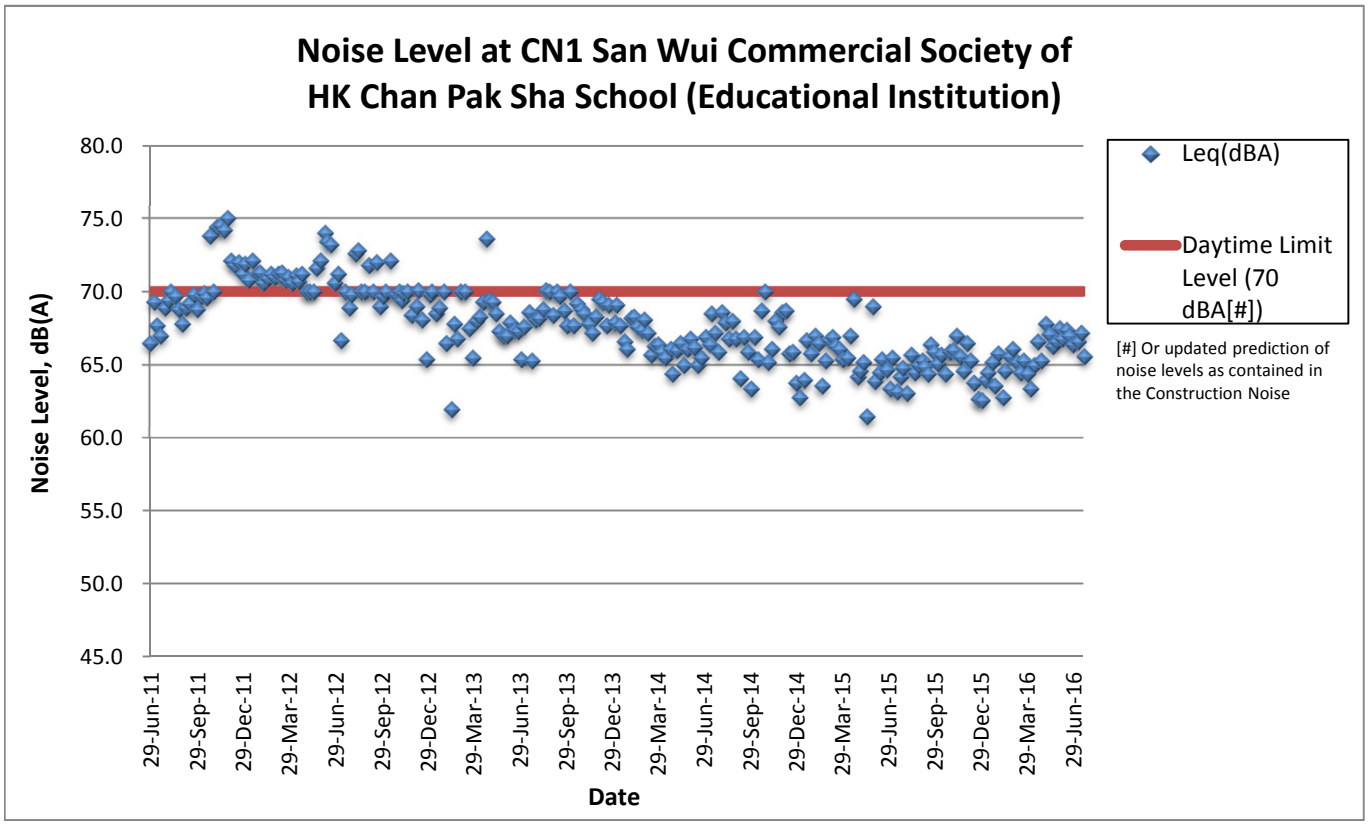
Table B2.1 Action and Limit Levels for Ebb Condition

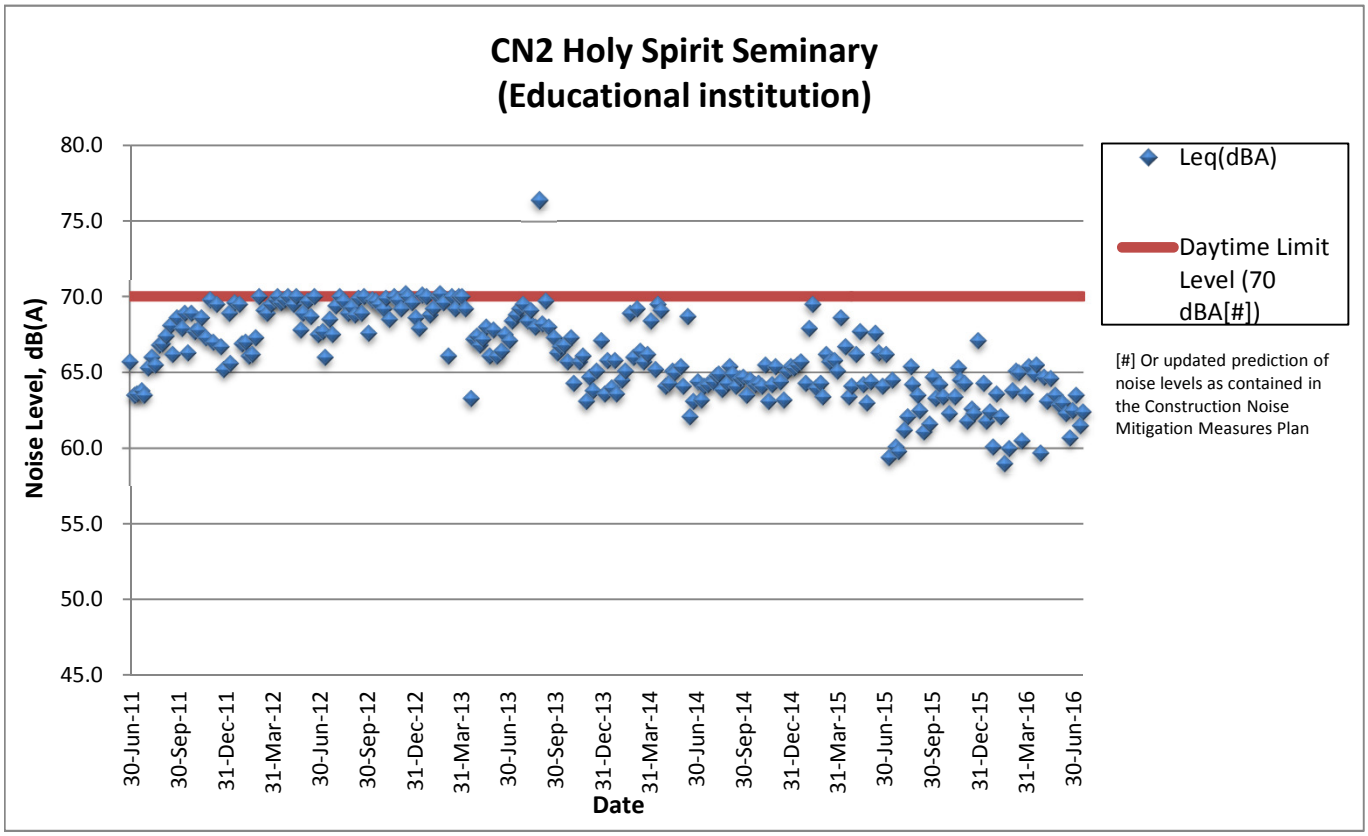
Tide: **Ebb** Location: **WM1**				
Parameters	Action Level		Limit Level	
DO in mg/L	Surface	5.9	Surface	5.5
	Middle	6.0	Middle	5.6
	Bottom	6.0	Bottom	5.7
SS in mg/L (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Turbidity in NTU (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Tide: **Ebb** Location: **WM2**				
Parameters	Action Level		Limit Level	
DO in mg/L	Surface	5.9	Surface	5.5
	Middle	NA	Middle	NA
	Bottom	6.0	Bottom	5.7
SS in mg/L (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Turbidity in NTU (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Tide: **Ebb** Location: **WM3**				
Parameters	Action Level		Limit Level	
DO in mg/L	Surface	6.1	Surface	5.7
	Middle	6.1	Middle	5.7
	Bottom	6.3	Bottom	5.9
SS in mg/L (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Turbidity in NTU (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Tide: **Ebb** Location: **WM4**				
Parameters	Action Level		Limit Level	
DO in mg/L	Surface	6.1	Surface	5.8
	Middle	6.3	Middle	6.0
	Bottom	6.5	Bottom	6.2
SS in mg/L (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Turbidity in NTU (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	

Table B2.2 Action and Limit Levels for Flood Condition

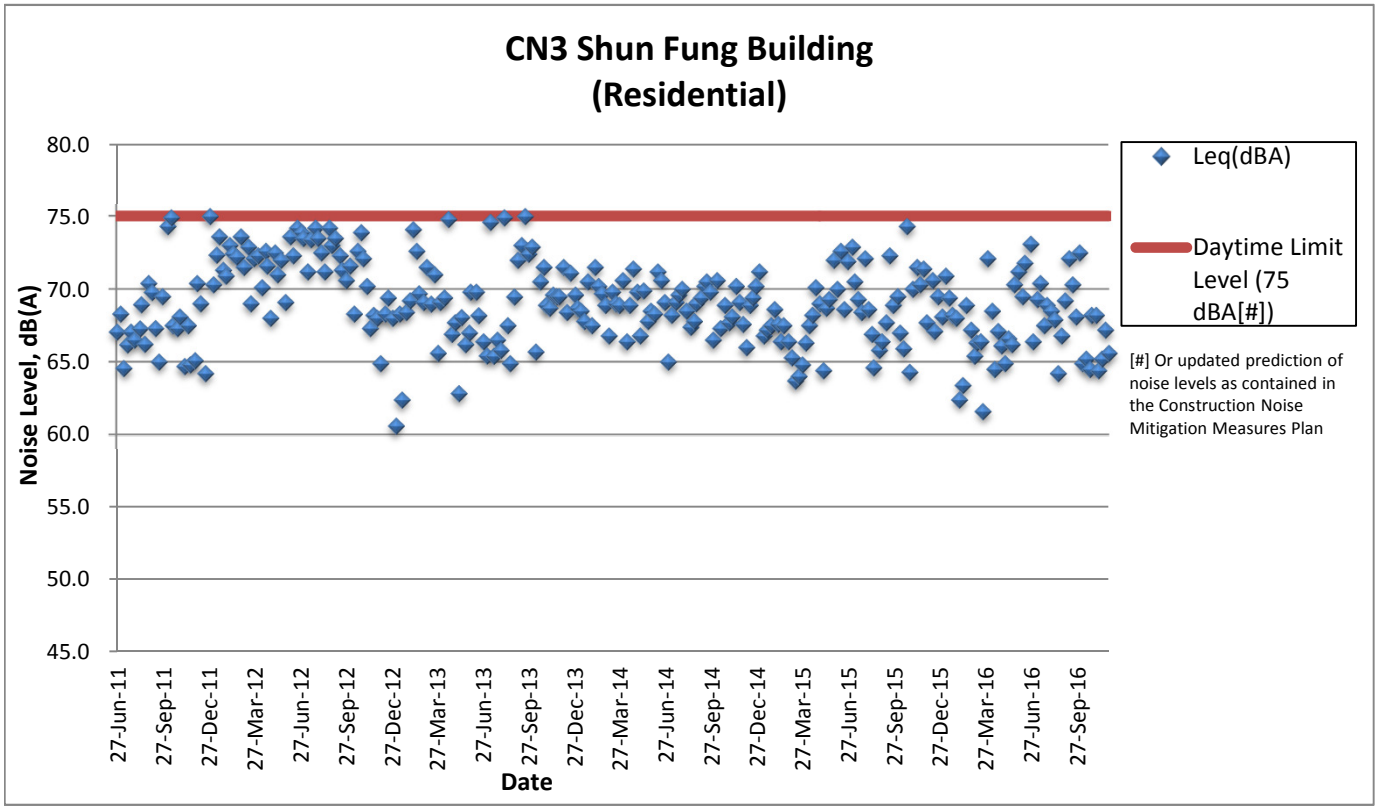
Tide: **Flood** Location: **WM1**				
Parameters	Action Level		Limit Level	
DO in mg/L	Surface	5.9	Surface	5.6
	Middle	6.1	Middle	5.7
	Bottom	6.2	Bottom	5.8
SS in mg/L (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Turbidity in NTU (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Tide: **Flood** Location: **WM2**				
Parameters	Action Level		Limit Level	
DO in mg/L	Surface	6.0	Surface	5.7
	Middle	NA	Middle	NA
	Bottom	6.1	Bottom	5.8
SS in mg/L (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Turbidity in NTU (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Tide: **Flood** Location: **WM3**				
Parameters	Action Level		Limit Level	
DO in mg/L	Surface	6.0	Surface	5.7
	Middle	6.2	Middle	5.8
	Bottom	6.2	Bottom	5.9
SS in mg/L (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Turbidity in NTU (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Tide: **Flood** Location: **WM4**				
Parameters	Action Level		Limit Level	
DO in mg/L	Surface	6.0	Surface	5.8
	Middle	6.2	Middle	5.8
	Bottom	6.3	Bottom	6.1
SS in mg/L (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	
Turbidity in NTU (depth averaged)	120% of upstream control station of the same day		130% of upstream control station of the same day	

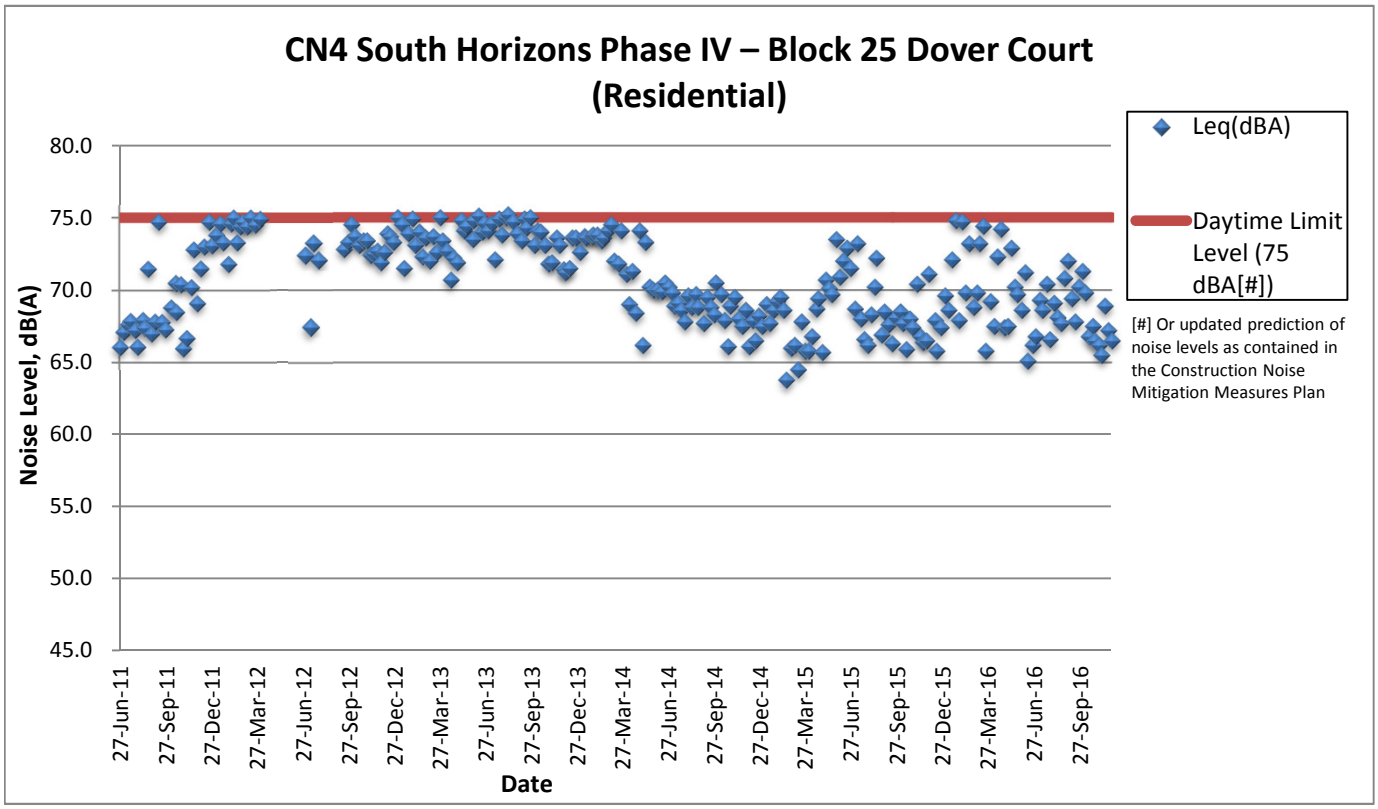
Graphical Plots for Noise Monitoring Results



