

**Entrusted Portion of Widening of Tolo Highway /
Fanling Highway between Island House Interchange
and Fanling Stage 2**

Monthly EM&A Report

January 2014

Submitted to

Environmental Protection Department

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27.3.2014

Meinhardt Infrastructure and Environment Limited

**Entrusted Portion of Widening of Tolo
Highway / Fanling Highway between Island
House Interchange and Fanling Stage 2**

Monthly EM&A Report

(January 2014)

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Position: Environmental Team Leader

Date: 12 February 2014



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Your ref

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Dear Sir,

12 February 2014
By Fax (2805 5028) & Post

Attn: Mr. James Penny

EM&A for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2 (between Tai Hang to Wo Hop Shek Interchange) – Entrusted Works
Environmental Permit No. EP-324/2008/A
Condition 3.3 – Submission of Monthly EM&A Report – January 2014 for the portion of Stage 2 works entrusted to CEDD under Contract No. CV/2012/09

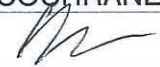
We refer to the revised Monthly EM&A Report – January 2014 received on 11 and 12 February 2014 submitted by ET via email. Pursuant to EP Condition 3.3, I hereby verify the Monthly EM&A Report – January 2014 (Rev. 0) for the portion of works under Stage 2 of the captioned Project which is entrusted to CEDD under Contract No. CV/2012/09.

Yours faithfully
for MOTT MACDONALD HONG KONG LIMITED

Terence Kong
Independent Environmental Checker

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Date	Revision	Prepared By	Checked By	Approved By
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EXECUTIVE SUMMARY

The Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2 (hereafter called “the Project”) covers part of the construction of the widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling which aimed to widen Tolo Highway and Fanling Highway to dual 4-lane carriageway in order to alleviate the current traffic congestion problems and to cope with the increasing transport demands to and from the urban areas and also cross boundary traffic. The Project covers construction activities at Yuen Leng along the existing Fanling Highway.

The impact EM&A for the Project includes air quality, noise and water quality monitoring. The EM&A programme commenced on 5 November 2013.

This report documents the findings of EM&A works conducted in January 2014. As informed by the Contractor, the major activities in the reporting period were:

- Cable detection and trail trenches;
- Tree Felling Works;
- Trial Pit Excavation;
- Pre-drilling works and piling works;
- Extension of box culvert ;
- Bored pile wall construction & Catch Fan;
- Erection of site office; and
- Construction of haul road and temporary soil platform for geotechnical works

Breach of Action and Limit Levels for Air Quality

Five (5) Action Level exceedances of 24-hour TSP monitoring were recorded on 2, 8, 14, 25 and 30 January 2014 while one (1) Limit Level exceedance was recorded on 20 January 2014 at the monitoring location AM1(SR77) in the reporting month. Investigation for the exceedances have been conducted and concluded not related to the project works. The investigation reports for the incidents are presented in **Appendix L**.

No exceedance of Action and Limit Level was recorded for 1-hour TSP monitoring at the monitoring location AM1(SR77) in the reporting month.

Breach of Action and Limit Levels for Noise

No noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded. No Limit Level exceedance of noise was recorded in the reporting month.

Breach of Action and Limit Levels for Water Quality

One (1) exceedance of Action Level of Turbidity was recorded on 2 January 2014. Two (2) exceedances of Limit Level of Suspended Solids on 15 and 24 January 2014 were recorded in the reporting month. Investigation for the exceedances have been conducted which concluded

that the exceedances events were not related to the construction works. The investigation reports for the incidents are presented in **Appendix L**.

Complaint, Notification of Summons and Successful Prosecution

No complaint, notification of summons and successful prosecution was received in the reporting month

Reporting Change

There was no reporting of change recorded in the reporting month.

Future Key Issues

The major construction works in the coming reporting month are anticipated to include:

- Cable detection and trial trenches;
- Pre-drilling works and piling works;
- Tree felling works, waterworks and excavation works;
- Slope upgrading works;
- Noise barrier installation;
- Extension of box culvert;
- Construction of haul road and temporary soil platform for geotechnical works; and
- Laying of concrete pipe works.

Potential environmental impacts arising from the above construction activities are anticipated to be mainly associated with construction dust, noise, water quality and waste management.

1 INTRODUCTION

1.1.1 Chun Wo Construction & Engineering Co Ltd (Chun Wo) was commissioned by the Civil Engineering and Development Department (CEDD) as the Civil Contractor for the Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2. Meinhardt Infrastructure & Environment Ltd (MIEL) has been appointed by Chun Wo as the Environmental Team (ET) to fulfill the corresponding EM&A requirements pursuant to Environmental Permit No. EP-324/2008/A in accordance with the Updated EM&A Manual (dated October 2013) for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling Stage 2. The EM&A programme commenced in 5 November 2013.

1.2 Purpose of the Report

1.2.1 This is the monthly EM&A Report which summaries the impact monitoring results and audit findings for the Project during the reporting month of January 2014.

1.3 Report Structure

1.3.1 This monthly EM&A Report comprises the following sections:

- Section 1: Introduction
- Section 2: Project Information
- Section 3: Status of Environmental Licenses, Notifications and Permits
- Section 4: Air Quality Monitoring
- Section 5: Noise Monitoring
- Section 6: Water Monitoring
- Section 7: Waste Management
- Section 8: Environmental Site Inspection and Audit
- Section 9: Implementation Status of Environmental Mitigation Measures
- Section 10: Environmental Non-conformance
- Section 11: Future Key Issues
- Section 12: Conclusions and Recommendations

2 PROJECT INFORMATION

2.1 Background

- 2.1.1 Tolo Highway and Fanling Highway are expressways in the North East New Territories connecting Sha Tin, Tai Po and Fanling. These highways form a vital part of the strategic Route 1, which links Hong Kong Island to Shenzhen. At present, this section of Route 1 is a dual 3-lane carriageway. However, at several major interchanges along this section of Route 1, the highway is only dual-2 lane. Severe congestion is a frequent occurrence during peak periods, particularly in the Kowloon bound direction.
- 2.1.2 The objective of the Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling is to widen Tolo Highway and Fanling Highway to dual 4-lane carriageway in order to alleviate the current traffic congestion problems and to cope with the increasing transport demands to and from the urban areas and also cross boundary traffic.
- 2.1.3 The construction works for the Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling are to be delivered in 2 stages:
- Stage 1 – Construction works between Island House Interchange and Tai Hang; and
 - Stage 2 – Construction works between Tai Hang and Wo Hop Shek Interchange.
- 2.1.4 The construction works of Stage 1 under the EP commenced in November 2009 and was planned to be completed in December 2013 tentatively. The works of Stage 2 was planned to commence in November 2013 and complete by end of 2016. Hyder-Arup-Black and Veatch Joint Venture (HABVJV) was appointed by the Highways Department (HyD) as the consultants for the design and construction assignment for the Project. Mott MacDonald Hong Kong Ltd is the Independent Environmental Checker (IEC) of both Stage 1 and Stage 2 works.
- 2.1.5 A portion of Stage 2 works of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling (hereafter called “the Project”) is entrusted to the contractor of Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works Contract 3, i.e. Chun Wo. AECOM Asia Co Ltd was appointed by the CEDD as the consultant for the design and construction assignment for the Liantang development.
- 2.1.6 The Project is a Designated Project under the Environmental Impact Assessment Ordinance (EIAO) (Cap. 499). An Environmental Impact Assessment (EIA) Report together with an Environmental Monitoring and Audit (EM&A) Manual were approved on 14 July 2000 (Register Number: EIA-043/2000). The Project is governed by an Environmental Permit (EP) (EP-324/2008) which was granted on 23 December 2008. A variation of EP (VEP) was applied and a VEP (EP-324/2008/A) was subsequently granted on 31 January 2012.

2.2 Site Description

- 2.2.1 The major construction activities under the Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2 include:

- At-Grade Road Works – Temporary and permanent road formation, pipe laying, road drainage, footpath and noise barrier construction;
- Demolition of existing Kiu Tau Footbridge and Footbridge Re-provision; and
- Box Culvert Extension – Flow diversion of existing stream, excavation, sub-base and blinding, base, wall and top slab construction.

2.2.2 **Figure 1** shows the works areas for the Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2.

2.3 Construction Programme and Activities

2.3.1 The major construction activities undertaken in the reporting month are summarized below:

- Cable detection and trail trenches;
- Tree Felling Works;
- Trial Pit Excavation;
- Pre-drilling works and piling works;
- Extension of box culvert ;
- Bored pile wall construction & Catch Fan;
- Erection of site office; and
- Construction of haul road and temporary soil platform for geotechnical works

2.3.2 The construction programme is presented in **Appendix A**.

2.4 Project Organisation

2.4.1 The project organization structure is shown in **Appendix B**. The key personnel contact names and numbers for the Project are summarised in **Table 2.1**.

Table 2.1 Contact Information of Key Personnel

Party	Role	Position	Name	Telephone	Fax
AECOM	Engineer's Representative	Senior Resident Engineer	Mr. Alan Lee	2472 7228	2472 0132
		Resident Engineer (Environmental)	Mr. Perry Yam	2674 2273	--
Mott MacDonald	Independent Environmental Checker (IEC)	IEC	Mr. Terence Kong	2828 5919	2827 1823
Chun Wo	Contractor	Site Agent	Mr. Daniel Ho	2638 6144	2638 7077
		Environmental Officer	Mr. Victor Huang	2638 6115	
		Environmental Officer	Mr. Sam Lam	2638 6147	

Party	Role	Position	Name	Telephone	Fax
Meinhardt	Environmental Team (ET)	ET Leader	Mr. Fredrick Leong	2859 1739	2540 1580

3 STATUS OF ENVIRONMENTAL LICENSES, NOTIFICATION AND PERMITS

3.1.1 The relevant environmental licenses, permits and/or notifications on environmental protection for this Project and valid in the reporting month are summarized in **Table 3.1**.

Table 3.1 Status of Environmental Licenses, Notifications and Permits

Permit / License No. / Notification/ Reference No.	Valid Period		Status	Remarks
	From	To		
<i>Environmental Permit</i>				
EP-324/2008/A	31 Jan 2012	--	Valid	--
<i>Construction Noise Permit</i>				
GW-RN0747-13	4 Dec 2013	19 Jan 2014	Expired	--
GW-RN0004-14	26 Jan 2014	22 Jun 2014	Valid	--
<i>Wastewater Discharge License</i>				
WT00016832-2013	28 Aug 2013	31 Aug 2018	Valid	--
<i>Chemical Waste Producer Registration</i>				
5113-634-C3817-01	7 Oct 2013	--	Valid	--
<i>Billing Account for Construction Waste Disposal</i>				
7017914	2 Aug 2013	--	Account Active	--
<i>Notification Under Air Pollution Control (Construction Dust) Regulation</i>				
--	31 Jul 2013	30 Jul 2019	Notified	--

4 AIR QUALITY MONITORING

4.1 Monitoring Requirement

4.1.1 In accordance with the Updated EM&A Manual, 1-hr and 24-hr total suspended particulate (TSP) levels at the designated air quality monitoring station are required. Impact 24-hour TSP monitoring should be carried out for at least once every 6 days. For the 1-hr TSP impact monitoring, the sampling frequency of at least three times in every 6 days should be undertaken when the highest dust impact occurs.

4.2 Monitoring Equipment

4.2.1 The 24-hr TSP air quality monitoring was performed using a High Volume Sampler (HVS), of which its location and operation satisfy, as far as practicable, all the requirements as specified in the Updated EM&A Manual. A portable direct reading dust meter, which was proven to be capable of achieving comparable results as that of the HVS, was used to carry out the 1-hr TSP monitoring. The brand and model of the equipment are given in **Table 4.1**.

Table 4.1 Air Quality Monitoring Equipment

Equipment	Brand and Model	Quantity	Serial Number
Portable direct reading dust meter (1-hr TSP)	Sibata Digital Dust Monitor (Model No. AM 510)	1	11302029
High Volume Sampler (24-hr TSP)	Tisch Total Suspended Particulate Mass Flow Controlled High Volume Air Sampler (Model No. TE-5170 MFC)	1	2359

4.2.2 The HVS and its accessories were maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.

4.2.3 Calibration of the HVS (five point calibration) using Calibration Kit was carried out every two months. The HVS calibration orifice and the portable direct reading dust meter will be calibrated annually. Calibration certificate of the TE-5025A Calibration Kit, the portable direct reading dust meter and the HVS are provided in **Appendix C**.

4.3 Monitoring Location

4.3.1 Air quality monitoring was conducted at the location specified in the Updated EM&A Manual. **Table 4.2** describes the details of the air quality monitoring station with its location as shown in **Figure 2**.

Table 4.2 Location of Air Quality Monitoring

Air Monitoring Station ID	Monitoring Location	Description
AM1(SR77) *	Yuen Leng 2 ⁽¹⁾	Residential, Ground floor

Remark:

* Station / ASR ID as identified in Updated EM&A Manual / EIA Report for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling

4.4 Monitoring Parameters, Frequency and Duration

4.4.1 **Table 4.3** summarizes the monitoring parameters, frequency and duration of impact TSP monitoring.

Table 4.3 Air Quality Monitoring Parameters, Frequency and Duration

Parameter	Frequency and Duration
1-hour TSP	At least three times in every 6 days should be undertaken when the highest dust impact occur
24-hour TSP	Once every 6 days

4.5 Monitoring Methodology

24-hr TSP Monitoring

4.5.1 With the consideration of criteria stated in the Updated EM&A Manual, the HVS was installed in the vicinity of the air sensitive receivers.

4.5.2 The relevant data including temperature, pressure, weather conditions, elapsed-time meter reading for the start and stop of the sampler, identification and weight of the filter paper, and any special phenomena observed were recorded. The weather information was referenced from Hong Kong Observatory (<http://www.weather.gov.hk/wxinfo/pastwx/extractc.htm>).

4.5.3 A HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd (HOKLAS no.: 066), with constant temperature and humidity control, and equipped with necessary measuring and conditioning instruments, to handle the 24-hr TSP samples, was employed for sample analysis, and equipment calibration and maintenance.

4.5.4 Filter papers of size 8"x10" were labelled before sampling. They were inspected to be clean with no pin holes and conditioned in a humidity controlled chamber for over 24-hr and were pre-weighed before use for the sampling.

4.5.5 The 24-hr TSP levels were measured by following the standard high volume sampling method for TSP as set out in the Title 40 of the United States Code of Federal Regulations, Chapter 1 (Part 50), Appendix B. TSP was sampled by drawing air through a conditioned, pre-weighted filter paper inside the HVS at a controlled air flow rate. After 24-hr sampling, the filter papers loaded with dust were kept in a clean and tightly sealed plastic bag, and then returned to the laboratory for reconditioning in the humidity controlled chamber followed by accurate weighing by an electronic balance with a readout down to 0.1 mg.

4.5.6 All the collected samples were kept in a good condition for 6 months before disposal.

1-hr TSP Monitoring

4.5.7 The 1-hr TSP measurement followed manufacturer's instruction manual. Before initiating a measurement, zeroing the portable dust monitor was carried out to ensure maximum accuracy of concentration measurements.

4.5.8 The 1-hr TSP was sampled by drawing air into the portable dust monitor where particular concentrations were measured instantaneously with an in-built silicon

detector sensing light scattered by the particulates in the sampled air. Continuous TSP levels were indicated and logged by a built-in data logger compatible with Windows based program to facilitate data collection, analysis and reporting.

4.6 Monitoring Schedule for the Reporting month

4.6.1 The schedule for environmental monitoring and meteorological data extracted from Hong Kong Observatory in the reporting month is provided in **Appendix D**.

4.7 Monitoring Results

4.7.1 The monitoring results for 1-hr and 24-hr TSP are summarised in **Table 4.4** and **Table 4.5** respectively. Detailed air quality monitoring results and the graphical presentation of air quality monitoring data for the current and past two reporting months are presented in **Appendix E**.

Table 4.4 Summary of 1-hr TSP Monitoring Results

ASR ID	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
AM1(SR77) *	197.3	169.0 – 222.0	292.7	500

Remark:

* Station / ASR ID as identified in Updated EM&A Manual / EIA Report for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling

Table 4.5 Summary of 24-hr TSP Monitoring Results

ASR ID	Average ($\mu\text{g}/\text{m}^3$)	Range ($\mu\text{g}/\text{m}^3$)	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
AM1(SR77) *	218.4	172.0 – 322.8	170.3	260

Remark:

* Station / ASR ID as identified in Updated EM&A Manual / EIA Report for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling

4.7.2 Five (5) Action Level exceedances of 24-hour TSP monitoring were recorded on 2, 8, 14, 25 and 30 January 2014 while one (1) Limit Level exceedance was recorded on 20 January 2014 at the monitoring location AM1(SR77) in the reporting month. Investigation for the exceedances have been conducted and concluded not related to the project works. The investigation reports for the incidents are presented in **Appendix L**.

4.7.3 No exceedance of Action and Limit Level was recorded for 1-hour TSP monitoring at the monitoring location AM1(SR77) in the reporting month.

4.7.4 The Event and Action Plan for the occurrence of non-compliance of the air quality criteria is annexed in **Appendix F**.

4.7.5 Details of monitoring conditions including influencing factors such as weather conditions and site observation are presented in **Appendix E**.

5 NOISE MONITORING

5.1 Monitoring Requirements

5.1.1 In accordance with the Updated EM&A Manual, the impact noise monitoring frequency shall depend on the scale of the construction activities. An initial guide on the regular monitoring frequency should be at least once per week when noise generating activities are underway.

5.2 Monitoring Equipment

5.2.1 Noise monitoring was performed using a sound level meter at the monitoring station. The sound level meter deployed complies with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. An acoustic calibrator was deployed to check the sound level meter at a known sound pressure level. The brand and model of the equipment is given in **Table 5.1**.

Table 5.1 Noise Monitoring Equipment

Equipment	Brand and Model	Quantity	Serial Number
Acoustic Calibrator	B&K (Model No. 4231)	1	2685684
Integrated Sound Level Meter	Rion (Model No. NL-52)	1	00220553

5.2.2 The sound level meter and acoustic calibrator were verified by the certified laboratory once every two years. Calibration certificates of the sound level meter and acoustic calibrator are provided in **Appendix C**.

5.3 Monitoring Locations

5.3.1 Impact noise monitoring was conducted at the location specified in the Updated EM&A Manual. **Table 5.2** describes the details of the noise monitoring station with its location as shown in **Figure 2**.

Table 5.2 Location of Noise Monitoring

NSR ID	Monitoring Location	Description
M1(SR77) *	Yuen Leng 2 ⁽¹⁾	Residential, Ground floor

Remark:

* Location / Station / NSR ID as identified in Updated EM&A Manual / EIA Report for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling

5.4 Monitoring Parameters, Frequency and Duration

5.4.1 **Table 5.3** summarizes the monitoring parameters, frequency and duration of impact noise monitoring.

Table 5.3 Noise Monitoring Parameters, Frequency and Duration

Parameter and Duration	Frequency
30-mins measurement at between 0700 and 1900 on normal weekdays. Leq, L10 and L90 would be recorded.	At least once per week

5.5 Monitoring Methodology

5.5.1 The monitoring procedures are summarised as below:

- (a) The microphone head of the sound level meter was positioned 1m exterior of the noise sensitive facade and lowered sufficiently so that the building's external wall acts as a reflecting surface.
- (b) The battery condition was checked to ensure good functioning of the meter.
- (c) Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
 - (i) frequency weighting: A
 - (ii) time weighting: Fast
 - (iii) parameters: Leq, L10 and L90
 - (iv) time measurement: Leq(30-minutes) during non-restricted hours i.e. 07:00 – 1900 hrs on normal weekdays; Leq(5-minutes) during restricted hours i.e. 19:00 – 23:00 hrs and 23:00 – 07:00 hrs of normal weekdays, whole day of Sundays and Public Holidays
- (d) Prior to and after each noise measurement, the meter was calibrated using the acoustic calibrator for 94dB(A) at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1dB(A), the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- (e) At the end of the monitoring period, the Leq, L10 and L90 were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- (f) A façade correction of +3dB (A) shall be made to the noise parameter obtained by free field measurement.

5.6 Monitoring Schedule for the Reporting Month

5.6.1 The schedule for environmental monitoring and meteorological data extracted from Hong Kong Observatory in the reporting month is provided in **Appendix D**.

5.7 Monitoring Results

5.7.1 The monitoring results for noise are summarized in **Table 5.4** and the monitoring results and the graphical presentation of noise level for the current and past two reporting months are presented in **Appendix G**.

Table 5.4 Summary of Noise Monitoring Results

Noise Monitoring Station ID	Average, dB(A), Leq (30min) ⁽²⁾	Range, dB(A), Leq (30min) ⁽²⁾	Action Level	Limit Level, dB(A)
M1(SR77) ⁽¹⁾	61	57.8 – 63.1	When one documented valid complaint is received	75

Remark:

- (1) Station / NSR ID as identified in Updated EM&A Manual / EIA Report for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling
- (2) +3dB(A) façade correction included

- 5.7.2 Major noise sources during the noise monitoring included construction activities of the Project and that along Tai Wo Service Road East, and nearby traffic noise.
- 5.7.3 No noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded. No Limit Level exceedance of noise was recorded in the reporting month.
- 5.7.4 The Event and Action Plan for the occurrence of non-compliance of the noise criteria is annexed in **Appendix F**.

6 WATER MONITORING

6.1 Monitoring Requirements

6.1.1 In accordance with the Updated EM&A Manual, during the course of the culvert extension works, monitoring shall be undertaken on three occasions per week. The interval between two sets of monitoring shall not be less than 36 hours except where there are exceedances of Action and/or Limit levels.

6.2 Monitoring Equipment

6.2.1 The equipment used in the water quality monitoring programme is summarised in **Table 6.1**.

Table 6.1 Water Quality Monitoring Equipment

Equipment	Model and Make
Turbidity meter	HACH Model 2100 Q (Serial No. 12010C015757)
Multimeter (Scope of Test: Conductivity, Dissolved Oxygen, pH, Salinity and Temperature)	YSI Proplus (Serial No. 09K100735)

6.2.2 The monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS before use and subsequently re-calibrated at 3-monthly intervals throughout all stages of the water quality monitoring. Copies of the calibration certificates for the water quality monitoring equipment are attached in **Appendix C**.

6.3 Monitoring Parameters, Frequency and Duration

6.3.1 Measurements for each monitoring station were conducted 3 days per week for the reporting month. **Table 6.2** summarises the monitoring parameters, frequency and duration of the baseline water quality monitoring.

Table 6.2 Water Quality Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter, unit	Frequency
Control Stations: C3a and C3b Impact Station: I5	- Depth, m - Temperature, °C - Salinity, ppt - pH - DO, mg/L - DO Saturation, % - Turbidity, NTU - SS, mg/L	3 days per week

6.4 Monitoring Locations

6.4.1 According to the Updated EM&A Manual, measurements were taken at all impact and control stations as summarised in **Table 6.3**. The locations of the monitoring stations are shown in **Figure 3**.

Table 6.3 Locations of Water Quality Monitoring

Station	Description	Easting	Northing
I5	Downstream of Ma Wat River (Yuen Leng)	833931	837859
C3a	Upstream of Ma Wat River (Nam Wa Po)	833816	837644
C3b	Upstream of Ma Wat River (Yuen Leng)	833931	837736

6.5 Monitoring Methodology

Instrumentation

- 6.5.1 The parameters of in-situ measurements included water depth, dissolved oxygen (DO), dissolved oxygen saturation (DOS), turbidity level, pH value and water temperature.

Operating/Analytical Procedures

- 6.5.2 Since water depths for all monitoring stations were less than 1m throughout the whole baseline measurement period, only mid-depth level was monitored.
- 6.5.3 At each monitoring station, at least duplicate readings of dissolved oxygen content and turbidity were taken. The probes were retrieved out of the water after the first measurement and then re-deployed for the second measurement.
- 6.5.4 Water samples were collected by the water sampler and filled into polyethylene bottles for laboratory determination of suspended solids. Sampling bottles were pre-rinsed with the same water samples, and filled up to the rim, capped tightly and labeled immediately. The sample bottles were then packed into a cool-box kept at 4°C, and delivered to a HOKLAS accredited laboratory, ALS Technichem (HK) Pty Ltd for analysis. The results for laboratory analysis of suspended solids are presented in **Appendix H**.

6.6 Monitoring Schedule for the Reporting Month

- 6.6.1 The schedule for environmental monitoring and meteorological data extracted from Hong Kong Observatory in the reporting month is provided in **Appendix D**.

6.7 Monitoring Results

- 6.7.1 The water quality criteria, namely Action and Limit Levels, as specified in the Updated EM&A Manual are shown in **Table 6.4**.

Table 6.4 Action and Limit Levels for Water Quality Monitoring

Parameters	Action	Limit
DO in mg/L	6.7 mg/L	4 mg/L or 40% saturation at 15 degree Celsius
SS in mg/L	42.6 mg/L or 120% of upstream control station's SS of the same day	46.8 mg/L or 130% of upstream station's SS of the same day and specific sensitive receiver water quality requirements

Parameters	Action	Limit
Turbidity (Tby) in NTU	81.9NTU or 120% of upstream control station's Tby of the same day	91.9NTU or 130% of upstream control station's Tby of the same day

Notes:

For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.

For SS and Tby, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.

- 6.7.2 The detailed water quality monitoring results and the graphical presentation of water quality monitoring data for the current and past two reporting months are presented in **Appendix I**.
- 6.7.3 The possible influences in monitoring results were suspected to be natural variation and possible silty water discharged at up-stream locations.
- 6.7.4 One (1) exceedance of Action Level of Turbidity was recorded on 2 January 2014. Two (2) exceedances of Limit Level of Suspended Solids on 15 and 24 January 2014 were recorded in the reporting month. Investigation for the exceedances have been conducted which concluded that the exceedances events were not related to the construction works. The investigation reports for the incidents are presented in **Appendix L**.
- 6.7.5 The Event and Action Plan for the occurrence of non-compliance of the water quality criteria is annexed in **Appendix F**.

7 WASTE MANAGEMENT

- 7.1.1 The Contractor has registered as a chemical waste producer of the Project. The C&D materials and waste sorting were carried out on-site. Receptacles were provided for general refuse collection.
- 7.1.2 As advised by the Contractor, a total of 493m³ of excavated material has been generated. 409m³ of inert C&D materials was disposed of at public fill to Tuen Mun Area 38. No inert C&D materials were reused on site. 110kg of general refuse was disposed of at North East New Territories (NENT) Landfill. 10kg of plastics and no paper/cardboard packaging and metals were collected by recycling contractor in the reporting month. No chemical waste was collected by licensed contractor in the reporting period. Details of the waste management data are presented in **Appendix J**.
- 7.1.3 The Contractor was advised to properly maintain the on-site C&D materials and waste collection, sorting and recording system, and maximize the reuse/recycle of C&D materials and wastes. The Contractor was also reminded to properly maintain the site tidiness and dispose of wastes accumulated site regularly and properly.
- 7.1.4 The Contractor was reminded that chemical waste containers should be properly treated and stored temporarily in the designated chemical waste storage area on-site in accordance with the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.

8 ENVIRONMENTAL SITE INSPECTION AND AUDIT

8.1 Site Inspection

8.1.1 Site inspections were carried out on a weekly basis to monitor the implementation of proper environmental pollution control and mitigation measures for the Project. A summary of the site inspection is provided in **Appendix K**.

8.1.2 In the reporting month, 4 site inspections were carried out on 6, 13, 20 and 27 January 2014. The one held on 27 January 2014 was a joint inspection with the IEC, ER, ET and Contractor. No site inspection was conducted by the EPD during the reporting month. No non-compliance was recorded during the site inspection. A summary of the reminders and observations recorded during the site inspections are presented in **Table 8.1**.

Table 8.1 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	30 Dec 2013	Observation: Muddy runoff was observed leaving the box culvert extension works area to the stream. The Contractor should implement sufficient and proper mitigation measures to avoid such issue to occur.	The Contractor has constructed concrete bund at the boundary of earth works closed to the stream. No muddy runoff was observed entering the stream during the ET's site inspection on 6 Jan 2013.
	18 Dec 2013	Reminder: The Contractor was reminded to cover the stockpile on site entirely with impervious sheeting.	The stockpiles were fully covered with impervious sheeting while they were not in use.
Air Quality	6 Jan 2014	Reminder: The Contractor was reminded to implement water spraying for the unpaved areas at the southern end of works area (i.e. near the footbridge above MTR East Rail Line).	The Contractor has implemented water spraying more frequently for the unpaved areas at the southern end of works area (i.e. near the footbridge above MTR East Rail Line) as observed during the site inspection on 13 Jan 2014.
	13 Jan 2014	Reminder: The Contractor was reminded to implement sufficient water spraying for dust suppression on exposed area and stockpile.	The Contractor has implemented covering for stockpile and sufficient water spraying for dust suppression on exposed area as observed during the site inspection on 20 Jan 2014.
	20 Jan 2014	Reminder: The Contractor was reminded to ensure the vehicles are clean before leaving the wheel washing bay.	The Contractor has ensured the vehicles are clean before leaving the wheel wash bay as observed during the site inspection on 27 Jan 2014.
	27 Jan 2014	Observation: Several stockpiles were observed without proper covering at the southern end of works area. The Contractor should cover the stockpiles with impervious sheeting or provide sufficient watering on the stockpiles.	Stockpiles are either removed or covered in tarpaulin as observed during the site inspection on 5 Feb 2014.
	27 Jan 2014	Reminder: The Contractor was reminded to cover the exposed slope properly with impervious sheeting.	The exposed slope has been covered with tarpaulin as observed during the site inspection on 5 Feb 2014.
Noise	N/A	N/A	N/A

Parameters	Date	Observations and Recommendations	Follow-up
Waste / Chemical Management	13 Jan 2014	Observation: The Contractor should ensure the provision of sufficient drip tray for chemical drums onsite.	The chemical drums were removed as observed during the site inspection on 20 Jan 2014.
	20 Jan 2014	Observation: Oil stains were observed on the road near the wheel washing bay. The Contractor should treat the oil stains properly and review the vehicles' condition onsite.	The oil stains on the road near the wheel wash bay were removed as observed during the site inspection on 27 Jan 2014.
	20 Jan 2014	Observation: General refuse were observed on ground at the steel bar storage area. The Contractor should remove the wastes and provide sufficient rubbish bin for workers onsite.	The general refuse on ground at the steel bar storage area was removed and waste bag was provided for temporary storage as observed during the site inspection on 27 Jan 2014.
Landscape & Visual	13 Jan 2014	Observation: The Contractor should ensure the provision of sufficient tree protection zone for all trees to be transplanted or retained.	Sufficient tree protection zone was provided by the Contractor for retained trees and trees to be transplanted as observed during the site inspection on 20 Jan 2014.
Permits / Licenses	N/A	N/A	N/A

9 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

9.1.1 The Contractor has implemented the relevant environmental mitigation measures as specified in the EIA Reports, EPs and updated EM&A Manual. The implementation status of environmental mitigation measures during the reporting period is summarized in **Appendix K**. The status of the required submissions under the EP during the reporting period is summarized in **Table 9.1**.

Table 9.1 Status of Required Submission under Environmental Permit

EP Condition	Submission	Submission Date
Condition 3.3	Monthly EM&A Report	14 January 2014

10 ENVIRONMENTAL NON-CONFORMANCE

10.1 Summary of Monitoring Exceedances

- 10.1.1 Five (5) Action Level exceedances of 24-hour TSP monitoring were recorded on 2, 8, 14, 25 and 30 January 2014 while one (1) Limit Level exceedance was recorded on 20 January 2014 at the monitoring location AM1(SR77) in the reporting month. Investigation for the exceedances have been conducted and concluded not related to the project works. The investigation reports for the incidents are presented in **Appendix L**.
- 10.1.2 No exceedance of Action and Limit Level was recorded for 1-hour TSP monitoring at the monitoring location AM1(SR77) in the reporting month.
- 10.1.3 No noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded. No Limit Level exceedance of noise was recorded in the reporting month.
- 10.1.4 One (1) exceedance of Action Level of Turbidity was recorded on 2 January 2014. Two (2) exceedances of Limit Level of Suspended Solids on 15 and 24 January 2014 were recorded in the reporting month. Investigation for the exceedances have been conducted which concluded that the exceedances events were not related to the construction works. The investigation reports for the incidents are presented in **Appendix L**.

10.2 Summary of Environmental Non-Compliance

- 10.2.1 No environmental non-compliance was recorded in the reporting month. The cumulative statistics are provided in **Appendix M**.

10.3 Summary of Environmental Complaints

- 10.3.1 No environmental complaint was received in the reporting month. The cumulative statistics are provided in **Appendix M**.

10.4 Summary of Environmental Summon and Successful Prosecutions

- 10.4.1 No environmental related prosecution or notification of summons was received in the reporting month. The cumulative statistics are provided in **Appendix M**.