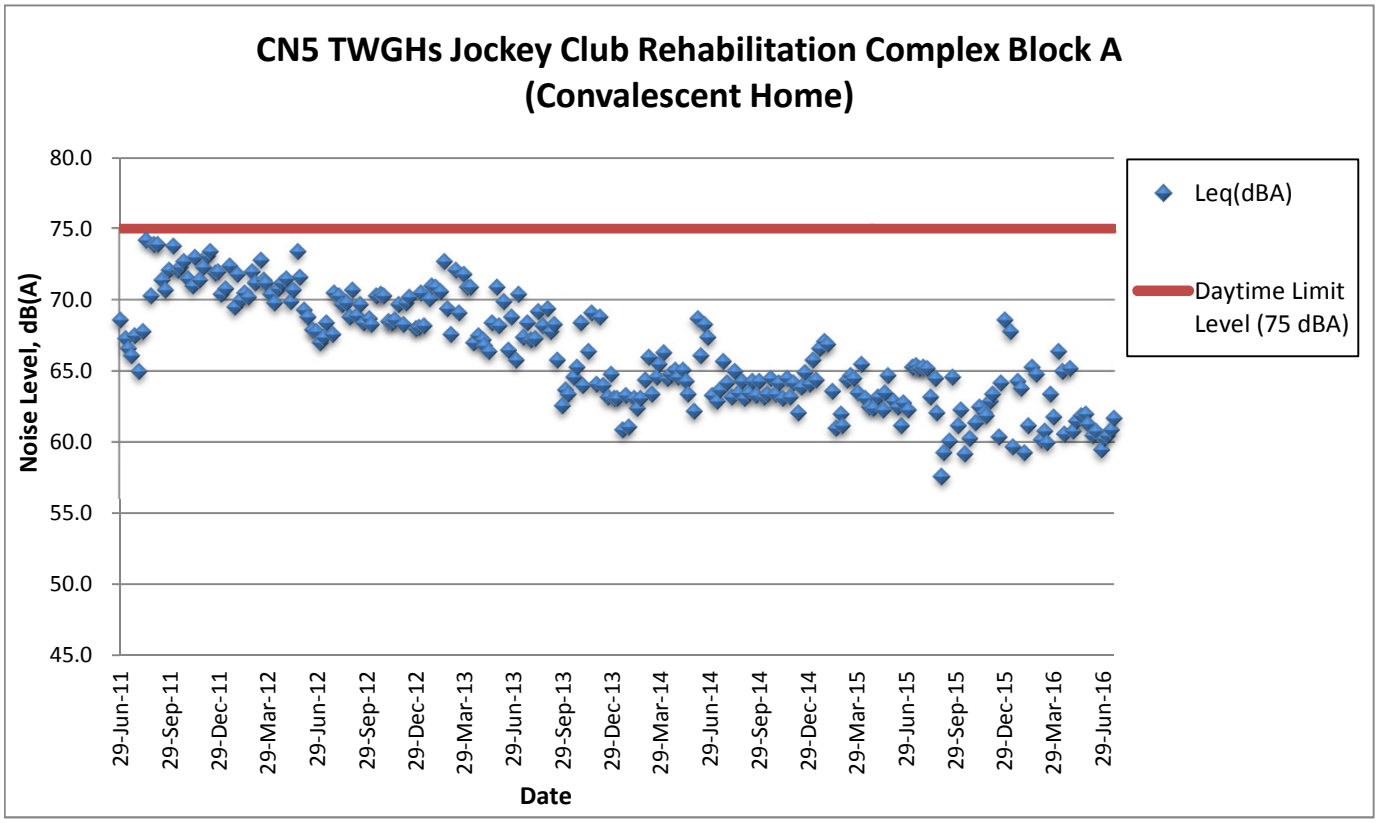


Graphical Plots for Noise Monitoring Results

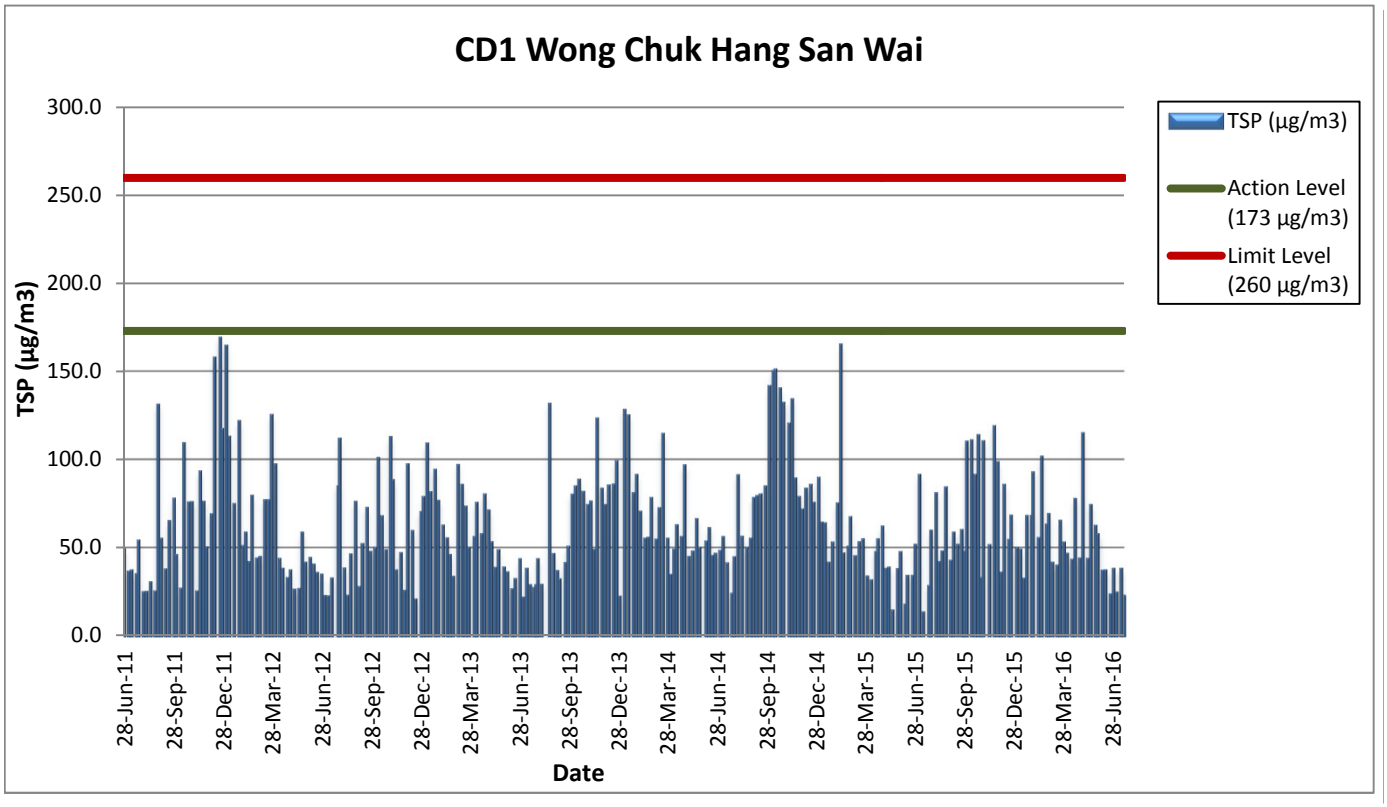


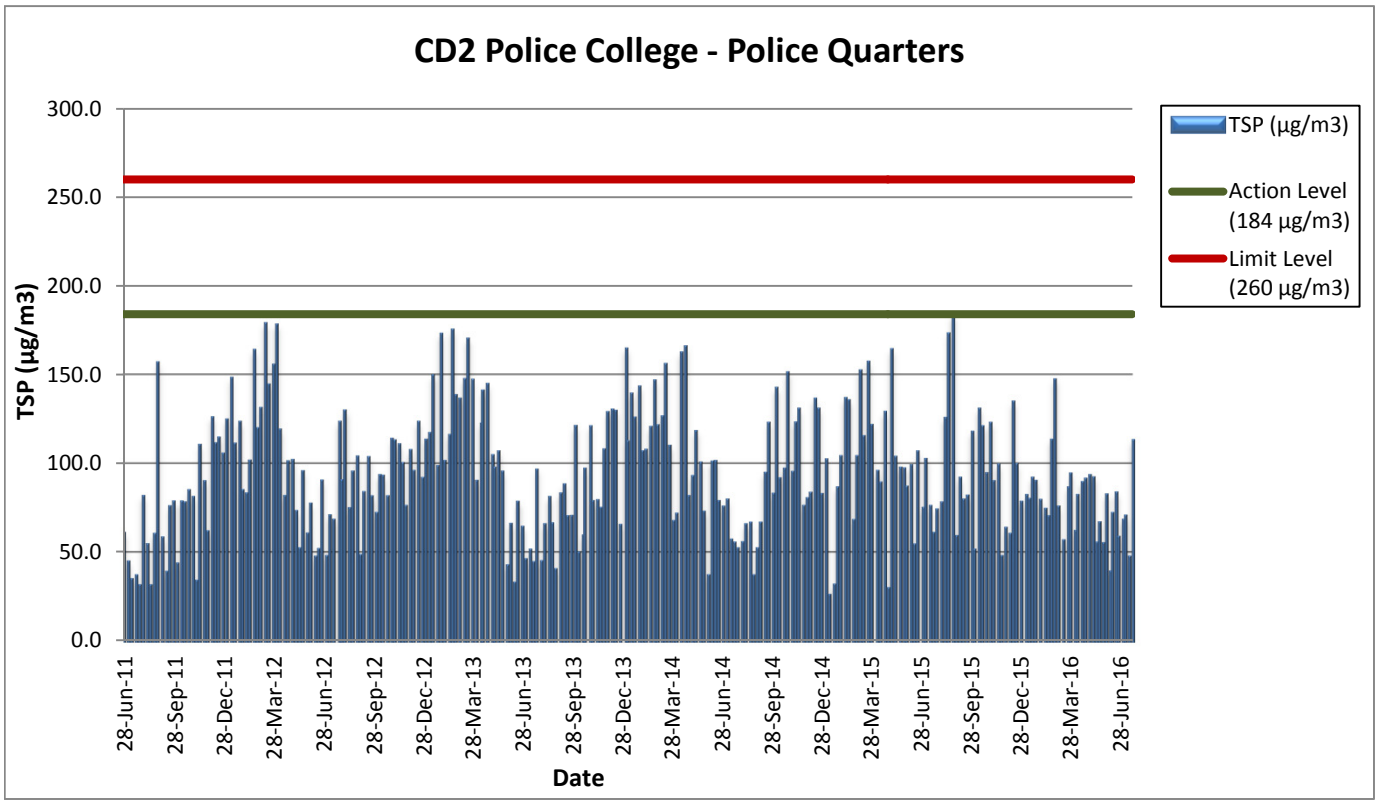


Graphical Plots for Noise Monitoring Results

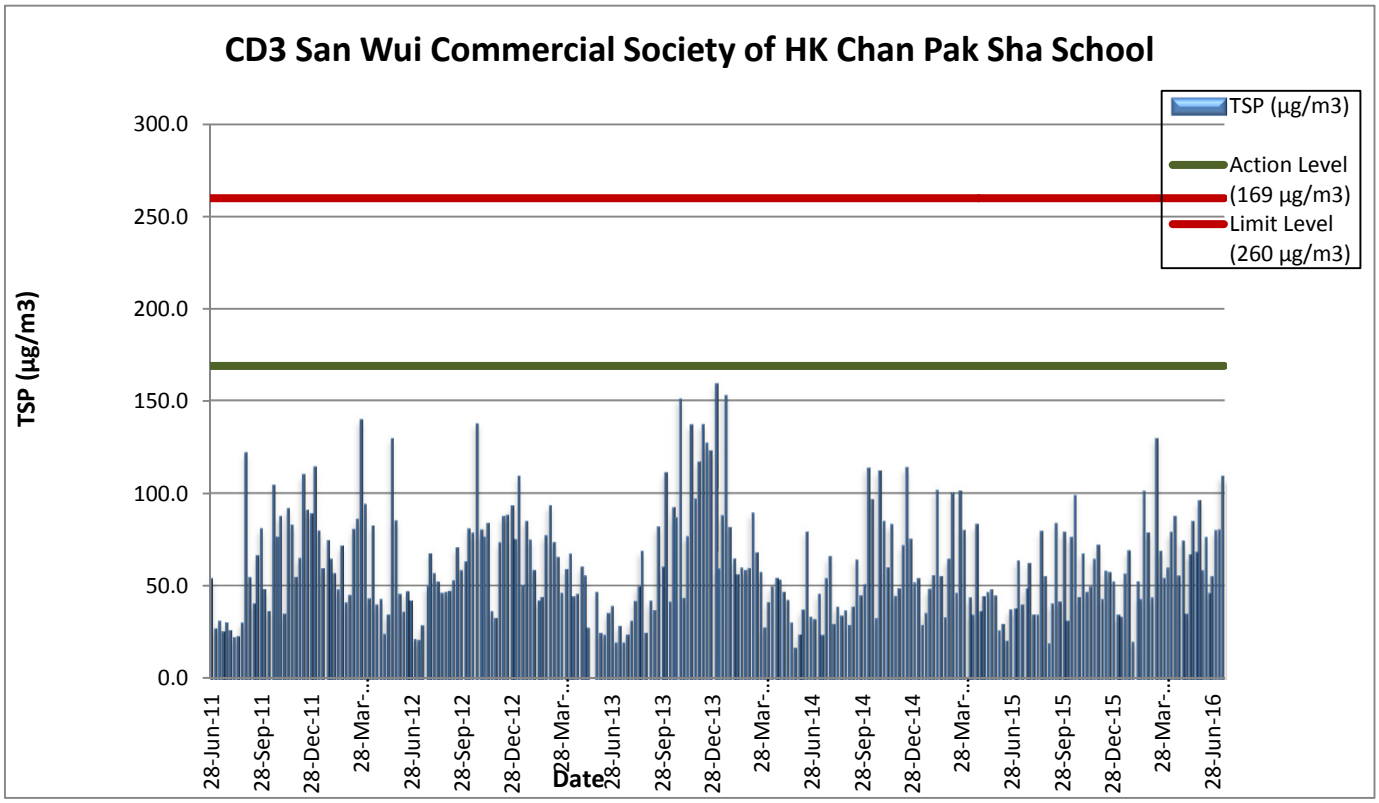


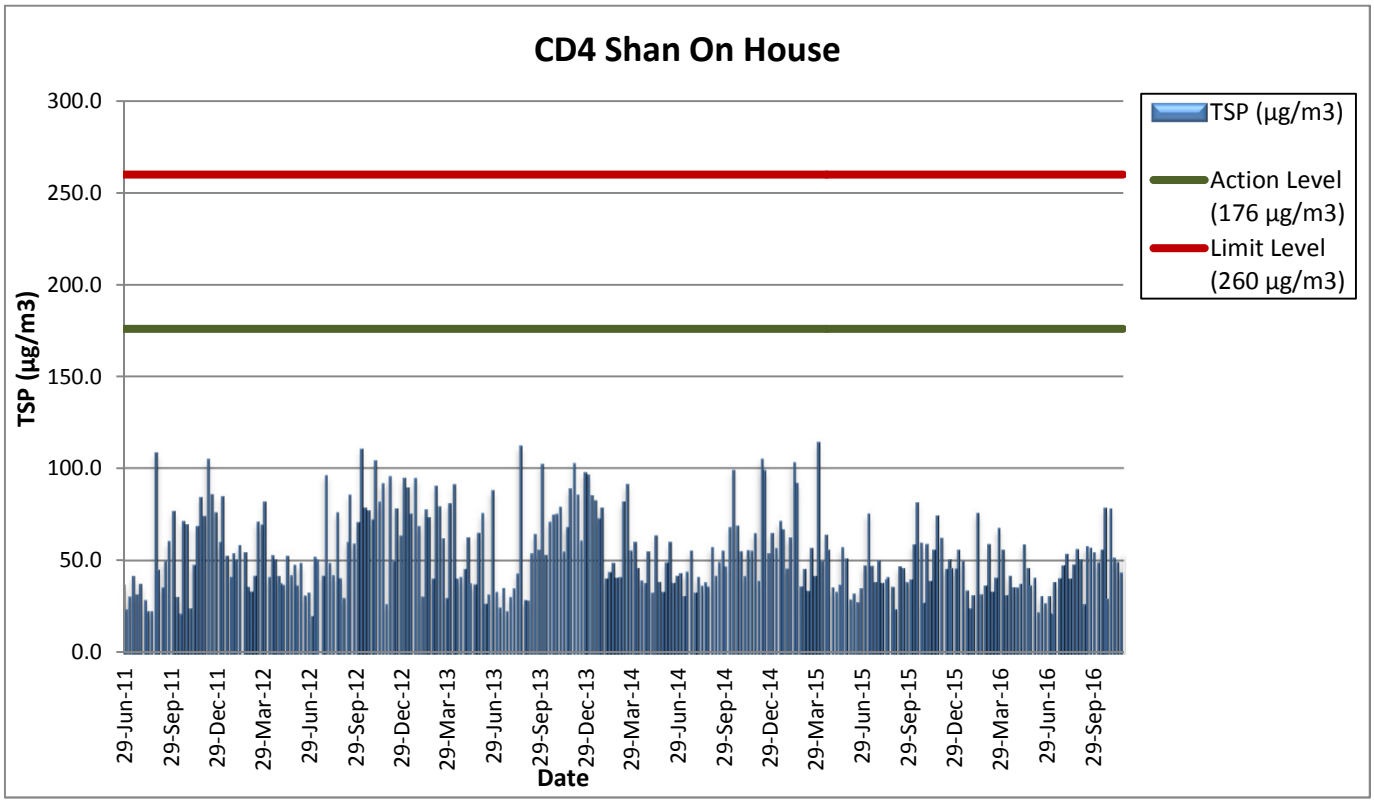
Graphical Plots for Air Quality Monitoring Results



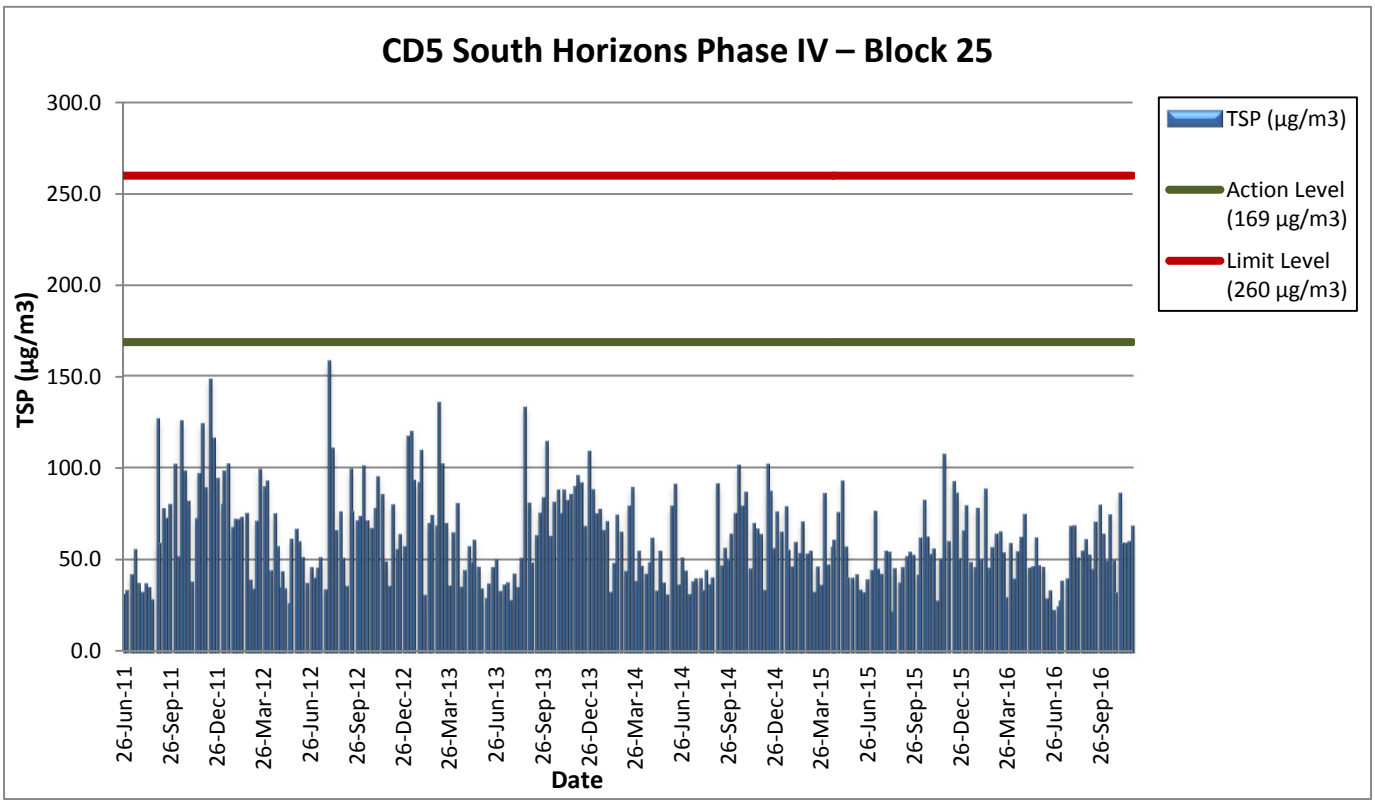


Graphical Plots for Air Quality Monitoring Results

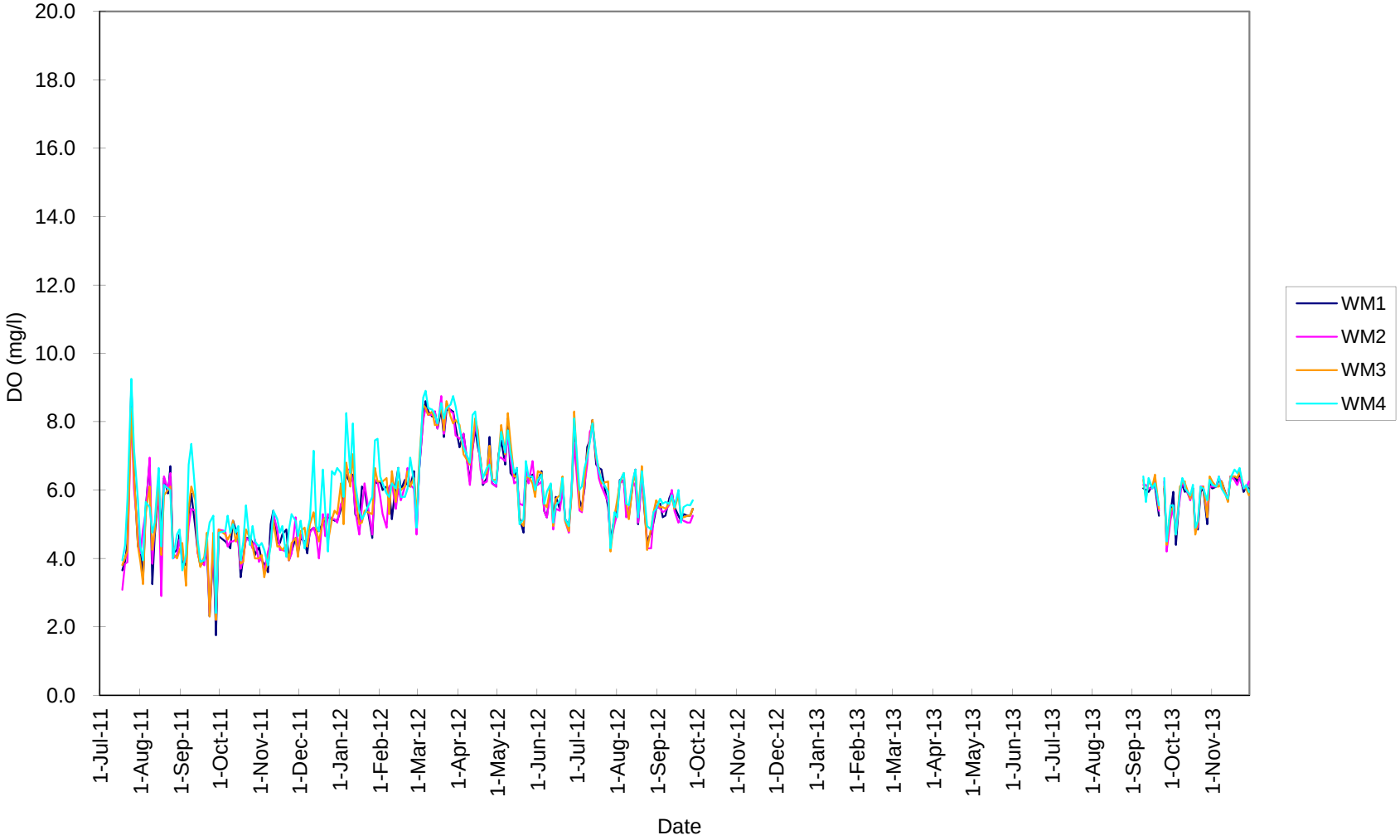




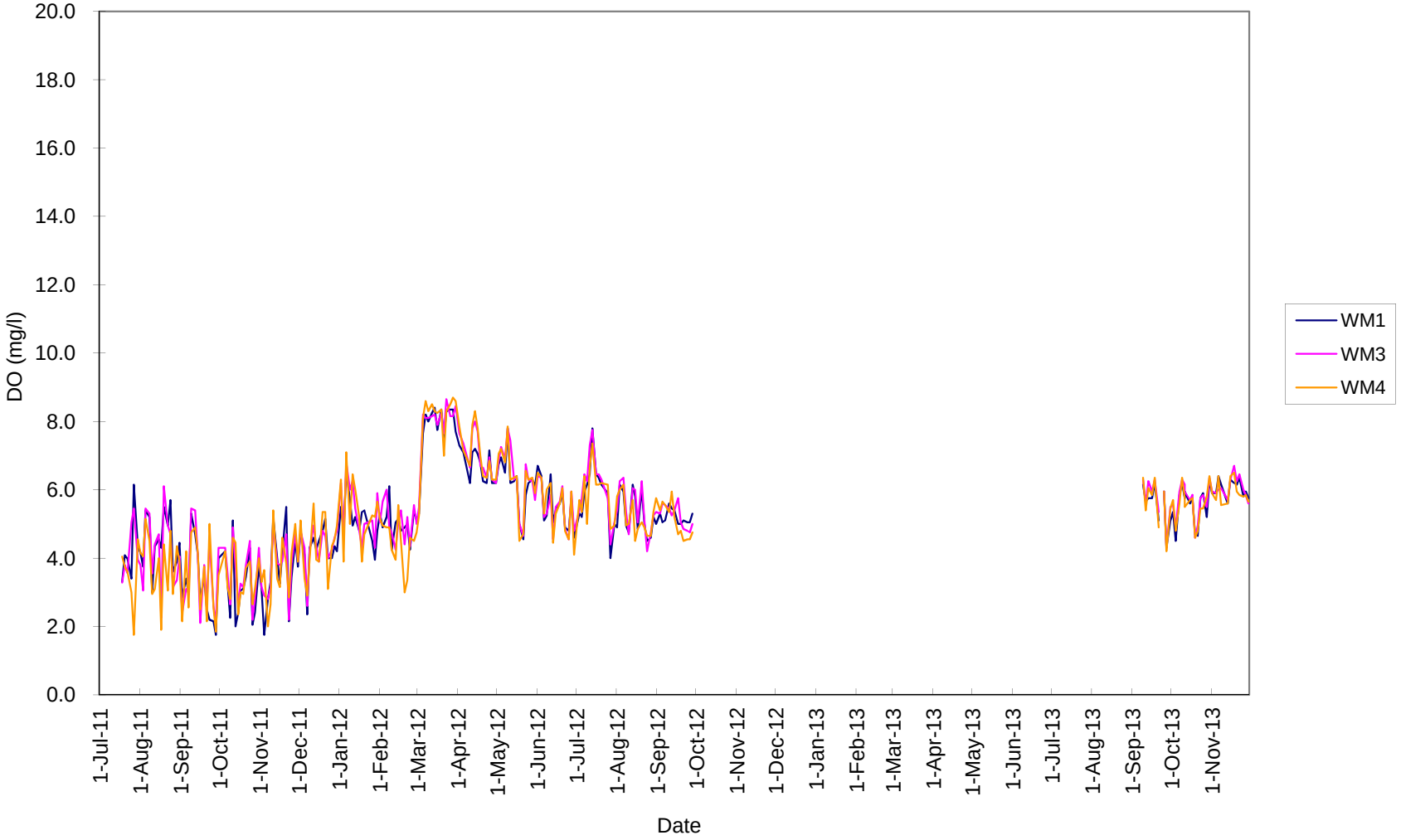
Graphical Plots for Air Quality Monitoring Results



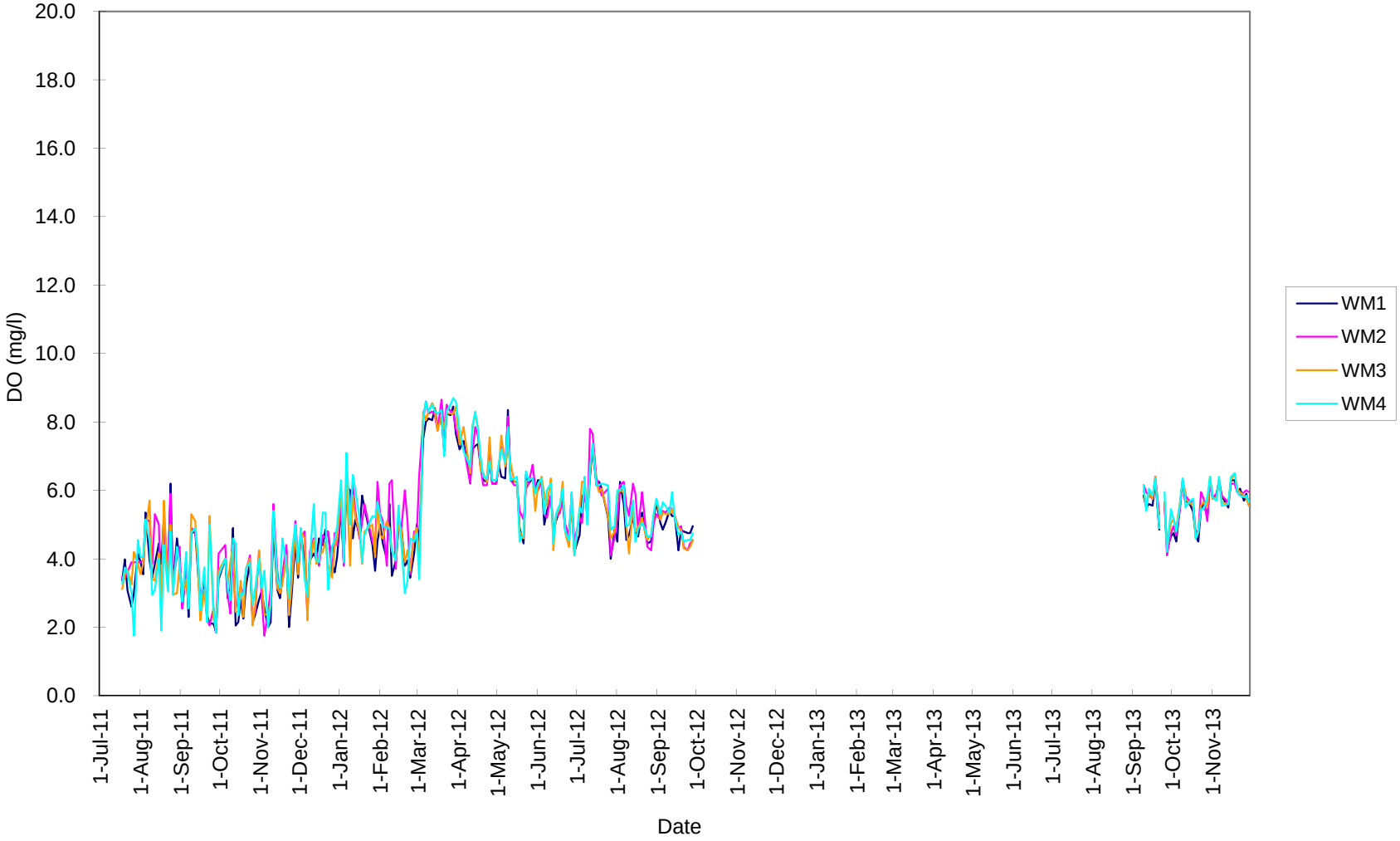
Monitoring Results for Dissolved Oxygen in Flood Tide - Surface Level (Jul 2011 - Nov 2013)



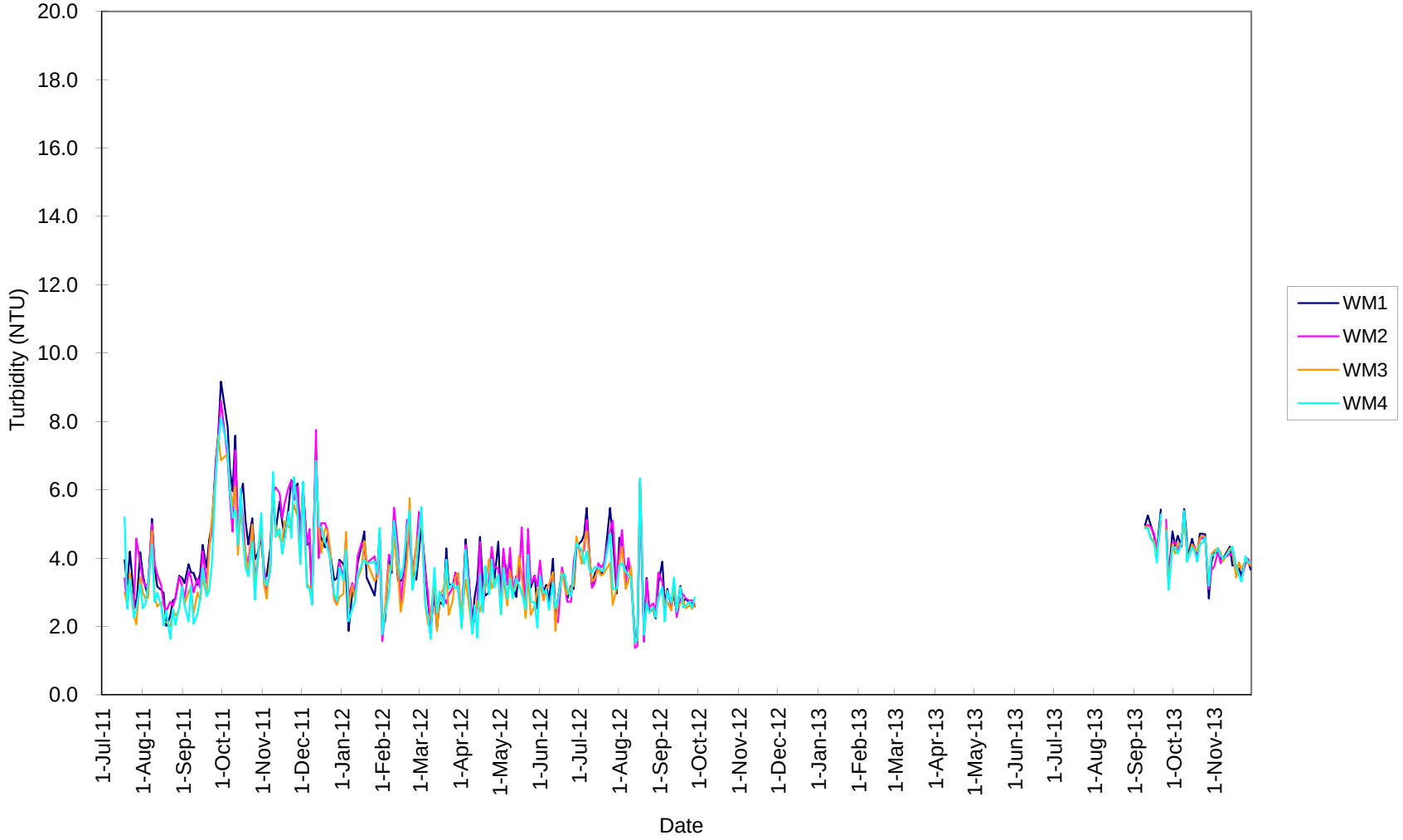
Monitoring Results for Dissolved Oxygen in Flood Tide - Middle Level (Jul 2011 - Nov 2013)



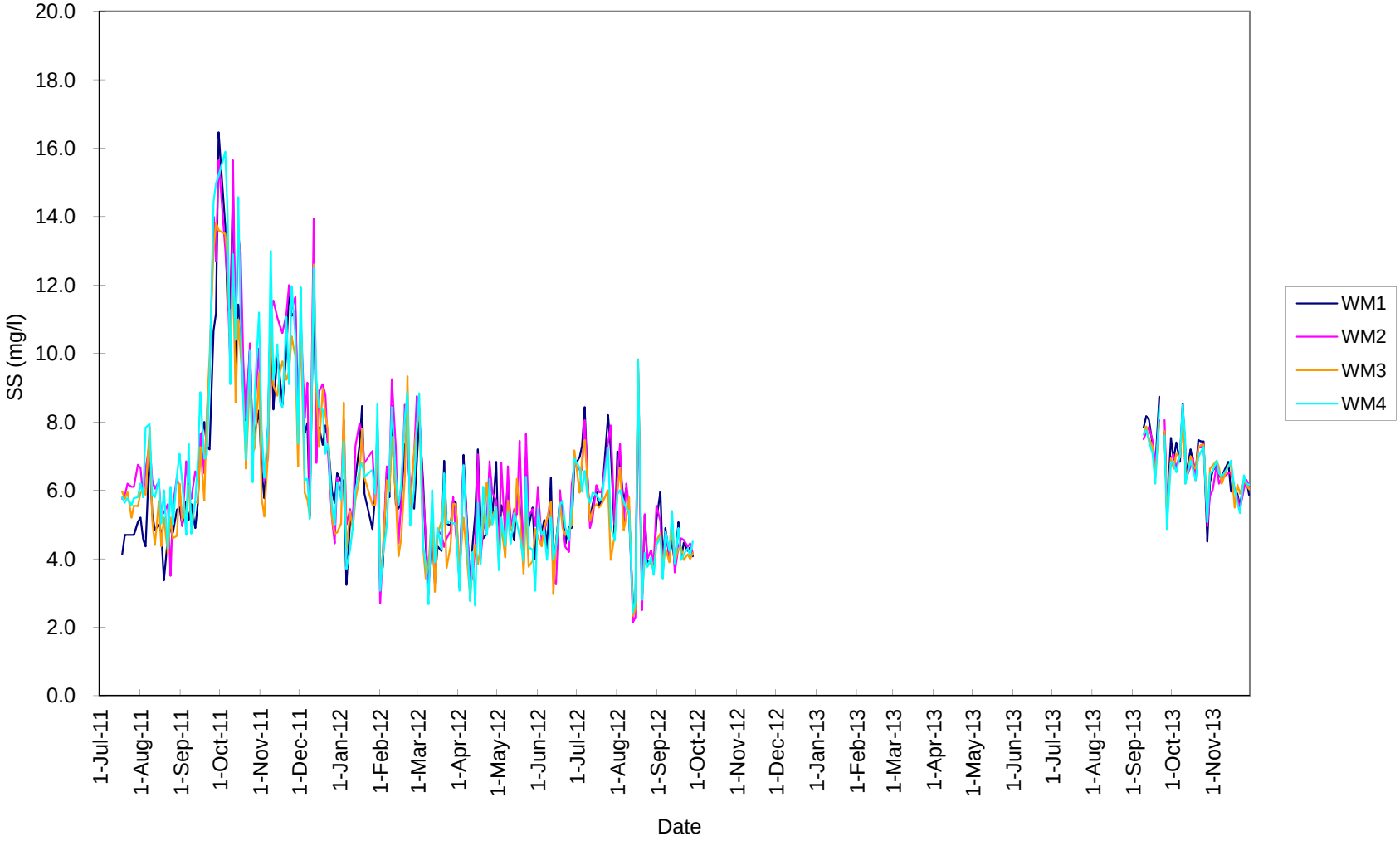
Monitoring Results for Dissolved Oxygen in Flood Tide - Bottom Level (Jul 2011 - Nov 2013)