11 FUTURE KEY ISSUES

11.1 Construction Programme for the Next Month

11.1.1 The major construction works in the coming reporting month are anticipated to include:

- Cable detection and trial trenches;
- Pre-drilling works and piling works;
- Tree felling works, waterworks and excavation works;
- Slope upgrading works;
- Noise barrier installation;
- Extension of box culvert;
- Construction of haul road and temporary soil platform for geotechnical works; and
- Laying of concrete pipe works.

11.2 Key Issues for the Coming Month

11.2.1 Key issues to be considered in the coming month are anticipated to include:

- Site runoff should be properly collected and treated prior to discharge;
- Properly maintain all drainage facilities and wheel washing facilities on site;
- Chemical, chemical waste and waste management;
- Tree protective measures for all retained trees should be well maintained; and
- Expose slopes and dusty stockpile should be covered up properly if no temporary work will be conducted.

11.3 Monitoring Schedule for the Next Month

11.3.1 The tentative schedule for environmental monitoring for the coming month is provided in **Appendix D**.

12 CONCLUSIONS AND RECOMMENDATIONS

12.1 Conclusions

- 12.1.1 The construction phase EM&A programme of the Project commenced on 5 November 2013.
- 12.1.2 The 1-hr TSP, 24-hr TSP, noise and water monitoring were carried out in the reporting period.
- 12.1.3 Five (5) Action Level exceedances of 24-hour TSP monitoring were recorded on 2, 8, 14, 25 and 30 January 2014 while one (1) Limit Level exceedance was recorded on 20 January 2014 at the monitoring location AM1(SR77) in the reporting month. Investigation for the exceedances have been conducted and concluded not related to the project works. The investigation reports for the incidents are presented in **Appendix L**.
- 12.1.4 No exceedance of Action and Limit Level was recorded for 1-hour TSP monitoring at the monitoring location (SR77) in the reporting month.
- 12.1.5 No noise complaint was received in the reporting month; hence, no Action Level exceedance was recorded. No Limit Level exceedance of noise was recorded in the reporting month.
- 12.1.6 One (1) exceedance of Action Level of Turbidity was recorded on 2 January 2014. Two (2) exceedances of Limit Level of Suspended Solids on 15 and 24 January 2014 were recorded in the reporting month. Investigation for the exceedances have been conducted which concluded that the exceedances events were not related to the construction works. The investigation reports for the incidents are presented in **Appendix L**.
- 12.1.7 Four (4) environmental site inspection was carried out in the reporting month. Recommendations on remedial actions were given to the Contractors for the deficiencies identified during the site audit.

12.2 Recommendations

- 12.2.1 According to the environmental site inspections performed in the reporting month, the following recommendations were provided:

Air Quality

- Implement proper mitigation measures (e.g. sand bags and/or earth bunds) to avoid earth, mud and debris leaving the works area via storm water drainage; and
- Enhance wheel washing for all vehicles leaving the construction site.

Water Quality

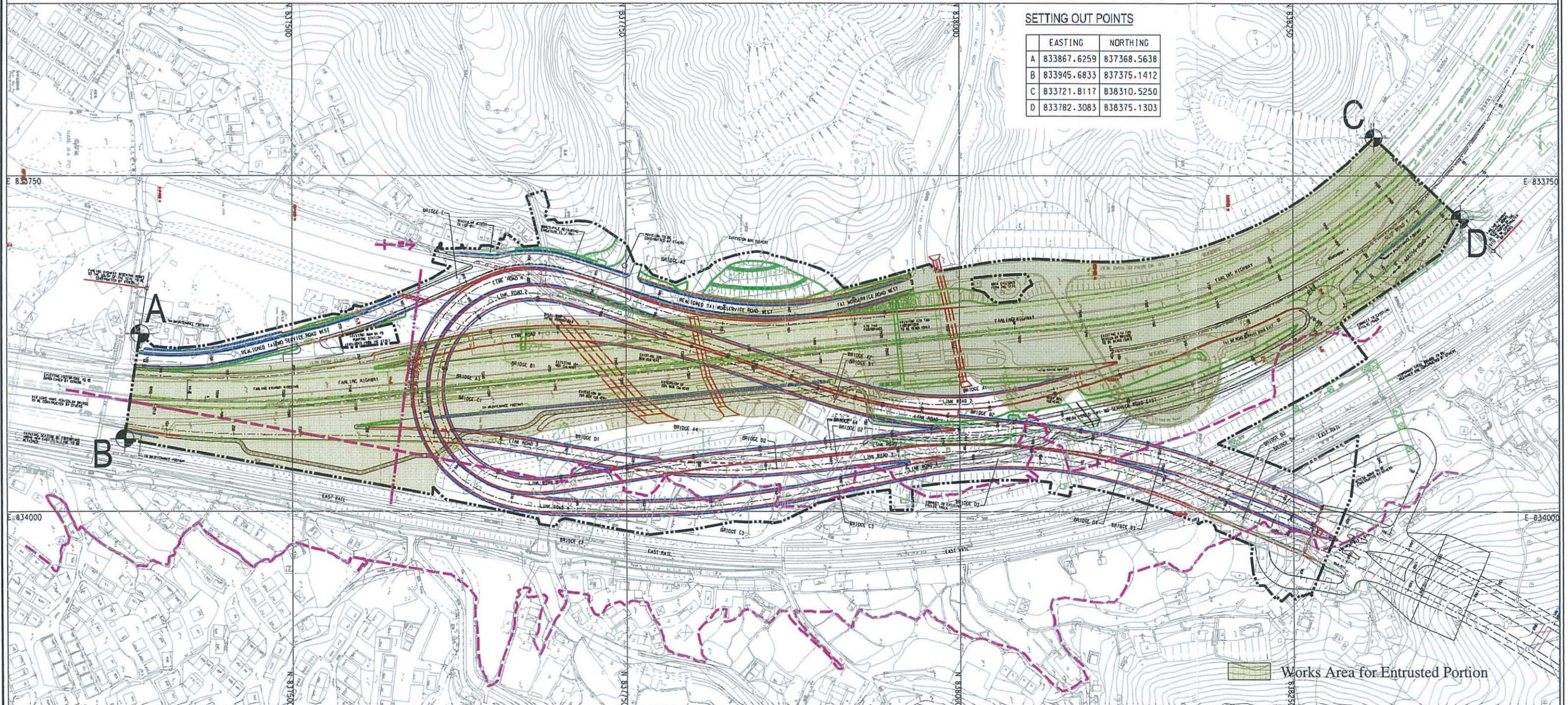
- Implement proper mitigation measures (e.g. sand bags and/or earth bunds) to avoid earth, mud and debris leaving the works area via storm water drainage; and
- Ensure drainage facilities erosion and sediment control structures are well maintained and inspected regularly.

Chemical and Chemical Waste Management

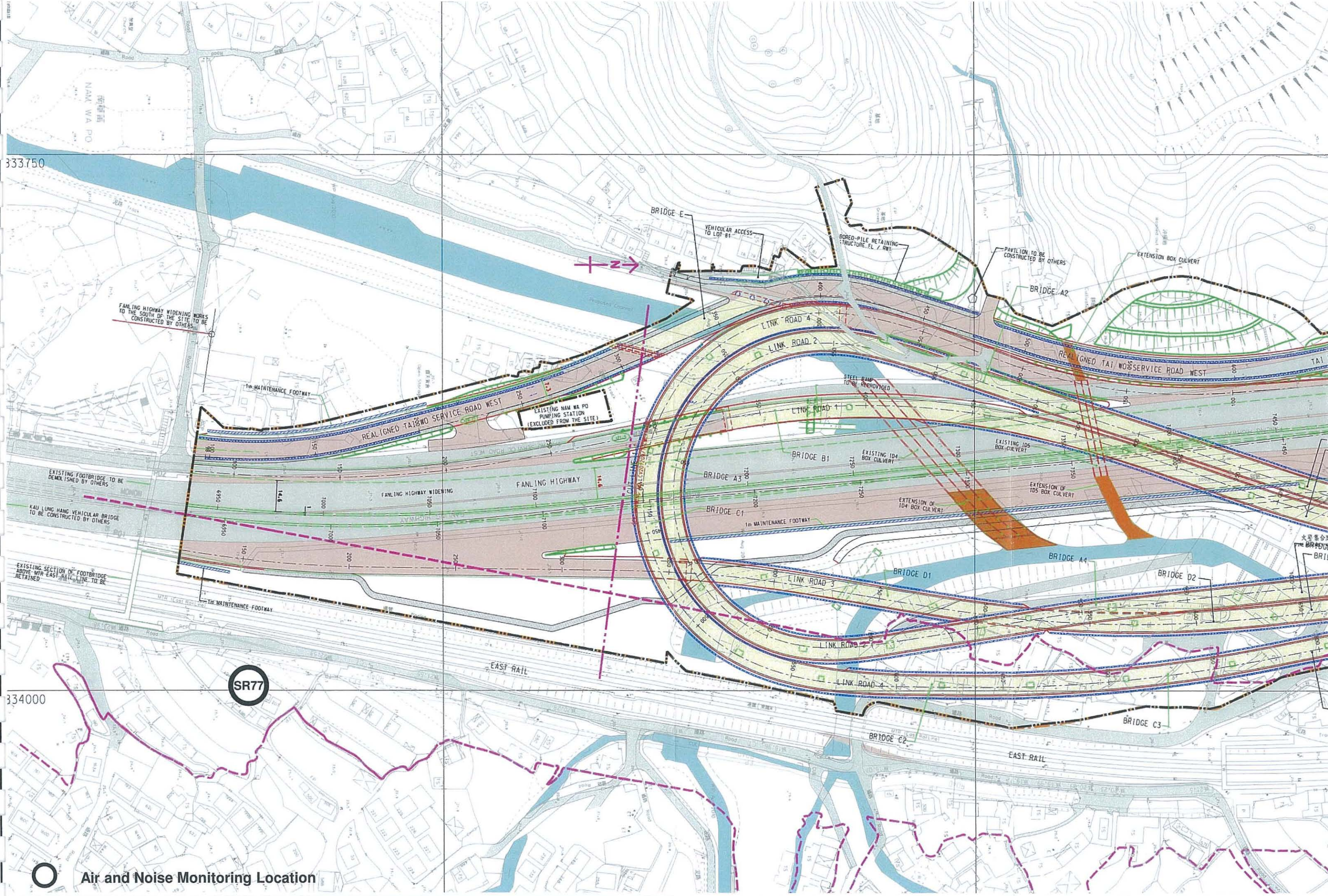
- Ensure the provision of drip tray for chemical being stored on site to avoid chemical spillage.

Landscape & Visual

- Ensure the provision of tree protection zone for all existing trees to be transplanted or retained.



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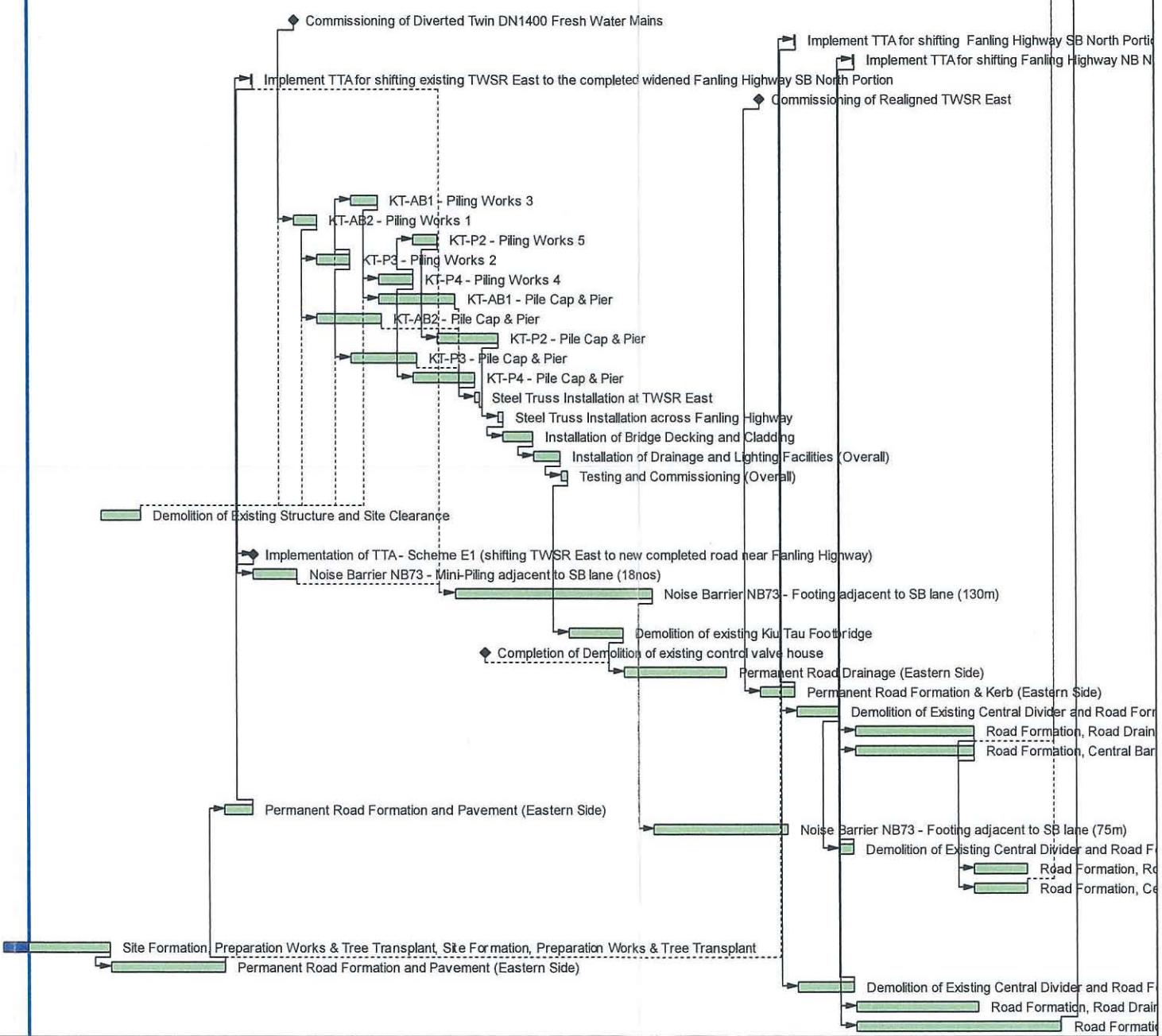
SR77

○ Air and Noise Monitoring Location

Figure 2: Air and Noise Monitoring Locations

Appendix A Construction Programme

Activity ID	Activity Name	OD	Start	Finish	Total Float	2014				2015				2016				2017				2018												
						A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
CWP - Under Development (Postpone Pipe Jacking)																																		
Key Dates (Forecast)																																		
Major Works																																		
KD-0105	KD1: Complete Section 1A - all HyD's entrustment works in Zone3 and SBZ2 except for landscaping works	0		07-Dec-17	53	◆KD1: Complete Section 1A																												
KD-0205	KD2: Complete Section 1B - all HyD's entrustment works in NBZ1 except for landscaping works	0		09-Jan-18	234	◆KD2: Complete Section 1B																												
Major Milestones and Events																																		
MS-0220	Commissioning of Diverted Twin DN1400 Fresh Water Mains	0		14-Nov-14	132	◆ Commissioning of Diverted Twin DN1400 Fresh Water Mains																												
MS-1000A	Implement TTA for shifting Fanling Highway SB North Portion (CH7470-7925) eastward to the completed road near TWSR East	2	07-Dec-16	08-Dec-16	3	◆ Implement TTA for shifting Fanling Highway SB North Portion																												
MS-1000B	Implement TTA for shifting Fanling Highway NB North Portion (CH7470-7925) eastward to the designed alignment	2	06-Mar-17	07-Mar-17	3	◆ Implement TTA for shifting Fanling Highway NB North Portion																												
MS-3000	Implement TTA for shifting existing TWSR East to the completed widened Fanling Highway SB North Portion	2	11-Sep-14	12-Sep-14	7	◆ Implement TTA for shifting existing TWSR East to the completed widened Fanling Highway SB North Portion																												
MS-3010	Commissioning of Realigned TWSR East	0	15-Oct-16		3	◆ Commissioning of Realigned TWSR East																												
Section IA & IB - Fanling Highway Widening (KD-1 & KD-2)																																		
Fanling Highway North Portion between CH7470 and CH7925																																		
Fanling Highway Zone 6 between CH7470 and CH7600 (Provision of Kiu Tau Footbridge)																																		
Kiu Tau Footbridge Re-provision (East)																																		
FHW-5000A	KT-AB1 - Piling Works 3	30	09-Feb-15	21-Mar-15	612	KT-AB1 - Piling Works 3																												
FHW-5000B	KT-AB2 - Piling Works 1	30	15-Nov-14	19-Dec-14	132	KT-AB2 - Piling Works 1																												
FHW-5000C	KT-P2 - Piling Works 5	30	14-May-15	18-Jun-15	612	KT-P2 - Piling Works 5																												
FHW-5000D	KT-P3 - Piling Works 2	40	20-Dec-14	07-Feb-15	612	KT-P3 - Piling Works 2																												
FHW-5000E	KT-P4 - Piling Works 4	40	23-Mar-15	13-May-15	612	KT-P4 - Piling Works 4																												
FHW-5010A	KT-AB1 - Pile Cap & Pier	90	23-Mar-15	14-Jul-15	660	KT-AB1 - Pile Cap & Pier																												
FHW-5010B	KT-AB2 - Pile Cap & Pier	75	20-Dec-14	27-Mar-15	745	KT-AB2 - Pile Cap & Pier																												
FHW-5010C	KT-P2 - Pile Cap & Pier	75	19-Jun-15	16-Sep-15	612	KT-P2 - Pile Cap & Pier																												
FHW-5010D	KT-P3 - Pile Cap & Pier	75	09-Feb-15	19-May-15	705	KT-P3 - Pile Cap & Pier																												
FHW-5010E	KT-P4 - Pile Cap & Pier	75	14-May-15	12-Aug-15	635	KT-P4 - Pile Cap & Pier																												
FHW-5020	Steel Truss Installation at TWSR East	7	13-Aug-15	20-Aug-15	635	◆ Steel Truss Installation at TWSR East																												
FHW-5030	Steel Truss Installation across Fanling Highway	7	17-Sep-15	24-Sep-15	612	◆ Steel Truss Installation across Fanling Highway																												
FHW-5040	Installation of Bridge Decking and Cladding	35	25-Sep-15	07-Nov-15	612	◆ Installation of Bridge Decking and Cladding																												
FHW-5050	Installation of Drainage and Lighting Facilities (Overall)	35	09-Nov-15	18-Dec-15	612	◆ Installation of Drainage and Lighting Facilities (Overall)																												
FHW-5060	Testing and Commissioning (Overall)	7	19-Dec-15	29-Dec-15	612	◆ Testing and Commissioning (Overall)																												
At-Grade Road Works (130m)																																		
FHW-5100	Demolition of Existing Structure and Site Clearance	45	27-Jan-14	26-Mar-14	135	◆ Demolition of Existing Structure and Site Clearance																												
FHW-5110*	Pipe Laying & Connection - Twin DN1400 Watermains (CHE & CHG) adjacent to existing TWSRE (90m, 9m depth)	186	31-Mar-14	14-Nov-14	132	◆ Pipe Laying & Connection - Twin DN1400 Watermains																												
FHW-5120	Implementation of TTA - Scheme E1 (shifting TWSR East to new completed road near Fanling Highway)	0	13-Sep-14		573	◆ Implementation of TTA - Scheme E1																												
FHW-5130	Noise Barrier NB73 - Mini-Piling adjacent to SB lane (18nos)	54	13-Sep-14	17-Nov-14	573	◆ Noise Barrier NB73 - Mini-Piling adjacent to SB lane																												
FHW-5140	Noise Barrier NB73 - Footing adjacent to SB lane (130m)	240	14-Jul-15	07-May-16	332	◆ Noise Barrier NB73 - Footing adjacent to SB lane																												
FHW-5150*	Pipe Laying - DN1200 & DN600 Watermains (CHB & CHC) along existing TWSRE (120m long, 3m depth)	240	04-Sep-15	02-Jul-16	373	◆ Pipe Laying - DN1200 & DN600 Watermains																												
FHW-5160	Demolition of existing Kiu Tau Footbridge	65	30-Dec-15	22-Mar-16	885	◆ Demolition of existing Kiu Tau Footbridge																												
FHW-5170	Completion of Demolition of existing control valve house	0		28-Aug-15	1050	◆ Completion of Demolition of existing control valve house																												
FHW-5180	Permanent Road Drainage (Eastern Side)	125	23-Mar-16	24-Aug-16	885	◆ Permanent Road Drainage (Eastern Side)																												
FHW-5190	Permanent Road Formation & Kerb (Eastern Side)	45	15-Oct-16	06-Dec-16	3	◆ Permanent Road Formation & Kerb (Eastern Side)																												
FHW-5200	Demolition of Existing Central Divider and Road Formation (Middle Part, Pavement Only)	45	09-Dec-16	09-Feb-17	3	◆ Demolition of Existing Central Divider and Road Formation																												
FHW-5300	Road Formation, Road Drainage, Kerb, Noise Barrier (Western Side)	145	08-Mar-17	01-Sep-17	520	◆ Road Formation, Road Drainage, Kerb, Noise Barrier																												
FHW-5400	Road Formation, Central Barrier (Remaining Works at Middle Part)	145	08-Mar-17	01-Sep-17	57	◆ Road Formation, Central Barrier																												
Fanling Highway Zone 7 between CH7600 and CH7660 (Existing Vehicular Bridge)																																		
At-Grade Roadworks (60m)																																		
FHW-6100	Permanent Road Formation and Pavement (Eastern Side)	35	31-Jul-14	10-Sep-14	7	◆ Permanent Road Formation and Pavement (Eastern Side)																												
FHW-6110	Noise Barrier NB73 - Footing adjacent to SB lane (75m)	166	09-May-16	24-Nov-16	332	◆ Noise Barrier NB73 - Footing adjacent to SB lane																												
FHW-6200	Demolition of Existing Central Divider and Road Formation (Middle Part, Pavement Only)	20	10-Feb-17	04-Mar-17	3	◆ Demolition of Existing Central Divider and Road Formation																												
FHW-6300	Road Formation, Road Drainage, Kerb (Western Side)	65	02-Sep-17	20-Nov-17	520	◆ Road Formation, Road Drainage, Kerb																												
FHW-6400	Road Formation, Central Barrier (Remaining Works at Middle Part)	65	02-Sep-17	20-Nov-17	57	◆ Road Formation, Central Barrier																												
Fanling Highway Zone 8 between CH7660 and CH7925																																		
At-Grade Roadworks (265m)																																		
FHW-7100	Site Formation, Preparation Works & Tree Transplant	127	30-Aug-13 A	07-Feb-14	7	◆ Site Formation, Preparation Works & Tree Transplant																												
FHW-7110	Permanent Road Formation and Pavement (Eastern Side)	140	08-Feb-14	30-Jul-14	7	◆ Permanent Road Formation and Pavement (Eastern Side)																												
FHW-7200	Demolition of Existing Central Divider and Road Formation (Middle Part, Pavement Only)	65	09-Dec-16	04-Mar-17	3	◆ Demolition of Existing Central Divider and Road Formation																												
FHW-7300	Road Formation, Road Drainage, Kerb (Western Side)	150	08-Mar-17	07-Sep-17	3	◆ Road Formation, Road Drainage, Kerb																												
FHW-7400	Road Formation, Central Barrier (Remaining Works at Middle Part)	250	08-Mar-17	09-Jan-18	187	◆ Road Formation, Central Barrier																												

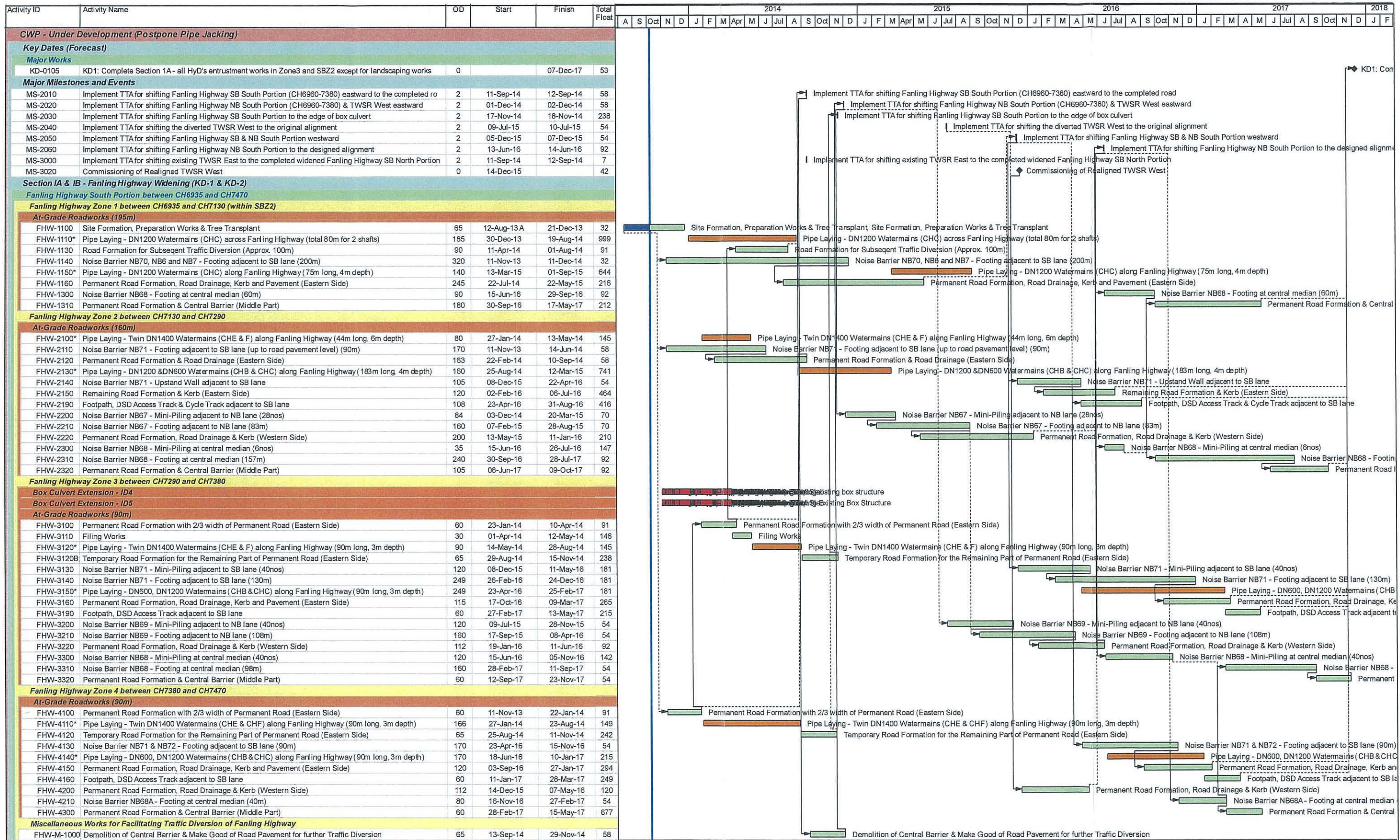


- Actual Work
- Remaining Work
- Critical Remaining Work
- ◆ Milestone

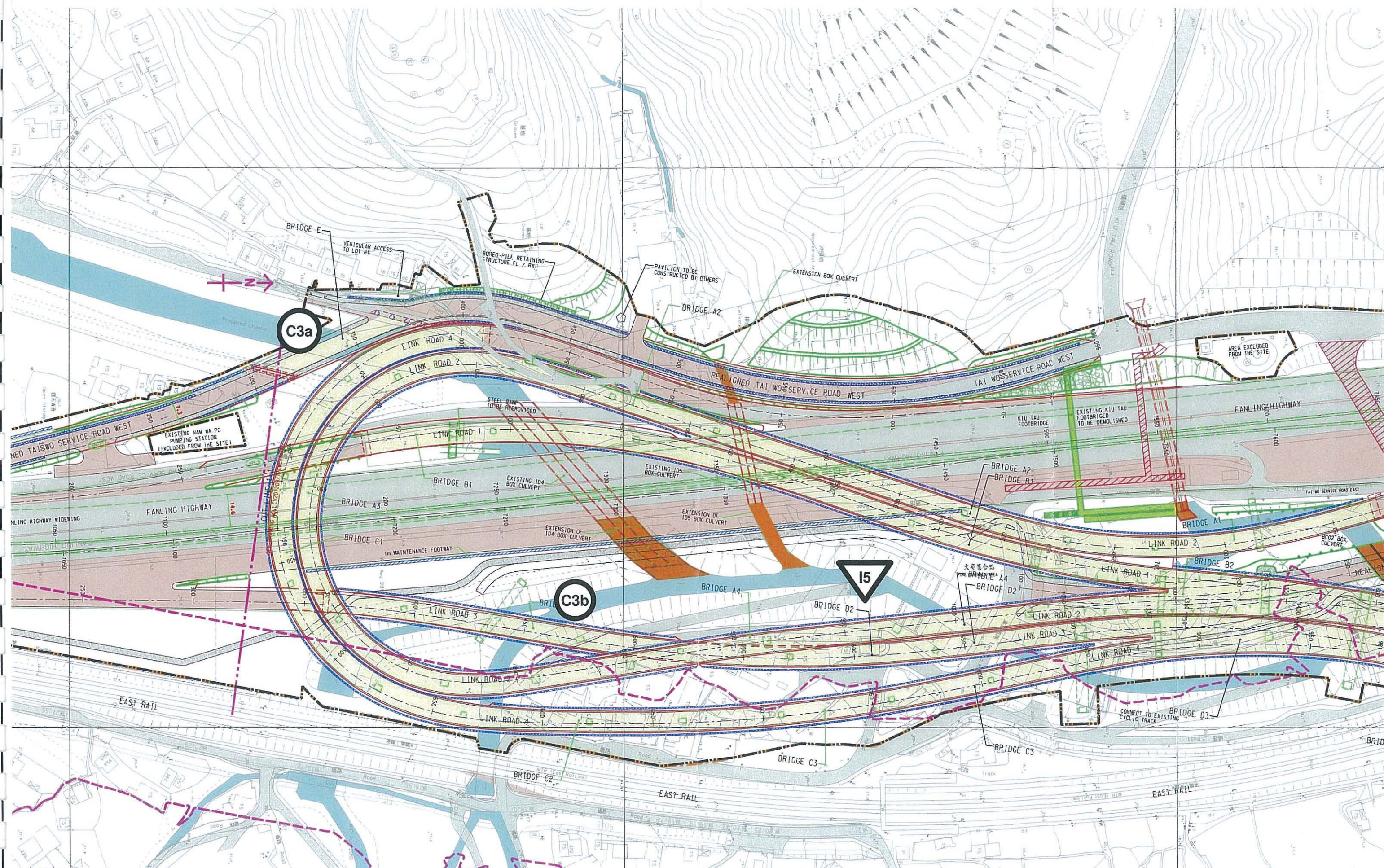
CEDD Contract No. CV/2012/09
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3

Works Sequence for Fanling Highway North Portion

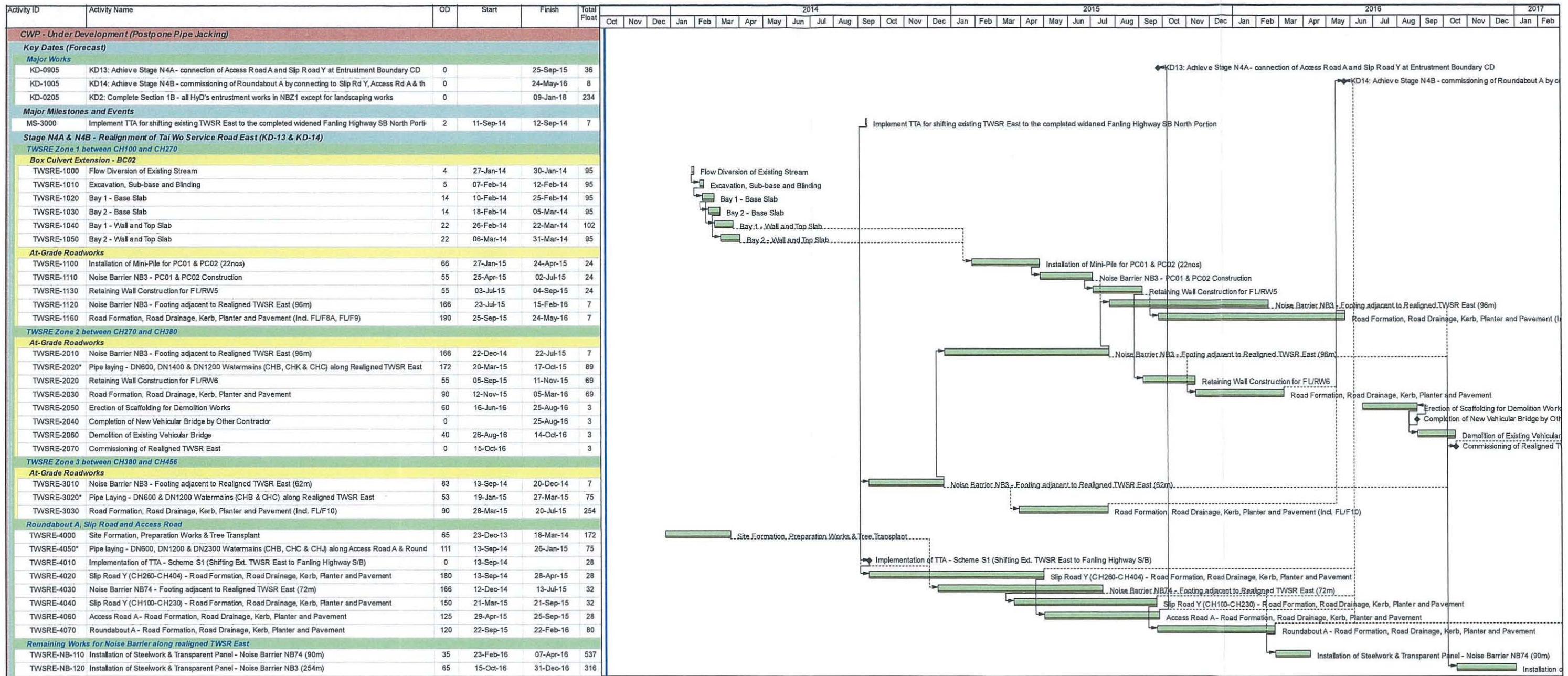
Date	Revision	Checked	Approved
11-Oct-13		SL	