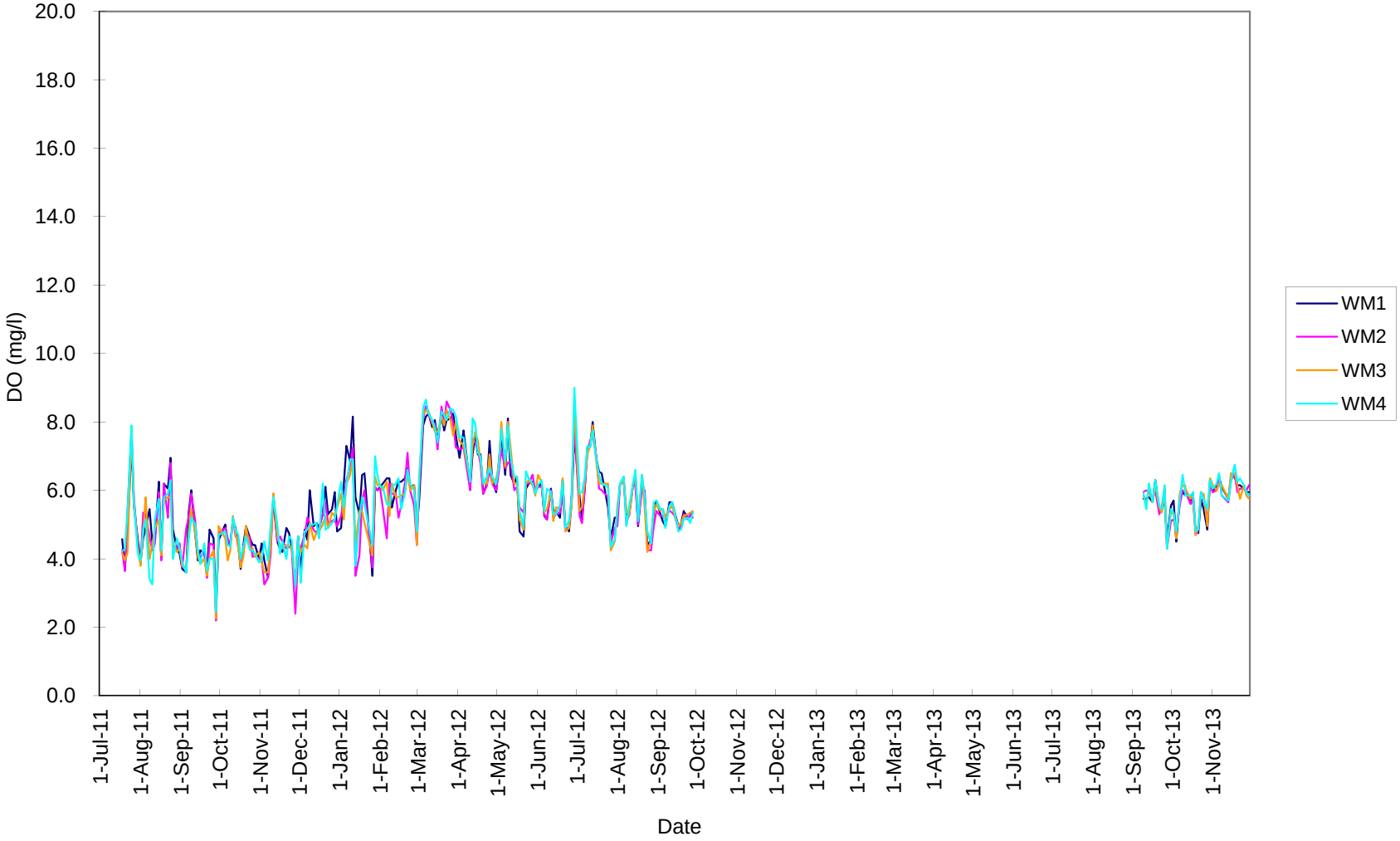
Monitoring Results for Turbidity in Flood Tide - Depth Average (Jul 2011 - Nov 2013)



Monitoring Results for Suspended Solids in Flood Tide - Depth Average (Jul 2011 - Nov 2013)



Monitoring Results for Dissolved Oxygen in Ebb Tide - Surface Level (Jul 2011 - Nov 2013)



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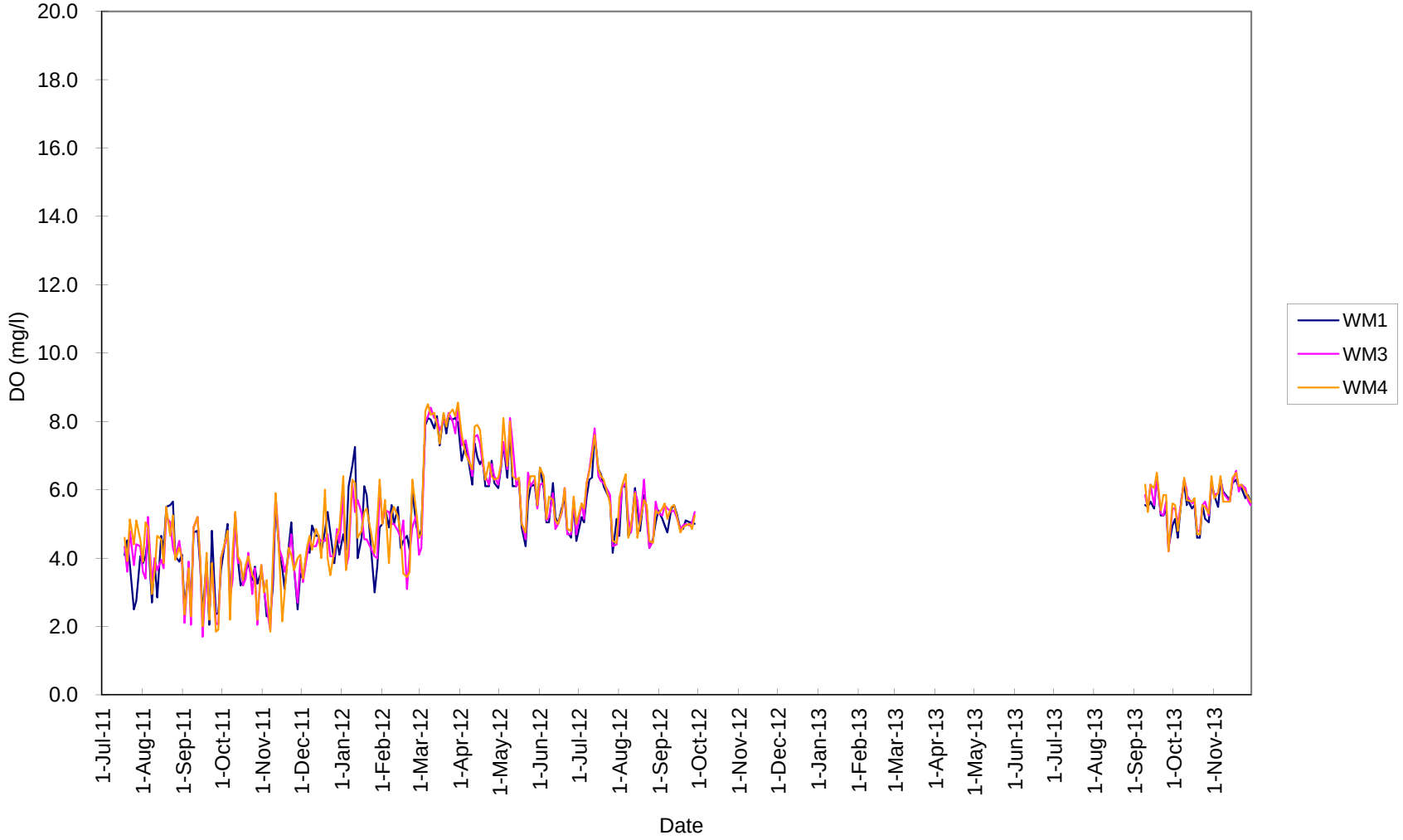
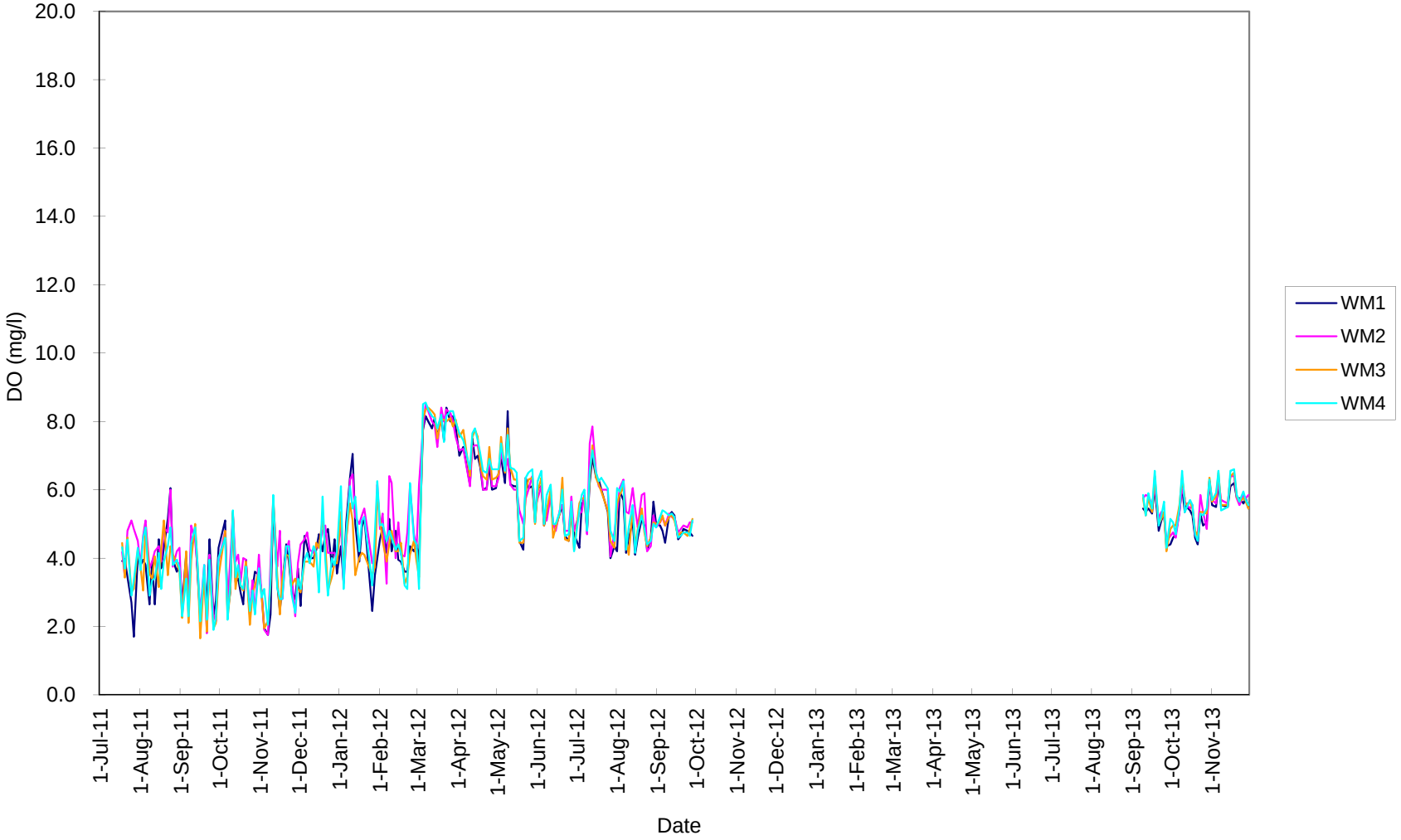
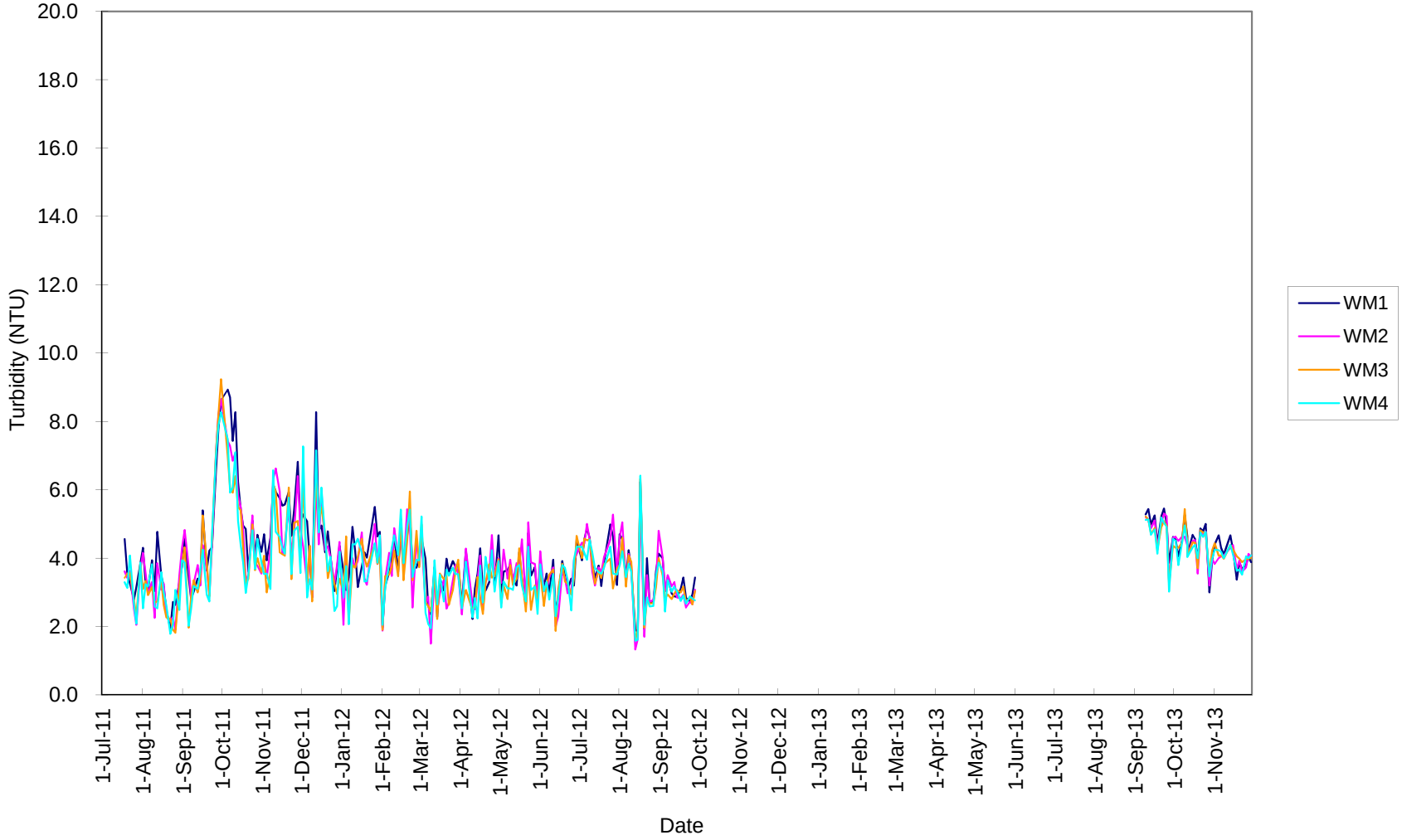


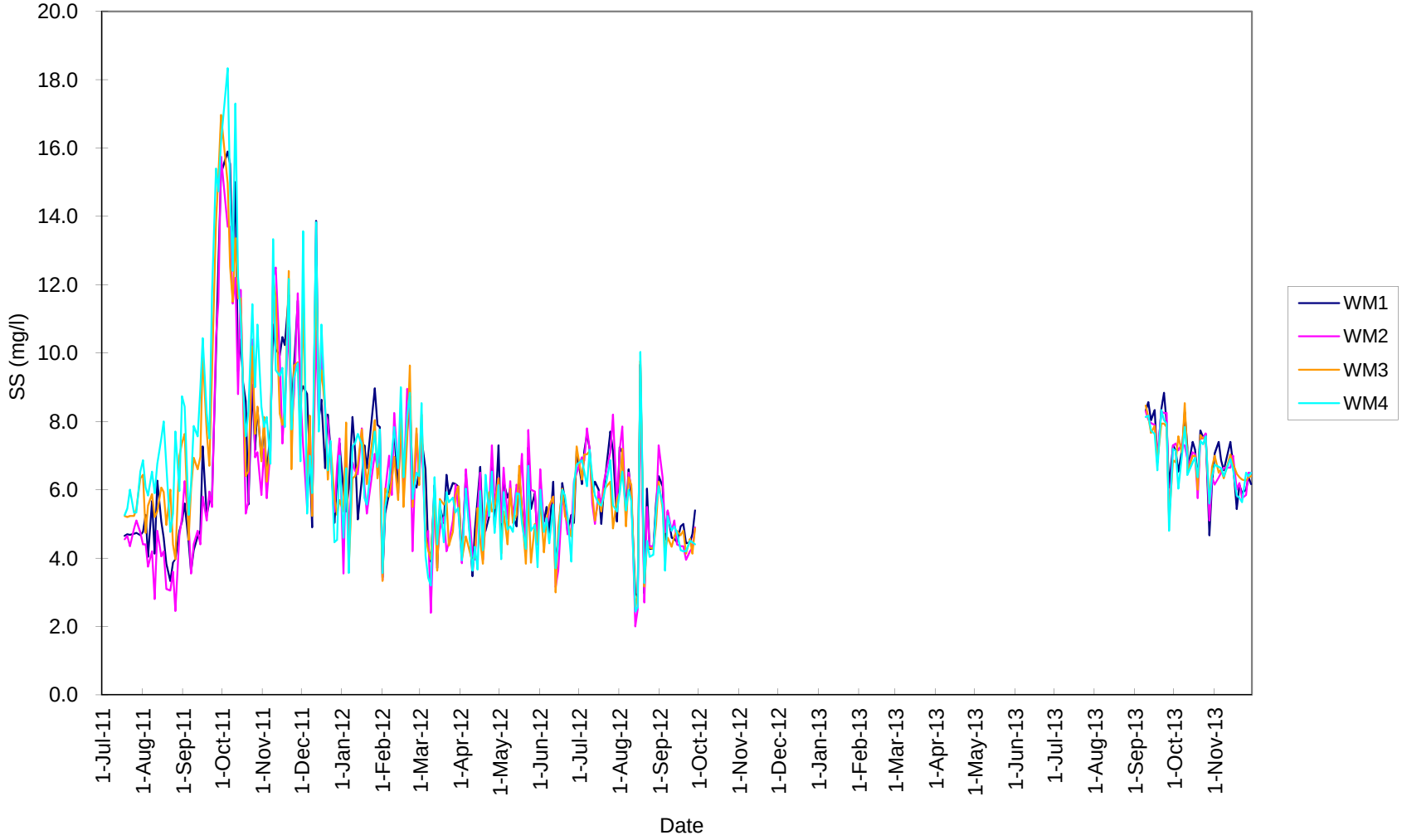
Monitoring Results for Dissolved Oxygen in Ebb Tide - Bottom Level (Jul 2011 - Nov 2013)



Monitoring Results for Turbidity in Ebb Tide - Depth Average (Jul 2011 - Nov 2013)



Monitoring Results for Suspended Solids in Ebb Tide - Depth Average (Jul 2011 - Nov 2013)



EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
Noise Impact (Construction Phase)								
		Airborne						
3.4.1.4	2	**Adoption of Quieter PME** The recommended quieter PME adopted in the assessment were taken from the BS5228: Part 1:2009 and are presented in **Table 3.20**. It should be noted that the silenced PME selected for assessment can be found in Hong Kong.	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIAO and NCO	Implemented
3.4.1.4	2	**Use of Movable Noise Barrier** The use of movable barrier for certain PME can further alleviate the construction noise impacts. In general, a 5 dB(A) reduction for movable PME and 10 dB(A) for stationary PME can be achieved depending on the actual design of the movable noise barrier. The Contractor shall be responsible for design of the movable noise barrier with due consideration given to the size of the PME and the requirement for intercepting the line of sight between the NSRs and PME. Barrier material with surface mass in excess of 7 kg/m^2 is recommended to achieve the predicted screening effect.	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIAO and NCO	Implemented
3.4.1.4	2	**Use of Noise Enclosure/ Acoustic Shed** The use of noise enclosure or acoustic shed is to cover stationary PME such as air compressor and concrete pump. 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.	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIAO and NCO	Implemented
3.4.1.4	2	**Use of Silencer** To reduce noise emission from the ventilation fans, silencers are also recommended to be used in fan ventilation system to attenuate noise generated during fan operation to achieve a noise reduction of 15 dB(A).	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIAO and NCO	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
3.4.1.4	2	**Use of Noise Insulating Fabric** Noise insulating fabric (the Fabric) can also be adopted for certain PME (e.g. drill rig, pilling auger etc). The Fabric should be lapped such that there are no openings or gaps on the joints. Technical data from manufacturers state that by using the Fabric, a noise reduction of over 10 dB(A) can be achieved on noise level.	To minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIAO and NCO	Implemented
3.4.1.4	2	**Good Site Practice** The good site practices listed below should be followed during each phase of construction: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • Silencers or mufflers on construction equipment should be utilized and properly maintained during the construction programme; • Mobile plant, if any, should be sited as far from 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 minimize the construction air-borne noise impact	Contractors	Construction Work Sites	During Construction	EIAO and NCO	Implemented
		Ground-borne						
3.4.2.5	2	PME that is in intermittent use should be shut down between work periods or should be throttled down to a minimum.	To minimize the construction ground-borne noise impact	Contractors	Tunnel site near Lei Tung Station	During Construction	NCO	Implemented
Noise Impact (Operation Phase)								
		Airborne						

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
		Railway Noise						
3.5.1.1	2	Erection of noise barrier/ enclosure along the viaduct section as shown in **Table 3.52** and illustrated in **Figures 3.25** to **3.27**. For the 'Further Mitigation Measures for Existing and Planned NSRs', additional noise barriers/semi-enclosures have been recommended for viaduct sections shown in **Table 3.57** and illustrated in **Figure 3.28** to **3.30**. The viaduct structure should allow further installation of noise barrier or enclosure at the later commissioning stage, if required.	To minimize the railway airborne noise along the viaduct section of SIL(E)	MTRC / Contractor	West of ex-Canadian Hospital site, West of Ocean Park G/IC site, East and West of Wong Chuk Hang Residential Zone, along Wong Chuk Hang Nullah and along Ap Lei Chau Bridge as shown in Figure 3.25 to Figure 3.30.	Before Operation	EIAO and NCO	Implemented
		Fixed Plant Noise						
3.5.1.2	2	The following noise reduction measures shall be considered as far as practicable during construction: • Choose quieter plant such as those which have been effectively silenced; • Include noise levels specification when ordering new plant (including chillier and E/M equipment); • Locate fixed plant/louver away from any NSRs as far as practicable; • Locate fixed plant in walled plant rooms or in specially designed enclosures; • Locate noisy machines in a basement or a completely separate building; • Install direct noise mitigation measures including silencers, acoustic louvers and acoustic enclosure where necessary; and • Develop and implement a regularly scheduled plant maintenance programme so that equipment is properly operated and serviced in order to maintain a controlled level of noise.	To minimize the fixed plant noise impact	MTRC	All stations, entrances, and ventilation buildings	Before Operation	EIAO and NCO	Implemented
		Ground-borne						

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
3.5.2.3	2	Using of incline turnout (a 5 dB(A) reduction in turnout and crossing vibration) and Type 1a resilient baseplated trackform within the SOH station.	To minimize the railway ground-borne noise impact	MTRC / Contractor	South Horizons Station	Before Operation	EIAO and NCO	Implemented
Ecological Impact (Construction Phase)								
		Habitat Loss						
4.7.1	3	Minimise habitat loss particularly woodland as far as possible.	Minimize habitat loss	Contractors	Construction Work Sites	During Construction	Annex 16 of EIAO-TM	Implemented
4.7.1	3	Temporary disturbed woodland should be reinstated in full after the completion of works	To reinstate disturbed woodland habitats	Contractors	Construction Work Sites	After completion of construction works	Annex 16 of EIAO-TM; ETWB TCW No. 2/2004 (for maintenance arrangement of vegetation)	To be implemented as per construction programme
4.7.1	3	Degraded woodland and shrubland should be reinstated after the completion of works as far as possible.	To reinstate disturbed habitats	Contractors	Construction Work Sites	After completion of construction works	Annex 16 of EIAO-TM; ETWB TCW No. 2/2004 (for maintenance arrangement of vegetation)	To be implemented as per construction programme
4.7.1	3	Habitat Compensation of permanent loss of woodland in full in terms of area.	To compensate permanent loss of woodland	Contractors	Construction Work Sites	After completion of construction works	Annex 16 of EIAO-TM; ETWB TCW No. 2/2004 (for maintenance arrangement of vegetation)	To be implemented as per construction programme
		Ardeid Night Roost						
4.7.2.1	3	**Avoidance of Site Clearance and Tree Felling Works at Wintering Season** Site clearance and tree felling works at the existing ardeid night roost (location described in **Figure 4.15**) should only be carried out at non-wintering season (March to November inclusive). Demarcating clearly the works area and ensuring good site practise to avoid unnecessary disturbance to the ardeids during construction phase.	Avoid and minimize impact on peak period of ardeid roosting	Contractor	Construction Work Sites	During Construction	Annex 16 of EIAO-TM	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
4.7.2.1 and 4.7.2.4	3	**Compensate for loss of roosting trees with replanting of suitable trees** The compensatory planting with suitable, heavy standard trees should be located at the lower course of the WCH Nullah approximately 200m west of the existing night roost (location shown in **Figure 4.15**). Trees should be replanted after construction alongside the nullah to provide a substrate for roosting.	To compensate for permanent loss of roosting trees	Contractors, advised by Ecologist	Construction Work Site at Wong Chuk Hang	After completion of construction works	Annex 16 of EIAO-TM; ETWB TCW No. 2/2004 (for maintenance arrangement of vegetation)	Implemented
4.7.2.1	3	**Inspection of ardeid night roost for active ardeid nests** When conducting site clearance works at the existing ardeid night roost, the area should be inspected to confirm no active ardeid nest are present. If any active bird nest is observed, suitably sized buffer area should be established to minimize human or machinery disturbance until the nest is abandoned. Also the site should be monitored monthly to check the updated status.	Ensure no impact on active ardeid nests	Contractors, advised by Ecologist	Construction Work Site at Wong Chuk Hang	During Construction	Wild Animals Protection Ordinance (Cap. 170)	Implemented
4.7.2.2	3	**Avoidance of Construction Activities at Sunset Time** Construction activities using PME at the potential ardeid night roost (location shown in **Figure 4.13**) should be ceased at 18:00 – 06:00 to avoid disturbance to the night roost ardeids.	Minimize noise impact on ardeid roosting and foraging	Contractor	Construction Work Sites	During Construction	Annex 16 of EIAO-TM	Implemented
4.7.2.4	3	**Coloured Panels on Noise Barriers** The acoustic enclosure/ barrier should be designed with coloured panels to minimize the chance of bird collision.	To minimise the potential for bird strike	Contractors	Construction Work Sites	During Construction	Annex 16 of EIAO-TM;	Implemented
4.7.3	3	**Magazine Site** Implement good site practice including containment of silt runoff within the site boundary, containment of contaminated soils, appropriate storage of chemicals and wastes.	Avoid impacts to fauna species and water pollution	Contractor	Chung Hom Shan Magazine Site	During Construction	ProPECC Note PN 1/94 Waste Disposal Ordinance (Cap.354)	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
4.7.4	3	**Coral Community at Aberdeen Channel** A bridge pier construction method in which a cofferdam would be installed to create a confined dredging environment should be implemented to minimise potential impacts from suspended solid release. Good site practices should be applied to land-based construction works including containment of silt runoff within the site boundary, the containment of contaminated soils for removal from the site and appropriate storage of chemicals and chemical waste.	Avoid release of suspended solid and contaminated runoff to Aberdeen Channel	Contractors	Dredging/ excavation area required for installation of the pier/pier foundations of bridge in Aberdeen Channel	During marine construction works	WQOs & ProPECC Note PN 1/94	Implemented
4.7.5	3	**Floral Species of Conservation Interest** Transplanting all affected floral species of conservation interest identified in the EcoIA. *In-situ* preservation should be re-considered throughout all stages of the project.	Mitigate the removal impact on floral species of conservation interest	Contractors	Construction Work Sites	During Construction	Annex 16 of EIAO-TM;	Implemented
Water Quality Impact (Construction)								
5.7.1.1	4	**Dredging/ Excavation and Seawall modification for construction of piers/pier foundations of bridge in Aberdeen Channel** To minimise the loss of fine sediment to suspension, steel pile casing and watertight cofferdam should be installed and seawater trapped inside the casing and cofferdam should be pumped out to generate a dry working environment prior to carrying out sediment dredging/ excavation. The water from the dewatering should be appropriately treated with desilting or sedimentation device before discharge. Silt curtains should be deployed to completely enclose the cofferdam installation and removal works and the seawall modification and pile installation works respectively.	Avoid spillage of sediment	MTRC / Contractor	Dredging/ excavation area required for installation of the pier/pier foundations of bridge in Aberdeen Channel	During marine construction works	WQOs & ProPECC Note PN 1/94	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
5.7.1.2	4	**Barging Facilities and Activities** To minimise the release of suspended solids to marine waters, silt curtain should be deployed to completely enclose the marine piles works during installation and decommissioning. Good site practices for operation of barging points should be followed, including appropriate sizing of vessels to ensure adequate clearance between the vessel and the seabed, controlled loading and unloading of barges and hoppers to prevent splash, installing tight fitting seals to the bottom openings to prevent leakage, and measures to prevent foam, oil, grease, scum or litter on the water within the site.	To minimize suspended solids and water quality impacts	MTRC / Contractor	Barging point marine works area	During marine construction works	WQOs & ProPECC Note PN 1/94	Implemented
5.7.1.3	4	**Sewage Effluent from Construction Workforce** Temporary sanitary facilities, such as portable chemical toilets, should be employed on-site where necessary to handle sewage from the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets and be responsible for appropriate disposal and maintenance.	To minimize water quality impacts	MTRC / Contractor	All works areas with on-site sanitary facilities	During Construction	Water Pollution Control Ordinance	Implemented
5.7.1.4	4	**Wastewater Discharge from Tunnelling and Open Cut Excavation** Wastewater with a high level of suspended solids should be treated before discharge by settlement in tanks with sufficient retention time. Oil interceptors would be required to remove the oil, lubricants and grease from wastewater. Should the level of suspended solids be very high, an on-site pre-packaged treatment plant might be required with the addition of flocculants to improve the settlement of solids. A discharge licence under the WPCO would be required for discharge to stormwater drain.	To minimize water quality impacts	MTRC / Contractor	All works areas	During Construction	Water Pollution Control Ordinance	Implemented
5.7.1.5	4	**Construction Site Runoff and Drainage** The site practices outlined in ProPECC Note PN 1/94 should be followed as far as practicable in order to minimise surface runoff and the chance of erosion. The following measures are recommended to protect water quality and sensitive uses of the coastal area i.e. WSD seawater intakes along the Aberdeen Channel:	To minimize water quality impacts	MTRC / Contractor	All works areas	During Construction	ProPECC Note PN 1/94	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
		• At the start of site establishment (including the barging facilities), perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system should be undertaken by the Contractor prior to the commencement of construction. • The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into stormwater drainage system through a sediment/silt trap. The sediment/silt traps should be incorporated in the permanent drainage channels to enhance deposition rates, if practical. • Sand/silt removal facilities such as sand/silt traps and sediment basins should be provided to remove sand/silt particles from runoff to meet the requirements of the TM standards under the WPCO. The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC Note PN 1/94. Sizes may vary depending upon the flow rate. The detailed design of the sand/silt traps should be undertaken by the Contractor prior to the commencement of construction.						

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
		• All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly during rainstorms. Deposited silt and grit should be regularly removed, at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times. • Measures should be taken to minimize the ingress of site drainage into excavations. If excavation of trenches in wet periods is necessary, they should be dug and backfilled in short sections wherever practicable. Water pumped out from foundation excavations should be discharged into storm drains via silt removal facilities. • If surface excavation works cannot be avoided during the wet season (April to September), temporarily exposed slope/soil surfaces should be covered by tarpaulin or other means, as far as practicable, and temporary access roads should be protected by crushed stone or gravel, as excavation proceeds. Interception channels should be provided (e.g. along the crest/edge of the excavation) to prevent storm runoff from washing across exposed soil surfaces. • The overall slope of the site should be kept to a minimum to reduce the erosive potential of surface water flows.						

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
		• 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 adequately designed and sited wheel washing facility should be provided at construction site exit where practicable. Wash-water should have sand and silt settled out and removed regularly to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheel-wash bay to prevent vehicle tracking of soil and silty water to public roads and drains. • Open stockpiles of construction materials or construction wastes on-site should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • Manholes (including newly constructed ones) should be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and stormwater runoff being directed into foul sewers. • Precautions should be taken at any time of the year when rainstorms are likely. Actions should be taken when a rainstorm is imminent or forecasted and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC Note PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events, especially for areas located near steep slopes.						

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
		• Bentonite slurries used in piling or slurry walling should be reconditioned and reused wherever practicable. Temporary enclosed storage locations should be provided on-site for any unused bentonite that needs to be transported away after all the related construction activities are completed. The requirements in ProPECC Note PN 1/94 should be adhered to in the handling and disposal of bentonite slurries.						
5.7.1.6	4	**General Construction Activities** Construction solid waste, debris and refuse generated on-site should be collected, handled and disposed of properly to avoid entering any nearby stormwater drain. Stockpiles of cement and other construction materials should be kept covered when not being used. Oils and fuels should only be stored in designated areas which have pollution prevention facilities. To prevent spillage of fuels and solvents to any nearby stormwater drain, all fuel tanks and storage areas should be provided with locks and be sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank. The bund should be drained of rainwater after a rain event.	To minimize water quality impacts	MTRC / Contractor	All works areas	During Construction	EIA Recommendation	Implemented
Water Quality Impact (Operation)								
5.7.2.1	4	**Change in flow regime and hydrology in Aberdeen Channel (Typhoon Shelter) (ATS) due to railway bridge** Streamline shaped bridge pier to reduce friction to the tidal flows across the Aberdeen Channel should been considered in the conceptual design of the bridge form.	To minimize water quality impacts	MTRC / Detailed Design Consultant	Pier/pier foundations of bridge in Aberdeen Channel	During Detailed Design	EIA Recommendation	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
5.7.2.3	4	**Sewage and wastewater effluents from stations and depot** • Runoff and spillage prevention measures should conform to relevant engineering and design standards. Any opportunities for the recycling of water within the automatic washing facilities should be sought to minimise discharge requirements. Bio-degradable detergents should be selected to minimise the impact on water quality and associated ecosystems of the receiving water bodies. • Plant maintenance areas should be bunded and constructed on an impermeable floor, and provided with petrol interceptors. Traps and interceptors should be regularly cleaned and maintained, especially after any accidental spillages. Layers of sawdust, sand or equivalent material should be laid underneath and around any plant and equipment that may possibly leak oil. • An emergency spillage action plan should be developed for the Depot to ensure that any accidental spillage event is treated immediately and does not impact on any water bodies. • All fuel tanks and storage areas within the Depot should be provided with locks and be located on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank, to prevent the escape of spilled fuel oils. • Waste oil and other chemicals must be disposed by a licensed contractor to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation (Cap 354).	To minimize water quality impacts	MTRC	SIL(E) Stations & WCH Depot	During Operation	WPCO	Being implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
5.7.2.4	4	**Runoff from rail tracks** • Track drainage channels discharge should pass through oil/grit interceptors/chambers to remove oil, grease and sediment before being pumped to the public stormwater drainage system. • Silt traps and oil interceptors should be cleaned and maintained regularly. • Oily contents of the oil interceptors should be transferred to an appropriate disposal facility, or to be collected for reuse, if possible.	To minimize water quality impacts	MTRC	Along the SIL(E) tracks	During Operation	WPCO	Being implemented
Landscape and Visual Impact (Construction Phase)								
Table 6-13		**Preservation of Existing Vegetation**						
CP1.1	5	To retain trees, which have high amenity or ecology value and contribute most to the landscape and visual amenity of the site and its immediate environs.	To minimise the disturbance to the existing landscape resources.	Project Landscape Architect (Detailed Design Consultants)/ Contractor	Site	Throughout design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP1.2	5	Creation of precautionary area around trees to be retained equal to half of the trees canopy diameter. Precautionary area to be fenced.	To ensure the success of the tree preservation proposals.	Contractor	Site	Before construction phase commence	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP1.3	5	Prohibition of the storage of materials including fuel, the movement of construction vehicles, and the refuelling and washing of equipment including concrete mixers within the precautionary area.	To ensure the success of the tree preservation proposals.	Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP1.4	5	Phased segmental root pruning for trees to be retained and transplanted over a suitable period (determined by species and size) prior to lifting or site formation works which affect the existing rootball of trees identified for retention. The extent of the pruning will be based on the size and the species of the tree in each case.	To ensure the success of the tree preservation proposals.	Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP1.5	5	Pruning of the branches of existing trees identified for transplantation and retention to be based on the principle of crown thinning maintaining their form and amenity value.	To ensure the success of the tree preservation proposals.	Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented

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CP1.6	5	The watering of existing vegetation particularly during periods of excavation when the water table beneath the existing vegetation is lowered.	To ensure the success of the tree preservation proposals.	Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP1.7	5	The rectification and repair of damaged vegetation following the construction phase to it's original condition prior to the commencement of the works or replacement using specimens of the same species, size and form where appropriate to the design intention of the area affected	To ensure the success of the tree preservation proposals.	Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	To be implemented as per construction programme
CP1.8	5	All works affecting the trees identified for retention and transplantation will be carefully monitored. This includes the key stages in the preparation of the trees, the implementation of protection measures and health monitoring through out the construction period	To ensure the success of the tree preservation proposals.	Contractor	Site	Throughout construction phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Being implemented
CP1.9	5	Detailed landscape and tree preservation proposals will be submitted to the relevant government departments for approval under the lease conditions and in accordance with ETWB TCW No. 2/2004 and 3/2006.	To ensure the tree preservation and planting proposals are integrated with the existing landscape context and that the landscape resources are preserved where appropriate.	Project Landscape Architect (Detailed Design Consultants)	Site	Throughout design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP1.10	5	The tree preservation works should be implemented. A tree protection specification would be included within the contract documents.	To ensure the tree preservation and planting proposals are integrated with the existing landscape context and that the landscape resources are preserved where appropriate.	Project Proponent	Site	Throughout design and construction phases	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
Table 6-13		**Works Area and Temporary Works Areas**						
CP2.1	5	Where appropriate to the final design the landscape of these works areas should be restored following the completion of the construction phase.	To minimise the disturbance to existing landscape resources and change of visual amenity.	Contractor	Site	Through out construction phase	TM-EIA Annex 18	Implemented

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CP2.2	5	Construction site controls should be enforced including the storage of materials, the location and appearance of site accommodation and the careful design of site lighting to prevent light spillage.	To minimise the disturbance to existing landscape resources and change of visual amenity.	Contractor	Site	Through out construction phase	TM-EIA Annex 18	Implemented
CP2.3	5	Screen the works area during the construction phase through the use of decorative hoarding along the site boundary facing adjacent VSRs	To minimise the disturbance to existing landscape resources and change of visual amenity.	Contractor	Site	Through out construction phase	TM-EIA Annex 18	Implemented
Table 6-13		**Implementation of Mitigation Planting and planting species selection**						
CP3.1	5	Replanting of disturbed vegetation should be undertaken at the earliest possible stage of the construction phase.	To minimise the disturbance to existing landscape resources and minimize the impacts on the visual amenity of the area.	Contractor	Site	After the site formation and on completion of planting area.	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP3.2	5	Use of native plant species predominantly in the planting design for the buffer areas.	To enhance the local landscape and ecological value.	Project Landscape Architect (Detailed Design Consultants)	Site	After the site formation and on completion of planting area.	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP3.3	5	Proposed mitigation planting shall not only limit to conventional amenity planting, but also considered alternative greening measures such as vertical greening for screening or soften the built structures. Small shrubs, climbing plants, grass and groundcovers shall be used in specific locations according to site condition and at where would not interfere the operation of railway and its associated facilities.	To maximise the planting opportunities	Project Landscape Architect (Detailed Design Consultants)	Site	Throughout design and construction phases	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Being implemented
CP3.4	5	The tree planting works should be implemented by approved Landscape Contractors and inspected and approved on site by a qualified Landscape Architect. A tree planting specification would be included within the contract documents.	To ensure the tree preservation and planting proposals are integrated with the existing landscape context and that valuable landscape	Project Proponent	Site	Throughout design and construction phases	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Being implemented