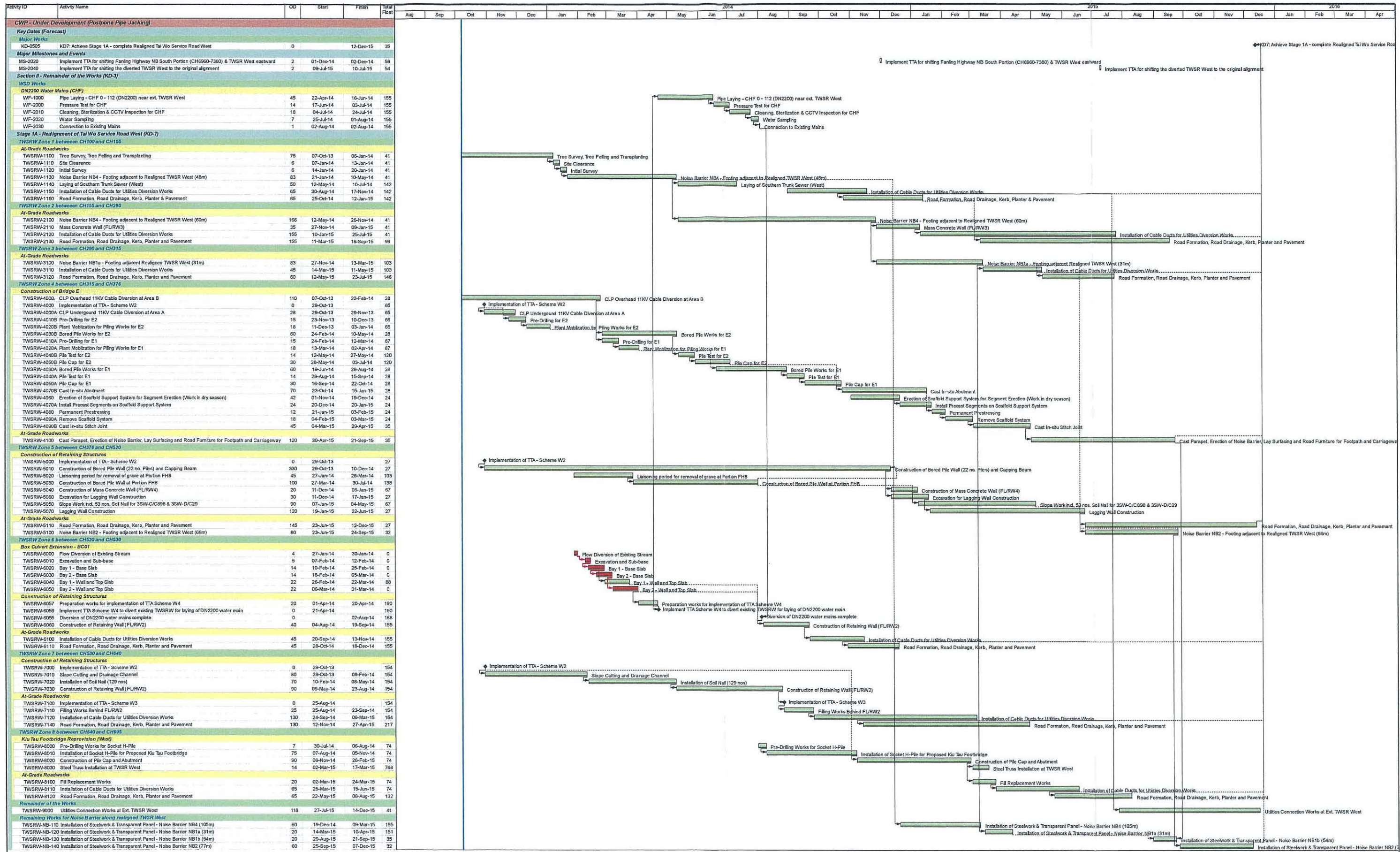
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 Impact Water Monitoring Location
 Control Water Monitoring Location



Date	Revision	Checked	Approved
11-Oct-13		SL	




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CHUN WO CONSTRUCTION & ENGINEERING CO., LTD.

- Actual Work
- Remaining Work
- Critical Remaining Work
- Milestone
- Project Baseline Bar

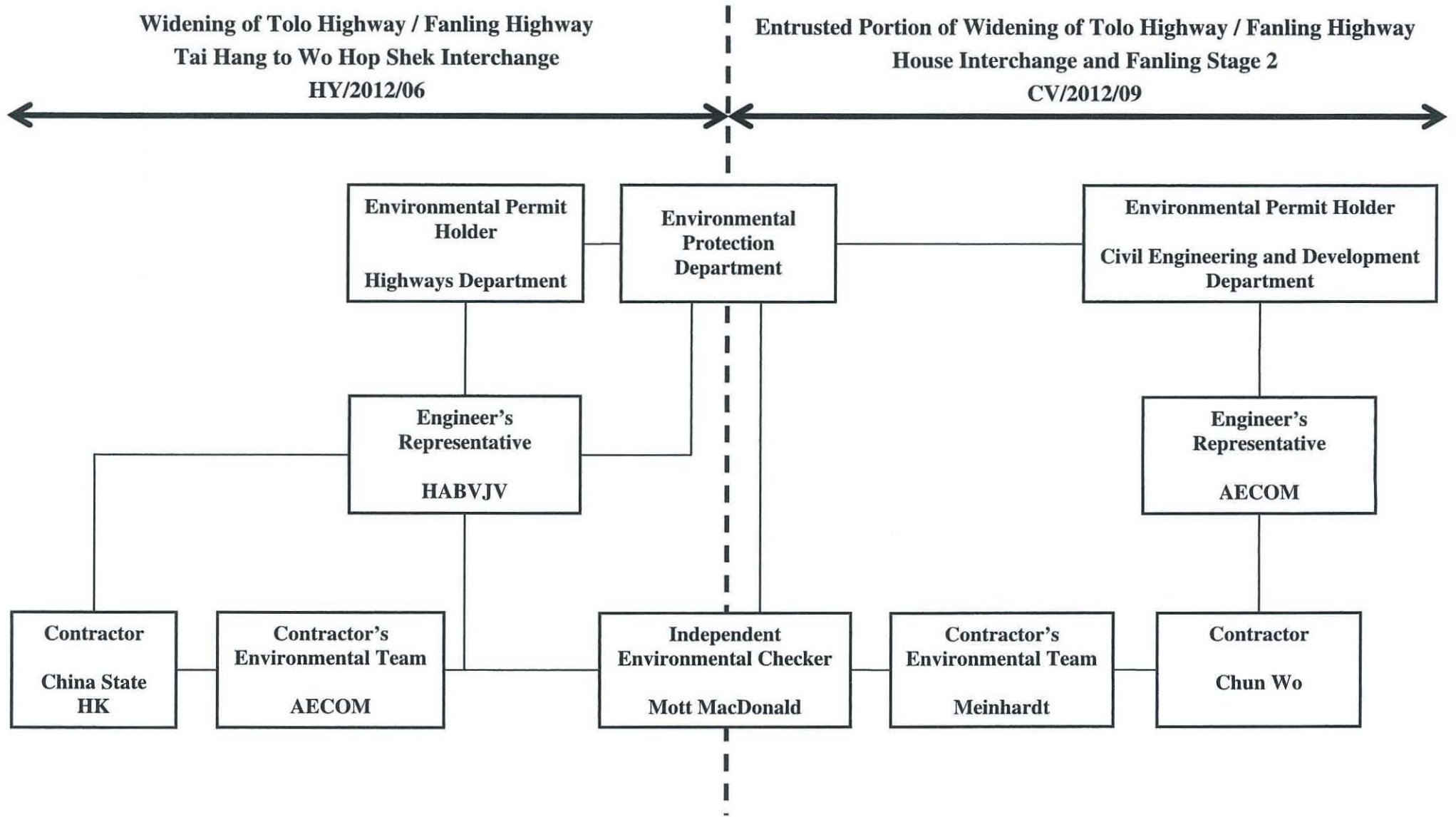
CEDD Contract No. CV/2012/09
Liantang / Heung Yuen Wai BCP - Site Formation & Infrastructure Works, Contract 3
Works Sequence for TWSRW

Date	Revision	Checked	Approved
11-Sep-13		SL	

Appendix B

Project Organization Structure

Appendix C Calibration Certificates of Monitoring Equipment



Figure

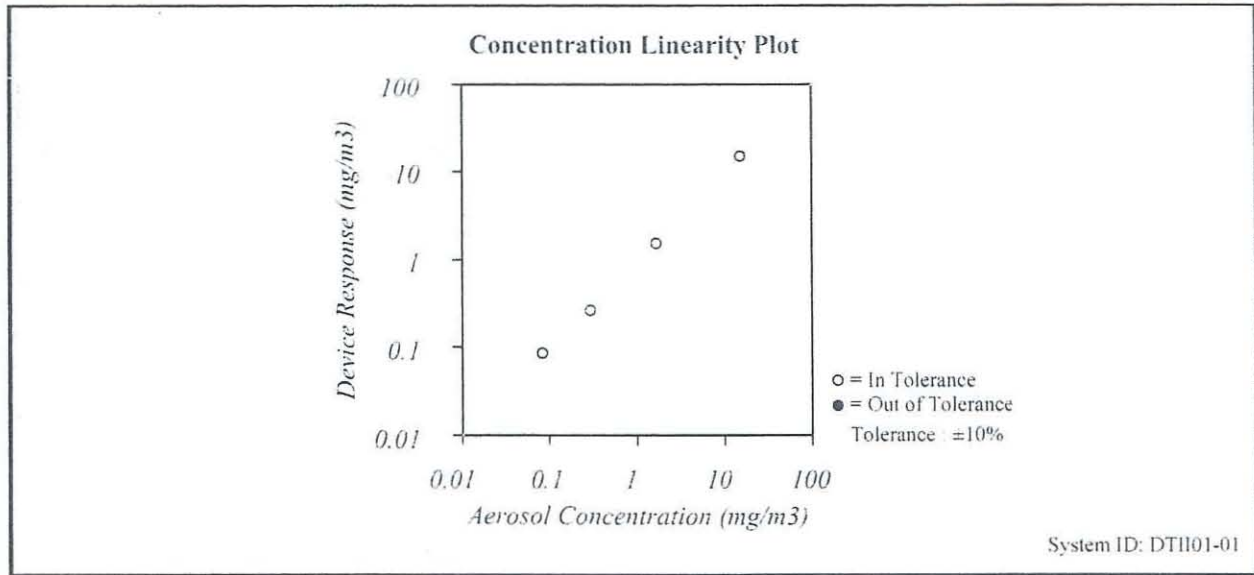


CERTIFICATE OF CALIBRATION AND TESTING

TSI Incorporated, 500 Cardigan Road, Shoreview, MN 55126 USA
Tel: 1-800-874-2811 1-651-490-2811 Fax: 1-651-490-3824 http://www.tsi.com

Environment Condition			Model	AM510
Temperature	68.2 (20.1)	°F (°C)	Serial Number	11302029
Relative Humidity	20	%RH		
Barometric Pressure	28.81 (975.6)	inHg (hPa)		

<input checked="" type="checkbox"/> As Left	<input checked="" type="checkbox"/> In Tolerance
<input type="checkbox"/> As Found	<input type="checkbox"/> Out of Tolerance



TSI Incorporated does hereby certify that all materials, components, and workmanship used in the manufacture of this equipment are in strict accordance with the applicable specifications agreed upon by TSI and the customer and with all published specifications. All performance and acceptance tests required under this contract were successfully conducted according to required specifications. There is no NIST standard for optical mass measurements. Calibration of this instrument performed by TSI has been done using emery oil and has been nominally adjusted to respirable mass of standard ISO 12103-1. All test dust (Arizona dust). Our calibration ratio is greater than 1.2:1

Measurement Variable	System ID	Last Cal.	Cal. Due	Measurement Variable	System ID	Last Cal.	Cal. Due
Photometer	E003433	10-09-12	04-09-13	Flowmeter	E002371	03-06-12	03-06-13
DC Voltage(Keithley)	E002859	01-03-13	01-03-14	Microbalance	M001324	01-04-13	01-04-15
Barometric Pressure	E003733	02-25-12	02-25-13	Temperature	E002873	11-08-12	11-08-13
Humidity	E002873	11-08-12	11-08-13	Pressure	E003440	08-17-12	08-17-13

Kao Vany
Calibrated

Final Function Check

February 12, 2013
Date



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE.
 VILLAGE OF CLEVELAND, OH 45002
 513.467.9000
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 WWW.TISCH-ENV.COM

AIR POLLUTION MONITORING EQUIPMENT
 ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Apr 09, 2013 Roots-meter S/N 0438320 Ta (K) - 296
 Operator Tisch Orifice I.D. - 1941 Pa (mm) - 751.84

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER DIFF Hg (mm)	ORFICE DIFF H2O (in.)
1	NA	NA	1.00	1.4710	3.3	2.00
2	NA	NA	1.00	1.0370	6.4	4.00
3	NA	NA	1.00	0.9270	7.9	5.00
4	NA	NA	1.00	0.8840	8.8	5.50
5	NA	NA	1.00	0.7300	12.8	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
0.9916	0.6741	1.4113	0.9956	0.6768	0.8874
0.9874	0.9521	1.9959	0.9914	0.9560	1.2549
0.9854	1.0630	2.2315	0.9894	1.0673	1.4030
0.9843	1.1134	2.3405	0.9883	1.1180	1.4715
0.9790	1.3410	2.8227	0.9829	1.3465	1.7747
Qstd slope (m) = 2.11662			Qa slope (m) = 1.32539		
intercept (b) = -0.01714			intercept (b) = -0.01078		
coefficient (r) = 0.99999			coefficient (r) = 0.99999		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

Vstd = Diff. Vol [(Pa-Diff. Hg)/760] (298/Ta)
 Qstd = Vstd/Time

Va = Diff Vol [(Pa-Diff Hg)/Pa]
 Qa = Va/Time

For subsequent flow rate calculations:

Qstd = 1/m { [SQRT(H2O(Pa/760) (298/Ta))] - b }
 Qa = 1/m { [SQRT H2O(Ta/Pa)] - b }

TSP Sampler Calibration

SITE

Location: Lian Tang 3 Date: January 4, 2014
Sampler: TE-5170 MFC (Serial # : 2359) Tech: Sam Wong

CONDITIONS

Barometric Pressure (in Hg):	40.20	Corrected Pressure (mm Hg):	1021
Temperature (deg F):	59	Temperature (deg K):	288
Average Press. (in Hg):	40.20	Corrected Average (mm Hg):	1021
Average Temp. (deg F):	59	Average Temp. (deg K):	288

CALIBRATION ORIFICE

Make:	Tisch	Qstd Slope:	2.11662
Model:	TE-5025A	Qstd Intercept:	-0.01714
Serial#:	1941	Date Certified:	April 9, 2013

CALIBRATIONS



Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION
1	12.40	1.970	58.0	68.39	Slope = 33.7251
2	10.20	1.787	52.0	61.31	Intercept = 1.4016
3	8.00	1.584	46.0	54.24	Corr. coeff.= 0.9994
4	5.20	1.278	38.0	44.80	
5	3.20	1.005	30.0	35.37	# of Observations: 5

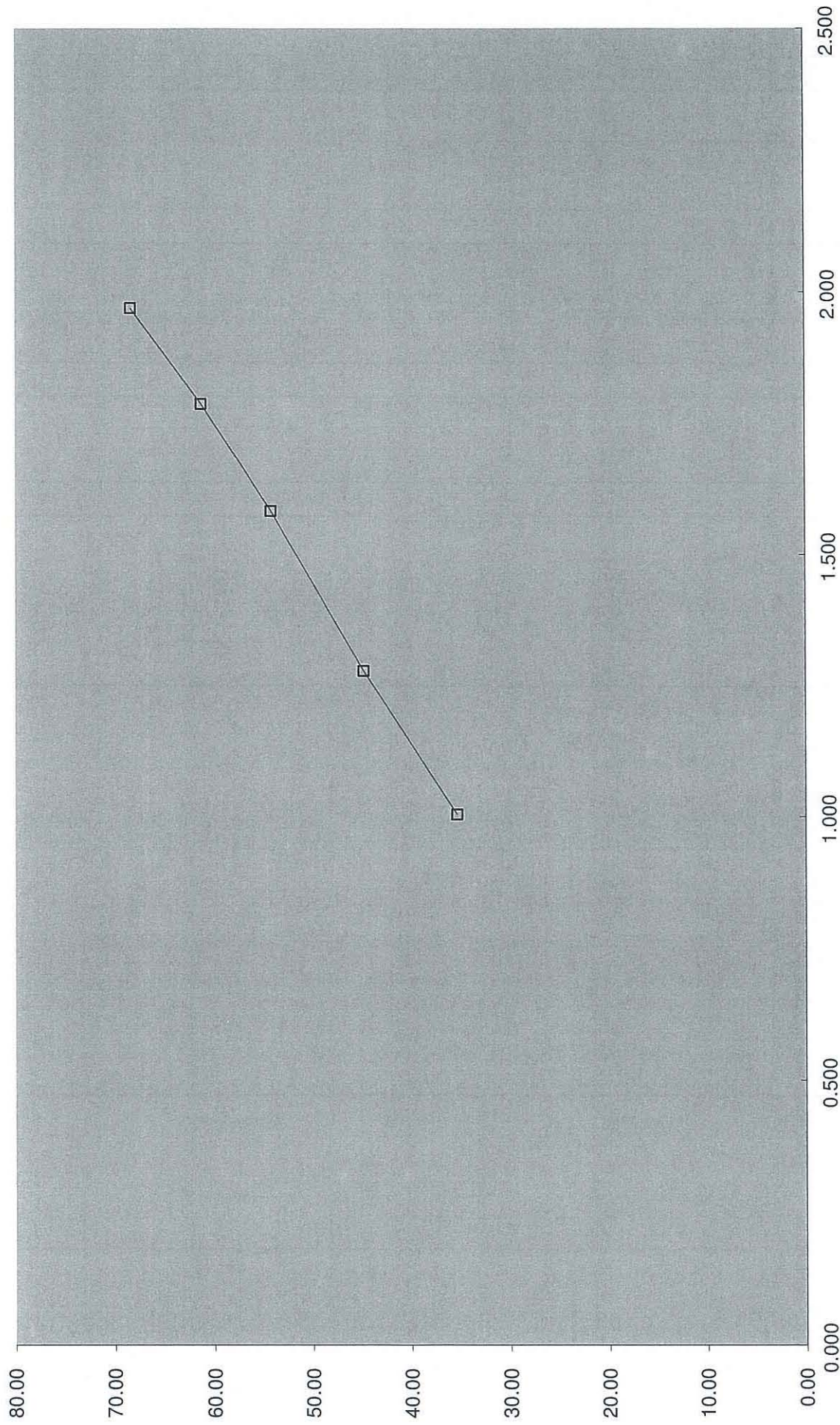
Calculations

$$Qstd = 1/m[\text{Sqrt}(H2O(Pa/Pstd)(Tstd/Ta))-b]$$
$$IC = I[\text{Sqrt}(Pa/Pstd)(Tstd/Ta)]$$

Qstd = standard flow rate
IC = corrected chart response
I = actual chart response
m = calibrator Qstd slope
b = calibrator Qstd intercept
Ta = actual temperature during calibration (deg K)
Pa = actual pressure during calibration (mm Hg)
Tstd = 298 deg K
Pstd = 760 mm Hg
For subsequent calculation of sampler flow:
 $1/m((I) [\text{Sqrt}(298/Tav)(Pav/760)]-b)$

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

Calibrated By : <u>Sam WONG</u>	Checked By : <u>Thomas WONG</u>
	





Calibration Certificate

Certificate No. **37521**

Page 1 of 2 Pages

Customer : Enovative Environmental Service Limited

Address : Room 3, 12/F., New City Centre, 2 Lei Yue Mun Road, Kwun Tong, Kowloon, H.K.

Order No. : Q32432

Date of receipt : 16-Oct-13

Item Tested

Description : Sound Level Calibrator

Manufacturer : B&K

Model : Type 4231

Serial No. : 2685684

Test Conditions

Date of Test : 31-Oct-13

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : F21, Z02.

Test Results

All results were within the IEC 942 Class 1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	35730	NIM-PRC & SCL-HKSAR
S205	Ref. Sound Level Calibrator	PHCO40002	SCL-HKSAR
S041	Universal Counter	34621	SCL-HKSAR
S206	Sound Level Meter	36203	SCL-HKSAR
S031	6½ dgt. Multimeter	30128	NIM-PRC

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).

The test results apply to the above Unit-Under-Test only

Calibrated by : Dorothy Cheuk
Dorothy Cheuk

Approved by : Steve Kwan
Steve Kwan

This Certificate is issued by
Hong Kong Calibration Ltd
Unit 8B, 24/F Well Fung Industrial Centre, No. 58-76 Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong
Tel: 2425 8801 Fax: 2425 8646

Date: 31-Oct-13



Calibration Certificate

Certificate No. 37521

Page 2 of 2 Pages

Results :

1. Level Accuracy

UUT Nominal Value (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	94.08	± 0.3 dB
114	114.07	

Uncertainty : ± 0.1 dB

2. Frequency

UUT Nominal Value	Measured Value	IEC 942 Class 1 Spec.
1 kHz	1.002 kHz	± 2 %

Uncertainty : ± 3.6 x 10⁻⁶

3. Level Stability : 0.0 dB

IEC 942 Class 1 Spec. : ± 0.1 dB

Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 0.7 %

IEC 942 Class 1 Spec. : < 3 %

Uncertainty : ± 2.3 % of reading

Remark : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. Atmospheric Pressure : 1014 hPa.

----- END -----



Calibration Certificate

Certificate No. **36604**

Page **1** of **4** Pages

Customer : Enovative Environmental Service Limited

Address : Room 3, 12/F., New City Centre, 2 Lei Yue Mun Road, Kwun Tong, Kowloon, H.K.

Order No. : Q32395

Date of receipt : 4-Sep-13

Item Tested

Description : Sound Level Meter (N12-RION-004)

Manufacturer : Rion

Model : NL-52

Serial No. : 00220553

Test Conditions

Date of Test : 10-Sep-13

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure: Z01.

Test Results

All results were within the IEC 61672 Type1 specification.

The results are shown in the attached page(s).

Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S017	Multi-Function Generator	C127181	SCL-HKSAR
S205	Ref. Sound Level Calibrator	PHCO40002	SCL-HKSAR

The values given in this Calibration Certificate only relate to the values measured at the time of the test and any uncertainties quoted will not include allowance for the equipment long term drift, variations with environmental changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Hong Kong Calibration Ltd. shall not be liable for any loss or damage resulting from the use of the equipment.

The test equipment used for calibration are traceable to International System of Units (SI).

The test results apply to the above Unit-Under-Test only

Calibrated by : 
Dorothy Cheuk

Approved by : 
Steve Kwan

Date: 16-Sep-13

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.
Tel: 2425 8801 Fax: 2425 8646



Calibration Certificate

Certificate No. 36604

Page 2 of 4 Pages

Results :

1. Self-generated noise: 16.4 dBA (Mfr's Spec ≤17 dBA)

2. Acoustical signal test

UUT Setting			Applied Value (dB)	UUT Reading (dB)
Level Range (dB)	Weight	Response		
30 – 130	L _A	Fast	94.0	94.0
		Slow		94.0
	L _C	Fast		94.0
	L _Z	Fast		94.0
	L _A	Fast	114.0	114.0
		Slow		114.0
	L _C	Fast		114.0
	L _Z	Fast		114.0

IEC 61672 Type 1 Spec. : ± 1.1 dB

Uncertainty : ± 0.1 dB

3 Electrical signal tests of frequency weightings (A weighting)

Frequency	Attenuation (dB)	IEC 61672 Type 1 Spec.
31.5 Hz	-39.8	- 39.4 dB, ± 2 dB
63 Hz	-26.4	- 26.2 dB, ± 1.5 dB
125 Hz	-16.3	- 16.1 dB, ± 1.5 dB
250 Hz	-8.7	- 8.6 dB, ± 1 dB
500 Hz	-3.3	- 3.2 dB, ± 1.4 dB
1 kHz	0.0 (Ref)	0 dB, ± 1.1 dB
2 kHz	+1.2	+ 1.2 dB, ± 1.6 dB
4 kHz	+0.9	+ 1.0 dB, ± 1.6 dB
8 kHz	-1.1	- 1.1 dB, + 2.1 dB ~ -3.1 dB
16 kHz	-8.0	- 6.6 dB, + 3.5 dB ~ - 17.0 dB

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 36604

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4. Frequency & Time weightings at 1 kHz

4.1 Frequency Weighting (Fast)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
A	94.0	94.0 (Ref.)	--	± 0.4 dB
C	94.0	94.0	0.0	
Z	94.0	94.0	0.0	

4.2 Time Weighting (A-weighted)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
Fast	94.0	94.0 (Ref.)	--	± 0.3 dB
Slow	94.0	94.0	0.0	
Time-averaging	94.0	94.0	0.0	

Uncertainty : ± 0.1 dB

5. Level linearity on the reference level range

UUT Range	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
130 dB (Ref Level)	129.0	129.0	0.0	± 1.1 dB
	124.0	124.0	0.0	
	119.0	119.0	0.0	
	114.0	114.0	0.0	
	109.0	109.0	0.0	
	104.0	104.0	0.0	
	99.0	99.0	0.0	
	94.0	94.0 (Ref)	--	
	89.0	89.0	0.0	
	84.0	84.0	0.0	
	79.0	79.0	0.0	
	74.0	74.0	0.0	
	69.0	69.0	0.0	
	64.0	64.0	0.0	
	59.0	59.0	0.0	
	54.0	54.0	0.0	
	49.0	49.0	0.0	
44.0	44.0	0.0		

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. **36604**

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6. Toneburst response (4kHz)

UUT Setting	Tone Burst Duration(ms)	UUT Reading(dB)	Difference (dB)	IEC 61672 Type 1 Spec.
Fast	Steady	127.0(Ref)	--	--
	200	126.0	-1.0	-1.0 ± 0.8dB
	2	108.9	-18.1	-18.0, +1.3 dB ~ -1.8 dB
	0.25	99.9	-27.1	-27.0, +1.3 dB ~ -3.3 dB
Slow	Steady	127.0(Ref)	--	--
	200	120.2	-6.8	-7.4 ± 0.8dB
	2	100.6	-26.4	-27.0, +1.3 dB ~ -3.3 dB
Time averaging	Steady	127.0(Ref)	--	--
	200	120.1	-6.9	-7.0±0.8dB
	2	99.5	-27.5	-27.0, +1.3 dB ~ -1.8 dB
	0.25	91.7	-35.3	-36.0, +1.3 dB ~ -3.3 dB

Uncertainty : ± 0.1 dB

7. Overload indication (130 dB range, A-weighted, Time-average, 4kHz)

UUT Reading at overload (dB)		Difference (dB)	IEC 61672 Type 1 Spec.
+ ve one half cycle	- ve one half cycle		
138.4	138.2	0.2	< 1.8 dB

The overload indicator latched on until reset

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test

2. The uncertainty claimed is for a confidence probability of not less than 95%.

3. Atmospheric Pressure : 996 hPa.

4. Preamplifier model : NH-25 , S/N : 10553

5. Firmware Version: 1.2

6. Power Supply Check: OK

7. The UUT was adjusted with the laboratory's sound calibrator at the reference sound pressure level before the calibration.

----- END -----



ALS Technichem (HK) Pty Ltd

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR IVAN LEUNG
CLIENT: ALS TECHNICHEM (HK) PTY LTD
ADDRESS: 11/F., CHUNG SHUN KNITTING CENTRE,
1-3 WING YIP STREET,
KWAI CHUNG,
N.T., HONG KONG

WORK ORDER: HK1324468
LABORATORY: HONG KONG
DATE RECEIVED: 25/10/2013
DATE OF ISSUE: 31/10/2013

PROJECT: --

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.
Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: Turbidity
Description: Turbidity meter
Brand Name: HACH
Model No.: HACH 2100Q
Serial No.: 12010C015757
Equipment No.: --
Date of Calibration: 31 October, 2013

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.
Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.

ISSUING LABORATORY: HONG KONG

Address

ALS Technichem (HK) Pty Ltd
11/F Chung Shun Knitting Centre
1-3 Wing Yip Street
Kwai Chung
HONG KONG

Phone: 852-2610 1044
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Mr. Fung Lim Chee, Richard
General Manager
Greater China & Hong Kong

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Page 1 of 2

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ALS TECHNICHEM (HK) PTY LTD Part of the ALS Laboratory Group A Campbell Brothers Limited Company

Life Sciences

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



Work Order: HK1324468
Date of Issue: 31/10/2013
Client: ALS TECHNICHEM (HK) PTY LTD

Description: Turbidity meter
Brand Name: HACH
Model No.: HACH 2100Q
Serial No.: 12010C015757
Equipment No.: --
Date of Calibration: 31 October, 2013

Date of next Calibration: 31 January, 2014

Parameters:

Turbidity

Method Ref: APHA (21st edition), 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.40	--
4	3.93	-1.8
40	40.5	1.3
80	79.2	-1.0
400	399	-0.3
800	808	1.0
	Tolerance Limit ($\pm\%$)	10.0



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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR THOMAS WONG
CLIENT: ENOVATIVE ENVIRONMENTAL SERVICE LIMITED
ADDRESS: RM 3704, SIK MAN HOUSE,
HOMANTIN ESTATE,
KOWLOON,
HONG KONG
PROJECT: --

WORK ORDER: HK1334794
LABORATORY: HONG KONG
DATE RECEIVED: 01/12/2013
DATE OF ISSUE: 27/12/2013

COMMENTS

It is certified that the item under calibration/checking has been calibrated/checked by corresponding calibrated equipment in the laboratory.

Maximum Tolerance and calibration frequency stated in the report, unless otherwise stated, the internal acceptance criteria of ALS will be followed.

Scope of Test: Conductivity, Dissolved Oxygen, pH, Salinity and Temperature
Equipment Type: Multimeter
Brand Name: YSI
Model No.: Professional Plus
Serial No.: 09K100735
Equipment No.: --
Date of Calibration: 01 December, 2013

NOTES

This is the Final Report and supersedes any preliminary report with this batch number.

Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release.


Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK / CALIBRATION



Work Order: HK1334794
Date of Issue: 27/12/2013
Client: ENOVATIVE ENVIRONMENTAL SERVICE LIMITED

Description: Multimeter
Brand Name: YSI
Model No.: Professional Plus
Serial No.: 09K100735
Equipment No.: --
Date of Calibration: 01 December, 2013 **Date of next Calibration:** 01 March, 2014

Parameters:

Conductivity

Method Ref: APHA (21st edition), 2510B

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	148.9	1.4
6667	6326	-5.1
12890	12227	-5.1
58670	54000	-8.0
Tolerance Limit (±%)		10.0

Dissolved Oxygen

Method Ref: APHA (21st edition), 4500O: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
3.11	3.30	0.19
5.16	5.36	0.20
8.82	8.82	0.00
Tolerance Limit (±mg/L)		0.20

pH Value

Method Ref: APHA 21st Ed. 4500H:B


Expected Reading (pH Unit)	Displayed Reading (pH Unit)	Tolerance (pH unit)
4.0	4.20	0.20
7.0	7.16	0.16
10.0	10.06	0.06
Tolerance Limit (±pH unit)		0.20

Salinity

Method Ref: APHA (21st edition), 2520B

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	10.09	0.9
20	20.01	0.1
30	30.26	0.9
Tolerance Limit (±%)		10.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.


 Mr. Fung Lim Chee, Richard
 General Manager -
 Greater China & Hong Kong

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



Work Order: HK1334794
Date of Issue: 27/12/2013
Client: ENOVATIVE ENVIRONMENTAL SERVICE LIMITED

Description: Multimeter
Brand Name: YSI
Model No.: Professional Plus
Serial No.: 09K100735
Equipment No.: --
Date of Calibration: 01 December, 2013 **Date of next Calibration:** 01 March, 2014

Parameters:

Temperature

Method Ref: Section 6 of International Accreditation New Zealand Technical
Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
9.0	8.4	-0.6
20.0	19.6	-0.4
38.0	38.3	0.3
	Tolerance Limit (±°C)	2.0

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless of equipment precision or significant figures.


Mr. Fung Lim Chee, Richard
General Manager -
Greater China & Hong Kong

Appendix D EM&A Monitoring Schedules and Meteorological Data Extracted from Hong Kong Observatory

**Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2
Impact Monitoring & Site Auditing Schedule for January 2014**

January 2014						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1 The first day of January	2 24-hour TSP + 3 x 1-hour TSP, Noise (SR77) Water (I5, C3a, C3b)	3	4 Water (I5, C3a, C3b)
5	6 Water (I5, C3a, C3b) ET Site Walk(09:30 – 11:00) with Liangtang Project-wide ET and IEC	7	8 Water (I5, C3a, C3b) 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	9	10 Water (I5, C3a, C3b)	11
12	13 Water (I5, C3a, C3b) ET Site Walk(09:30 – 11:00) with Liangtang Project-wide ET and IEC	14 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	15 Water (I5, C3a, C3b)	16	17 Water (I5, C3a, C3b)	18
19	20 Water (I5, C3a, C3b) 24-hour TSP + 3 x 1-hour TSP, Noise (SR77) ET Site Walk(09:30 – 11:00) with Liangtang Project-wide ET and IEC + SSEMC	21	22 Water (I5, C3a, C3b)	23	24 Water (I5, C3a, C3b)	25 24-hour TSP + 3 x 1-hour TSP
26	27 Water (I5, C3a, C3b) ET Site Walk(09:30 – 11:00) with Fanling Stage 2 IEC & Liangtang Project- wide ET and IEC	28	29 Water (I5, C3a, C3b)	30 Water (I5, C3a, C3b) 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	31 Chinese Lunar New Year's Day	

**Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2
Impact Monitoring & Site Auditing Schedule for February 2014**

February 2014						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1 The second day of Lunar New Year
2	3 The fourth day of Lunar New Year	4 Construction site holiday	5 Water (I5, C3a, C3b) 24-hour TSP + 3 x 1-hour TSP, Noise (SR77) ET Site Walk(09:30 – 11:00) with Liangtang Project-wide ET and IEC	6	7 Water (I5, C3a, C3b)	8
9	10 Water (I5, C3a, C3b) ET Site Walk(09:30 – 11:00) with Liangtang Project-wide ET and IEC	11 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	12 Water (I5, C3a, C3b)	13	14 Water (I5, C3a, C3b)	15
16	17 Water (I5, C3a, C3b) 24-hour TSP + 3 x 1-hour TSP, Noise (SR77) ET Site Walk(09:30 – 11:00) with Liangtang Project-wide ET and IEC + SSEMC	18	19 Water (I5, C3a, C3b)	20	21 Water (I5, C3a, C3b)	22 24-hour TSP + 3 x 1-hour TSP
23	24 Water (I5, C3a, C3b) ET Site Walk(09:30 – 11:00) with Fanling Stage 2 IEC & Liangtang Project-wide ET and IEC	25	26 Water (I5, C3a, C3b)	27	28 Water (I5, C3a, C3b) 24-hour TSP + 3 x 1-hour TSP, Noise (SR77)	

Climatological Information Services > Extracts of Climatological Data > Extract of Automatic Weather Station > Station: Sheung Shui Automatic Weather Station, Year: 2014, Month: January

Extract of Meteorological Observations for Sheung Shui Automatic Weather Station, January 2014 (Table 1)

Date	Mean Pressure at M.S.L. (hPa)	Air Temperature			Mean Dew Point Temperature (deg C)	Relative Humidity		
		Max. (deg C)	Mean (deg C)	Min. (deg C)		Max. (%)	Mean (%)	Min. (%)
Jan 1	1019.6	22.5	12.8	6.3	4.7	91	63	28
Jan 2	1017.0	22.4	15.2	8.2	10.1	92	73	55
Jan 3	1016.1	25.1	18.3	14.0	13.2	92	74	47
Jan 4	1018.4	23.1	17.3	12.0	7.1	92	54	29
Jan 5	1019.1	20.5	14.7	8.4	6.0	86	59	28
Jan 6	1018.0	21.4	16.6	12.1	8.9	79	61	43
Jan 7	1016.7	20.7	18.6	16.7	14.1	84	75	61
Jan 8	1018.5	23.2	18.6	14.3	14.1	93	76	58
Jan 9	1023.6	16.1	14.4	12.4	6.3	66	58	52
Jan 10	1024.6	17.1	15.2	13.7	9.6	76	69	61
Jan 11	1023.8	22.1	16.8	12.6	11.2	87	71	50
Jan 12	1023.9	22.8	16.4	12.2	10.7	95	71	49
Jan 13	1024.7	15.2	12.3	10.3	5.3	72	63	54
Jan 14	1024.4	17.1	12.2	9.1	4.3	71	59	46
Jan 15	1026.0	20.0	12.6	9.1	3.7	84	56	31
Jan 16	1024.6	20.6	13.4	7.8	7.1	90	68	40
Jan 17	1023.7	21.9	14.5	9.0	8.8	96	72	38
Jan 18	1026.7	22.3	15.5	10.3	1.5	82	40	19
Jan 19	1026.5	19.2	12.3	6.9	6.3	88	69	41
Jan 20	1024.4	22.6	14.9	8.9	2.9	91	52	14
Jan 21	1025.3	18.6	14.1	10.2	-6.2	54	25	14
Jan 22	1025.7	19.7	12.2	7.1	-4.2	74	35	11
Jan 23	1023.4	20.3	11.7	6.1	4.9	93	66	33
Jan 24	1019.0	22.0	15.3	9.3	10.2	92	73	53
Jan 25	1017.9	24.9	18.9	15.6	13.6	85	72	50
Jan 26	1019.6	25.2	18.7	16.3	13.2	91	72	43
Jan 27	1021.1	22.7	17.2	15.0	9.5	77	62	40
Jan 28	1020.5	24.7	17.2	13.3	11.2	87	70	41
Jan 29	1020.0	25.1	16.6	10.5	10.8	95	72	37
Jan 30	1019.5	26.2	17.1	10.9	12.1	95	76	42
Jan 31	1018.4	25.7	18.3	11.5	12.3	95	72	38
Mean	1021.6	21.6	15.5	11.0	7.8	85	64	40
Maximum	1026.7	26.2	18.9	16.7	14.1	96	76	61
Minimum	1016.1	15.2	11.7	6.1	-6.2	54	25	11

Extract of Meteorological Observations for Sheung Shui Automatic Weather Station, January 2014 (Table 2)

Date	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
Jan 1	0.0	***	*****
Jan 2	0.0	***	*****
Jan 3	0.0	***	*****
Jan 4	0.0	***	*****
Jan 5	0.0	***	*****
Jan 6	0.0	***	*****
Jan 7	0.0	***	*****
Jan 8	0.0	***	*****
Jan 9	0.0	***	*****
Jan 10	0.0	***	*****
Jan 11	0.0	***	*****
Jan 12	0.0	***	*****
Jan 13	0.0	***	*****
Jan 14	0.0	***	*****
Jan 15	0.0	***	*****
Jan 16	0.0	***	*****
Jan 17	0.0	***	*****
Jan 18	0.0	***	*****
Jan 19	0.0	***	*****
Jan 20	0.0	***	*****
Jan 21	0.0	***	*****
Jan 22	0.0	***	*****
Jan 23	0.0	***	*****
Jan 24	0.0	***	*****
Jan 25	0.0	***	*****
Jan 26	0.0	***	*****
Jan 27	0.0	***	*****
Jan 28	0.0	***	*****
Jan 29	0.0	***	*****
Jan 30	0.0	***	*****
Jan 31	0.0	***	*****
Mean	-----	***	*****
Total	0.0	---	-----
Maximum	0.0	---	*****
Minimum	0.0	---	*****

*** unavailable

missing (less than 24 hourly observations a day)

Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

Appendix E

Air Quality Monitoring Results and their Graphical Presentation

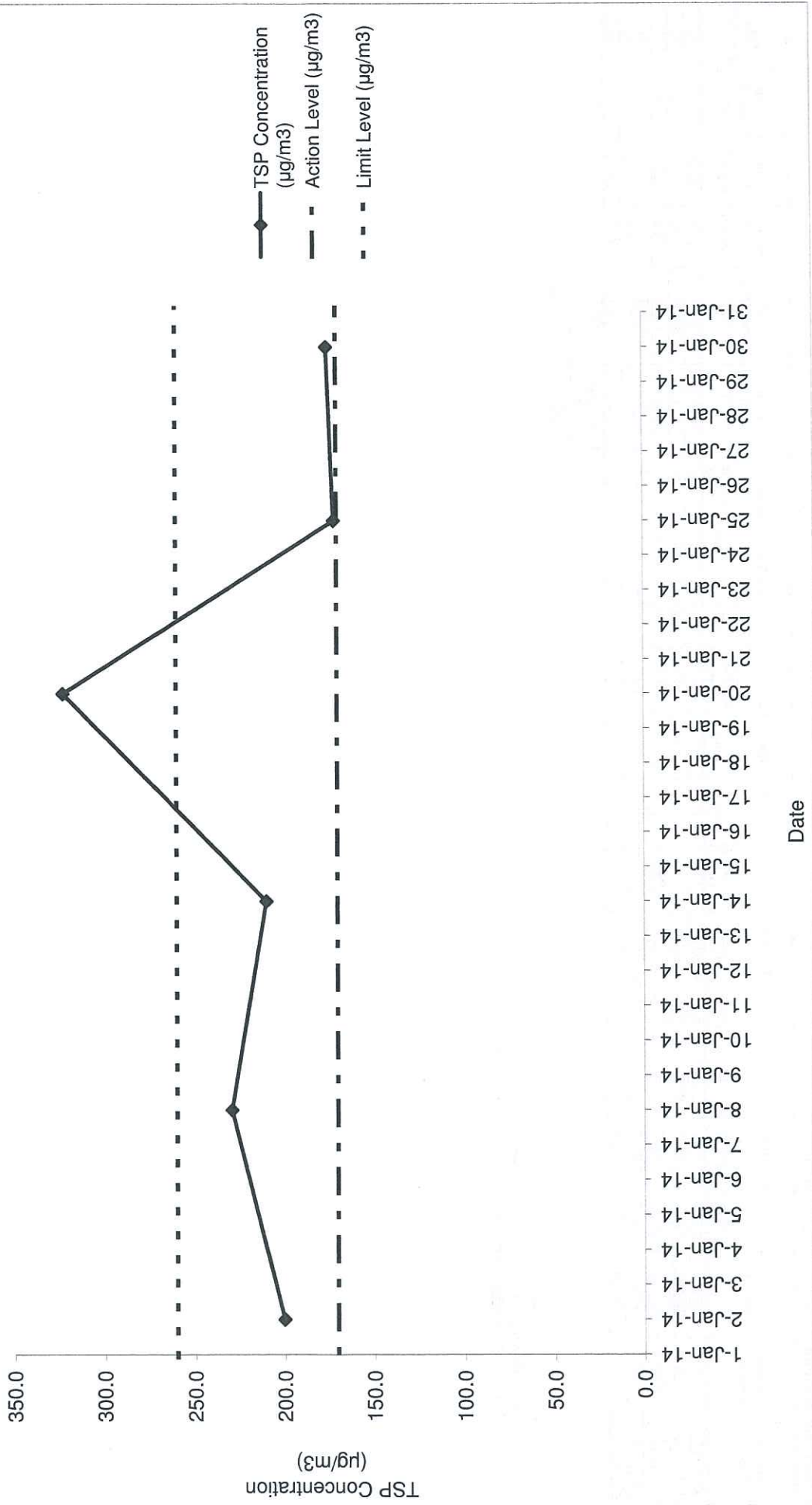
Appendix E
Air Quality Monitoring Results and their Graphical Presentation

24-Hour TSP Monitoring Result at station: SR77

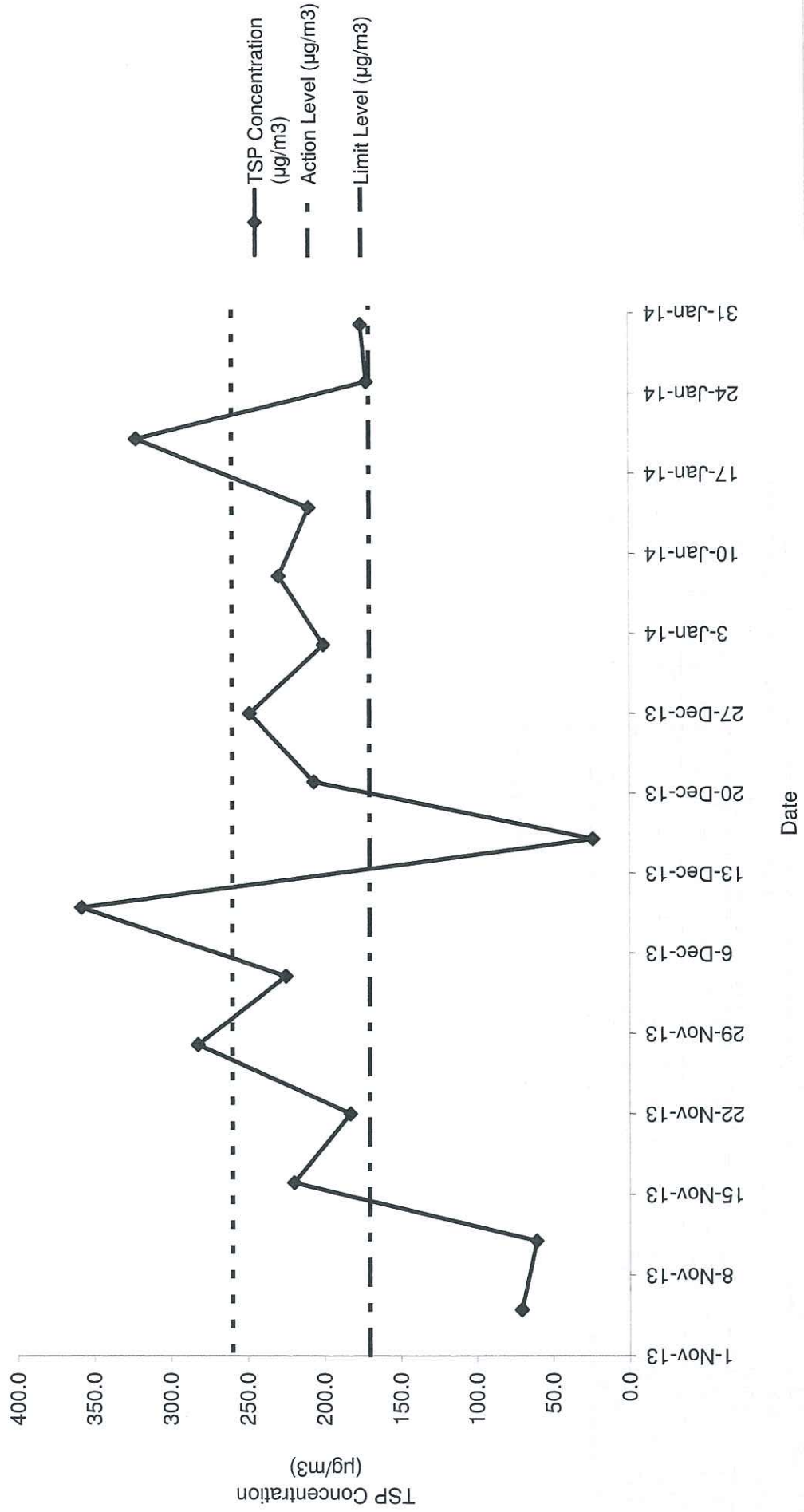
Sampling Date	Weather Condition	Paper No.	Wt. of paper (g)			Elapse Time			Flow Rate (CFM)			Flow Rate (m ³ /min)			Total Volume (m ³)	TSP Concentration (ug/m ³)	Action Level (ug/m ³)	Limit Level (ug/m ³)	Wind speed m/s	Wind direction		
			Initial Wt.	Final Wt.	Wt. of Dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate	Initial	Final	Avg Flow Rate								
2-Jan-14	Sunny	205834	2.6667	3.0836	0.4169	0.00	24.00	24.00	51	51	24.00	51.0	1.44	1.44	2079.59	200.5	170.3	260.0	<5	N		
8-Jan-14	Fine	205904	2.8976	3.3749	0.4773	0.00	24.00	24.00	51	51	24.00	51.0	1.44	1.44	2079.59	229.5	170.3	260.0	<5	N		
14-Jan-14	Fine	205835	2.7456	3.1824	0.4368	0.00	24.00	24.00	51	51	24.00	51.0	1.44	1.44	2079.59	210.0	170.3	260.0	<5	N		
20-Jan-14	Fine	205836	2.7541	3.4253	0.6712	0.00	24.00	24.00	51	51	24.00	51.0	1.44	1.44	2079.59	322.8	170.3	260.0	<5	N		
25-Jan-14	Sunny	205837	2.7496	3.1072	0.3576	0.00	24.00	24.00	51	51	24.00	51.0	1.44	1.44	2079.59	172.0	170.3	260.0	<5	N		
30-Jan-14	Fine	205838	2.7561	3.1216	0.3655	0.00	24.00	24.00	51	51	24.00	51.0	1.44	1.44	2079.59	175.8	170.3	260.0	<5	N		
															Average	218.4						
															Min	172.0						
															Max	322.8						

Note: No major dust source observed during the monitoring period
Data in **Bold** denotes exceedance of respective Action Level
Data in **Bold Underline** denotes exceedance of respective Limit Level

24-Hour TSP Monitoring Result at Station: SR77



**24-Hour TSP Monitoring Result at Station: SR77
(November 2013 - January 2014)**



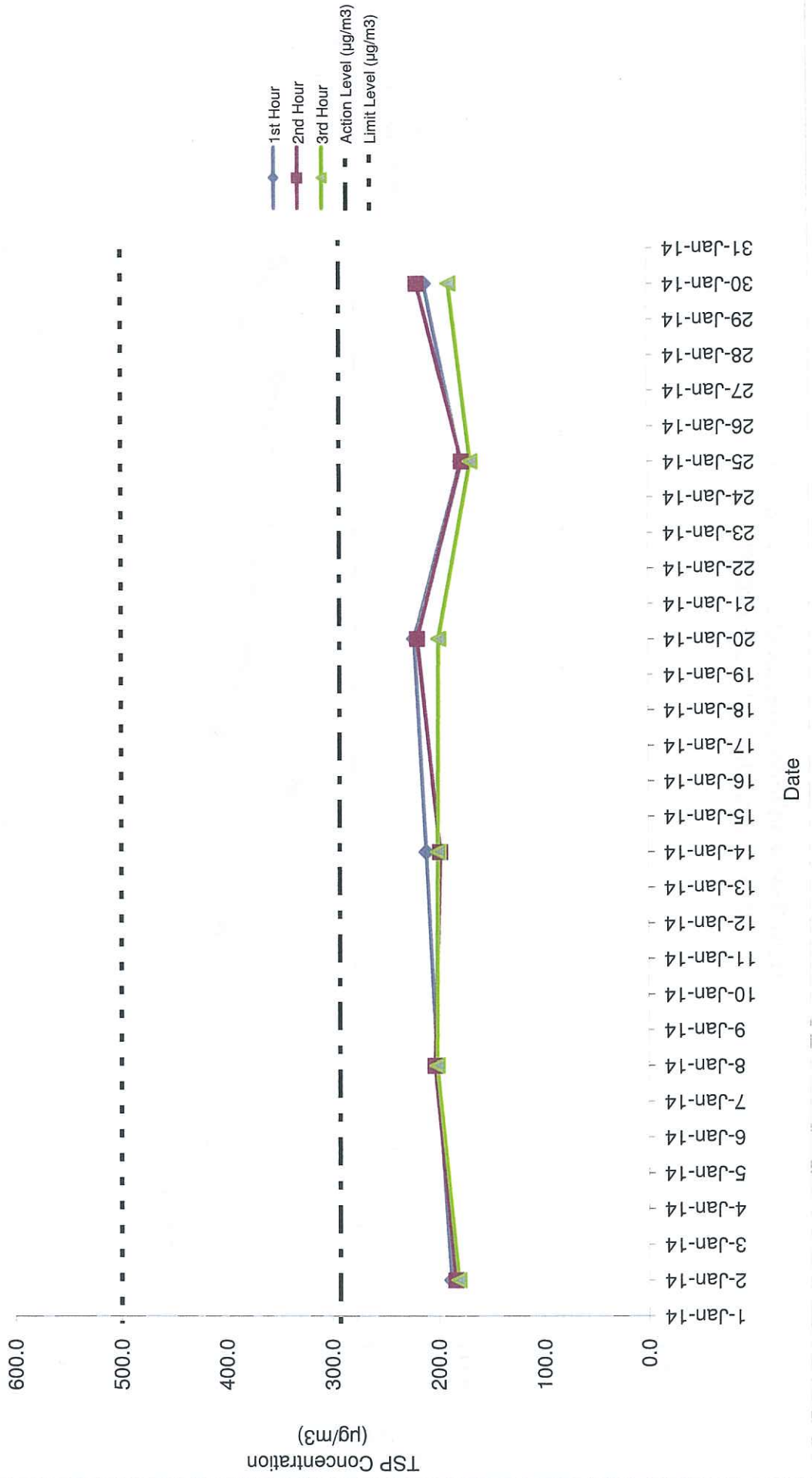
Appendix E
Air Quality Monitoring Results and their Graphical Presentation

1-Hour TSP Monitoring Result at station: SR77

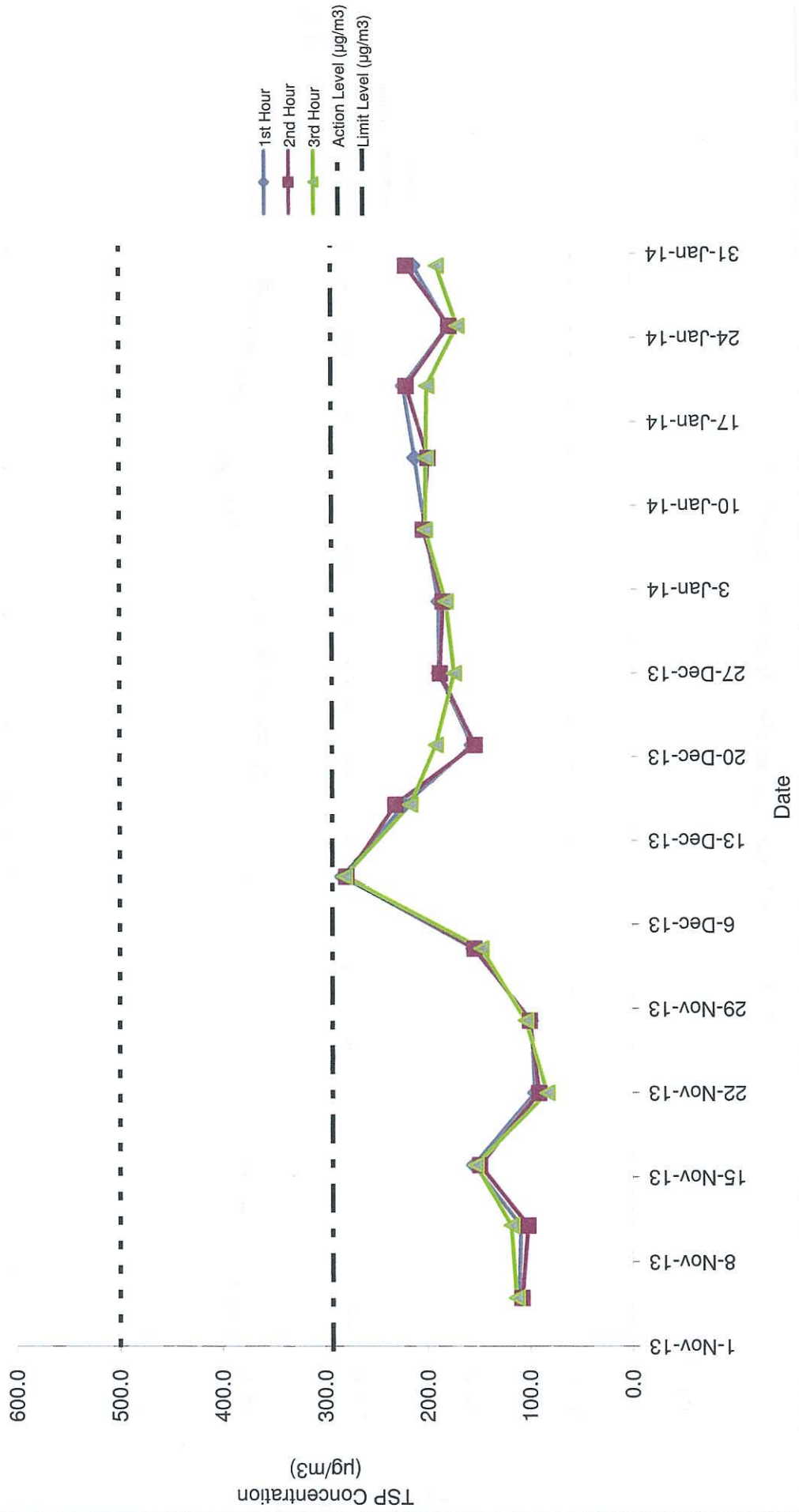
Date	Weather Condition	Time	Conc. (µg/m ³)			Action Level (µg/m ³)	Limit Level (µg/m ³)
			1 st Hour	2 nd Hour	3 rd Hour		
2-Jan-14	Sunny	9:30 - 12:34	188.0	184.0	181.0	292.7	500.0
8-Jan-14	Fine	9:30 - 12:34	201.0	203.0	201.0	292.7	500.0
14-Jan-14	Fine	13:00 - 16:04	211.0	198.0	200.0	292.7	500.0
20-Jan-14	Fine	13:00 - 16:04	222.0	219.0	199.0	292.7	500.0
25-Jan-14	Sunny	9:00 - 12:04	178.0	177.0	169.0	292.7	500.0
30-Jan-14	Fine	14:00 - 17:04	212.0	219.0	189.0	292.7	500.0
			Average	197.3			
				Min	169.0		
				Max	222.0		

Note: No major dust source observed during the monitoring period

1-Hour TSP Monitoring Result at station: SR77



**1-Hour TSP Monitoring Result at station: SR77
(November 2013 - January 2014)**



Appendix F

Summary of Event and Action Plan



Event and Action Plan for Air Quality

Event	Action			IEC	ER	Contractor
	ET Leader					
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC and ER; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method. 	<ol style="list-style-type: none"> 1. Notify Contractor. 	<ol style="list-style-type: none"> 1. Rectify any unacceptable practice; 2. Amend working methods if appropriate. 		
Action level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC and ER; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency to daily; 5. Discuss with IEC and Contractor on remedial actions required; 6. If exceedance continues, arrange meeting with IEC and ER; 7. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ER on the effectiveness of the proposed remedial measures; 5. Supervise Implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Submit proposals for remedial actions to IEC within 3 working days of notification; 2. Implement the agreed proposals; 3. Amend proposal if appropriate. 		

Event	Action		IEC	ER	Contractor
	ET Leader				
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Identify source; 2. Inform IEC, ER, Contractor and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results. 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise ER on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. Ensure remedial measures properly implemented. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Amend proposal if appropriate. 	
Limit level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> 1. Notify IEC, ER, Contractor, and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase frequency to daily; 5. Analyse Contractor's working procedures to determine possible mitigation to be; 6. Arrange meeting with IEC and ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring. 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise ER accordingly; 3. Supervise the implementation of remedial measures. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of exceedance in writing; 2. Notify Contractor; 3. In consultation with the IEC, agree with the Contractor on the remedial measures to be implemented; 4. Ensure remedial measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as determined by ER until the exceedance is abated. 	

Event and Action Plan for Noise Quality

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

Event and Action Plan for Water Quality

Event	Action				Contractor
	ET Leader	IEC	ER	Contractor	
Action level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat in-situ measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor & ER; 4. Check monitoring data, all plant, equipment & contractor's working methods; 	<ol style="list-style-type: none"> 1. Check monitoring data submitted by ET & Contractor's working methods; 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; Notify, Contractor 	<ol style="list-style-type: none"> 1. Inform the ER & confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Amend working methods if appropriate. 	
Action level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor, ER & EPD; 4. Check monitoring data, all plant, equipment & Contractor's working methods; 5. Discuss mitigation measures with IEC, ER & Contractor; 6. Ensure mitigation measures are implemented; 7. Increase monitoring to daily until no exceedance of Action level. 	<ol style="list-style-type: none"> 1. Checking monitoring data submitted by ET & Contractor's working method; 2. Discuss with ET & Contractor on possible remedial actions; 3. Review the proposed mitigation measures submitted by Contractor & advise the ER accordingly; 4. Supervise the implementation of mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC on the proposed mitigation measures; 2. Ensure mitigation measures properly implemented; 3. Assess the effectiveness of the implemented mitigation measures. 	<ol style="list-style-type: none"> 1. Inform the Engineer & confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant & equipment & consider changes of working methods; 4. Submit proposal of mitigation measures to ER within 3 working days of notification & discuss with ET, IEC & ER; 5. Implement the agreed mitigation measures. 	

Event	Action		IEC	ER	Contractor
	ET Leader				
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> 1. Repeat measurement on next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, contractor, ER & EPD; 4. Check monitoring data, all plant, equipment & contractor's working methods; 5. Discuss mitigation measures with IEC, Contractor & ER. 	<ol style="list-style-type: none"> 1. Checking monitoring data submitted by ET & Contractor's working method; 2. Discuss with ET & Contractor on the possible mitigation measures; 3. Review the proposed mitigation measures submitted by Contractor & advise the ER accordingly. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing; 2. Discuss with IEC, ET & Contractor on the proposed mitigation measures; 3. Request Contractor to review the working methods. 	<ol style="list-style-type: none"> 1. Inform the ER & confirm notification of the non-compliance in writing; 2. Rectify unacceptable practice; 3. Check all plant & equipment & consider changes of working methods; 4. Submit proposal of mitigation measures to ER within 3 working days of notification & discuss with ET, IEC & ER. 	
Limit level being exceeded by two or more consecutive sampling days	<ol style="list-style-type: none"> 1. Repeat measurement on the next day of exceedance to confirm findings; 2. Identify source(s) of impact; 3. Inform IEC, Contractor, ER & EPD; 4. Check monitoring data, all plant, equipment & Contractor's working methods; 5. Discuss mitigation measures within IEC, Contractor & ER; 6. Ensure mitigation measures are implemented; 7. Increase the monitoring frequency to daily until no exceedance of Limit level for two consecutive days. 	<ol style="list-style-type: none"> 1. Checking monitoring data submitted by ET & Contractor's working method; 2. Discuss with ET & Contractor on potential remedial actions; 3. Review Contractor's mitigation measures whenever necessary to assure their effectiveness & advise the ER accordingly; 4. Supervise the implementation of mitigation measures. 	<ol style="list-style-type: none"> 1. Discuss with IEC, ET & Contractor on the proposed mitigation measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the mitigation measures to be implemented; 4. Ensure mitigation measures are properly implemented; 5. Consider & instruct, if necessary, the Contractor to slow down or to stop all or part of the construction activities until no exceedance of Limit level. 	<ol style="list-style-type: none"> 1. Take immediate action to avoid further exceedance; 2. Submit proposal of mitigation measures to ER within 3 working days of notification & discuss with ET, IEC & ER; 3. Implement the agreed mitigation measures; 4. Resubmit proposals of mitigation measures if problem still not under control; 5. As directed by the Engineer, to slow down or to stop all or part of the construction activities until no exceedance of Limit level. 	