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Table 6-13		**Transplantation of Existing Trees**						
CP4.1	5	The tree transplanting works should be implemented by approved Landscape Contractors and inspected and approved on site by a qualified Landscape Architect. A tree protection / transplanting specification would be included within the contract documents.	To ensure the tree preservation and planting proposals are integrated with the existing landscape context and that valuable landscape resources are preserved where appropriate to the final design.	Project Proponent / Contractor	Site	Throughout design and construction phases	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP4.2	5	Approximately 437 existing trees to be transplanted, majority of them shall be relocated to off-site planting areas. The final recipient sites should be, as far as space allows, adjacent to their current locations alongside of the alignment.	To retain their contribution to the local landscape context.	Project Landscape Architect (Detailed Design Consultants)/ Contractor / Project Proponent (planting areas associated with station and alignment)/ LCSD (roadside and park areas)	Site	Throughout design and construction phases	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP4.3	5	Tree to be transplanted to planting areas identified in the “Southern District Greening Master Plan” shall be, as far as programme allows, directly relocated to their final recipient sites.	To minimise the disturbance to the landscape resources.	Project Landscape Architect (Detailed Design Consultants)/ Contractor / Project Proponent (planting areas associated with station and alignment)/ LCSD (roadside and park areas)	Site	Throughout design and construction phases	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP4.4	5	Tree to be replanted along the alignment shall be kept in the temporary holding nurseries which closely monitoring by landscape contractor.	To enhance the survivals of the transplanted trees	Project Landscape Architect (Detailed Design Consultants)/ Contractor	Site	Throughout design and construction phases	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented

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CP4.5	5	The implementation programme for the proposed works should reserve enough time for the advance tree transplanting preparation works.	To enhance the survivals of the transplanted trees	Project Proponent/ Project Landscape Architect (Detailed Design Consultants)/ Contractor	Site	Throughout design and construction phases	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP4.6	5	The implementation programme for the proposed works should reserve enough time for the advance tree transplanting preparation works.	To enhance the survivals of the transplanted trees	Project Proponent/ Project Landscape Architect (Detailed Design Consultants)/ Contractor	Site	Throughout design and construction phases	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
CP4.7	5	The tree transplanting works should be implemented by approved Landscape Contractors and inspected and approved on site by a qualified Landscape Architect. A tree protection specification would be included within the contract documents.	To enhance the survivals of the transplanted trees	Project Proponent/ Project Landscape Architect (Detailed Design Consultants)/ Contractor	Site	Throughout design and construction phases	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004	Implemented
Table 6-13		**Coordination with Concurrent Projects**						
CP5.1	5	Coordinated implementation programme with concurrent projects	To minimise potential impact where possible reduce the period of disturbance.	Project Proponent / Project Landscape Architect (Detailed Design Consultants)/ Contractor	Site	Throughout design and construction phases	TM-EIA Annex 18.	Implemented
Landscape and Visual Impact (Operation Phase)								
Table 6-14		**Design of Engineering and Building Structures**						
OP1.1	5	Where possible integrate the engineering and building structures, as far as technically feasible, with existing built structures. Select responsive The locations for the associated facilities away from landscape and visually sensitive areas.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD	Implemented

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OP1.2	5	Use of a responsive design for the disposition of the main elements including the locations of the proposed above ground structures.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout Design phase	TM-EIA Annex 18 and BD	Implemented
OP1.3	5	The disposition and height profile of the proposed ground structures should respond to the existing context.	To enhance the sense of visual integration with the existing context, avoid abrupt transitions between the existing and proposed built environment and reduce the apparent visual mass of the proposed developments.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD	Implemented
OP1.4	5	Creation of setbacks, articulating the development frontage, maintenance of view corridors and the utilisation of stepped or articulated height profile.	To enhance the sense of visual integration with the existing context, avoid abrupt transitions between the existing and proposed built environment and reduce the apparent visual mass of the proposed developments.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD	Implemented
OP1.5	5	Use of natural materials such as colour blocking, innovative surface treatments and vertical greening.	To reduce the apparent visual mass of the facilities.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18, HKPSG and BD	Implemented
OP1.6	5	Use of natural materials such as colour blocking, innovative surface treatments and vertical greening.	To reduce the apparent visual mass of the facilities.	Project Engineer and Architect (Detailed Design Consultants)/ Project Proponent	Site	Throughout design phase	TM-EIA Annex 18, HKPSG and BD	Implemented
OP1.7	5	Use of natural tones colour palette and non-reflective materials for outward facing building facades finishes.	To reduce the potential glare effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18, HKPSG and BD	Implemented

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OP1.8	5	Incorporation of landscaped terraced edges where conditions allow particularly those fronting the public realm.	To reduce the apparent visual mass of the structure and create a more subtle transition with the pedestrian level streetscape.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18, HKPSG and BD	Implemented
OP1.9	5	Aesthetic design of architectural and track lighting sign shall follow the following design intention. - Directional and full cut off lighting is recommended particularly for recreation and roadside areas; - Minimize geographical spread of lighting, only applied for safety at the key access points and staircases; - Limited lighting intensity to meet the minimum safety and operational requirement; and - High-pressure sodium road lighting is recommended for more stringent light control.	To reduce the night-time glare effect to the surrounding environs, reducing spillage and thus visual impacts.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Through out operation phase	TM-EIA Annex 18	Implemented
Table 6-14		**Roadside and Amenity Planting**						
OP2.1	5	Utilise large ornamental trees to maximise the area of visible greenery, soften the interface between the proposed scheme and adjacent urban fabric and enhance the thermal comfort of adjacent spaces.	Provide a linkage with the existing landscape creating a more coherent landscape framework.	Project Landscape Architect(Detailed Design Consultants)/ Project Proponent	Site	Through out design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004, HKPSG and BD	Implemented
OP2.2	5	Planting proposals should respond to the need for visual access in the views from the adjacent neighbourhoods to the roadside or rural landscape. Whereas dense foliage plants shall be provided at other locations to screen and frame views, provide a more shaded environment for pedestrians and provide accents within the existing roadside planting.	Conserve and enhance the landscape interest.	Project Landscape Architect(Detailed Design Consultants)/ Project Proponent	Site	Through out design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004, HKPSG and BD	Implemented
OP2.3	5	The planting on sloping ground and areas adjacent to existing woodland shall utilise native species.	Improving the ecological connectivity between existing woodland habitats and creating a more unified and coherent landscape framework.	Project Landscape Architect(Detailed Design Consultants)/ Project Proponent	Site	Through out design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004, HKPSG and BD	Implemented

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Table 6-14		**Compensatory Planting Proposals**						
OP3.1	5	Utilise all available spaces for new tree and shrub planting to screen views of the proposals and where this is not possible soften their architectural form.	To soften the architectural form and enhance their visual integration within the future landscape context.	Project Landscape Architect (IDC Consultants) / LCSD	Site	Through out design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004, HKPSG and BD	Implemented
OP3.2	5	New tree planting will be concentrated in the proposed amenity areas along the alignment and surrounding the stations, and providing infill planting between the retained and transplanted trees; and on the disturbed slope areas.	To restore and enhance existing landscape context.	Project Proponent / NA	Site	Through out design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004, HKPSG and BD	Implemented
OP3.3	5	The preliminary planting proposals for the proposed works shall adopt a compensatory planting ratio of 1:1 (new planting: trees recommended for felling) utilising a combination of mature to light standard sized stock in general roadside and planting areas adjacent to proposed stations and above ground structures.	To compensate the loss of existing trees.	Project Proponent / Project Landscape Architect (IDC Consultants)	Site	Through out design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004, HKPSG	Implemented
OP3.4	5	The retention of existing trees through their preservation in-situ, the transplantation of trees found to be in conflict with the proposed works and the successful establishment of the newly planted trees will form part of the roadside and slope planting enhancing the amenity of the local areas and providing for the thermal comfort of pedestrians.	To compensate the loss of existing trees.	Project Proponent / Project Landscape Architect (IDC Consultants)	Site	Through out design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004, HKPSG	Implemented
OP3.5	5	The proposed compensatory and new tree planting will utilise a combination of species native to Hong Kong and ornamental feature trees for the slope areas and those alongside the infrastructure corridors. The species selection for the areas adjacent to proposed stations and within the main urban areas will utilise a range of amenity tree species. These proposals will be subject to further development during the detailed design stage of the project.	To compensate the loss of existing trees.	Project Proponent / Project Landscape Architect (IDC Consultants)	Site	Through out design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004, HKPSG	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
OP3.6	5	The preliminary planting proposals for the proposed works shall adopt a compensatory planting ratio of 1:1 (new planting: trees recommended for felling) utilising a combination of mature to light standard sized stock in general roadside and planting areas adjacent to proposed stations and above ground structures. .	To compensate the loss of existing trees.	Project Proponent / Project Landscape Architect (IDC Consultants)	Site	Through out design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004, HKPSG	Implemented
OP3.7	5	The retention of existing trees through their preservation in-situ, the transplantation of trees found to be in conflict with the proposed works and the successful establishment of the newly planted trees will form part of the roadside and slope planting enhancing the amenity of the local areas and providing for the thermal comfort of pedestrians.	To compensate the loss of existing trees.	Project Proponent / Project Landscape Architect (IDC Consultants)	Site	Through out design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004, HKPSG	Implemented
OP3.8	5	The proposed compensatory and new tree planting will utilise a combination of species native to Hong Kong and ornamental feature trees for the slope areas and those alongside the infrastructure corridors. The species selection for the areas adjacent to proposed stations and within the main urban areas will utilise a range of amenity tree species. These proposals will be subject to further development during the detailed design stage of the project.	To compensate the loss of existing trees.	Project Proponent / Project Landscape Architect (IDC Consultants)	Site	Through out design phase	TM-EIA Annex 18, ETWB TCW No. 3/2006 & 2/2004, HKPSG	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
Table 6-14		**Treatment of Retaining Wall and Slopes**						
OP4.1	5	The proposed treatment of Retaining Wall and Slopes should be aesthetically enhanced through the use of soft landscape works including tree and shrub planting to give man-made slopes a more natural appearance blending into the local rural landscape.	The design seeks to visually integrate the engineered slope feature within the local landscape context.	Project Landscape Architect(Detailed Design Consultants)/ / LCSD or HyD	Site	Through out design phase	TM-EIA Annex 18, HKPSG and BD GEO Publication No. 1/2000 "Technical Guidelines on Landscape Treatment and Bio-engineering for Man-made Slopes and Retaining Walls" For HyD SIMAR slopes refer to Standard Requirements for Handover of Vegetation on to Highways Department (Rev.B).	Implemented

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OP4.2	5	Whip sized tree planting is preferred on the face of soil cut slopes and at the crest and toe of the slope, and within berm planters. The smaller, younger plant stock will adapt to their new growing conditions more quickly than larger sized stock and establish a naturalistic effect more rapidly.	The design seeks to visually integrate the engineered slope feature within the local landscape context.	Project Landscape Architect(Detailed Design Consultants)/ / LCSD or HyD	Site	Through out design phase	TM-EIA Annex 18, HKPSG and BD GEO Publication No. 1/2000 "Technical Guidelines on Landscape Treatment and Bio-engineering for Man-made Slopes and Retaining Walls" For HyD SIMAR slopes refer to Standard Requirements for Handover of Vegetation on to Highways Department (Rev.B).	Implemented
Table 6-14		**Design of Noise Mitigation Structures**						
OP5.1	5	Noise mitigation structures installed along the trackside should not be limited to the functional requirements of mitigating train noise. It should also include a requirement that these structures make a positive contribution to the urban / semi-rural landscape character of this area and by doing so improve the perceived landscape quality of the area. These barriers would be visible from some VSRs identified in the study.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD	Implemented
OP5.2	5	Promote the innovative use of materials, such as Plexiglas, fibreglass, reinforced concrete etc, whilst remaining aware of the design life span of each of the elements incorporated in the design.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD	Implemented

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OP5.3	5	Reduce the visual effect of the structure through the use of form, materials, textures colours and tones.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD	Implemented
OP5.4	5	Incorporation of articulation in the façade of the noise barriers / enclosures through the use of some transparent sections near the upper portion of the proposed structure.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD	Implemented
OP5.5	5	Reflect the chromatic context of the surrounding urban landscape through the use of colour panels in the proposed noise barrier.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD	Implemented
OP5.6	5	Utilise materials, which are non-reflective avoiding glare from incident sunlight.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD	Implemented
Table 6-14		**Design of Engineering Structures**						
OP6.1	5	The landscape consultants have worked in unison with the engineers on the aesthetic aspects of the structures and their relationship with the landscape.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect and Landscape Architects (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD, ACABAS	Implemented
OP6.2	5	The structures shall aim to “touch” the ground as lightly as possible in order to minimise disturbance to the existing landscape and vegetation below the structures. This would be achieved by designing slender, rounded columns spaced the maximum distance apart. The viaducts would be constructed using pre-cast methods and launched from columns rather than scaffolding. The viaduct should be designed to achieve where appropriate a graceful, curving alignment.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD, ACABAS	Implemented

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OP6.3	5	Landform and vegetation in areas disturbed by construction works would be reinstated to blend with the existing landscape patterns or as discussed above.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD, ACABAS	Implemented
OP6.4	5	Wherever light levels, the water regime and the requirements of the ecological mitigation measures permit, vegetation would be reinstated below the structures. Irrigation may be required in some locations and hard landscape solutions considered where the clearance is low. Planting would be used wherever possible to minimise the apparent height of structures and to soften their appearance in medium and long distance views.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD, ACABAS	Implemented
OP6.2	5	The design of the proposed structures should avoid unnecessary visual clutter, this would be achieved through the co-ordination of the various engineering disciplines involved to arrive at innovative design solutions.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD, ACABAS	Implemented
OP6.5	5	Fair faced concrete would not be used for parapets to minimise glare from the structure and to avoid the visually detracting effect of staining.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD, ACABAS	Implemented
OP6.6	5	Drainage structures would where possible be concealed within the structure of the proposed viaducts.	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect (Detailed Design Consultants)/ NA	Site	Throughout design phase	TM-EIA Annex 18 and BD, ACABAS	Implemented
Table 6-14		**Reinstatement and Creation of Open Spaces and Gardens**						
OP7.1	5	The landscape consultants have worked in unison with the engineers on the aesthetic aspects for Reinstatement and Creation of Open Spaces and Gardens	To ensure the proposals are integrated with the existing landscape and visual context, and avoid cluster effect.	Project Engineer and Architect and Landscape Architects (Detailed Design Consultants)/ NA	Site	Throughout Design and Construction phases	TM-EIA Annex 18 and BD, ACABAS	Implemented

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Hazard to Life								
A7A	6	Improved truck design to reduce the amount of combustibles in, front exhaust spark arrester, 1 x 9 kg water based and 1 x 9 kg dry chemical powder fire extinguishers for a vehicle with gross weight up to 9 tonnes, and 2 x 2.5kg dry powder and 2 x 10-litre foam fire extinguishers to be provided for a vehicle of 9 tonnes and above, and a hand-held lightning detector to be provided in the vehicle. This should be combined with monthly vehicle inspection.	To meet the ALARP requirement	MTRC/ Contractor	Explosive Magazine	Construction phase		Implemented
A7A	6	Blasting activities including storage and transport of explosives should be supervised and audited by competent site staff to ensure strict compliance with the blasting permit conditions.	To ensure that the risks from the proposed explosives storage and transport would not be unacceptable	MTRC / Contractor	Works areas at which explosives would be stored and/or used	Construction phase	Dangerous Goods Ordinance	Implemented
A7A	6	Only the required quantity of explosives for a particular blast should be transported to avoid the return of unused explosives to the magazine. The number of return trips to the magazine with the full load of explosives or partial load should be minimised by proper co-ordination between blasting and delivery. If disposal is required for small quantities, disposal should be made in a controlled and safe manner by a Registered Shotfirer.	To reduce the risk during explosives transport	MTRC/ Contractor	Works areas at which explosives would be stored and/ or used	Construction phase		Implemented
A7A	6	The explosive truck accident frequency should be minimized by implementing a dedicated training programme for both the driver and his attendants, including regular briefing sessions, implementation of a defensive driving attitude. In addition, drivers should be selected based on good safety record, and medical checks.	To meet the ALARP requirement.	MTRC/ Contractor	-	Construction phase		Implemented
A7A	6	The contractor should as far as practicable combine the explosive deliveries for a given work area.	To meet the ALARP requirement.	MTRC/ Contractor	-	Construction phase		Implemented