Appendix G Noise Monitoring Results and their Graphical Presentation

Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure works - Contract 3
Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2

Noise Monitoring Result at SR77

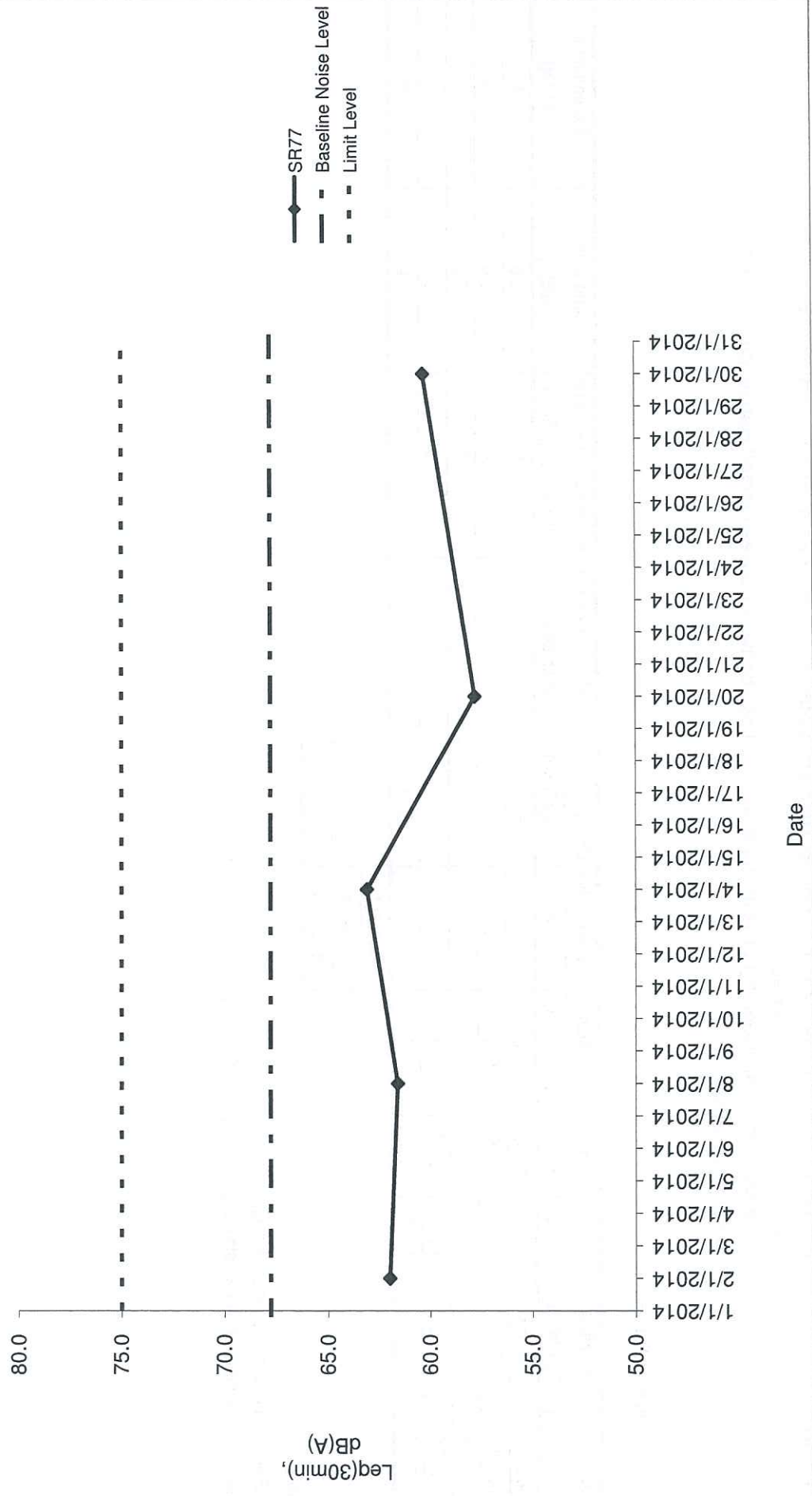
Date	Weather Condition	Start Time	End Time	Measured Noise Level (dB(A))*			Baseline Corrected Level, dB(A)**	Baseline Noise Level (dB(A)), Leq(30min)	Limit Level dB(A)	Exceedance (Y / N)
				L10(30min)	L90(30min)	Leq(30min)				
2014/01/02	Sunny	9:30	10:00	70.8	72.3	62.0	-	67.8	75.0	N
2014/01/08	Fine	9:30	10:00	71.2	76.1	61.6	-	67.8	75.0	N
2014/01/14	Fine	13:00	13:30	70.4	74.5	63.1	-	67.8	75.0	N
2014/01/20	Fine	13:00	13:30	76.8	72.1	57.8	-	67.8	75.0	N
2014/01/30	Fine	14:00	14:30	70.8	72.9	60.3	-	67.8	75.0	N
				Average		61.0				
				Minimum		57.8				
				Maximum		63.1				

Remarks

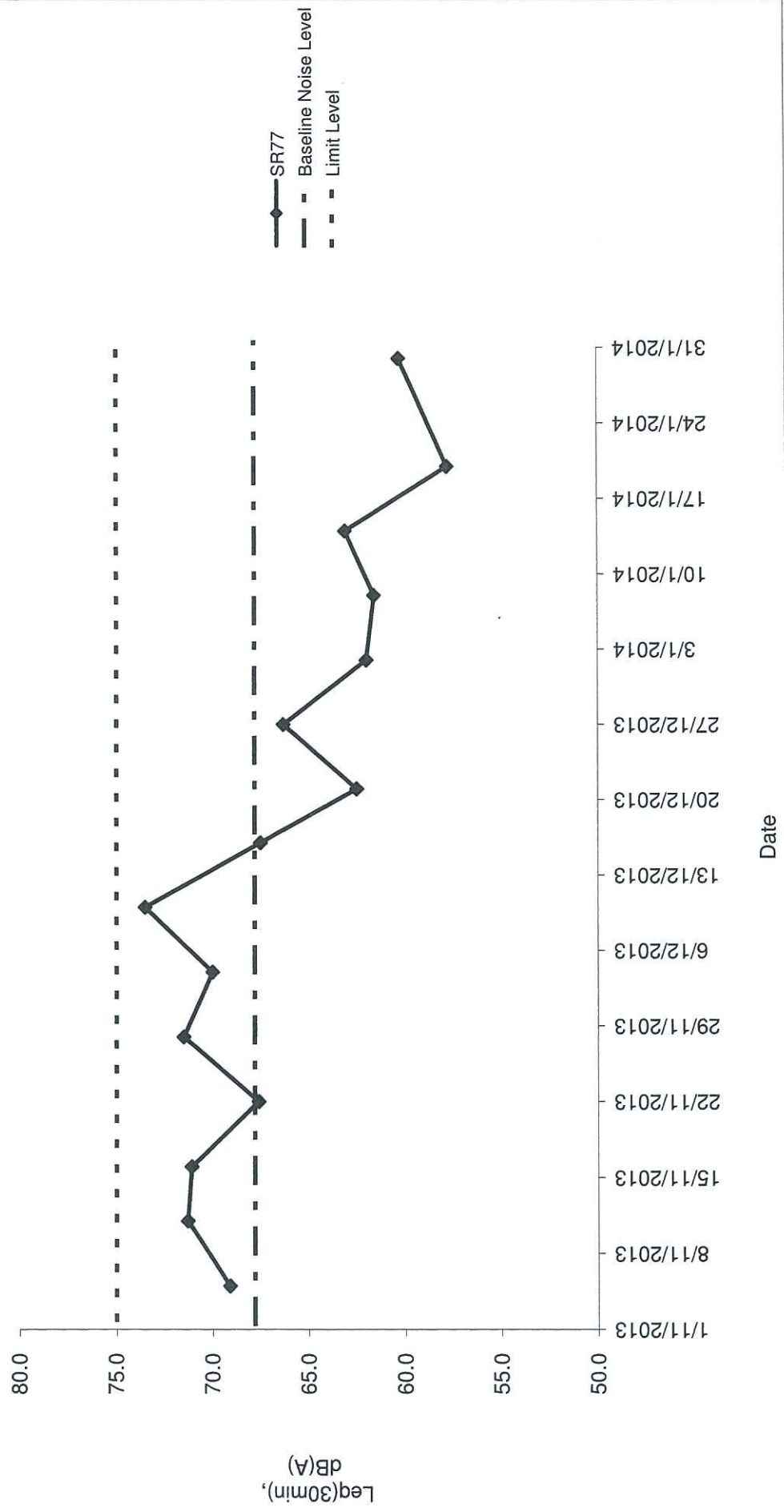
* +3dB(A) Façade effect correction included

** Baseline corrected level is only calculated when measured noise level (Leq) > limit level.

Noise monitoring result: SR77



Noise monitoring result: SR77
(November 2013 - January 2014)



Appendix H Laboratory Results for Water Quality

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1400047
Address	: RM 3704, SIK MAN HOUSE, HOMANTIN ESTATE, KOWLOON, HONG KONG	Address	: 11/F., Chung Shun Knitting Centre, 1 - 3 Wing Yip Street, Kwai Chung, N.T., Hong Kong		
E-mail	: thomas.wong@eno.com.hk	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: +852 22421020	Telephone	: +852 2610 1044		
Facsimile	: +852 27143612	Facsimile	: +852 2610 2021		
Project	: CONTRACT NO CV_2012_09 LIANTANG_HEUNG YUEN WAI BOUNDARY CONTROL POINT SITE FORMATION	Quote number	: ----	Date received	: 02-JAN-2014
Order number	: ----			Date of issue	: 07-JAN-2014
C-O-C number	: ----			No. of samples	: - Received : 6
Site	: ----				: - Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1400047 supersedes any previous reports with this reference. The completion date of analysis is 03-JAN-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1400047 :
Project Name: Contract No. CV2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.
Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the 'Electronic Transactions Ordinance' of Hong Kong, Chapter 553, Section 6.

Signature

Fung Lim Chee, Richard

Position

General Manager

Authorised results for:-

Inorganics

ALS Laboratory Group
ALS Technichem (HK) Pty Ltd

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A Campbell Brothers Limited Company



Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	EA025: Suspended Solids (SS) 2 mg/L	EAIED: Physical and Aggregate Properties
			LOR Unit		
C3A-1	[02-JAN-2014]	HK1400047-001		17	
C3A-2	[02-JAN-2014]	HK1400047-002		18	
C3B-1	[02-JAN-2014]	HK1400047-003		21	
C3B-2	[02-JAN-2014]	HK1400047-004		22	
I5-1	[02-JAN-2014]	HK1400047-005		9	
I5-2	[02-JAN-2014]	HK1400047-006		9	



Laboratory Duplicate (DUP) Report

Laboratory sample ID		Client sample ID	Method: Compound	Laboratory Duplicate (DUP) Report			
EAI/ED: Physical and Aggregate Properties (QC Lot: 3236044)				CAS Number	LOR	Unit	RPD (%)
HK1400033-001	Anonymous	EA025: Suspended Solids (SS)		----	2	mg/L	0.0
				4		4	

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

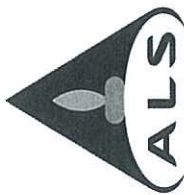
Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Spike Concentration	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	Value	RPDs (%)
EAI/ED: Physical and Aggregate Properties (QCLot: 3236044)	----	2	mg/L	10 mg/L	98.5	<2	----	86	112	----
EA025: Suspended Solids (SS)										

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

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Project : CONTRACT NO CV_2012_09
LIANTANG_HEUNG YUEN WAI BOUNDARY
CONTROL POINT SITE FORMATION

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Quote number : *****

Page : 1 of 3
Work Order : HK1400309
Date received : 04-JAN-2014
Date of issue : 09-JAN-2014
No. of samples : Received : 6
: Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1400309 supersedes any previous reports with this reference. The completion date of analysis is 07-JAN-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1400309 :
Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.
Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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Signatory : Fung Lim Chee, Richard
Position : General Manager
Authorised results for:- Inorganics

ALS Laboratory Group ALS Technichem (HK) Pty Ltd

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Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound LOR Unit	EA025: Suspended Solids (SS) 2 mg/L			
C3A-1	[04-JAN-2014]	HK1400309-001		EAIED: Physical and Aggregate Properties 18			
C3A-2	[04-JAN-2014]	HK1400309-002		20			
C3B-1	[04-JAN-2014]	HK1400309-003		6			
C3B-2	[04-JAN-2014]	HK1400309-004		6			
I5-1	[04-JAN-2014]	HK1400309-005		5			
I5-2	[04-JAN-2014]	HK1400309-006		6			



Laboratory Duplicate (DUP) Report

Matrix: WATER		Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EAIED: Physical and Aggregate Properties (QC Lot: 3238461)								
HK1400308-002	Anonymous	EA025: Suspended Solids (SS)	-----	2	mg/L	20	20	0.0
HK1400309-004	C3B-2	EA025: Suspended Solids (SS)	-----	2	mg/L	6	6	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER		Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	Low	High	Value	Control Limit
EAIED: Physical and Aggregate Properties (QC Lot: 3238461)													
EA025: Suspended Solids (SS)	-----	2	mg/L	<2	10 mg/L	101	-----	-----	87	111	-----	-----	-----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

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: +852 27143612
Project : CONTRACT NO CV_2012_09

LIANTANG_HEUNG YUEN WAI BOUNDARY
CONTROL POINT SITE FORMATION

Order number : ----
O-C number : ----
Site : ----

Laboratory : ALS Technichem HK Pty Ltd
Contact : Fung Lim Chee, Richard
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Quote number : ----

Page : 1 of 3
Work Order : HK1400370

Date received : 06-JAN-2014

Date of issue : 09-JAN-2014

No. of samples : - Received : 6
- Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1400370 supersedes any previous reports with this reference. The completion date of analysis is 07-JAN-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1400370 :
Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.
Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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Signatory : Fung Lim Chee, Richard
Position : General Manager
Authorised results for:- Inorganics

ALS Laboratory Group
ALS Technichem (HK) Pty Ltd

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A Campbell Brothers Limited Company



Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound LOR Unit	EA025: Suspended Solids (SS) 2 mg/L			
C3A-1	[06-JAN-2014]	HK1400370-001	EAVED: Physical and Aggregate Properties	22			
C3A-2	[06-JAN-2014]	HK1400370-002		20			
C3B-1	[06-JAN-2014]	HK1400370-003		9			
C3B-2	[06-JAN-2014]	HK1400370-004		9			
I5-1	[06-JAN-2014]	HK1400370-005		8			
I5-2	[06-JAN-2014]	HK1400370-006		7			



Laboratory Duplicate (DUP) Report

Matrix: WATER		Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EAI/ED: Physical and Aggregate Properties (QC Lot: 3238462)								
HK1400343-003	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	25	24	0.0
HK1400370-001	C3A-1	EA025: Suspended Solids (SS)	----	2	mg/L	22	22	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER		Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	Value	Control Limit
EAI/ED: Physical and Aggregate Properties (QC Lot: 3238462)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	98.0	-----	-----	87	111	-----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd



ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

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Telephone : ----
Facsimile : ----
Project : CONTRACT NO CV_2012_09
LIANTANG_HEUNG YUEN WAI BOUNDARY
CONTROL POINT SITE FORMATION

Laboratory : ALS Technichem HK Pty Ltd
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Facsimile : +852 2610 2021
Quote number : ----

Page : 1 of 3
Work Order : HK1400751

Date received : 08-JAN-2014

Order number : ----
C-O-C number : ----
Site : ----

Date of issue : 14-JAN-2014
No. of samples : - Received : 6
- Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1400751 supersedes any previous reports with this reference. The completion date of analysis is 10-JAN-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1400751 : Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.
Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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Signatory : Fung Lim Chee, Richard
Position : General Manager
Authorised results for:- : Inorganics

ALS Laboratory Group ALS Technichem (HK) Pty Ltd

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Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound LOR Unit	EA025: Suspended Solids (SS) 2 mg/L				
C3a-1	[08-JAN-2014]	HK1400751-001	EA/ED: Physical and Aggregate Properties	36				
C3a-2	[08-JAN-2014]	HK1400751-002		35				
C3b-1	[08-JAN-2014]	HK1400751-003		9				
C3b-2	[08-JAN-2014]	HK1400751-004		10				
I5-1	[08-JAN-2014]	HK1400751-005		7				
I5-2	[08-JAN-2014]	HK1400751-006		7				



Laboratory Duplicate (DUP) Report

Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EAIED: Physical and Aggregate Properties (QC Lot: 3243767)									
HK1400746-020	Anonymous		EA025: Suspended Solids (SS)	-----	2	mg/L	<2	<2	0.0
HK1400746-030	Anonymous		EA025: Suspended Solids (SS)	-----	2	mg/L	<2	<2	0.0
EAIED: Physical and Aggregate Properties (QC Lot: 3243768)									
HK1400751-006	I5-2		EA025: Suspended Solids (SS)	-----	2	mg/L	7	7	0.0
HK1400809-003	Anonymous		EA025: Suspended Solids (SS)	-----	2	mg/L	<2	<2	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report							
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	Value	Control Limit
EAIED: Physical and Aggregate Properties (QCLot: 3243767)											
EA025: Suspended Solids (SS)	-----	2	mg/L	<2	10 mg/L	102	-----	-----	87	111	-----
EAIED: Physical and Aggregate Properties (QCLot: 3243768)											
EA025: Suspended Solids (SS)	-----	2	mg/L	<2	10 mg/L	100	-----	-----	87	111	-----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
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E-mail	: Thomas.wong@eno.com.hk	E-mail	: Richard.Fung@alsglobal.com		
Telephone	: ----	Telephone	: +852 2610 1044		
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Project	: CONTRACT NO CV_2012_09 LIANTANG HEUNG YUEN WAI BOUNDARY CONTROL POINT SITE FORMATION	Quote number	: ----	Date received	: 10-JAN-2014
Order number	: ----			Date of issue	: 15-JAN-2014
C-O-C number	: ----			No. of samples	: - Received : 6
Site	: ----				: - Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1401195 supersedes any previous reports with this reference. The completion date of analysis is 14-JAN-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1401195 : Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.

Sample(s) were received in a chilled condition.

Water sample(s) analysed and reported on an as received basis.

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Signatory

Fung Lim Chee, Richard

Position

General Manager

Authorised results for:-

Inorganics

ALS Laboratory Group

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A Campbell Brothers Limited Company



Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	
			LOR Unit	EA025: Suspended Solids (SS)
				2 mg/L
				EAVED: Physical and Aggregate Properties
C3a-1	[10-JAN-2014]	HK1401195-001		14
C3a-2	[10-JAN-2014]	HK1401195-002		15
C3b-1	[10-JAN-2014]	HK1401195-003		4
C3b-2	[10-JAN-2014]	HK1401195-004		4
I5-1	[10-JAN-2014]	HK1401195-005		7
I5-2	[10-JAN-2014]	HK1401195-006		6



Laboratory Duplicate (DUP) Report

Matrix: WATER		Method: Compound		Laboratory Duplicate (DUP) Report			
Laboratory sample ID	Client sample ID	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EAVED: Physical and Aggregate Properties (QC Lot: 3247856)							
HK1401146-001	Anonymous	EA025: Suspended Solids (SS)	2	mg/L	<2	<2	0.0
HK1401192-002	Anonymous	EA025: Suspended Solids (SS)	2	mg/L	6	7	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER		Method Blank (MB) Report			Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Spike Recovery (%)	Recovery Limits (%)	Value	Control Limit
EAVED: Physical and Aggregate Properties (QCLot: 3247856)										
EA025: Suspended Solids (SS)	-----	2	mg/L	<2	10 mg/L	102	-----	87	111	-----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd



ALS Laboratory Group

ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

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LIANTANG_HEUNG YUEN WAI BOUNDARY
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Laboratory : ALS Technichem HK Pty Ltd
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Quote number : ----

Page : 1 of 3
Work Order : HK1401356

Date received : 13-JAN-2014

Order number : ----
C-O-C number : ----
Site : ----

Date of issue : 15-JAN-2014
No. of samples : - Received : 6
- Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1401356 supersedes any previous reports with this reference. The completion date of analysis is 14-JAN-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1401356 : Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.
Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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Signatory : Fung Lim Chee, Richard
Position : General Manager
Authorised results for:- Inorganics

ALS Laboratory Group
ALS Technichem (HK) Pty Ltd

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Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound LOR Unit	EA025: Suspended Solids (SS) 2 mg/L			
				EAVED: Physical and Aggregate Properties			
C3a-1	[13-JAN-2014]	HK1401356-001		4			
C3a-2	[13-JAN-2014]	HK1401356-002		5			
C3b-1	[13-JAN-2014]	HK1401356-003		5			
C3b-2	[13-JAN-2014]	HK1401356-004		4			
I5-1	[13-JAN-2014]	HK1401356-005		3			
I5-2	[13-JAN-2014]	HK1401356-006		3			



Laboratory Duplicate (DUP) Report

Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	
EA/ED: Physical and Aggregate Properties (QC Lot: 3247860)									
HK1401298-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0	
HK1401356-005	[5-1	EA025: Suspended Solids (SS)	----	2	mg/L	3	3	0.0	

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER					Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method Blank (MB) Report			Spike Recovery (%)			Recovery Limits (%)			RPDs (%)		
Method: Compound	CAS Number	LOR	Unit	Result	LCS	DCS	Low	High	Value	Control Limit	
EA/ED: Physical and Aggregate Properties (QC Lot: 3247860)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	102	----	87	111	----	----	

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
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Telephone	: ----	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: CONTRACT NO CV_2012_09 LIANTANG_HEUNG YUEN WAI BOUNDARY CONTROL POINT SITE FORMATION	Quote number	: ----	Date received	: 15-JAN-2014
Order number	: ----			Date of issue	: 20-JAN-2014
C-O-C number	: ----			No. of samples	: - Received : 6
Site	: ----				: - Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1401761 supersedes any previous reports with this reference. The completion date of analysis is 16-JAN-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1401761 : Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.

Sample(s) were received in a chilled condition.

Water sample(s) analysed and reported on an as received basis.

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Signatory

Fung Lim Chee, Richard

Position

General Manager

Authorised results for:-

Inorganics

ALS Laboratory Group
ALS Technichem (HK) Pty Ltd

Trading Name: ALS Technichem (HK) Pty Ltd
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Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound LOR Unit	EA025: Suspended Solids (SS) 2 mg/L
C3a-1	[15-JAN-2014]	HK1401761-001	EAVED: Physical and Aggregate Properties	7
C3a-2	[15-JAN-2014]	HK1401761-002		7
C3b-1	[15-JAN-2014]	HK1401761-003		5
C3b-2	[15-JAN-2014]	HK1401761-004		6
I5-1	[15-JAN-2014]	HK1401761-005		10
I5-2	[15-JAN-2014]	HK1401761-006		12



Laboratory Duplicate (DUP) Report

Matrix: WATER		Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	LOR	CAS Number	Unit	Original Result	Duplicate Result	RPD (%)
EAVED: Physical and Aggregate Properties (QC Lot: 3253667)								
HK1401716-001	Anonymous	EA025: Suspended Solids (SS)	2	-----	mg/L	<2	<2	0.0
HK1401760-002	Anonymous	EA025: Suspended Solids (SS)	2	-----	mg/L	22	22	0.0
EAVED: Physical and Aggregate Properties (QC Lot: 3253668)								
HK1401761-004	C3b-2	EA025: Suspended Solids (SS)	2	-----	mg/L	6	6	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER		Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	DCS	Recovery Limits (%)	Value	RPDs (%)
EAVED: Physical and Aggregate Properties (QCLot: 3253667)										
EA025: Suspended Solids (SS)	-----	2	mg/L	<2	10 mg/L	100	-----	87	111	-----
EAVED: Physical and Aggregate Properties (QCLot: 3253668)										
EA025: Suspended Solids (SS)	-----	2	mg/L	<2	10 mg/L	98.0	-----	87	111	-----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd



ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

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: Thomas.wong@eno.com.hk
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Project : CONTRACT NO CV_2012_09
LIANTANG_HEUNG YUEN WAI BOUNDARY
CONTROL POINT SITE FORMATION

Laboratory : ALS Technichem HK Pty Ltd
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E-mail : Richard.Fung@alsglobal.com
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Facsimile : +852 2610 2021
Quote number : ----

Page : 1 of 3
Work Order : HK1401991

Date received : 17-JAN-2014

Order number : ----
C-O-C number : ----
Site : ----

Date of issue : 22-JAN-2014
No. of samples : - Received : 6
- Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1401991 supersedes any previous reports with this reference. The completion date of analysis is 20-JAN-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1401991 :
Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.
Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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Signatory : Fung Lim Chee, Richard
Position : General Manager
Authorised results for:- Inorganics

ALS Laboratory Group ALS Technichem (HK) Pty Ltd

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A Campbell Brothers Limited Company



Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	EA025: Suspended Solids (SS) 2 mg/L	EAI/ED: Physical and Aggregate Properties
C3A-1	[17-JAN-2014]	HK1401991-001	LOR Unit	9	
C3A-2	[17-JAN-2014]	HK1401991-002		10	
C3B-1	[17-JAN-2014]	HK1401991-003		4	
C3B-2	[17-JAN-2014]	HK1401991-004		3	
I5-1	[17-JAN-2014]	HK1401991-005		7	
I5-2	[17-JAN-2014]	HK1401991-006		7	



Laboratory Duplicate (DUP) Report

Matrix: WATER		Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EAI/ED: Physical and Aggregate Properties (QC Lot: 3256686)								
HK1401921-052	Anonymous	EA025: Suspended Solids (SS)	-----	2	mg/L	5	6	0.0
HK1401970-002	Anonymous	EA025: Suspended Solids (SS)	-----	2	mg/L	5	5	0.0
EAI/ED: Physical and Aggregate Properties (QC Lot: 3256687)								
HK1401991-002	C3A-2	EA025: Suspended Solids (SS)	-----	2	mg/L	10	10	0.0
HK1402016-004	Anonymous	EA025: Suspended Solids (SS)	-----	2	mg/L	9	10	11.8

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER		Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	DCS	Recovery Limits (%)	Value	Control Limit	RPDs (%)
EAI/ED: Physical and Aggregate Properties (QC Lot: 3256686)											
EA025: Suspended Solids (SS)	-----	2	mg/L	<2	10 mg/L	101	-----	87	111	-----	-----
EAI/ED: Physical and Aggregate Properties (QC Lot: 3256687)											
EA025: Suspended Solids (SS)	-----	2	mg/L	<2	10 mg/L	100	-----	87	111	-----	-----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

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Project : CONTRACT NO CV_2012_09
LIANTANG HEUNG YUEN WAI BOUNDARY
CONTROL POINT SITE FORMATION

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Quote number : ----

Page : 1 of 3
Work Order : HK1402116

Date received : 20-JAN-2014

Order number : ----
C-O-C number : ----
Site : ----
Date of issue : 23-JAN-2014
No. of samples : - Received : 6
- Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1402116 supersedes any previous reports with this reference. The completion date of analysis is 21-JAN-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1402116 : Project Name: Contract No. CV2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.

Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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Signatory

Fung Lim Chee, Richard

Position

General Manager

Authorised results for:-

Inorganics

ALS Laboratory Group
ALS Technichem (HK) Pty Ltd

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Tel: +852 2610 1044 Fax: +852 2610 2021 www.alsenviro.com

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Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	
			LOR Unit	EA025: Suspended Solids (SS) 2 mg/L
C3A-1	[20-JAN-2014]	HK1402116-001	EAI/ED: Physical and Aggregate Properties	9
C3A-2	[20-JAN-2014]	HK1402116-002		9
C3B-1	[20-JAN-2014]	HK1402116-003		5
C3B-2	[20-JAN-2014]	HK1402116-004		5
I5-1	[20-JAN-2014]	HK1402116-005		6
I5-2	[20-JAN-2014]	HK1402116-006		6



Laboratory Duplicate (DUP) Report

Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report		RPD (%)
EAIED: Physical and Aggregate Properties (QC Lot: 3258715)							Original Result	Duplicate Result	
HK1402108-006	Anonymous	EA025: Suspended Solids (SS)		-----	2	mg/L	3	2	0.0
HK1402111-002	Anonymous	EA025: Suspended Solids (SS)		-----	2	mg/L	10	10	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Spike Concentration	LCS	Spike Recovery (%)	Recovery Limits (%)	Value	Control Limit
EAIED: Physical and Aggregate Properties (QC Lot: 3258715)	-----	2	mg/L						
EA025: Suspended Solids (SS)				10 mg/L	98.0		87 - 111		-----
				<2					

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd



ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

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Project : CONTRACT NO CV_2012_09
LIANTANG HEUNG YUEN WAI BOUNDARY
CONTROL POINT SITE FORMATION

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Quote number : ----

Page : 1 of 3
Work Order : HK1402391

Date received : 22-JAN-2014

Order number : ----
C-O-C number : ----
Site : ----

Date of issue : 27-JAN-2014
No. of samples : - Received : 6
- Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1402391 supersedes any previous reports with this reference. The completion date of analysis is 24-JAN-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1402391 :
Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.

Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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Signatory
Fung Lim Chee, Richard

Position
General Manager

Authorised results for:-
Inorganics

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A Campbell Brothers Limited Company



Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound LOR Unit	EA025: Suspended Solids (SS) 2 mg/L			
C3A-1	[22-JAN-2014]	HK1402391-001	EAVED: Physical and Aggregate Properties	6			
C3A-2	[22-JAN-2014]	HK1402391-002		6			
C3B-1	[22-JAN-2014]	HK1402391-003		6			
C3B-2	[22-JAN-2014]	HK1402391-004		7			
I5-1	[22-JAN-2014]	HK1402391-005		6			
I5-2	[22-JAN-2014]	HK1402391-006		5			



Laboratory Duplicate (DUP) Report

Matrix: WATER		Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3265007)								
HK1335869-001	Anonymous	EA025: Suspended Solids (SS)	-----	2	mg/L	<2	<2	0.0
HK1402391-002	C3A-2	EA025: Suspended Solids (SS)	-----	2	mg/L	6	7	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER		Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QCLot: 3265007)											
EA025: Suspended Solids (SS)	-----	2	mg/L	<2	10 mg/L	102	-----	-----	87	111	-----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd



ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

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Project : CONTRACT NO CV_2012_09
LIANTANG_HEUNG YUEN WAI BOUNDARY
CONTROL POINT SITE FORMATION

Laboratory : ALS Technichem HK Pty Ltd
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Quote number : ----

Page : 1 of 3
Work Order : HK1402612

Date received : 24-JAN-2014

Order number : ----
C-O-C number : ----
Site : ----
Date of issue : 30-JAN-2014
No. of samples : Received : 6
Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1402612 supersedes any previous reports with this reference. The completion date of analysis is 27-JAN-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1402612 : Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.
Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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Signatory : Fung Lim Chee, Richard

Position : General Manager

Authorised results for:-
Inorganics

ALS Laboratory Group ALS Technichem (HK) Pty Ltd

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Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound LOR Unit	EA025: Suspended Solids (SS) 2 mg/L
C3A-1	[24-JAN-2014]	HK1402612-001	EAVED: Physical and Aggregate Properties	4
C3A-2	[24-JAN-2014]	HK1402612-002		4
C3B-1	[24-JAN-2014]	HK1402612-003		7
C3B-2	[24-JAN-2014]	HK1402612-004		5
I5-1	[24-JAN-2014]	HK1402612-005		10
I5-2	[24-JAN-2014]	HK1402612-006		9



Laboratory Duplicate (DUP) Report

Matrix: WATER		Method: Compound		Laboratory Duplicate (DUP) Report			
Laboratory sample ID	Client sample ID	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EAVED: Physical and Aggregate Properties (QC Lot: 3267004)							
HK1402597-003	Anonymous	EA025: Suspended Solids (SS)	2	mg/L	10	11	0.0
HK1402599-003	Anonymous	EA025: Suspended Solids (SS)	2	mg/L	4	4	0.0
EAVED: Physical and Aggregate Properties (QC Lot: 3267005)							
HK1402612-003	C3B-1	EA025: Suspended Solids (SS)	2	mg/L	7	7	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER				Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	Low	High	Value	Control Limit
EAVED: Physical and Aggregate Properties (QC Lot: 3267004)													
EA025: Suspended Solids (SS)	-----	2	mg/L	<2	10 mg/L	98.0	-----	-----	87	111	-----	-----	-----
EAVED: Physical and Aggregate Properties (QC Lot: 3267005)													
EA025: Suspended Solids (SS)	-----	2	mg/L	<2	10 mg/L	101	-----	-----	87	111	-----	-----	-----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd



ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

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Project : CONTRACT NO CV_2012_09
LIANTANG_HEUNG YUEN WAI BOUNDARY
CONTROL POINT SITE FORMATION

Laboratory : ALS Technichem HK Pty Ltd
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Quote number : ---

Page : 1 of 3
Work Order : HK1402747

Date received : 27-JAN-2014

Order number : ---
C-O-C number : ---
Site : ---
Date of issue : 30-JAN-2014
No. of samples : - Received : 6
: - Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1402747 supersedes any previous reports with this reference. The completion date of analysis is 29-JAN-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1402747 :
Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.
Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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Signatory : Fung Lim Chee, Richard
Position : General Manager
Authorised results for:- Inorganics

ALS Laboratory Group ALS Technichem (HK) Pty Ltd

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Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	
			LOR Unit	EA025: Suspended Solids (SS) 2 mg/L
C3A-1	[27-JAN-2014]	HK1402747-001		7
C3A-2	[27-JAN-2014]	HK1402747-002		6
C3B-1	[27-JAN-2014]	HK1402747-003		9
C3B-2	[27-JAN-2014]	HK1402747-004		10
I5-1	[27-JAN-2014]	HK1402747-005		8
I5-2	[27-JAN-2014]	HK1402747-006		8



Laboratory Duplicate (DUP) Report

Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EAI/ED: Physical and Aggregate Properties (QC Lot: 3270257)									
HK1402745-001	Anonymous		EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1402747-002	C3A-2		EA025: Suspended Solids (SS)	----	2	mg/L	6	6	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	DCS	Recovery Limits (%)	Value	RPDs (%)
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	98.5	----	Low: 87, High: 111	----	----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd



ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 3
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1403037
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Telephone	: ----	Telephone	: +852 2610 1044		
Facsimile	: ----	Facsimile	: +852 2610 2021		
Project	: CONTRACT NO CV_2012_09 LIANTANG HEUNG YUEN WAI BOUNDARY CONTROL POINT SITE FORMATION	Quote number	: ----	Date received	: 29-JAN-2014
Order number	: ----			Date of issue	: 05-FEB-2014
C-O-C number	: ----			No. of samples	: - Received : 6
Site	: ----				: - Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1403037 supersedes any previous reports with this reference. The completion date of analysis is 04-FEB-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1403037 : Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.
Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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Signatory : Fung Lim Chee, Richard **Position** : General Manager **Authorised results for:-** Inorganics

ALS Laboratory Group ALS Technichem (HK) Pty Ltd

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Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	
			LOR Unit	EA025: Suspended Solids (SS) 2 mg/L
C3A-1	[29-JAN-2014]	HK1403037-001	EAVED: Physical and Aggregate Properties	3
C3A-2	[29-JAN-2014]	HK1403037-002		3
C3B-1	[29-JAN-2014]	HK1403037-003		4
C3B-2	[29-JAN-2014]	HK1403037-004		4
I5-1	[29-JAN-2014]	HK1403037-005		4
I5-2	[29-JAN-2014]	HK1403037-006		5



Laboratory Duplicate (DUP) Report

Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Laboratory Duplicate (DUP) Report		RPD (%)
							Original Result	Duplicate Result	
EAVED: Physical and Aggregate Properties (QC Lot: 3277622)									
HK1403032-001	Anonymous		EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1403035-008	Anonymous		EA025: Suspended Solids (SS)	----	2	mg/L	4	4	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

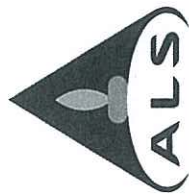
Method Blank (MB) Report				Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report						
Method: Compound	CAS Number	LOR	Unit	Spike Concentration	LCS	Spike Recovery (%)	Recovery Limits (%)	DCS	Value	Control Limit
EAVED: Physical and Aggregate Properties (QCLot: 3277622)										
EA025: Suspended Solids (SS)	----	2	mg/L	10 mg/L	100	-----	87	111	-----	-----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

ALS Technichem (HK) Pty Ltd

ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES



CERTIFICATE OF ANALYSIS

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LIANTANG_HEUNG YUEN WAI BOUNDARY
CONTROL POINT SITE FORMATION

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Quote number : ----

Page : 1 of 3
Work Order : HK1403132

Date received : 30-JAN-2014

Order number : ----
C-O-C number : ----
Site : ----

Date of issue : 06-FEB-2014
No. of samples : - Received : 6
- Analysed : 6

Report Comments

This report for ALS Technichem (HK) Pty Ltd work order reference HK1403132 supersedes any previous reports with this reference. The completion date of analysis is 05-FEB-2014. Results apply to sample(s) as submitted. All pages of this report have been checked and approved for release. When date(s) and/or time(s) are shown bracketed, these have been assumed by the laboratory for process purposes. Abbreviations: CAS number = Chemical Abstract Services number. LOR = Limit of reporting.