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A7A	6	The explosive truck fire involvement frequency should be minimized by implementing a better emergency response and training to make sure the adequate fire extinguishers are used and attempt is made to evacuate the area of the incident or securing the explosive load if possible. All explosive vehicles should also be equipped with bigger capacity AFFF-type extinguishers.	To meet the ALARP requirement.	MTRC/ Contractor	-	Construction phase		Implemented
A7A	6	A minimum headway between two consecutive trucks conveys of at least 10 min is recommended.	To ensure that the risk from the proposed explosives transport would not be unacceptable	MTRC/ Contractor	Along explosives transport route	Construction phase		Implemented
A7A	6	Use only experienced driver(s) with good safety record for explosive vehicle(s). Training should be provided to ensure it covers all major safety subjects.	To ensure safe transport of explosives	MTRC/ Contractor	At suitable location	Construction phase		Implemented
A7A	6	Develop procedure to ensure that parking space on the site is available for the explosive truck. Confirmation of parking space should be communicated to truck drivers before delivery.	To ensure that the risks from the proposed explosives storage and transport would not be unacceptable	MTRC/ Contractor	Explosive magazine	Construction phase		Implemented
A7A	6	Delivery vehicles shall not be permitted to remain unattended within the magazine site (or appropriately wheel-locked).	To reduce the risk of fire within the magazine	MTRC / Contractor	Explosive Magazine	Construction phase		Implemented
A7A	6	Good house-keeping within and outside of the magazine to ensure that combustible materials (including vegetation) are removed and not allowed to accumulate.	To reduce the risk of fire within the magazine	MTRC / Contractor	Explosive Magazine	Construction phase		Implemented
A7A	6	Detonators shall not be transported in the same vehicle with other Class 1 explosives.	To reduce the risk of explosion during the transport of cartridged emulsion	MTRC / Contractor		Construction phase		Implemented
A7A	6	Emergency plan (i.e. magazine operational manual) shall be developed to address uncontrolled fire in magazine area. The case of fire near an explosive carrying truck in jammed traffic should also be covered. Drill of the emergency plan should be carried out at regular intervals.	To reduce the risk of fire	MTRC/ Contractor	Explosive Magazine and along explosives transport route	Construction phase		Implemented
A7A	6	Adverse weather working guideline should be developed to clearly define procedure for transport explosives during thunderstorm.	To ensure safe transport of explosives	MTRC/ Contractor	Along explosives transport route	Construction phase		Implemented
A7A	6	During transport of the explosives within the tunnel, hot work should not be permitted.	To ensure safe transport of explosives	MTRC/ Contractor	Along explosives transport route	Construction phase		Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
A7A	6	Ensure that UN 1.4B packaging of detonators remains intact until handed over at blasting site.	To reduce the risk of explosion during the transport of detonator	MTRC/ Contractor	-	Construction phase		Implemented
A7A	6	Contractor to ensure that any electro-explosive devices are sufficiently shielded from radio frequency radiation hazards.	To reduce the risk of explosion during the transport of detonators	MTRC/ Contractor	-	Construction phase		Implemented
A7A	6	Steel vehicle tray welded to a steel vertical fire screen should be mounted at least 150 mm behind the drivers cab and 100 mm from the steel cargo compartment, the vertical screen shall protrude 150 mm in excess of all three (3) sides of the steel cargo compartment.	To reduce the risk during explosives transport.	MTRC/ Contractor	-	Construction phase		Implemented
A7A	6	Ensure cartridged emulsion with high water content should be preferred. Also, the emulsion with perchlorate formulation should be avoided.	To ensure safe explosives to be used	MTRC/ Contractor	-	Construction phase		Implemented
A7A	6	Traffic Management should be implemented within the temporary magazine site, to ensure that no more than 1 vehicle will be loaded at any time, in order to avoid accidents involving multiple vehicles within the site boundary. Based on the construction programme, considering that 6 trucks could be loaded over a peak 2 hour period, this is considered feasible.	To ensure that the risks from the proposed explosives storage and transport would not be unacceptable	MTRC/ Contractor	-	Construction phase		Implemented
A7A	6	The design of the fill slope close to the temporary magazine site should consider potential washout failures and incorporate engineering measures to prevent a washout causing damage to the temporary magazine stores	To ensure that the risks from the proposed explosives storage would not be unacceptable	MTRC/ Contractor	-	Construction phase		Implemented
A7A	6	The security plan should address different alert security level to reduce opportunity for arson / deliberate initiation of explosives. The corresponding security procedure should be implemented with respect to prevailing security alert status announced by the Government.	To ensure that the risks from the proposed explosives storage would not be unacceptable	MTRC/ Contractor	-	Construction phase		Implemented
A7A	6	A suitable work control system should be introduced, such as an operational manual including Permit-to-Work system.	To ensure that the risks from the proposed explosives storage would not be unacceptable	MTRC/ Contractor	-	Construction phase		Implemented
A7A	6	The magazine building shall be regularly checked for water seepage through the roof, walls or floor.	To ensure that the risks from the proposed explosives storage would not be unacceptable	MTRC/ Contractor	-	Construction phase		Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
Waste Management (Construction Phase)								
8.5.1.1	7	**Good Site Practices** Recommendations for good site practices during the construction activities include: • Nomination of an approved person, such as a site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site • Training of site personnel in proper waste management and chemical handling procedures • Provision of sufficient waste disposal points and regular collection of waste • Appropriate measures to minimise windblown litter and dust/odour during transportation of waste by either covering trucks or by transporting wastes in enclosed containers • Provision of wheel washing facilities before the trucks leaving the works area so as to minimise dust introduction from public road • Well planned delivery programme for offsite disposal such that adverse environmental impact from transporting the C&D material is not anticipated • Provision of cover for the stockpile material, sand bag or earth bund as barrier to prevent material from washing away and entering the drains	To reduce waste generation	MTRC / Contractor	Construction Work Sites (General)	During Construction	Waste Disposal Ordinance (Cap.354); Waste Disposal (Chemical Wastes) (General) Regulation (Cap 354) and ETWBTC No. 15/2003, Waste Management on Construction Site	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
8.5.1.2	7	**Waste Reduction Measures** Recommendations to achieve waste reduction include: • Sort C&D material from demolition and decommissioning of the existing facilities to recover recyclable portions such as metals • Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal • Encourage collection of aluminium cans by providing separate labelled bins to enable this waste to be segregated from other general refuse generated by the work force • Proper storage and site practices to minimise the potential for damage or contamination of construction materials • Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	For perform waste reduction	MTRC / Contractor	Construction Work Sites (General)	During Construction	Waste Disposal Ordinance (Cap.354); Waste Disposal (Chemical Wastes) (General) Regulation; Land (Miscellaneous Provisions) Ordinance (Cap. 28)	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
8.5..1.3	7	**C&D Material** In order to minimise impacts resulting from collection and transportation of C&D material for off-site disposal, the excavated materials should be reused on-site as backfilling material as far as practicable. In addition, C&D material generated from excavation works could be reused as rock material in local projects that require public fill for reclamation and earth filling purposes, say, 'Hong Kong – Zhuhai – Macao Bridge' in association with Hong Kong Boundary Crossing Facilities and Hong Kong Link Road, Central-Wanchai Bypass and Wanchai Development Phase II project (subject to further coordination). The surplus rock and other inert C&D material should be disposed of at the Government's Public Fill Reception Facilities (PFRFs), for beneficial use by other projects in the HKSAR, or transported to Mainland China via CEDD for use by other suitable projects in the Mainland. C&D waste generated from general site clearance and tree felling works would require disposal to the designated landfill site. Other mitigation requirements are listed below: • A Waste Management Plan should be prepared and • In order to monitor the disposal of C&D material and solid wastes at public filling facilities and landfills, and to control fly-tipping, a trip-ticket system (e.g. ETWB TCW No. 31/2004) should be included.	To minimize impacts resulting from collection and transportation of C&D material for off-site disposal	MTRC / Contractor	Construction Work Sites (General)	During Construction	ETWB TCW No. 31/2004	Implemented
8.5.1.4	7	**General Refuse** General refuse should be stored in enclosed bins or compaction units separate from C&D material. A reputable waste collector should be employed by the contractor to remove general refuse from the site, separately from C&D material. Preferably an enclosed and covered area should be provided to reduce the occurrence of 'wind blown' light material.	To minimize impacts resulting from collection and transportation of general refuse for off-site disposal	MTRC / Contractor	Construction Work Sites (General)	During Construction	Public Health and Municipal Services Ordinance (Cap. 132) - Public Cleansing and Prevention of Nuisances Regulation	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
8.5.1.5	7	**Chemical Waste** 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*. Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. The Contractor should use a licensed collector to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	To minimize impacts resulting from collection and transportation of chemical waste for off-site disposal	MTRC / Contractor	Construction Work Sites (General)	During Construction	Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes, Waste Disposal (Chemical Waste) (General) Regulation	Implemented
8.5.1.6	7	**Marine Dredged Sediment** The sediment at the pier site would be dredged and transferred to barges for subsequent disposal. Release of dredged sediment into the surrounding water should be avoided. It is recommended that the distance between the barge and the dredging point be shortened as far as possible to avoid dropping of sediment from the close grab to the seawater.	To minimise potential impacts on water quality	MTRC/ Contractor	Dredging/ excavation area required for installation of the pier/pier structure in Aberdeen Channel	During marine construction works	ETWB TCW No. 34/2002	Implemented
8.5.1.6	7	Category H material was identified at the grab sampling location at the dredging/excavation site. As there was no exceedance of 10xLCEL for the tested parameters, the sediment to be dredged at this location should be disposed of at a confined marine disposal site. The Project Proponent should agree with MFC on the allocation of disposal site and the Contractor should apply a dumping permit from EPD prior to the dredging / excavation works.	To prevent cross contamination of waste.	MTRC/ Contractor	Dredging/ excavation area with Category H material	During marine construction works	ETWB TCW No. 34/2002	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
Waste Management (Operation Phase)								
8.5.2.1	7	**General Refuse** General refuse should be collected on daily basis and delivered to the refuse collection point accordingly. A reputable waste collector should be employed to remove general refuse regularly to avoid odour nuisance or pest and vermin problem. Recycling containers are recommended to be provided to encourage recycling aluminium cans and waste paper.	To minimize impacts resulting from collection and transportation of general refuse for off-site disposal	MTRC	Stations and depot	During Operation	Public Health and Municipal Services Ordinance (Cap. 132) - Public Cleansing and Prevention of Nuisances Regulation	Being implemented
8.5.2.2	7	**Industrial Waste** Similar to general refuse, a reputable waste collector should be employed to remove industrial waste regularly to avoid accumulation. Scrap materials such as metals can be recycled if uncontaminated.	To minimize impacts resulting from collection and transportation of industrial waste for off-site disposal	MTRC	Stations and depot	During Operation	Public Health and Municipal Services Ordinance (Cap. 132) - Public Cleansing and Prevention of Nuisances Regulation	Being implemented
8.5.2.3	7	**Chemical Waste** • Register with the EPD as a chemical waste producer should be obtained and guidelines stated in the *Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes* should be followed. • Good quality containers compatible with the chemical wastes should be used, and incompatible chemicals should be stored separately. Appropriate labels should be securely attached on each chemical waste container indicating the corresponding chemical characteristics of the chemical waste, such as explosive, flammable, oxidizing, irritant, toxic, harmful, corrosive, etc. Licensed collector should be deployed to transport and dispose of the chemical wastes, to either the approved Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.	To minimize impacts resulting from collection and transportation of chemical waste for off-site disposal	MTRC	Stations and depot	During Operation	Waste Disposal (Chemical Waste) (General) Regulation Code of Practice on the Packaging, Labelling and Storage of Chemical Waste	Being implemented
Land Contamination (Construction Phase)								

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
9.7.1	8	The following measures should be implemented for contaminated material excavation and transportation (if any): • To minimize the chance for construction workers' to come into contact with contaminated materials, bulk earth-moving excavation equipment should be employed; • Contact with contaminated materials can be minimised by wearing appropriate clothing and personal protective equipment such as gloves and masks (especially when interacting directly with contaminated material), provision of washing facilities and prohibition of smoking and eating on site; • Stockpiling of contaminated excavated materials on site should be avoided as far as possible; • The use of contaminated soil for landscaping purpose should be avoided unless pre-treatment was carried out; • Vehicles containing any excavated materials should be suitably covered to reduce dust emissions and/or release of contaminated wastewater; • Truck bodies and tailgates should be sealed to stop any discharge; • Only licensed waste haulers should be used to collect and transport contaminated material to treatment/disposal site and with the implementation of tracking system to avoid fly tipping; • Speed control for trucks carrying contaminated materials should be carried out; • Observe all relevant regulations in relation to waste handling, such as Waste Disposal Ordinance (Cap 354), Waste Disposal (Chemical Waste) (General) Regulation (Cap 354) and obtain all necessary permits where required; and • Maintain records of waste generation and disposal quantities and disposal arrangements.	To minimize as much as possible any nuisance generated in relation to land remediation activities. At the same time, to protect all personnel from possible risk associated with land remediation activities.	MTRC / Contractor	All site areas	During Construction	EIA Recommendations	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
Land Contamination (Operation Phase)								
9.7.2	8	Defined procedures in handling chemicals should be implemented as part of MTRCL company policy. All relevant operational procedures should be strictly followed to avoid land contamination.	To minimize as much as possible any risk in association with land contamination during operation of the Project	MTRC	All areas within the Project	During Operation	EIA Recommendations	Being implemented
Air Quality Impact (Construction Phase)								
10.6.2	9	**Specific Dust Control Measures**	To minimize adverse dust emission generated from various construction activities of the works sites	Contractor	Construction Works Sites	During Construction	EIA Recommendations	Implemented
		• For the unloading of spoil from trucks at barging point, installation of 3-sided screen with top and the provision of water sprays at the discharge point should be provided						
		• Watering every working hour for 12 hours a day on exposed soil areas on active works areas and paved haul roads to reduce dust emissions						
		• The rock crushing facilities with maximum daily output of over 1000m^3 per day should be enclosed including unloading locations and a fabric baghouse/cartridge filter type dust extraction and collection system or equivalent system with 99% or more dust removal efficiency should be installed for the treatment of the emissions from rock crushing and screening processes.						
10.6.2	9	Best practices for dust control are required. A control programme can be instigated to monitor the construction process in order to enforce dust controls and modify methods of works where feasible to reduce the dust emission down to acceptable levels. The following best practices for dust control should be implemented throughout the construction period: **Disturbed Parts of the Roads** • Each and every main temporary access should be paved with concrete, bituminous hardcore materials or metal plates and kept clear of dusty materials; or	To minimize adverse dust emission generated from various construction activities of the works sites	Contractor	Construction Works Sites	During Construction	Air Pollution Control (Construction Dust) Regulation, EPD's Best Practicable Means and EIA Recommendation	Implemented

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
		• Unpaved parts of the road would be sprayed with water or a dust suppression chemical so as to keep the entire road surface wet. **Exposed Earth** • Exposed earth should be properly treated by compaction, hydroseeding, vegetation planting or seating with latex, vinyl, bitumen within six months after the last construction activity on the site or part of the site where the exposed earth lies. **Loading, Unloading or Transfer of Dusty Materials** • All dusty materials should be sprayed with water immediately prior to any loading or transfer operation so as to keep the dusty material wet. **Debris Handling** • Any debris should be covered entirely by impervious sheeting or stored in a debris collection area sheltered on the top and the three sides. • Before debris is dumped into a chute, water should be sprayed so that it remains wet when it is dumped. ▪ For the minor blasting at WCH Depot, tarpaulin covers would be provided on the steel screens to prevent the dust from spreading out, and the whole blasting area would be watered before and after each blast in order to help contain the dust and fumes. **Transport of Dusty Materials** • Vehicle used for transporting dusty materials/ spoil should be covered with tarpaulin or similar material. The cover should extend over the edges of the sides and tailboards. **Wheel Washing** • Vehicle wheel washing facilities should be provided at each construction site exit.						

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
		Stone Crushing Plant • The control measures listed in EPD's A Guidance Note on the Best Practicable Means for Mineral Works (Stone Crushing Plants) BPM 11/1) should be followed, where appropriate. **Concrete Batching Plant** • The loading, unloading, handling, transfer or storage of dusty materials should be carried in a totally enclosed system. All dust-laden air or waste gas generated by the process operations should be properly extracted and vented to fabric filtering system. The control measures listed in EPD's A guidance note on the best practicable means for cement works (concrete batching plant) (BPM 3/2) should be followed, where appropriate. **Good Site Management** • The Contractor should maintain high standard of housekeeping to prevent emission of fugitive dust emission. Loading, unloading, handling and storage of raw materials, wastes or by-products should be carried out in a manner so as to minimize the release of visible dust emission. Any piles of materials accumulated on or around the work areas should be cleaned up regularly. Cleaning, repair and maintenance of all plant facilities within the work areas should be carried out in a manner minimizing generation of fugitive dust emissions. The material should be handled properly to prevent fugitive dust emission before cleaning.						

EIA Ref.	EM&A Ref.	Recommended Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Who to implement the measure?	Location of the measure	When to implement the measure?	What requirements or standards for the measure to achieve?	Implementation status
Cultural Heritage Impact (Construction Phase)								
11.7.1.1	10	Archaeological watching brief during the construction phase is recommended for areas highlighted as having some archaeological potential (The works sites that will require archaeological watching brief can be found in the following figures in the main report: Harcourt Garden (Figure 11.22 of EIA Report), Wong Chuk Hang San Wai (WS10) in Figure 11.35 of EIA Report and Works Sites S7, S7c, S7d and S7e (Figure 11.28 of EIA Report)	To identify and record any archaeological material or features revealed during the excavation phase of the works schedule	MTRC/ Contractor	Admiralty: Harcourt Garden Works Site; Wong Chuk Hang: Works Sites S7c,d,e, Works Site S7, Pier Columns within Works Site S10	During Construction	Antiquities and Monuments Ordinance	Implemented

FIGURES

Figures 1 to 2
Works Areas of the Project

Figures 3 to 6
Location of Construction Air Quality Monitoring Stations

Figures 7 to 8
Location of Construction Noise Monitoring Stations

Figure 9
Location of Water Quality Monitoring Stations

Figure 1 – Works Areas of the Project (1 of 2)

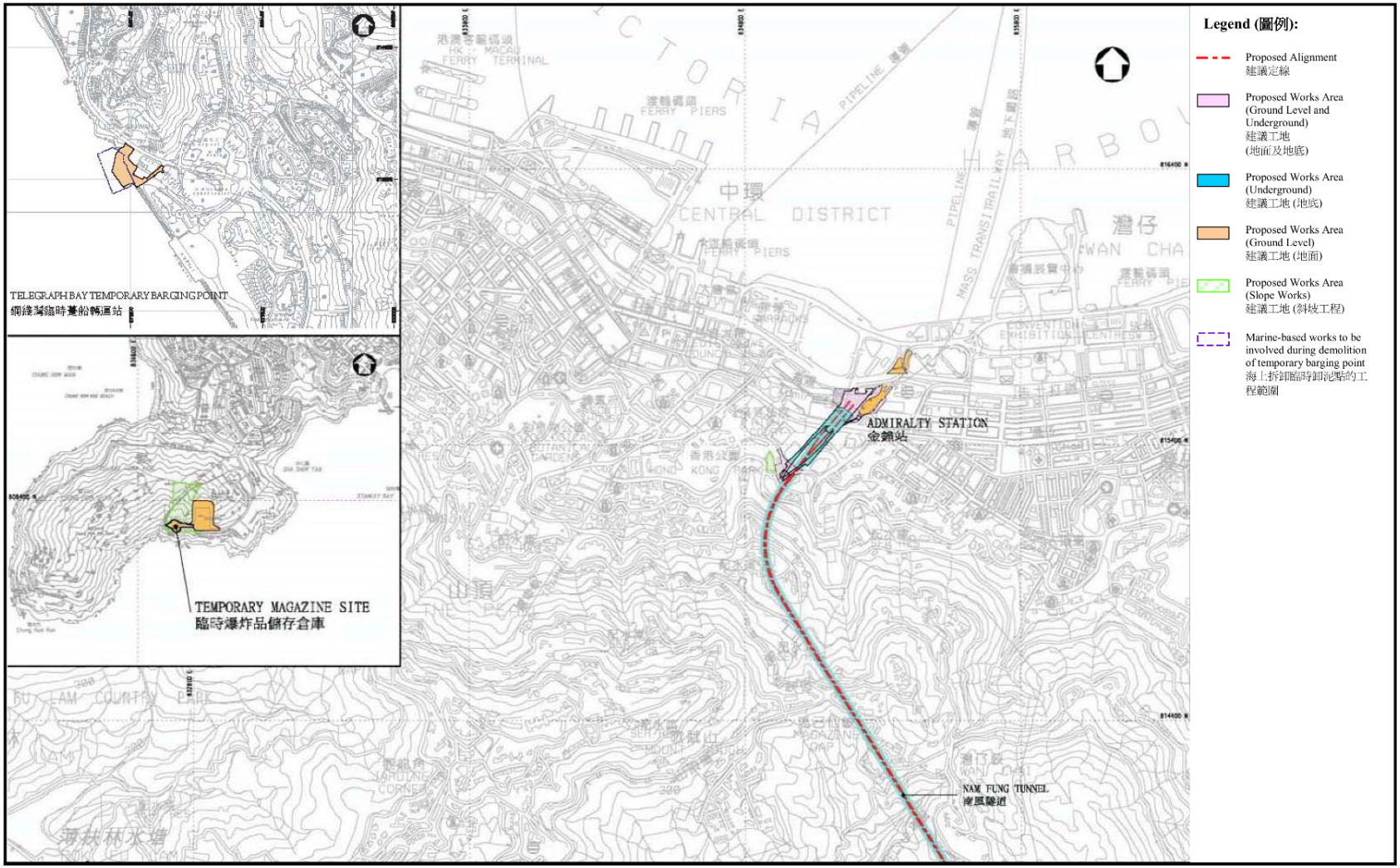

Figure 2 – Works Areas of the Project (2 of 2)

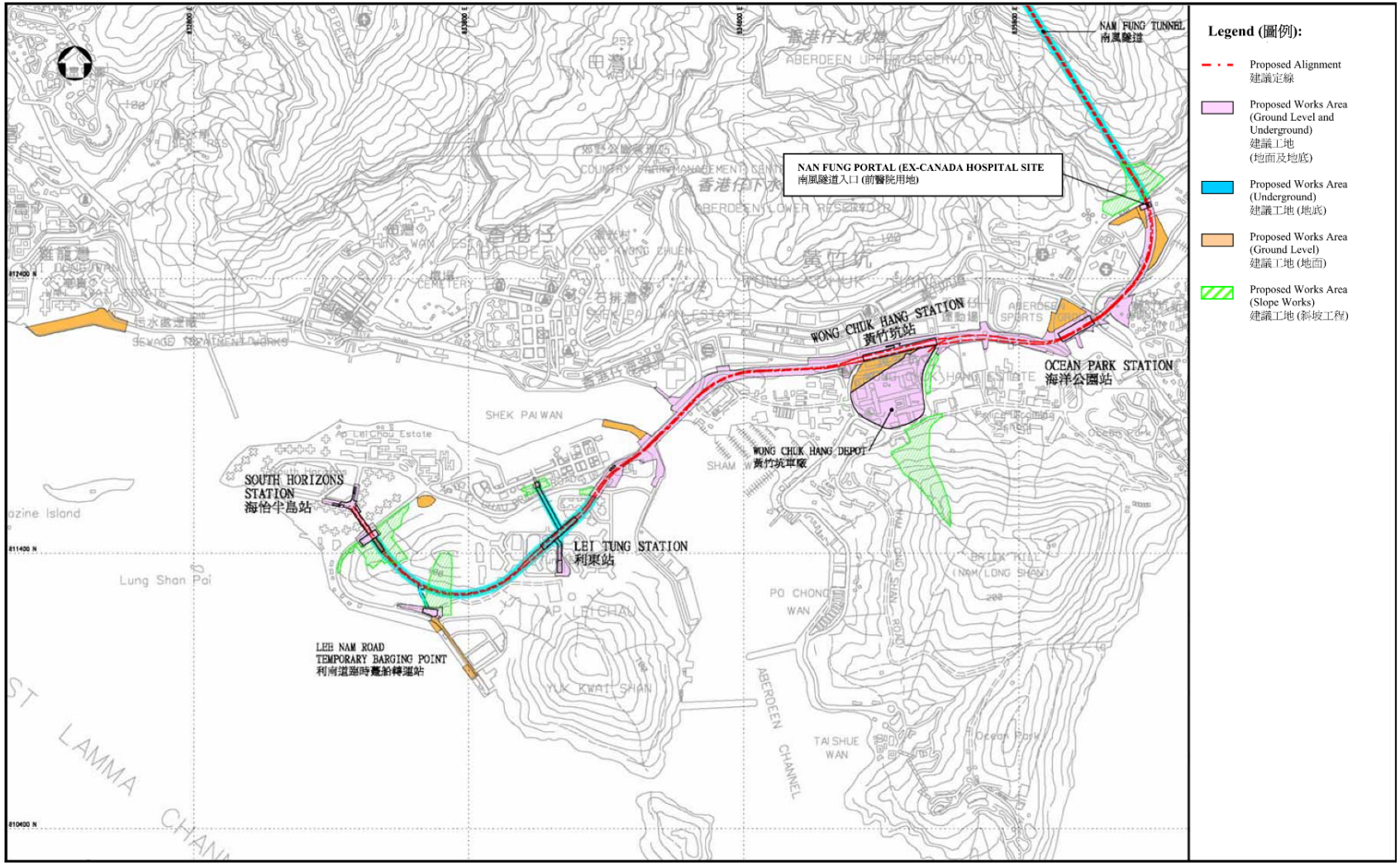

Figure 3 – Location of Construction Air Quality Monitoring Stations (1 of 4)

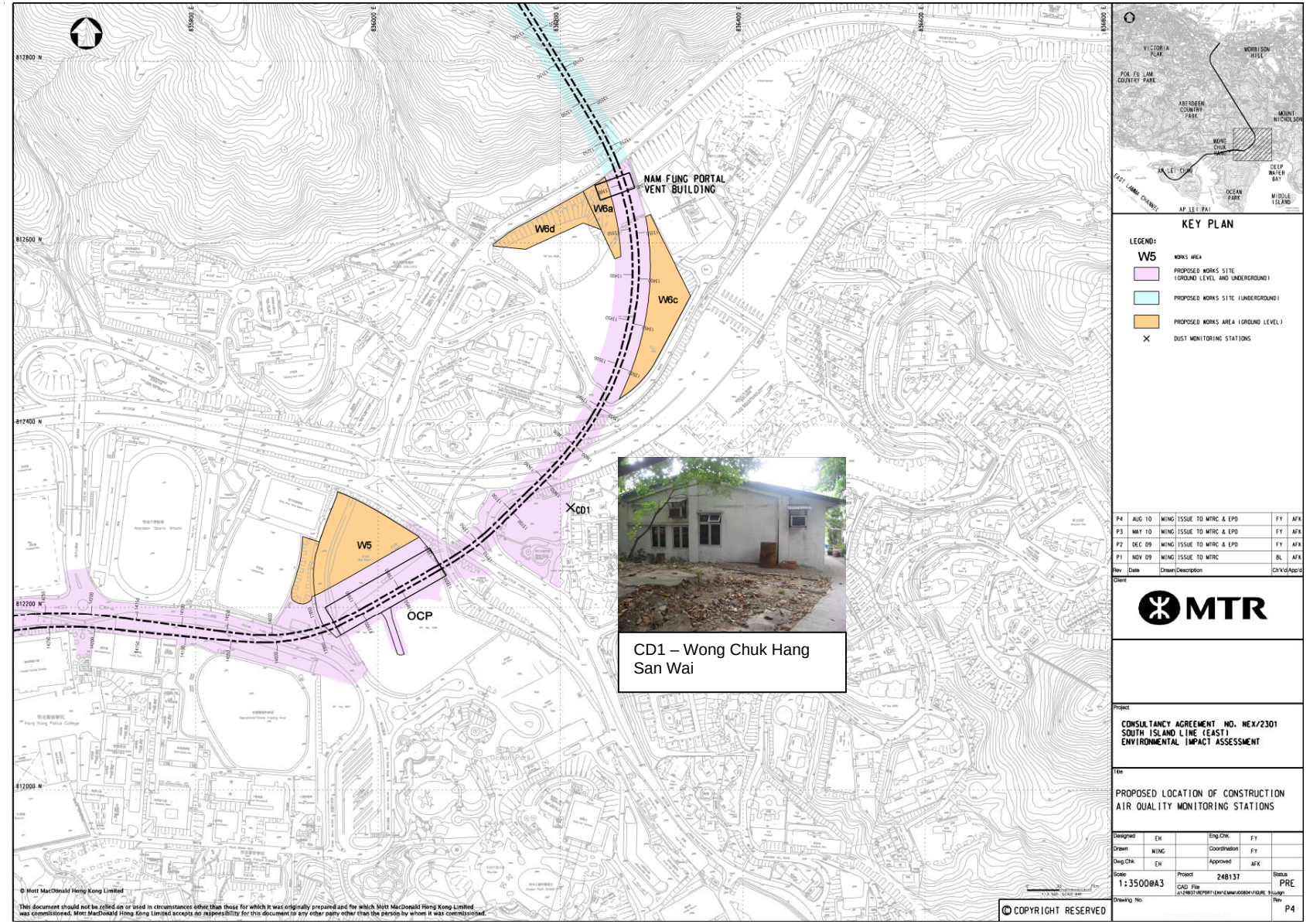

Figure 4 – Location of Construction Air Quality Monitoring Stations (2 of 4)

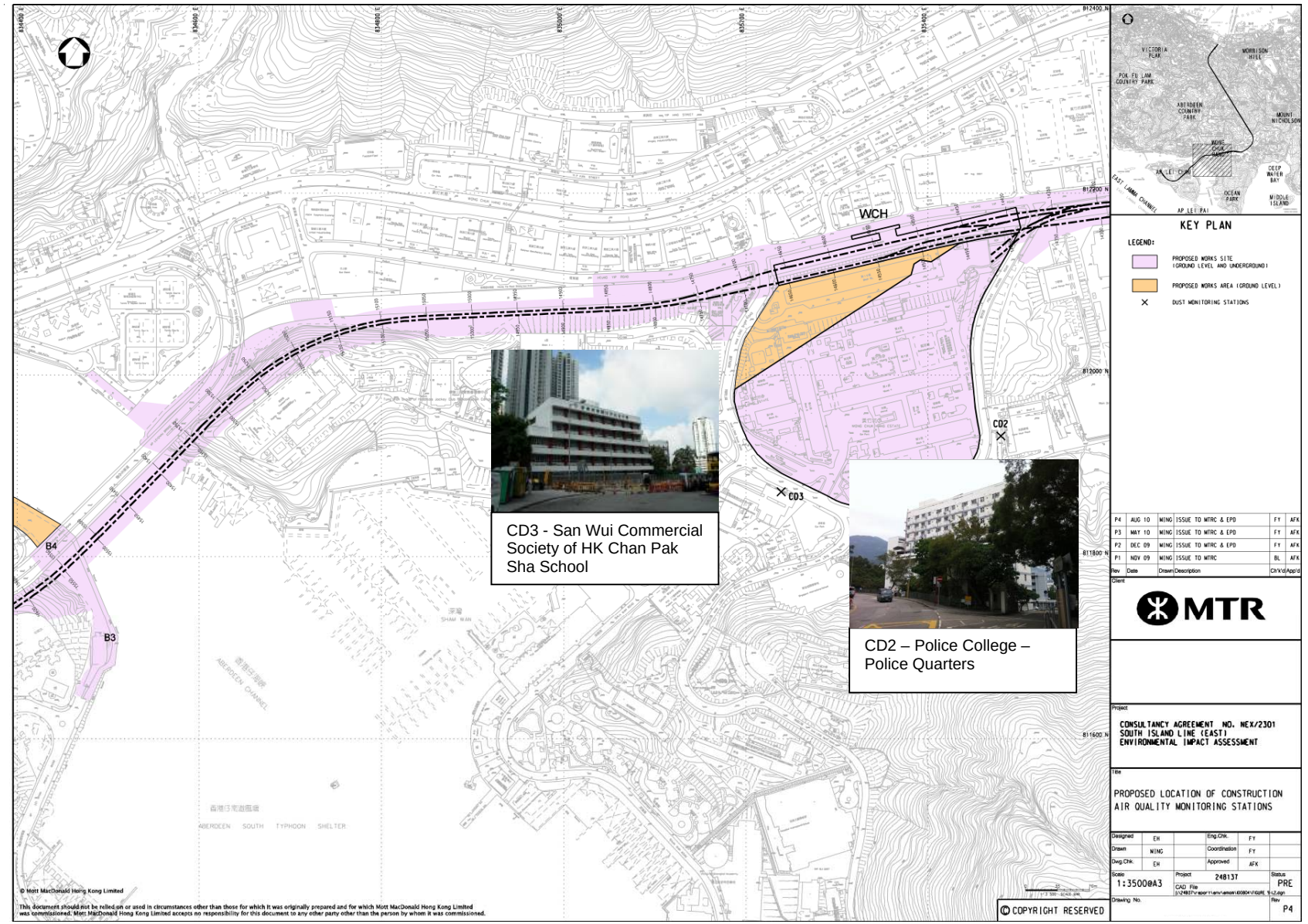

Figure 5 – Location of Construction Air Quality Monitoring Stations (3 of 4)

Figure 6 – Location of Construction Air Quality Monitoring Stations (4 of 4)

Figure 7 – Location of Construction Noise Monitoring Stations (1 of 2)

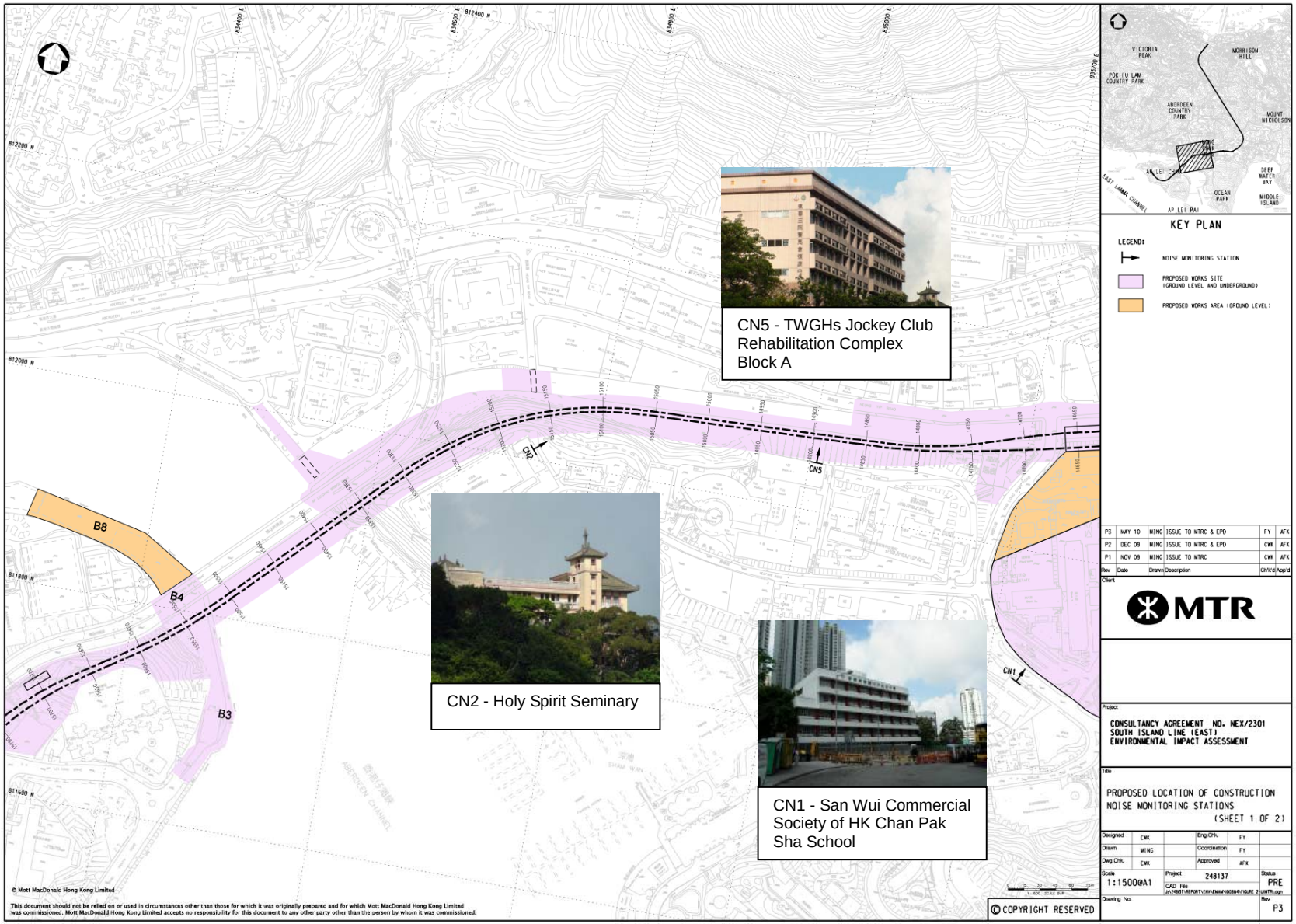

Figure 8 – Location of Construction Noise Monitoring Stations (2 of 2)

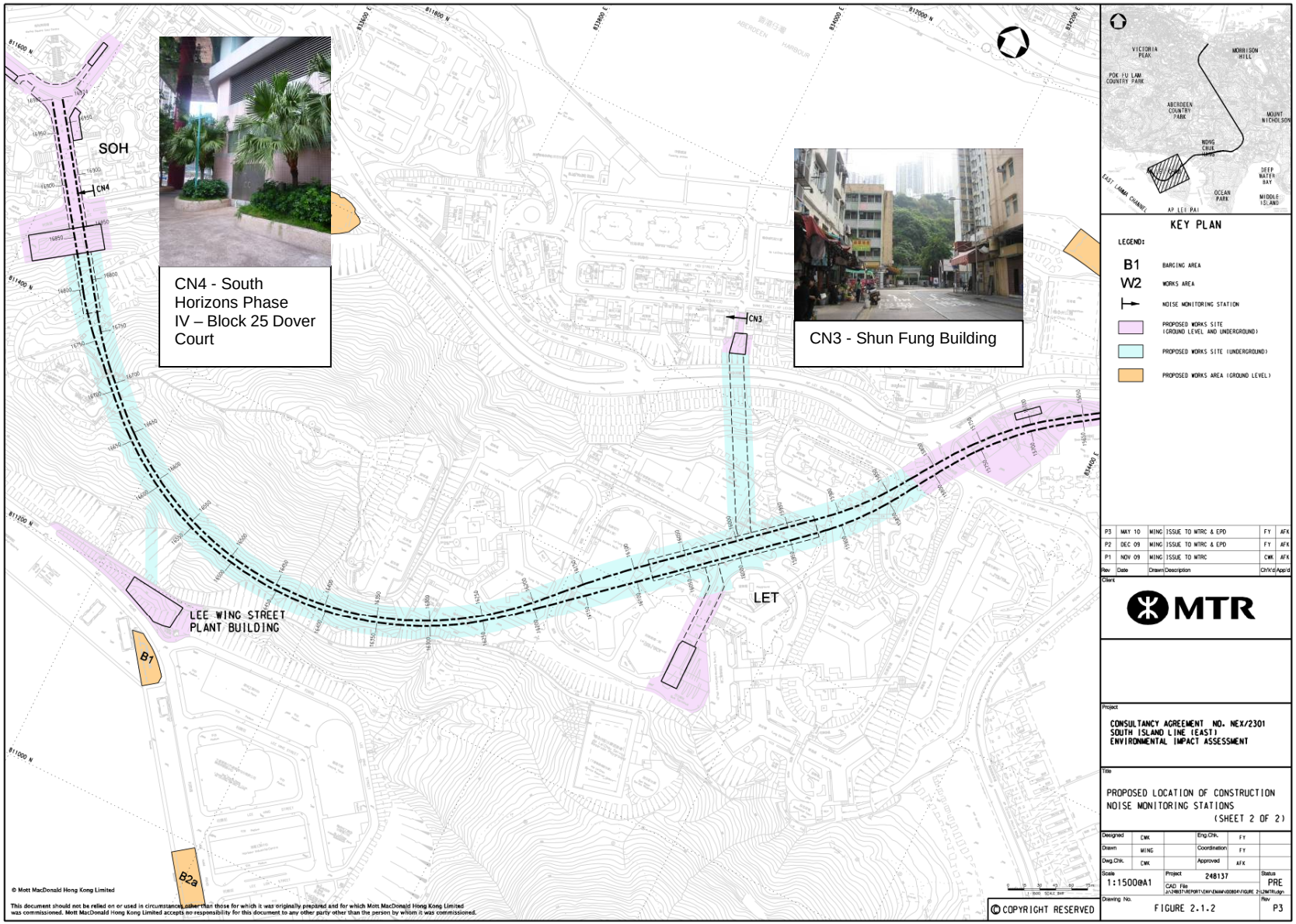

Figure 9 – Location of Water Quality Monitoring Stations