Specific comments for Work Order HK1403132 :
Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure Works - Contract 3 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2.
Sample(s) were received in a chilled condition.
Water sample(s) analysed and reported on an as received basis.

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This document has been electronically signed by those names that appear on this report and are the authorised signatories. Electronic signing has been carried out in compliance with procedures specified in the 'Electronic Transactions Ordinance' of Hong Kong, Chapter 553, Section 6.

Signatory
Fung Lim Chee, Richard

Position
General Manager

Authorised results for:-
Inorganics

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Analytical Results

Sub-Matrix: WATER

Client sample ID	Client sampling date / time	Laboratory sample ID	Compound	
			LOR Unit	EA025: Suspended Solids (SS) 2 mg/L
C3A-1	[30-JAN-2014]	HK1403132-001	EAVED: Physical and Aggregate Properties	5
C3A-2	[30-JAN-2014]	HK1403132-002		5
C3B-1	[30-JAN-2014]	HK1403132-003		5
C3B-2	[30-JAN-2014]	HK1403132-004		4
I5-1	[30-JAN-2014]	HK1403132-005		6
I5-2	[30-JAN-2014]	HK1403132-006		6



Laboratory Duplicate (DUP) Report

Laboratory sample ID		Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3279762)									
HK1403010-001	Anonymous		EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1403010-011	Anonymous		EA025: Suspended Solids (SS)	----	2	mg/L	3	3	0.0
EA/ED: Physical and Aggregate Properties (QC Lot: 3279763)									
HK1403132-006	IS-2		EA025: Suspended Solids (SS)	----	2	mg/L	6	6	0.0
HK1403146-001	Anonymous		EA025: Suspended Solids (SS)	----	2	mg/L	4	4	0.0

Method Blank (MB), Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report

Matrix: WATER										
Method Blank (MB) Report					Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	LCS	Spike Recovery (%)	DCS	Recovery Limits (%)	RPDs (%)
EA/ED: Physical and Aggregate Properties (QCLot: 3279762)										
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	98.5	-----	-----	87 111	-----
EA/ED: Physical and Aggregate Properties (QCLot: 3279763)										
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	100	-----	-----	87 111	-----

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

- No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.

Appendix I Water Quality Monitoring Results and their Graphical Presentation

Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure works - Contract 3
 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2

Date of Monitoring: 2/1/2014 Weather: Sunny

Monitoring Location	Time	Water Depth (m)	Temperature (°C)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	10:59	<0.5	17.2	17.2	7.7	7.7	8.4	8.4	87.7	87.7	18.6	18.9	<0.1	<0.1	17	17.5
			17.2		7.7		8.4		87.7		19.2					
C3b	10:28	<0.5	15.9	15.9	8	8.0	8.5	8.6	86.4	86.8	25.7	25.9	<0.1	<0.1	21	21.5
			15.9		8		8.6		87.2		26.1					
I5	10:44	<0.5	15.9	15.9	7.5	7.5	8.1	8.1	81.8	81.8	31.8	32.5	<0.1	<0.1	9	9
			15.9		7.5		8.1		81.8		33.1					

Date of Monitoring: 4/1/2014 Weather: Sunny

Monitoring Location	Time	Water Depth (m)	Temperature (°C)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	10:00	<0.5	16.4	16.4	7.7	7.7	8.5	8.5	86.7	86.7	36.1	36.2	<0.1	<0.1	18	19
			16.4		7.7		8.5		86.7		36.2					
C3b	10:18	<0.5	16.8	16.8	8	8.0	8.8	8.8	90.4	90.4	33.4	34.8	<0.1	<0.1	6	6
			16.8		8		8.8		90.4		36.1					
I5	10:29	<0.5	17.1	17.1	7.5	7.5	7.9	7.9	82.1	82.1	29.2	29.7	<0.1	<0.1	5	5.5
			17.1		7.5		7.9		82.1		30.2					

Date of Monitoring: 6/1/2014 Weather: Fine

Monitoring Location	Time	Water Depth (m)	Temperature (°C)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	11:51	<0.5	18.7	18.7	7.6	7.6	7.1	7.1	75.8	75.8	26.1	25.6	<0.1	<0.1	22	21
			18.7		7.6		7.1		75.8		25.1					
C3b	12:19	<0.5	18.1	18.1	8.1	8.1	8.2	8.2	86.7	86.7	15.4	15.7	<0.1	<0.1	9	9
			18.1		8.1		8.2		86.7		15.9					
I5	12:33	<0.5	18.6	18.6	7.4	7.4	8.1	8.1	87.1	87.1	16.9	17.0	<0.1	<0.1	8	7.5
			18.6		7.4		8.1		87.1		17.1					

Date of Monitoring: 8/1/2014 Weather: Fine

Monitoring Location	Time	Water Depth (m)	Temperature (°C)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	10:31	<0.5	20.2	20.2	7.6	7.6	7.9	7.9	86.8	86.8	41.8	41.5	<0.1	<0.1	36	35.5
			20.2		7.6		7.9		86.8		41.2					
C3b	9:55	<0.5	20.4	20.4	8.1	8.1	7.8	7.8	86.3	86.3	41.6	41.4	<0.1	<0.1	9	9.5
			20.4		8.1		7.8		86.3		41.1					
I5	10:13	<0.5	19.5	19.5	7.4	7.4	8.5	8.5	92.5	92.5	33.2	33.5	<0.1	<0.1	7	7
			19.5		7.4		8.5		92.5		33.7					

Date of Monitoring: 10/1/2014 Weather: Sunny

Monitoring Location	Time	Water Depth (m)	Temperature (°C)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	10:33	<0.5	17	17.0	7.7	7.7	7.6	7.6	78.4	78.4	25.5	25.5	<0.1	<0.1	14	14.5
			17		7.7		7.6		78.4		25.5					
C3b	10:05	<0.5	16.6	16.6	8	8.0	8.6	8.6	88.1	88.1	16.8	16.8	<0.1	<0.1	4	4
			16.6		8		8.6		88.1		16.8					
I5	10:16	<0.5	17	17.0	7.5	7.5	8.6	8.6	89	89.0	15.6	15.6	<0.1	<0.1	7	6.5
			17		7.5		8.6		89		15.6					

Date of Monitoring: 13/1/2014 Weather: Fine

Monitoring Location	Time	Water Depth (m)	Temperature (°C)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	10:00	<0.5	14	14.0	7.1	7.1	10.3	10.3	99.8	99.8	17	17.5	<0.1	<0.1	4	4.5
			14		7.1		10.3		99.7		18					
C3b	10:17	<0.5	14	14.0	7.8	7.8	10.0	10.1	97.3	97.5	18.1	17.6	<0.1	<0.1	5	4.5
			14		7.8		10.1		97.6		17.1					
I5	9:40	<0.5	14.5	14.5	7.4	7.4	10.1	10.1	98.58	98.7	16	16.7	<0.1	<0.1	3	3
			14.5		7.4		10.1		98.8		17.3					

Date of Monitoring: 15/1/2014 Weather: Fine

Monitoring Location	Time	Water Depth (m)	Temperature (°C)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	14:01	<0.5	20.4	20.4	7.1	7.1	7.5	7.6	82.8	84.2	16.9	17.4	<0.1	<0.1	7	7
			20.4		7.1		7.7		85.6		17.8					
C3b	13:46	<0.5	18.5	18.5	7.8	7.8	8.5	8.6	90.7	91.4	20.8	21.9	<0.1	<0.1	5	5.5
			18.5		7.8		8.6		92		22.9					
I5	13:30	<0.5	20	20.0	7.4	7.4	8.0	7.8	87.5	85.0	21.7	22.1	<0.1	<0.1	10	11
			20		7.4		7.5		82.5		22.5					

Date of Monitoring: 17/1/2014 Weather: Fine

Monitoring Location	Time	Water Depth (m)	Temperature (°C)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	13:03	<0.5	19.5	19.5	7.7	7.7	7.9	7.8	85.6	84.9	25.6	25.4	<0.1	<0.1	9	9.5
			19.5		7.7		7.7		84.1		25.2					
C3b	13:41	<0.5	19.5	19.5	8	8.0	8.4	8.4	91.1	91.1	21.2	20.8	<0.1	<0.1	4	3.5
			19.5		8		8.4		91.1		20.3					
I5	13:27	<0.5	18.8	18.8	7.5	7.5	7.6	7.6	81.9	81.9	19	19.3	<0.1	<0.1	7	7
			18.8		7.5		7.6		81.9		19.5					

NOTE:
 Data in **Bold** denotes exceedance of respective Action Level
 Data in **Bold Underline** denotes exceedance of respective Limit Level

Project Name: Contract No. CV/2012/09 Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure works - Contract 3
 Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling - Stage 2

Date of Monitoring 20/1/2014 Weather: Fine

Monitoring Location	Time	Water Depth (m)	Temperature (oC)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	14:07	<0.5	19.3	21.0	7.1	7.1	7.5	7.5	84	84.0	22.8	22.7	<0.1	<0.1	9	9
			21		7.1		7.5		84		22.5		<0.1		9	
C3b	13:56	<0.5	19.9	19.9	7.8	7.8	7.3	7.3	80.3	80.3	12.7	12.8	<0.1	<0.1	5	5
			19.9		7.8		7.3		80.3		12.8		<0.1		5	
I5	13:53	<0.5	20.8	20.8	7.4	7.4	7.9	7.9	87.9	87.9	14.1	14.0	<0.1	<0.1	6	6
			20.8		7.4		7.9		87.9		13.8		<0.1		6	

Date of Monitoring 22/1/2014 Weather: Fine

Monitoring Location	Time	Water Depth (m)	Temperature (oC)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	14:01	<0.5	19.3	19.3	7.7	7.7	8.7	8.7	94.2	94.2	22.9	22.3	<0.1	<0.1	6	6
			19.3		7.7		8.7		94.2		21.6		<0.1		6	
C3b	13:41	<0.5	18.1	18.1	8	8.0	8.4	8.4	89.4	89.4	23.8	23.5	<0.1	<0.1	6	6.5
			18.1		8		8.4		89.4		23.1		<0.1		7	
I5	13:33	<0.5	19.7	19.7	7.5	7.5	7.9	7.9	86.4	86.4	13.4	13.6	<0.1	<0.1	6	5.5
			19.7		7.5		7.9		86.4		13.7		<0.1		5	

Date of Monitoring 24/1/2014 Weather: Fine

Monitoring Location	Time	Water Depth (m)	Temperature (oC)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	14:28	<0.5	21.5	21.5	7.7	7.7	7.2	7.2	81.7	81.7	15.7	15.9	<0.1	<0.1	4	4
			21.5		7.7		7.2		81.7		16		<0.1		4	
C3b	13:49	<0.5	19.8	19.8	8	8.0	8.2	8.2	89.8	89.8	28.8	29.4	<0.1	<0.1	7	6
			19.8		8		8.2		89.8		29.9		<0.1		5	
I5	13:33	<0.5	20.8	20.8	7.5	7.5	8.0	8.0	89	89.0	31	30.4	<0.1	<0.1	10	9.5
			20.8		7.5		8.0		89		29.7		<0.1		9	

Date of Monitoring 27/1/2014 Weather: Fine

Monitoring Location	Time	Water Depth (m)	Temperature (oC)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	14:55	<0.5	21.1	21.1	7.7	7.7	7.4	7.4	83.8	83.8	22.1	22.2	<0.1	<0.1	7	6.5
			21.1		7.7		7.4		83.8		22.2		<0.1		6	
C3b	14:31	<0.5	20.9	20.9	8	8.0	7.4	7.4	82.7	82.7	26.1	26.1	<0.1	<0.1	9	9.5
			20.9		8		7.4		82.7		26		<0.1		10	
I5	14:11	<0.5	22.1	22.1	7.5	7.5	7.9	7.9	90.9	90.9	14.2	14.2	<0.1	<0.1	8	8
			22.1		7.5		7.9		90.9		14.1		<0.1		8	

Date of Monitoring 29/1/2014 Weather: Fine

Monitoring Location	Time	Water Depth (m)	Temperature (oC)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	14:40	<0.5	23	23.0	7.7	7.7	7.4	7.4	86.3	86.3	24	23.8	<0.1	<0.1	3	3
			23		7.7		7.4		86.3		23.5		<0.1		3	
C3b	14:19	<0.5	21.9	21.9	8	8.0	7.4	7.4	84.4	84.4	22.7	22.7	<0.1	<0.1	4	4
			21.9		8		7.4		84.4		22.6		<0.1		4	
I5	14:32	<0.5	23.1	23.1	7.5	7.5	7.7	7.7	90.2	90.2	22.3	22.7	<0.1	<0.1	4	4.5
			23		7.5		7.7		90.2		23.1		<0.1		5	

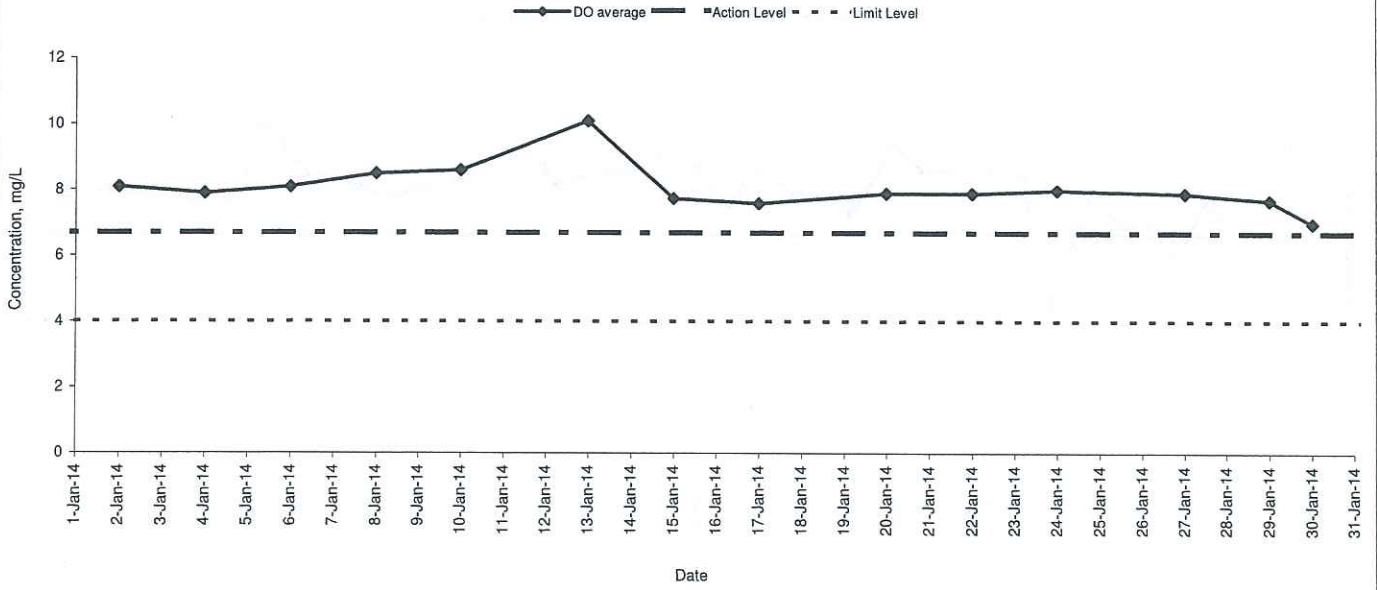
Date of Monitoring 30/1/2014 Weather: Fine

Monitoring Location	Time	Water Depth (m)	Temperature (oC)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
			Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
C3a	14:35	<0.5	23.1	23.1	7.7	7.7	6.9	6.9	81.3	81.3	29.9	29.5	<0.1	<0.1	5	5
			23.1		7.7		6.9		81.3		29		<0.1		5	
C3b	14:03	<0.5	22.9	22.9	8	8.0	7.5	7.7	87.9	89.9	22.7	22.8	<0.1	<0.1	4	4.5
			22.9		8		7.9		87.9		22.9		<0.1		4	
I5	14:17	<0.5	23.9	23.9	7.5	7.5	7.0	7.0	82.8	82.8	24.8	24.9	<0.1	<0.1	6	6
			23.9		7.5		7.0		82.8		24.9		<0.1		6	

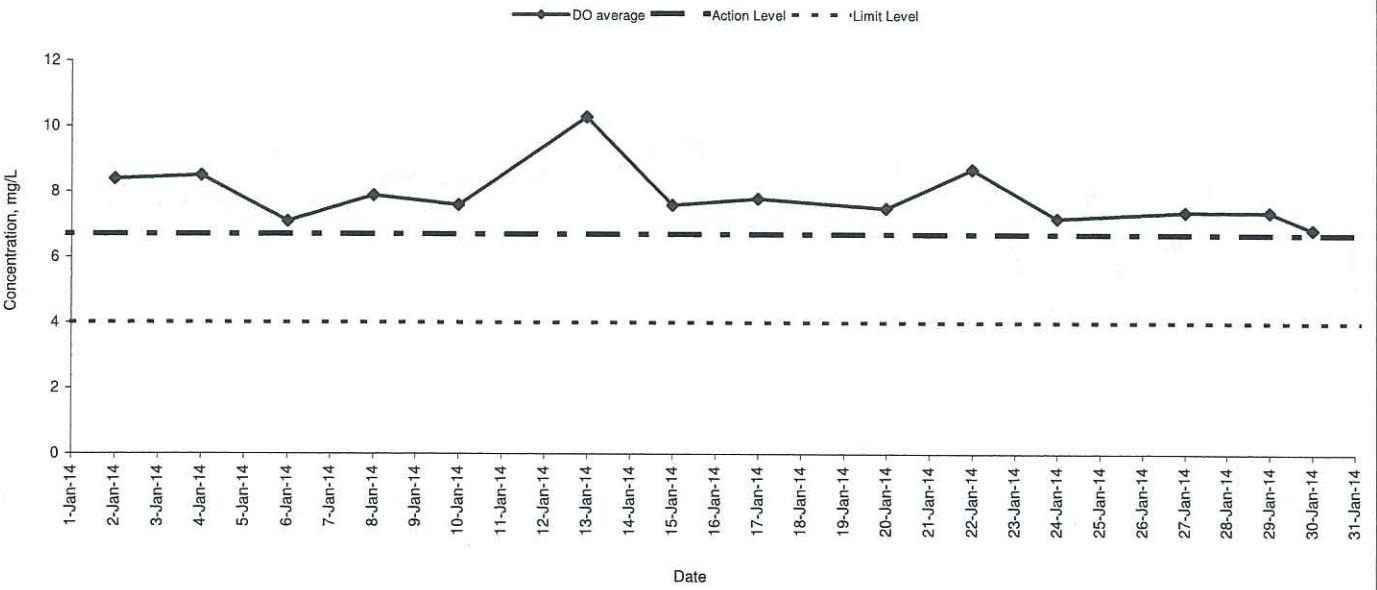
NOTE:
 Data in **Underline** denotes exceedance of respective Action Level
 Data in **Underline** denotes exceedance of respective Limit Level

Dissolved Oxygen

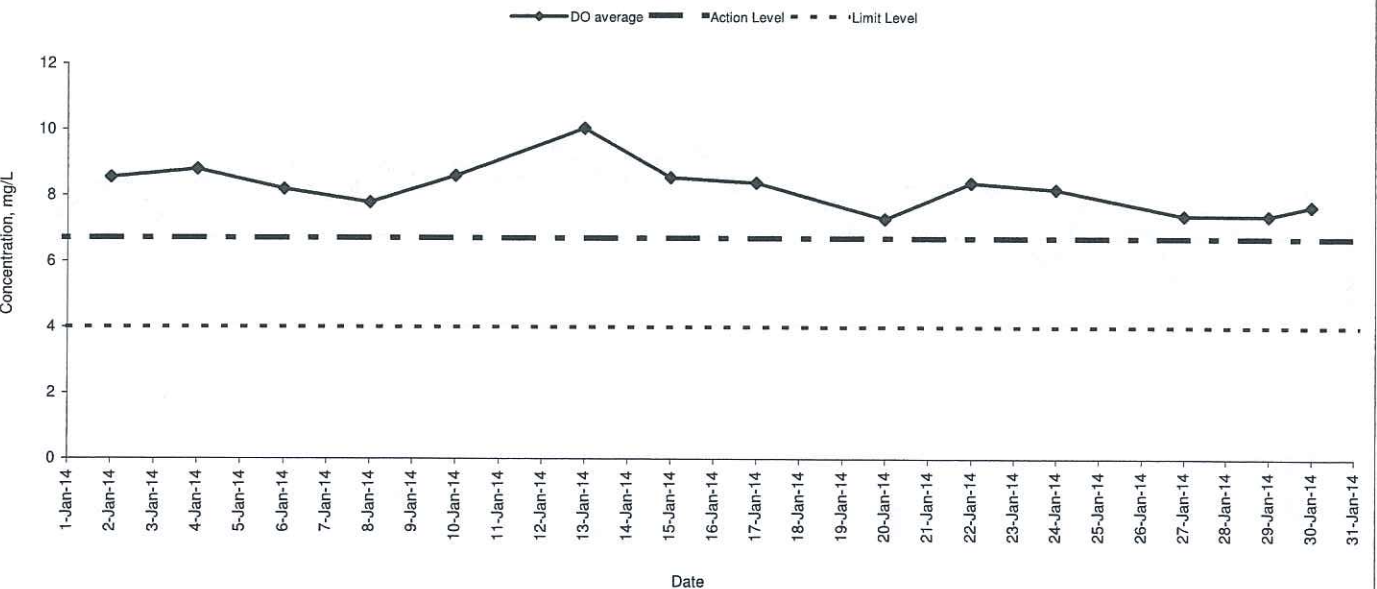
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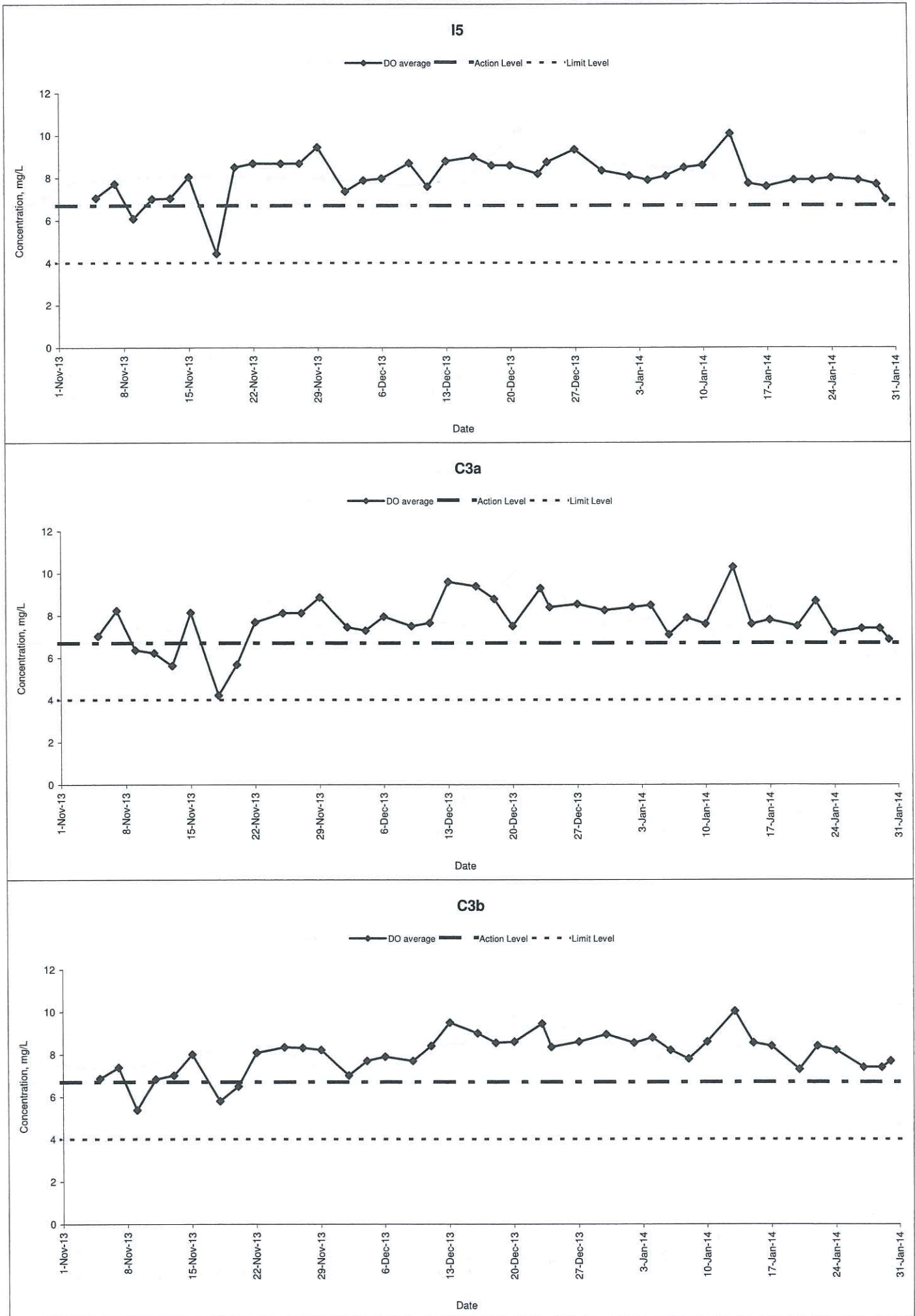
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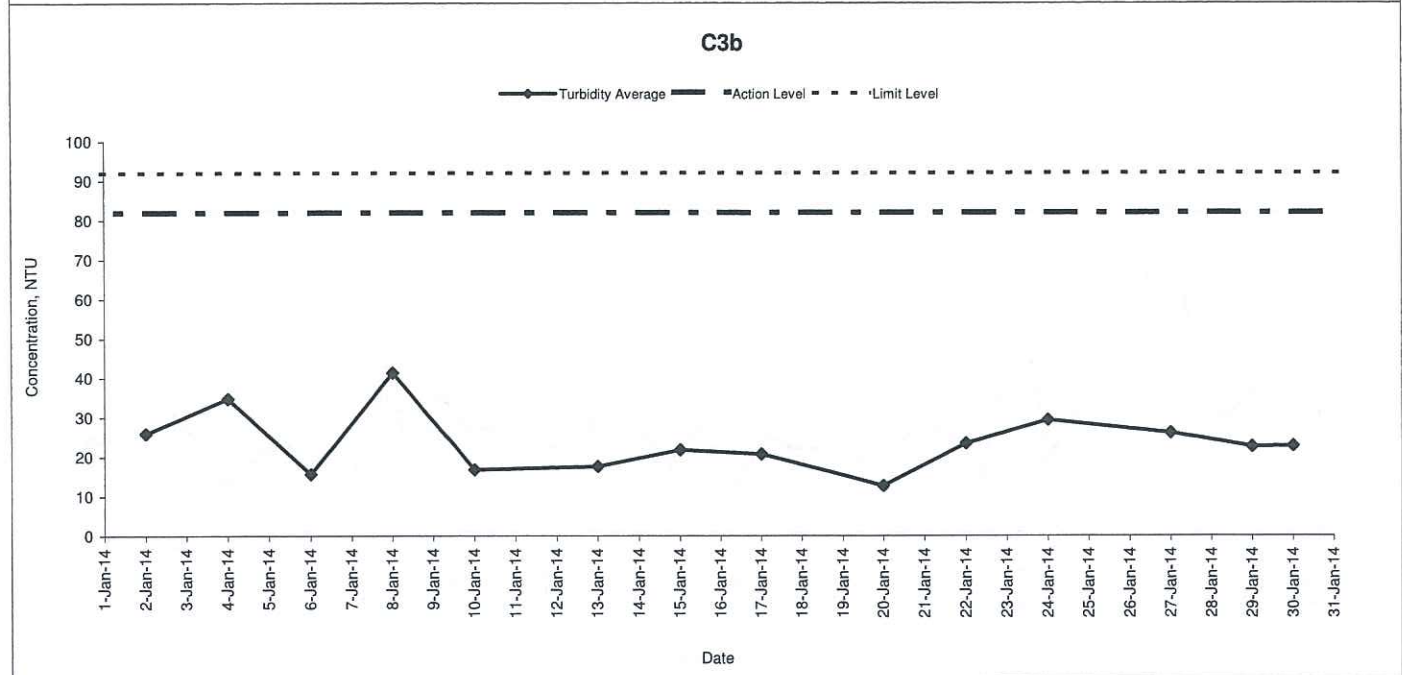
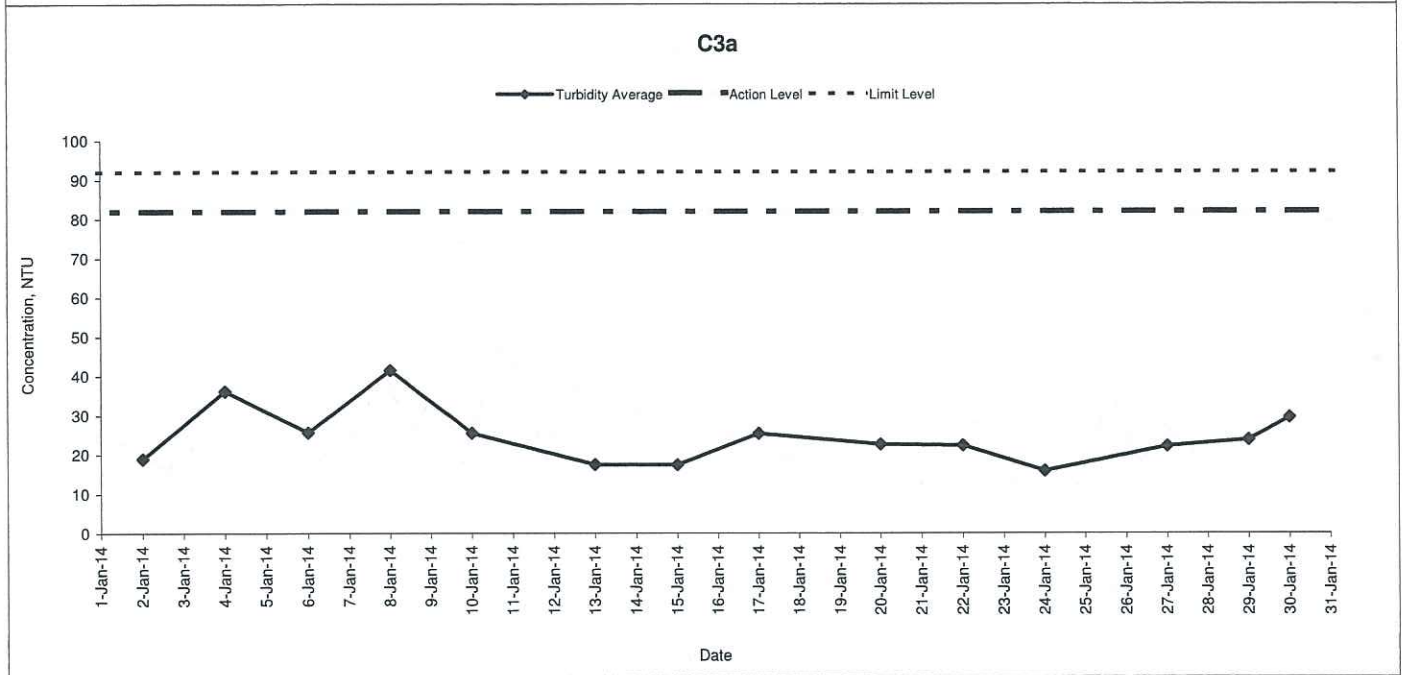
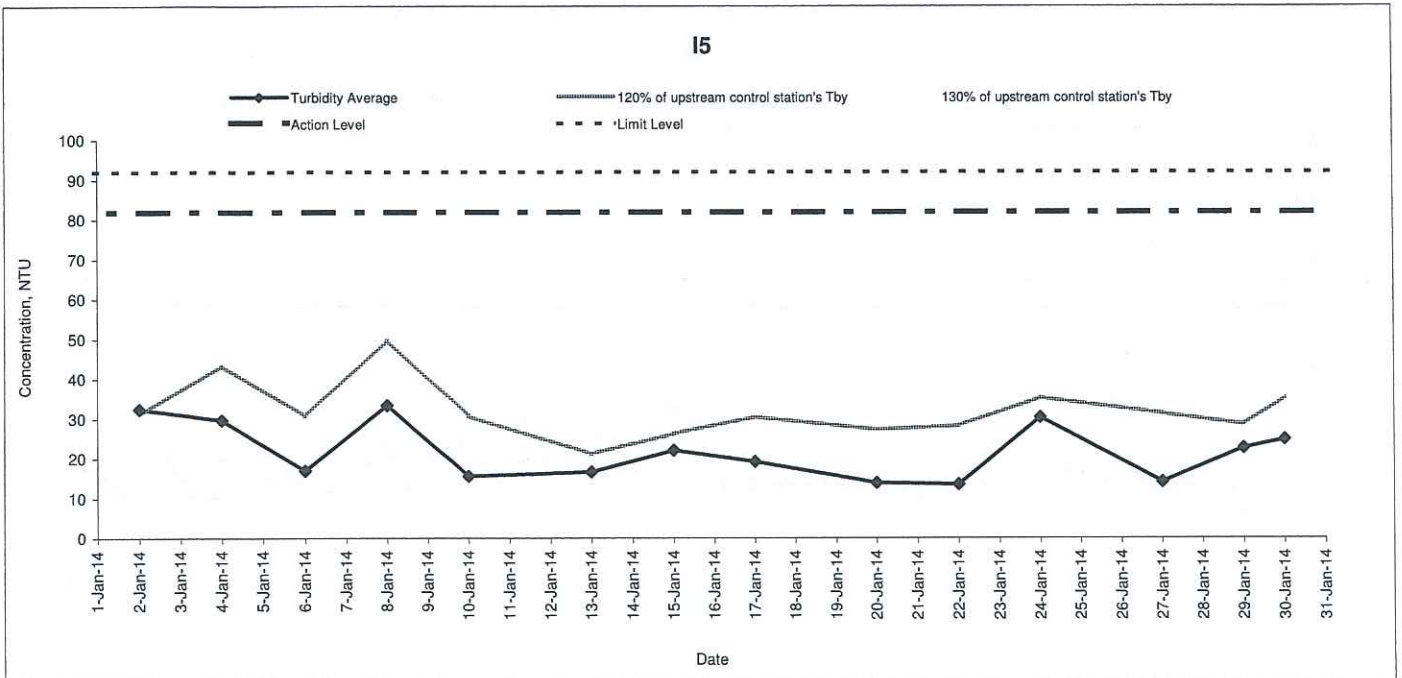
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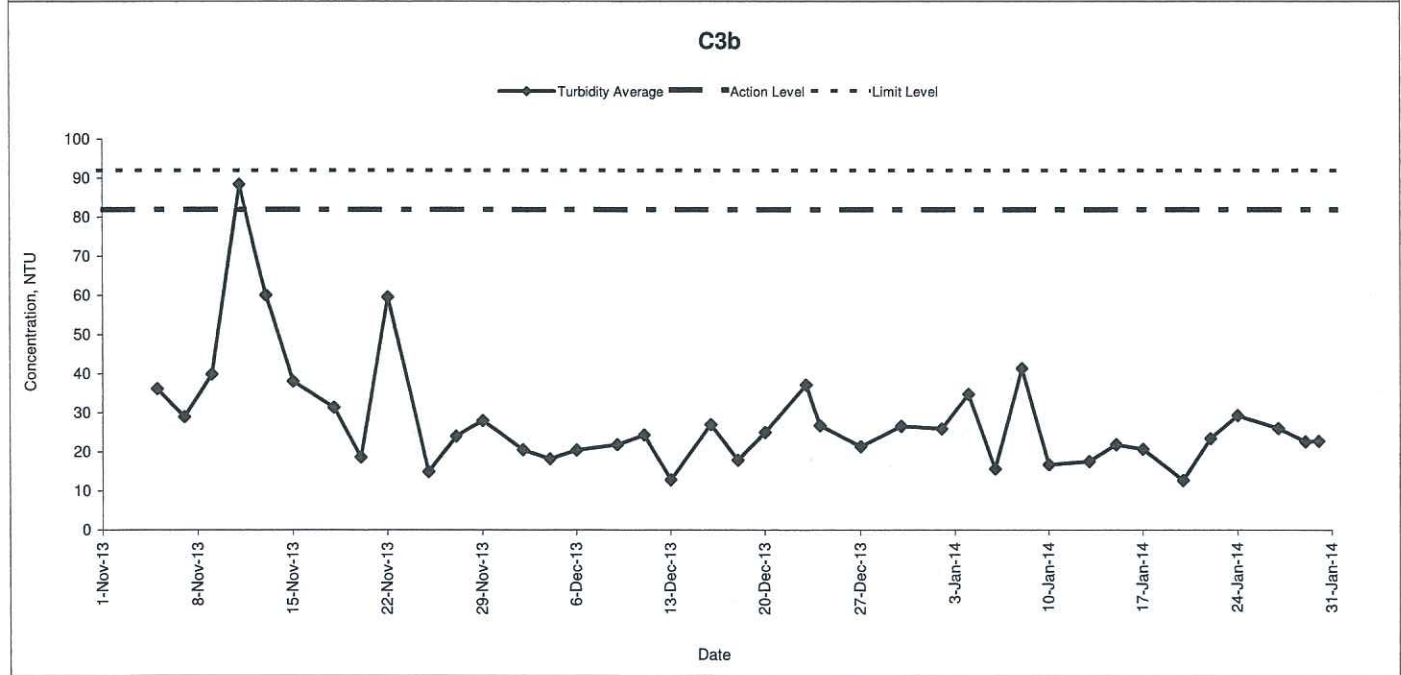
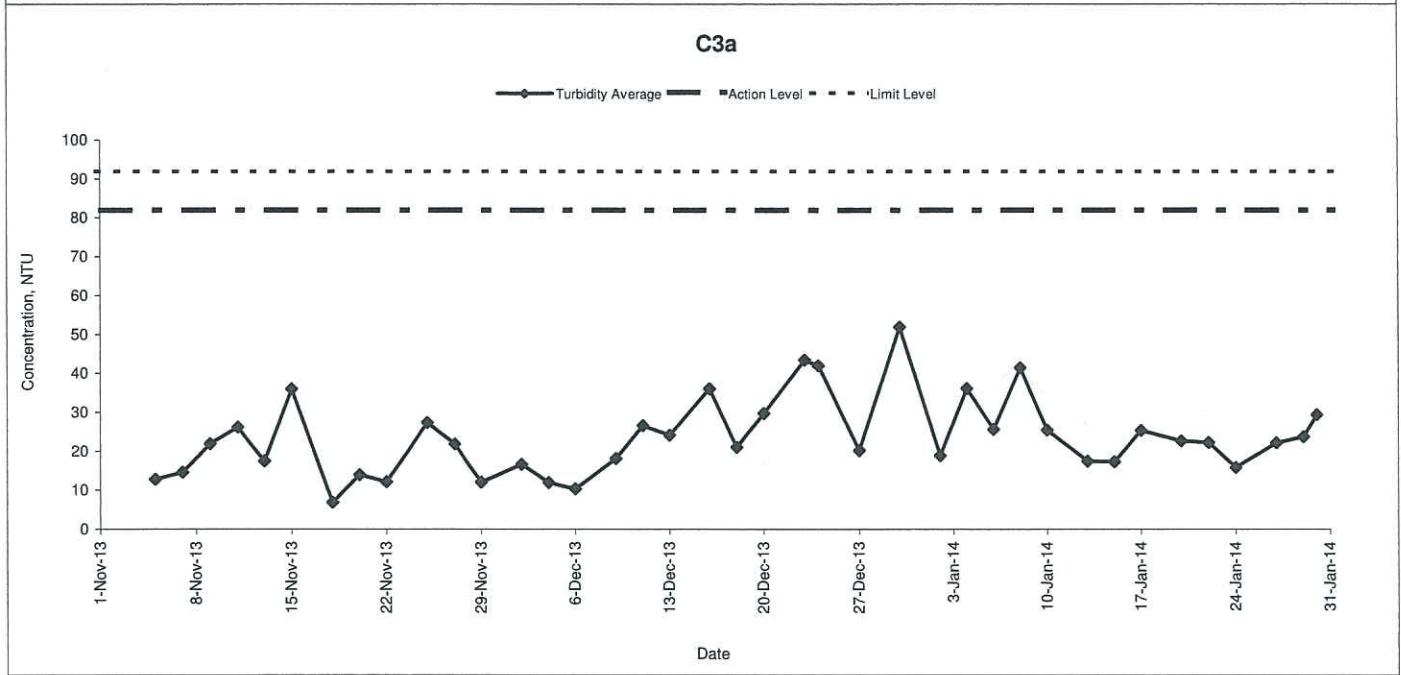
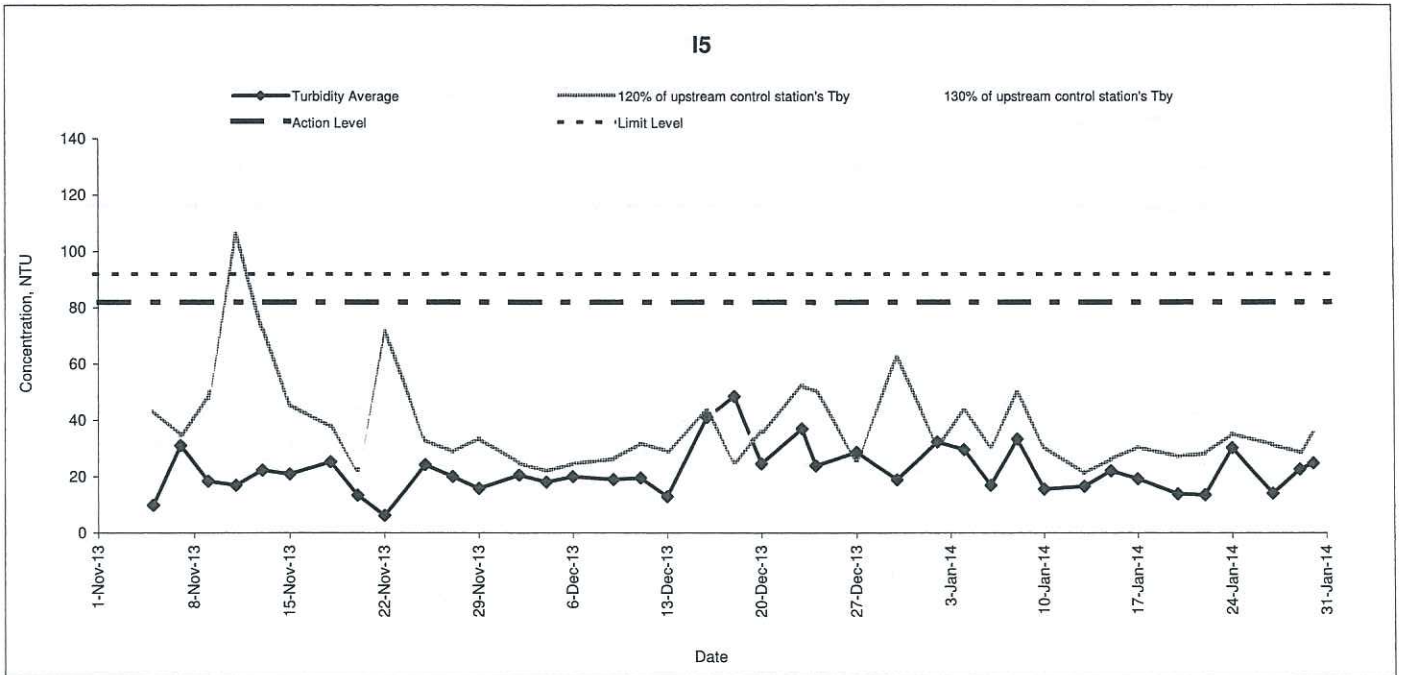
Dissolved Oxygen (November 2013 - January 2014)



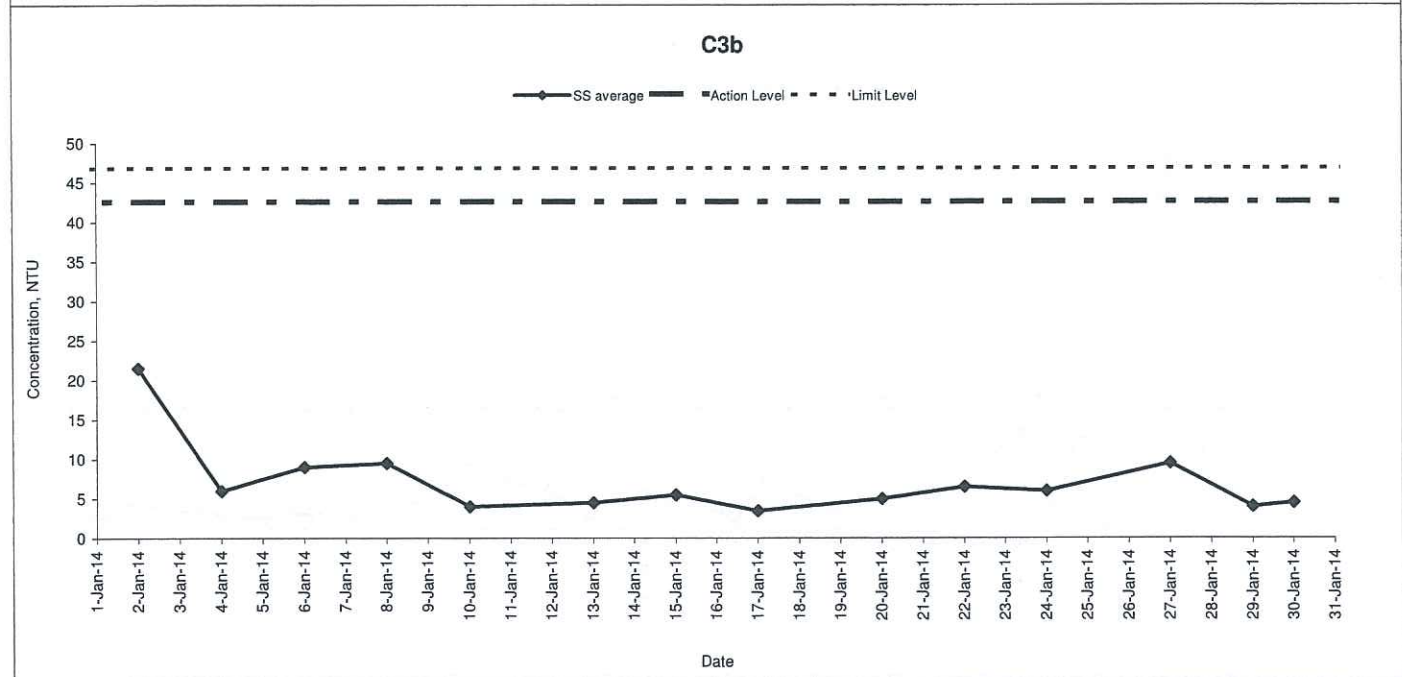
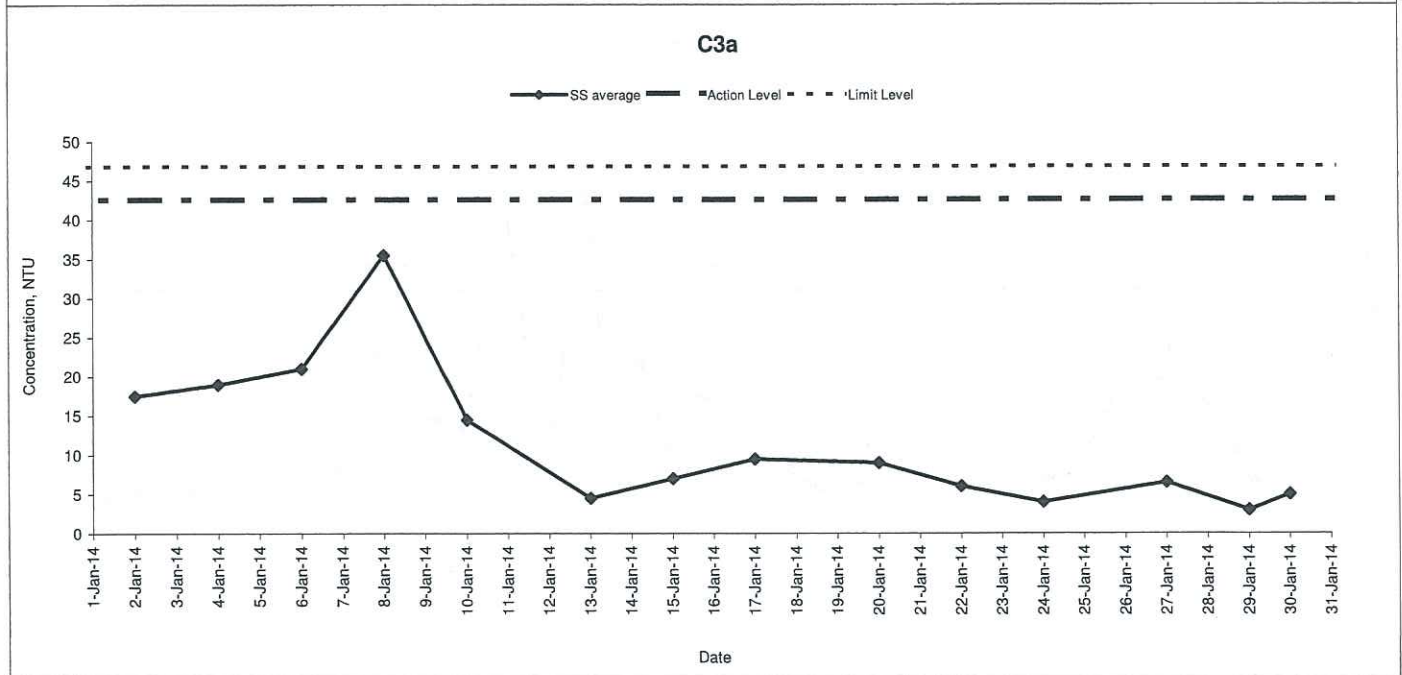
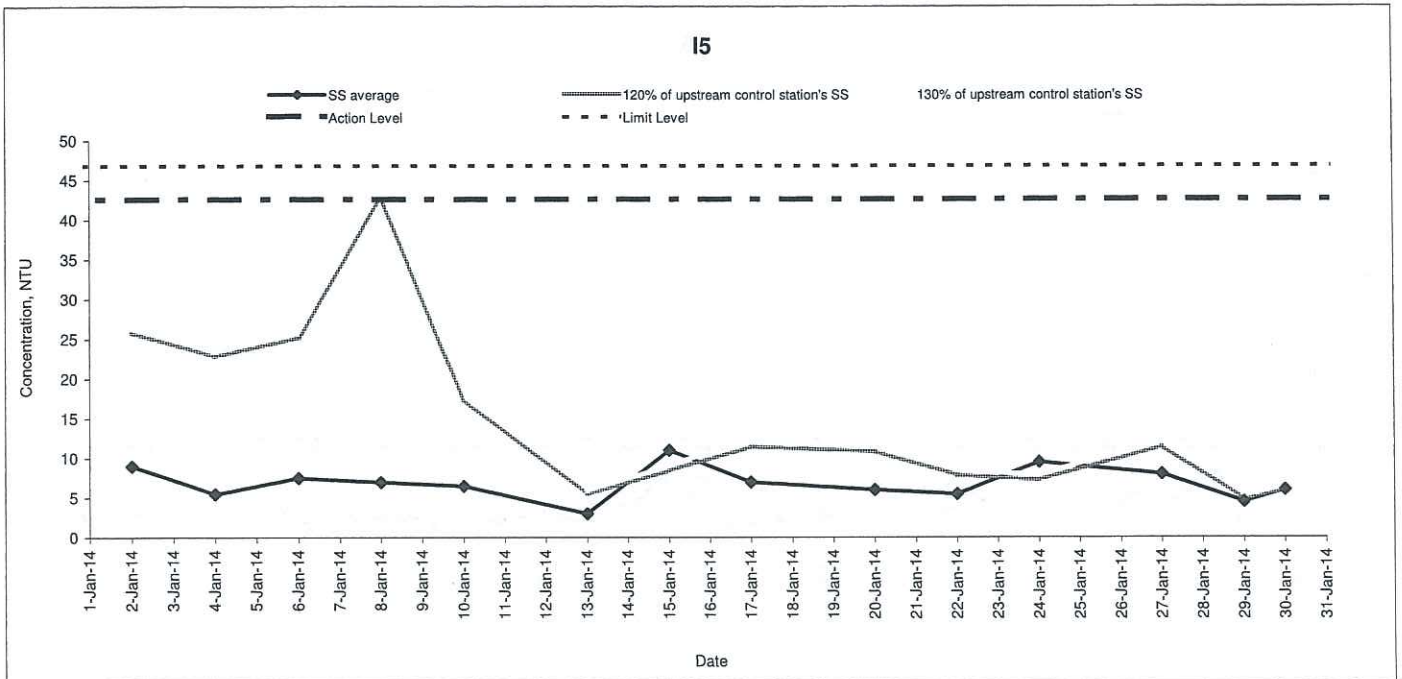
Turbidity



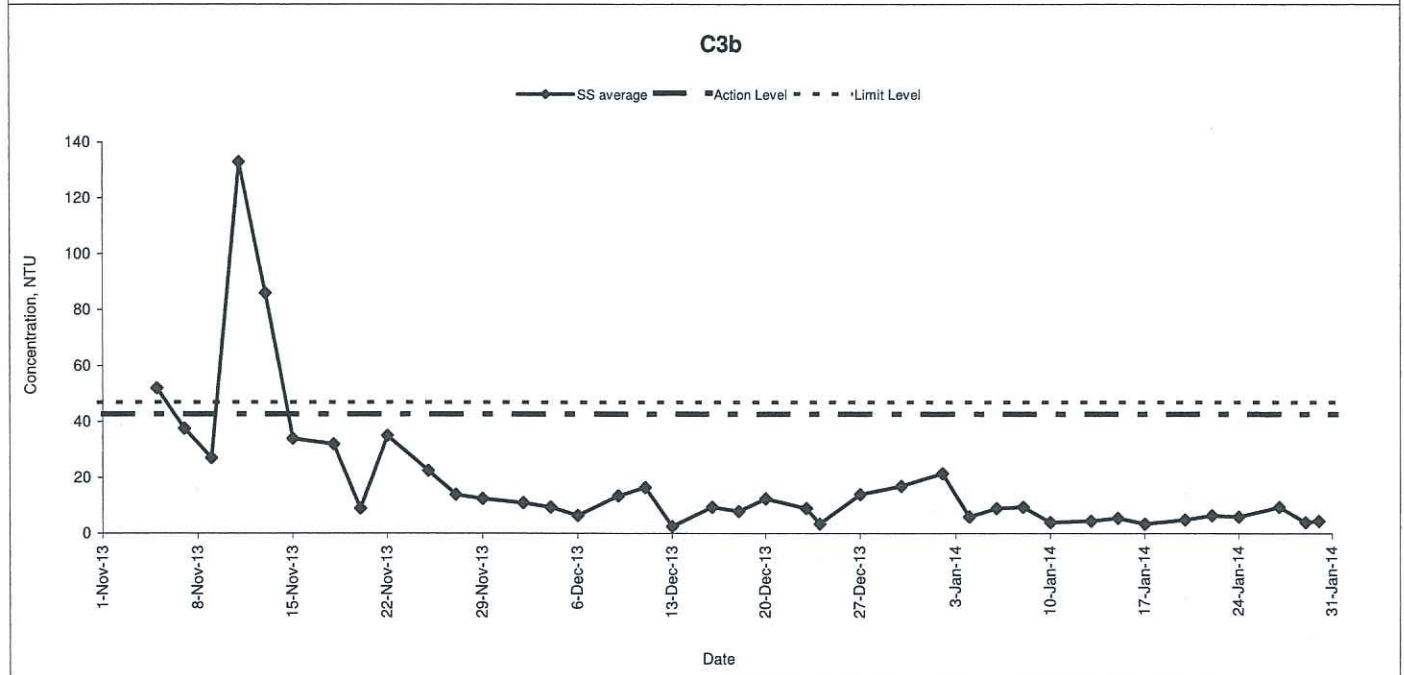
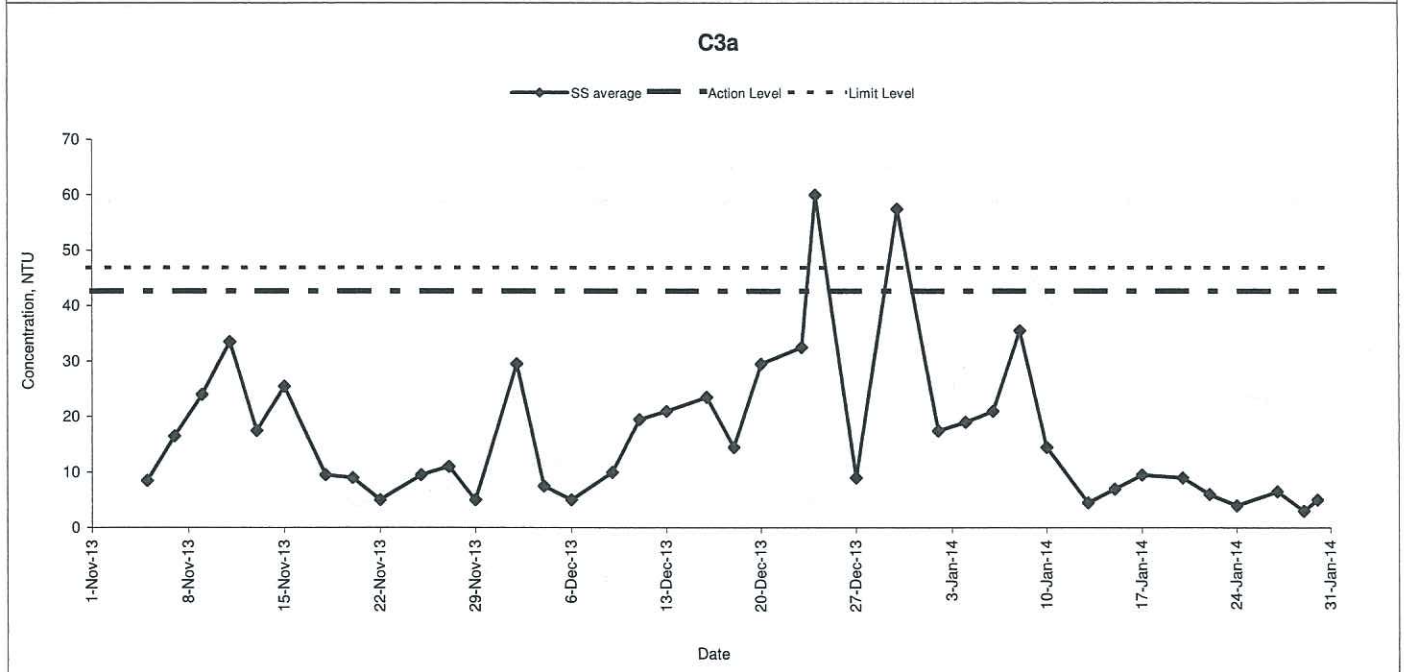
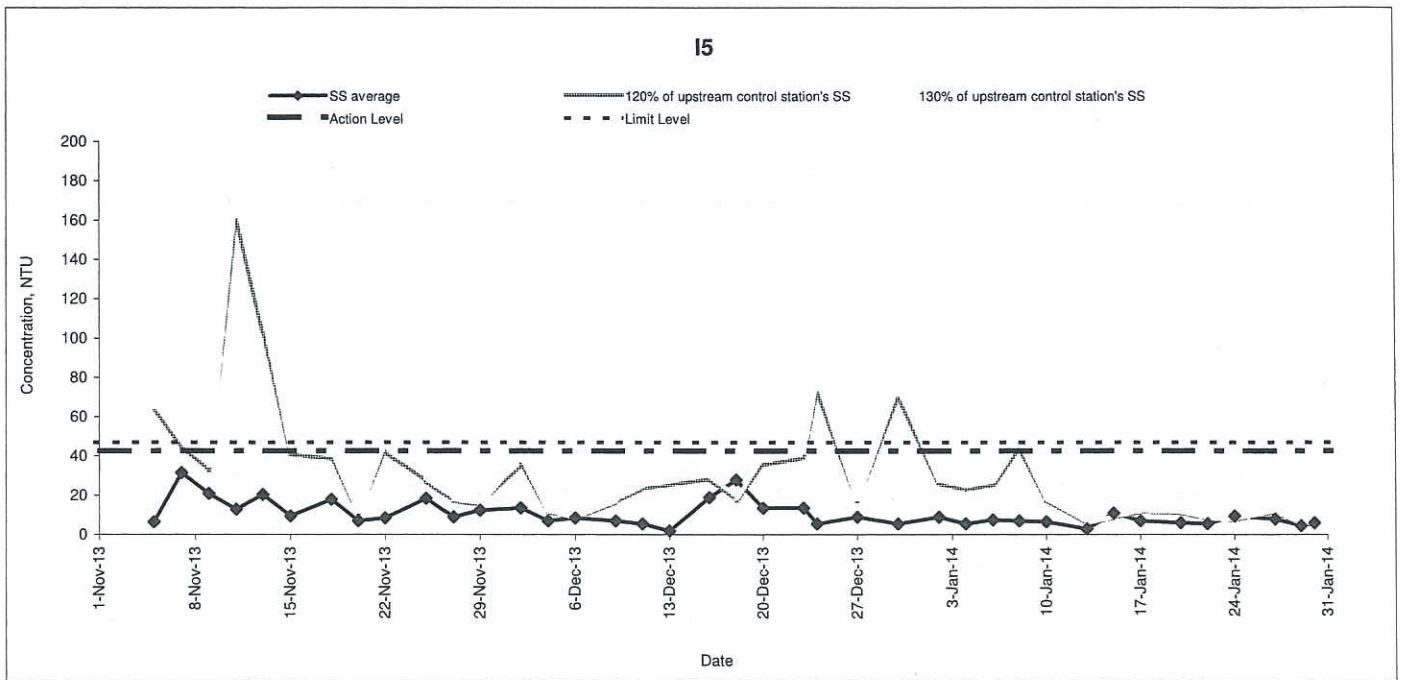
Turbidity (November 2013 - January 2014)



Suspended Solid



Suspended Solid (November 2013 - January 2014)



Appendix J Waste Flow Table

Appendix J Monthly Summary Waste Flow Table

Month Unit	Actual Quantities of Inert C&D Materials Generated Monthly					Actual Quantities of C&D Wastes Generated Monthly						
	Total Quantity Generated (in '000m3)	Hard Rock and Large Broken Concrete (in '000m3)	Soil (in '000m3)	Soil Reused in the Contract (in '000m3)	Soil Reused in other Projects (in '000m3)	Soil Disposed as Public Fill (in '000m3)	Imported Fill (in '000m3)	Metals ('000Kg)	Paper/ cardboard packaging (Note 3) ('000Kg)	Plastics ('000Kg)	Chemical Waste ('000Kg)	General Refuse (Note 2) ('000Kg)
Jul-13	-	-	-	-	-	-	-	-	-	-	-	-
Aug-13	-	-	-	-	-	-	-	-	-	-	-	-
Sep-13	-	-	-	-	-	-	-	-	-	-	-	0.004
Oct-13	-	-	-	-	-	-	-	-	-	-	-	0.003
Nov-13	1.351	-	1.351	0.473	-	0.878	-	-	-	-	-	0.055
Dec-13	0.177	0.007	0.170	0.030	-	0.140	0.600	-	-	-	-	0.055
Sub-Total	1.528	0.007	1.521	0.503	-	1.018	0.600	-	-	-	-	0.117
Jan-14	0.409	0.084	0.409	-	-	0.409	0.200	-	-	0.010	-	0.110
Feb-14	-	-	-	-	-	-	-	-	-	-	-	-
Mar-14	-	-	-	-	-	-	-	-	-	-	-	-
Apr-14	-	-	-	-	-	-	-	-	-	-	-	-
May-14	-	-	-	-	-	-	-	-	-	-	-	-
Jun-14	-	-	-	-	-	-	-	-	-	-	-	-
Total	1.937	0.091	1.930	0.503	-	1.427	0.800	-	-	0.010	-	0.227

Note:

1. Assume the density of soil fill is 2 ton/m³.
2. Assume the density of rock and broken concrete is 2.5 ton/m³.
3. Assume each truck of C&D wastes is 5m³.
4. The inert C&D materials except slurry and bentonite are disposed at Tuen Mun 38.
5. The slurry and bentonite are disposed at Tseung Kwun O 137.
6. The non-inert C&D wastes are disposed at NENT.

Appendix K Implementation Schedule of Environmental Mitigation Measures (EMIS)

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
Air Quality Air Quality during Construction	<ul style="list-style-type: none"> Restricting heights from which materials are dropped, as far as practicable to minimize the fugitive dust arising from unloading/loading. All stockpiles of excavated materials or spoil of more than 50m³ shall be enclosed, covered or dampened during dry or windy conditions. Effective water sprays shall be used to control potential dust emission sources such as unpaved haul roads and active construction areas. All spraying of materials and surfaces shall avoid excessive water usage. Vehicles that have the potential to create dust while transporting materials shall be covered, with the cover properly secured and extended over the edges of the side and tail boards. Materials shall be dampened, if necessary, before transportation. Travelling speeds shall be controlled to reduce traffic induced dust dispersion and re-suspension within the site from the operating haul trucks. Vehicle washing facilities shall be provided to minimise the quantity of material deposited on public roads. 	During Construction	Contractor	<ul style="list-style-type: none"> ✓ Obs Rem ✓ ✓ ✓ ✓ Rem
Air Quality during Operation	Not required	N/A	N/A	N/A
Noise Noise during Construction	<ul style="list-style-type: none"> Use of silenced plant or plant equipped with mufflers or dampers in substitute of ordinary plant. Reduce the number of equipment and their percentage on-time. 	During Construction	Contractor	<ul style="list-style-type: none"> ✓ ✓
Noise during Operation	Not required	N/A	N/A	N/A
Water Quality Water Quality during Construction	<p><u>Road Widening Works, Earthworks and Culvert Extension Works</u></p> <ul style="list-style-type: none"> Wastewater generated from any concrete batching washdown of equipment or similar activities should be discharged into foul sewers, after the removal of settleable solids, and pH adjustment as necessary. All sewage discharges from the study area should meet the TM standards and approval from EPD through the licensing process is required. 	During Construction	Contractor	<ul style="list-style-type: none"> ✓

Notes (#): ✓ – Compliance; Rem – Reminder; Obs – Observation; N/C – Non Compliance; N/A – Not Applicable;

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	<ul style="list-style-type: none"> ● Sand traps, oil interceptors and other pollution prevention installations should be provided, properly cleaned and maintained. ● Runoff from exposed working areas, unfinished slopes and from unlined temporary channels should be directed to stilling basins and/or silt traps before discharging to the drainage outfalls. ● Regular inspections of stilling basins and/or silt traps is required to ensure that sediment is not conveyed into the existing drainage system. ● Open stockpiles should be covered with a tarpaulin cover. ● During the wet season, any exposed top soils should be covered with a tarpaulin, shotcreted or hydroseeded. ● Sand and silt from wash-water from vehicle washing should be settled out before discharging into storm drains. ● Fuels should be stored in bunded areas such that spillage can be easily collected. 			<p>✓</p> <p>Obs</p> <p>✓</p> <p>✓</p> <p>N/A</p> <p>✓</p> <p>Obs</p>
Water Quality during Operation	Not required	N/A	N/A	N/A
Waste Management				
Waste Management during Construction	<p><u>General Waste</u></p> <ul style="list-style-type: none"> ● Transport of wastes off site as soon as possible. ● Maintenance of accurate waste records. ● Minimisation of waste generation for disposal (via reduction/recycling/re-use). ● No on-site burning will be permitted. ● Use of re-useable metal hoardings/signboards. <p><u>Vegetation from site clearance</u></p> <ul style="list-style-type: none"> ● Segregation of materials to facilitate disposal. ● Mulching to reduce bulk and where possible review opportunities for the possible beneficial use within landscaping areas. 	During Construction	Contractor	<p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p>

Notes (#): ✓ – Compliance; Rem – Reminder; Obs – Observation; N/C – Non Compliance; N/A – Not Applicable;

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	<p><u>Demolition Wastes</u></p> <ul style="list-style-type: none"> ● Segregation of materials to facilitate disposal. ● Appropriate stockpile management. <p><u>Excavated Materials</u></p> <ul style="list-style-type: none"> ● Segregation of materials to facilitate disposal / reuse. ● Appropriate stockpile management. ● Re-use of excavated material on or off site (where possible). ● Special handling and disposal procedures in the event that contaminated materials are excavated. <p><u>Construction Wastes</u></p> <ul style="list-style-type: none"> ● Segregation of materials to facilitate recycling/reuse (within designated area in appropriate containers/stockpiles). ● Appropriate stockpile management. ● Planning to reduce over ordering and waste generation. ● Recycling and re-use of materials where possible (e.g. metal, wood from formwork) ● For material which cannot be re-used/recycled, collection should be carried out by an approved waste contractor for landfill disposal. <p><u>Bentonite Slurries</u></p> <ul style="list-style-type: none"> ● Bentonite slurries should be reused as far as possible. <p>Disposal in accordance with Practice Note For Professional Persons ProPECC PN 1/94.</p> <p><u>Chemical Wastes</u></p> <ul style="list-style-type: none"> ● Storage within locked, covered and banded area. ● The storage area shall not be located adjacent to sensitive receivers e.g. drains. 	<p>During Construction</p> <p>During Construction</p> <p>During Construction</p> <p>During Construction</p> <p>During Construction</p> <p>During Construction</p> <p>During Construction</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p>N/A</p> <p>N/A</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>N/A</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> <p>N/A</p> <p>N/A</p> <p>Obs</p> <p>✓</p>

Notes (#): ✓ – Compliance; Rem – Reminder; Obs – Observation; N/C – Non Compliance; N/A – Not Applicable;

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	<ul style="list-style-type: none"> Minimise waste production and recycle oils/solvents where possible. A spill response procedure shall be in place and absorption material available for minor spillages. Use appropriate and labelled containers. Educate site workers on site cleanliness/waste management procedures. If chemical wastes are to be generated, the contractor must register with EPD as a chemical waste producer. The chemical wastes shall be collected by a licensed chemical waste collector. <p><u>Municipal Wastes</u></p> <ul style="list-style-type: none"> Waste shall be stored within a temporary refuse collection facility, in appropriate containers prior to collection and disposal. Regular, daily collections are required by an approved waste collector. 	During Construction	Contractor	✓ Obs ✓ ✓ ✓ ✓ Obs ✓
Waste Management during Operation	Not required.	N/A	N/A	N/A
Ecology Ecology during Construction	<p><u>Accurate Delineation of Works Area</u></p> <ul style="list-style-type: none"> Boundaries of proposed works areas shall be clearly identified and separated from external areas by a physical barrier to prevent encroachment of adjacent habitats. Individual trees which fall within the works areas but which work plans show do not require removal are to be retained and fenced off to maximise protection. <p><u>Dust generation</u></p> <p>There are a number of measures which shall be taken as specified in the Air Pollution Control (Construction Dust) Regulation on 'Dust Control Requirements, including the following key measures to be applied during construction:</p> <ul style="list-style-type: none"> vehicle washing facilities to be provided at every discernible or designated vehicle exit point; 	During Construction	Contractor	✓ ✓ ✓

Notes (#): ✓ – Compliance; Rem – Reminder; Obs – Observation; N/C – Non Compliance; N/A – Not Applicable;

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	<ul style="list-style-type: none"> all temporary site access roads shall be sprayed with water to suppress dust as necessary; all dusty materials should be sprayed with water immediately prior to any handling; and all debris should be covered entirely by impervious sheeting or stored in a sheltered debris collection area. <p><u>Surface Run-off</u> In general, mitigation measures shall be in accordance with ProPECC PN1/94 on 'Construction Site Drainage'. Key measures include:</p> <ul style="list-style-type: none"> Bund and cover stock piles to avoid run-off; Channel any run-off through a system of oil, grease and sediment / silt traps and reuse water on site where ever practical; All vehicle maintenance to be undertaken within a bunded area; and Maximise vegetation retention on-site to maximise absorption (minimise transport). 	During Construction	Contractor	<ul style="list-style-type: none"> ✓ ✓ ✓ Obs Obs N/A ✓
Ecology during Operation	<ul style="list-style-type: none"> To conduct compensatory ecological planting as specified in the latest landscape plans approved by EPD (Clause 2.6 of the Environmental Permit refers). 	During Construction and operation	Contractor (during construction) / LCSD* (during operation) (Note: * The division of vegetation planting and maintenance responsibilities shall follow the guidelines stipulated in ETWB TCW No. 2/2004.)	N/A
Landscape and Visual				
Landscape and Visual during Construction	<p><u>Preservation of Existing Vegetation</u></p> <ul style="list-style-type: none"> Trees identified for retention within the project limit would be protected during the works The tree transplanting and planting works shall be implemented by approved Landscape Contractors 	During Construction	Contractor	<ul style="list-style-type: none"> Obs ✓

Notes (#): ✓ – Compliance; Rem – Reminder; Obs – Observation; N/C – Non Compliance; N/A – Not Applicable;

Impact	Environmental Protection Measures	Timing	Responsibility	Implementation Status #
	<p><u>Temporary Works Areas</u></p> <ul style="list-style-type: none"> Where feasible the works areas would be screened using hoarding and existing vegetation would be retained where possible to reduce the landscape and visual impacts arising from the construction activity. The landscape of these works areas would be restored following the completion of the construction phase. <p><u>Hoarding</u></p> <ul style="list-style-type: none"> A hoarding would be erected where practicable in the most visually sensitive locations to screen the temporary construction works from the local VSRs. <p><u>Top Soils</u></p> <ul style="list-style-type: none"> The works will result in disturbance to extensive areas of topsoil. Topsoil worthy of retention should be stockpiled for use following completion of the civil engineering works. It should either be temporarily vegetated with hydroseeded grass or turned over on a regular basis. <p><u>Protection of Important Landscape Features</u></p> <ul style="list-style-type: none"> Important features such as temples, Island House and kilns within the study area, although remote from the proposed works retained and adequately protected. 	<p>During Construction</p> <p>During Construction</p> <p>During Construction</p> <p>During Construction</p>	<p>Contractor</p> <p>Contractor</p> <p>Contractor</p> <p>Contractor</p>	<p>✓</p> <p>✓</p> <p>N/A</p> <p>N/A</p>
Landscape and Visual during Operation	Not required.	N/A	N/A	N/A

Notes (#): ✓ – Compliance; Rem – Reminder; Obs – Observation; N/C – Non Compliance; N/A – Not Applicable;

Appendix L

Investigation Report for Exceedances

Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Investigation Report of Environmental Quality Exceedance(s)

Ref. No.: A140102_24TSP

Date	2 January 2014
Time	--
Monitoring Location	SR77
Parameter	24-Hr Total Suspended Particulate
Action / Limit Levels	Action Level: 170.3 $\mu\text{g}/\text{m}^3$ Limit Level: 260 $\mu\text{g}/\text{m}^3$
Measured Level	200.5 $\mu\text{g}/\text{m}^3$ (Action level being exceeded)
Possible reason for the exceedance	<p>It was noticed that there were construction works being undertaken by another Contractor which then occurred in very close proximity (about 5m) to the High Volume Sampler (HVS) of the air quality monitoring station at SR77 (refer to the attached photo).</p> <p>Such works mainly involved excavation of earth materials, operation of excavator (with exhaust emission), handling and moving of earth materials, etc. These construction works are anticipated to have considerable suspended particulates impact that may lead to high TSP levels as have been measured by the nearby HVS.</p> <p>On the other hand, as there were no records of large scale excavation and earth movement works carried out for the Entrusted Works. Only the extension of box culverts were undertaken during the monitoring, which were at a much farther distance from the air quality monitoring station at SR77 (refer to the attached location plan showing the works activities of the entrusted portion).</p> <p>As a conclusion, the exceedance was unlikely due to the construction works of the project.</p>
Action taken / to be taken	<p>As the exceedance was non-project related, no further investigation and specific remedial measure(s) would be recommended for the Entrusted Works.</p> <p>Nevertheless, the following mitigation measures had been implemented on-site for dust suppression:</p> <ol style="list-style-type: none"> 1. Exposed slopes near the river were covered with impervious sheets; 2. Any open stockpile of construction materials were covered with impervious sheet; 3. Sufficient watering was applied along the haul road.
Remarks	-



Construction works observed within close proximity of SR77 (Date: 2 January 2014)

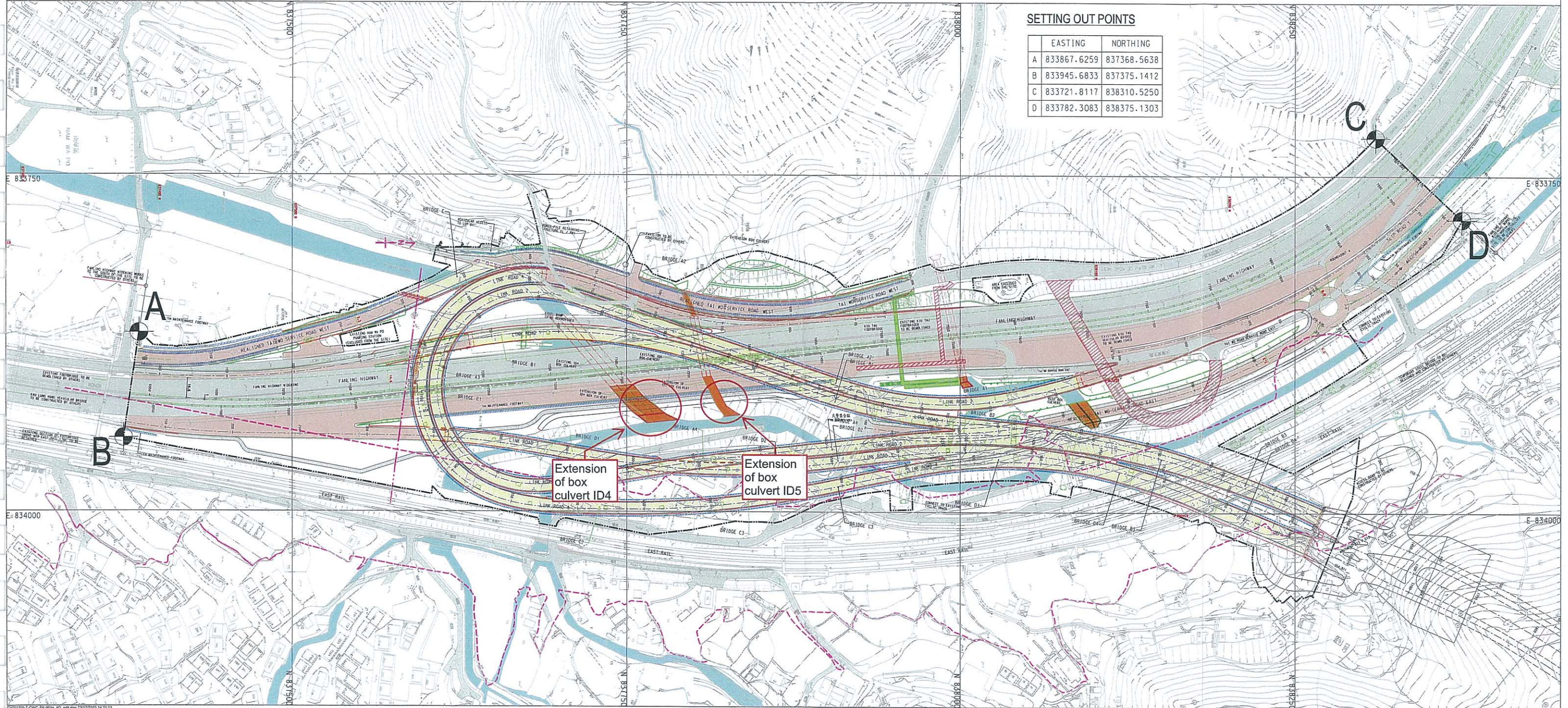
Contract No. CV/2012/09
 Liantang / Heung Yuen Wai Boundary Control Point
 Site Formation and Infrastructure Works - Contract 3



俊和建築工程有限公司
 CHUN WO CONSTRUCTION & ENGINEERING CO., LTD.

SETTING OUT POINTS

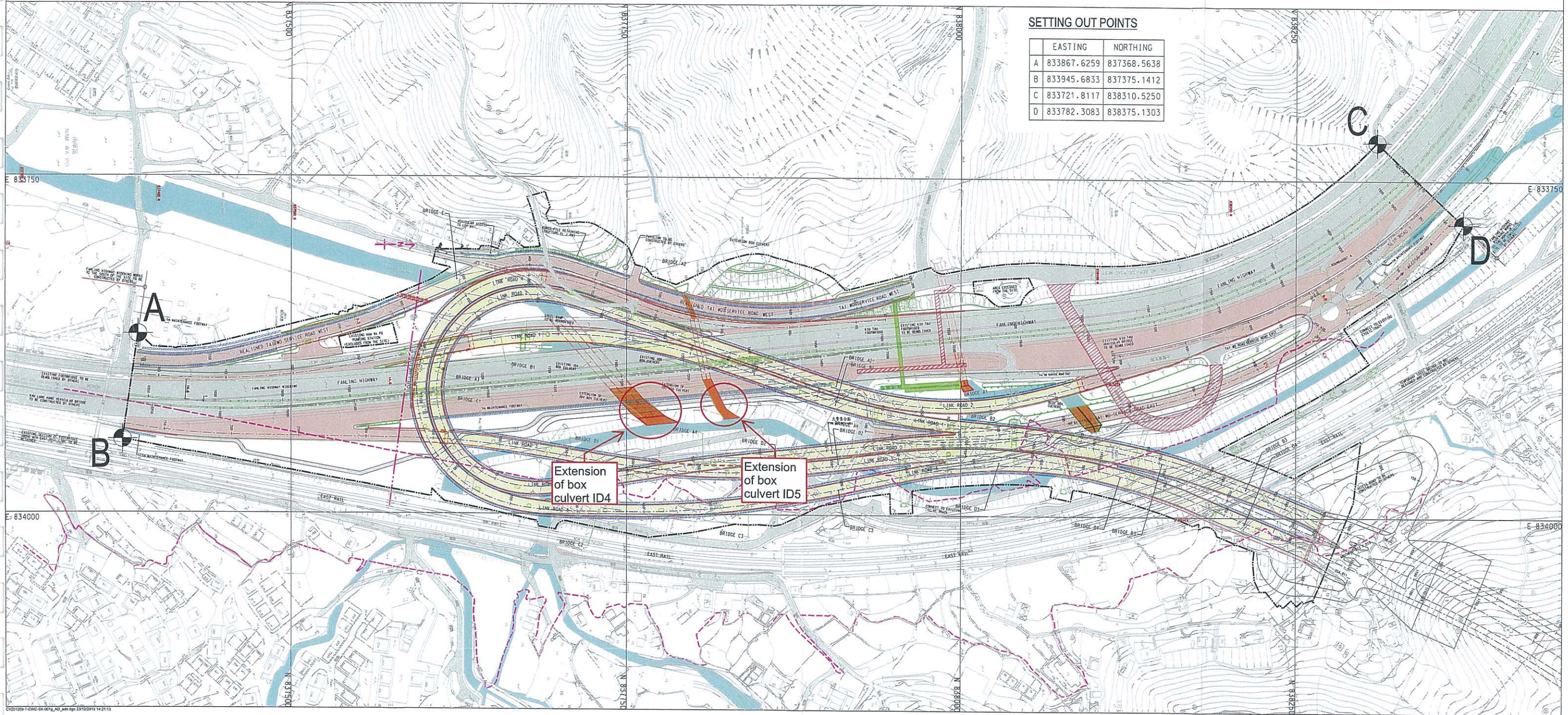
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B	833945.6833	837375.1412
C	833721.8117	838310.5250
D	833782.3083	838375.1303





SETTING OUT POINTS

	EASTING	NORTHING
A	833867.6259	837368.5638
B	833945.6833	837375.1412
C	833721.8117	838310.5250
D	833782.3083	838375.1303



Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Investigation Report of Environmental Quality Exceedance(s)

Ref. No.: A140108_24TSP

Date	8 January 2014
Time	--
Monitoring Location	SR77
Parameter	24-Hr Total Suspended Particulate
Action / Limit Levels	Action Level: 170.3µg/m ³ Limit Level: 260µg/m ³
Measured Level	229.5µg/m ³ (Action level being exceeded)
Possible reason for the exceedance	<p>It was noticed that there were construction works being undertaken by another Contractor (under Contract No. TP/2010/02) which then occurred in very close proximity (less than 1m) to the High Volume Sampler (HVS) of the air quality monitoring station at SR77 (refer to the attached photo).</p> <p>Such works mainly involved excavation of earth materials, operation of excavator (with exhaust emission), handling and moving of earth materials, etc. These construction works are anticipated to have considerable suspended particulates impact that may lead to high TSP levels as have been measured by the nearby HVS.</p> <p>The construction works is anticipated to be completed by the end of April.</p> <p>On the other hand, as there were no records of large scale excavation and earth movement works carried out for the Entrusted Works. Only the extension of box culverts were undertaken during the monitoring, which were at a much farther distance from the air quality monitoring station at SR77 (refer to the attached location plan showing the works activities of the entrusted portion).</p> <p>As a conclusion, the exceedance was unlikely due to the construction works of the project.</p>
Action taken / to be taken	<p>As the exceedance was non-project related, no further investigation and specific remedial measure(s) would be recommended for the Entrusted Works.</p> <p>Nevertheless, the following mitigation measures had been implemented on-site for dust suppression:</p> <ol style="list-style-type: none"> 1. Exposed slopes near the river were covered with impervious sheets; 2. Any open stockpile of construction materials were covered with impervious sheet; 3. Sufficient watering was applied along the haul road.

Remarks	-
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Construction works observed within close proximity of SR77 (Date: 8 January 2014)



Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

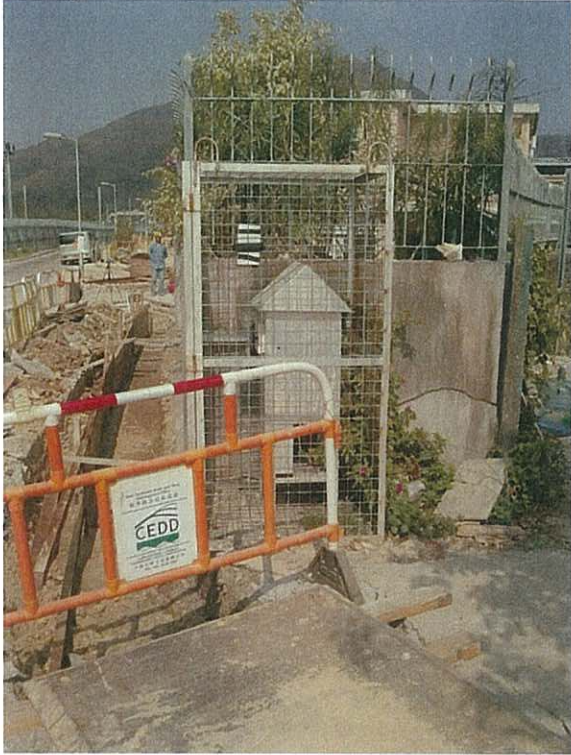
Investigation Report of Environmental Quality Exceedance(s)

Ref. No.: A140114_24TSP

Date	14 January 2014
Time	--
Monitoring Location	SR77
Parameter	24-Hr Total Suspended Particulate
Action / Limit Levels	Action Level: 170.3 $\mu\text{g}/\text{m}^3$ Limit Level: 260 $\mu\text{g}/\text{m}^3$
Measured Level	210 $\mu\text{g}/\text{m}^3$ (Action level being exceeded)
Possible reason for the exceedance	<p>It was noticed that there were construction works being undertaken by another Contractor (under Contract No. TP/2010/02) which then occurred immediately next to the High Volume Sampler (HVS) of the air quality monitoring station at SR77 (refer to the attached photo).</p> <p>Such works mainly involved excavation of earth materials, operation of excavator (with exhaust emission), handling and moving of earth materials, etc. These construction works are anticipated to have considerable suspended particulates impact that may lead to high TSP levels as have been measured by the nearby HVS.</p> <p>The construction works is anticipated to be completed by the end of April.</p> <p>On the other hand, as there were no records of large scale excavation and earth movement works carried out for the Entrusted Works. Only the extension of box culverts were undertaken during the monitoring, which were at a much farther distance from the air quality monitoring station at SR77 (refer to the attached location plan showing the works activities of the entrusted portion).</p> <p>As a conclusion, the exceedance was unlikely due to the construction works of the project.</p>
Action taken / to be taken	<p>As the exceedance was non-project related, no further investigation and specific remedial measure(s) would be recommended for the Entrusted Works.</p> <p>Nevertheless, the following mitigation measures had been implemented on-site for dust suppression:</p> <ol style="list-style-type: none"> 1. Exposed slopes near the river were covered with impervious sheets; 2. Any open stockpile of construction materials were covered with impervious sheet; 3. Sufficient watering was applied along the haul road.

Remarks	-
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Construction works observed within close proximity of SR77 (Date: 14 January 2014)



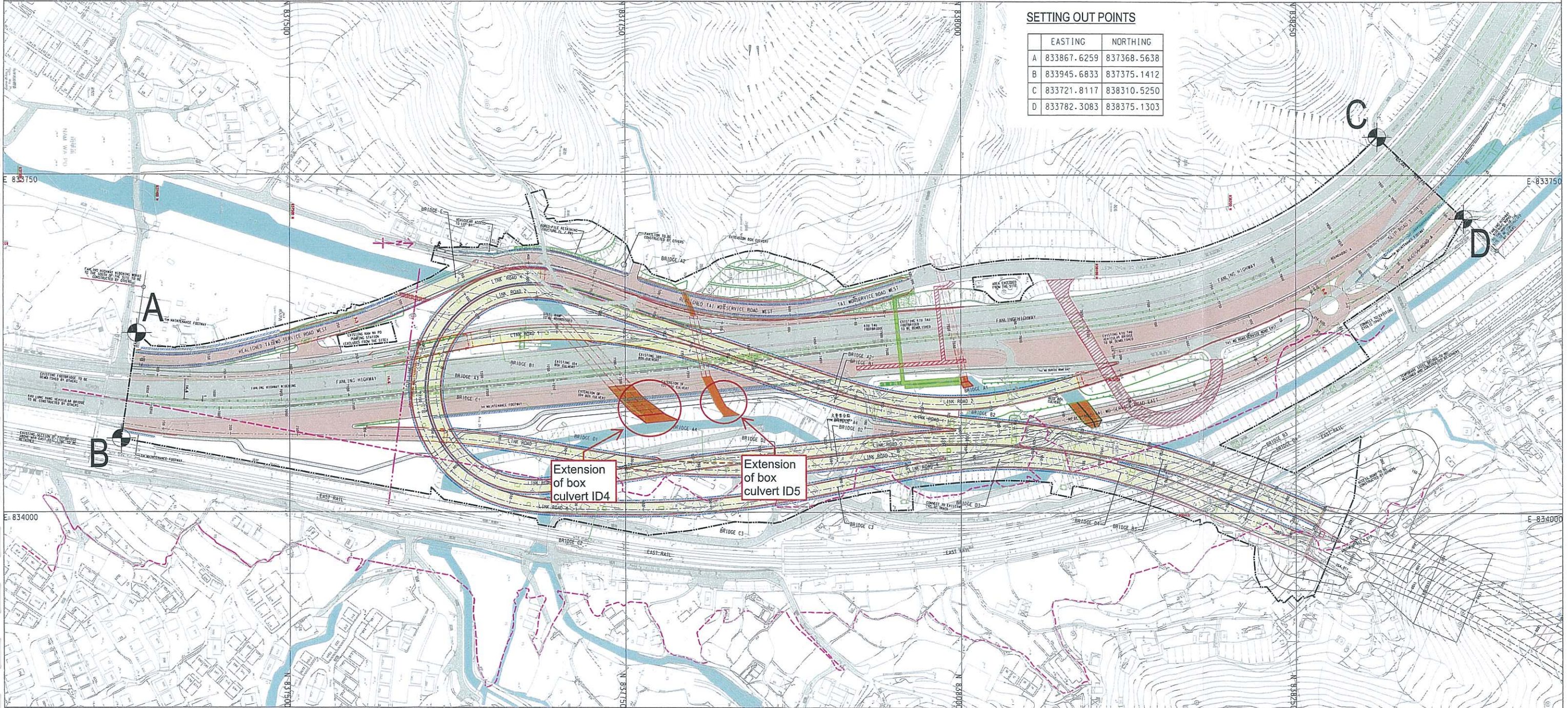
Contract No. CV/2012/09
 Liantang / Heung Yuen Wai Boundary Control Point
 Site Formation and Infrastructure Works - Contract 3



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 CHUN WO CONSTRUCTION & ENGINEERING CO., LTD.

SETTING OUT POINTS

	EASTING	NORTHING
A	833867.6259	837368.5638
B	833945.6833	837375.1412
C	833721.8117	838310.5250
D	833782.3083	838375.1303



Extension of box culvert ID4

Extension of box culvert ID5

Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Investigation Report of Environmental Quality Exceedance(s)

Ref. No.: A140120_24TSP

Date	20 January 2014
Time	--
Monitoring Location	SR77
Parameter	24-Hr Total Suspended Particulate
Action / Limit Levels	Action Level: 170.3 $\mu\text{g}/\text{m}^3$ Limit Level: 260 $\mu\text{g}/\text{m}^3$
Measured Level	322.8 $\mu\text{g}/\text{m}^3$ (Limit level being exceeded)
Possible reason for the exceedance	<p>It was noticed that there were construction works being undertaken by another Contractor (under Contract No. TP/2010/02) which then occurred immediately next to the High Volume Sampler (HVS) of the air quality monitoring station at SR77 (refer to the attached photo).</p> <p>Such works mainly involved excavation of earth materials, operation of excavator (with exhaust emission), handling and moving of earth materials, etc. These construction works are anticipated to have considerable suspended particulates impact that may lead to high TSP levels as have been measured by the nearby HVS.</p> <p>The construction works is anticipated to be completed by the end of April.</p> <p>On the other hand, as there were no records of large scale excavation and earth movement works carried out for the Entrusted Works. Only the extension of box culverts were undertaken during the monitoring, which were at a much farther distance from the air quality monitoring station at SR77 (refer to the attached location plan showing the works activities of the entrusted portion).</p> <p>As a conclusion, the exceedance was unlikely due to the construction works of the project.</p>
Action taken / to be taken	<p>As the exceedance was non-project related, no further investigation and specific remedial measure(s) would be recommended for the Entrusted Works.</p> <p>Nevertheless, the following mitigation measures had been implemented on-site for dust suppression:</p> <ol style="list-style-type: none"> 1. Exposed slopes near the river were covered with impervious sheets; 2. Any open stockpile of construction materials were covered with impervious sheet; 3. Sufficient watering was applied along the haul road.

Remarks	-
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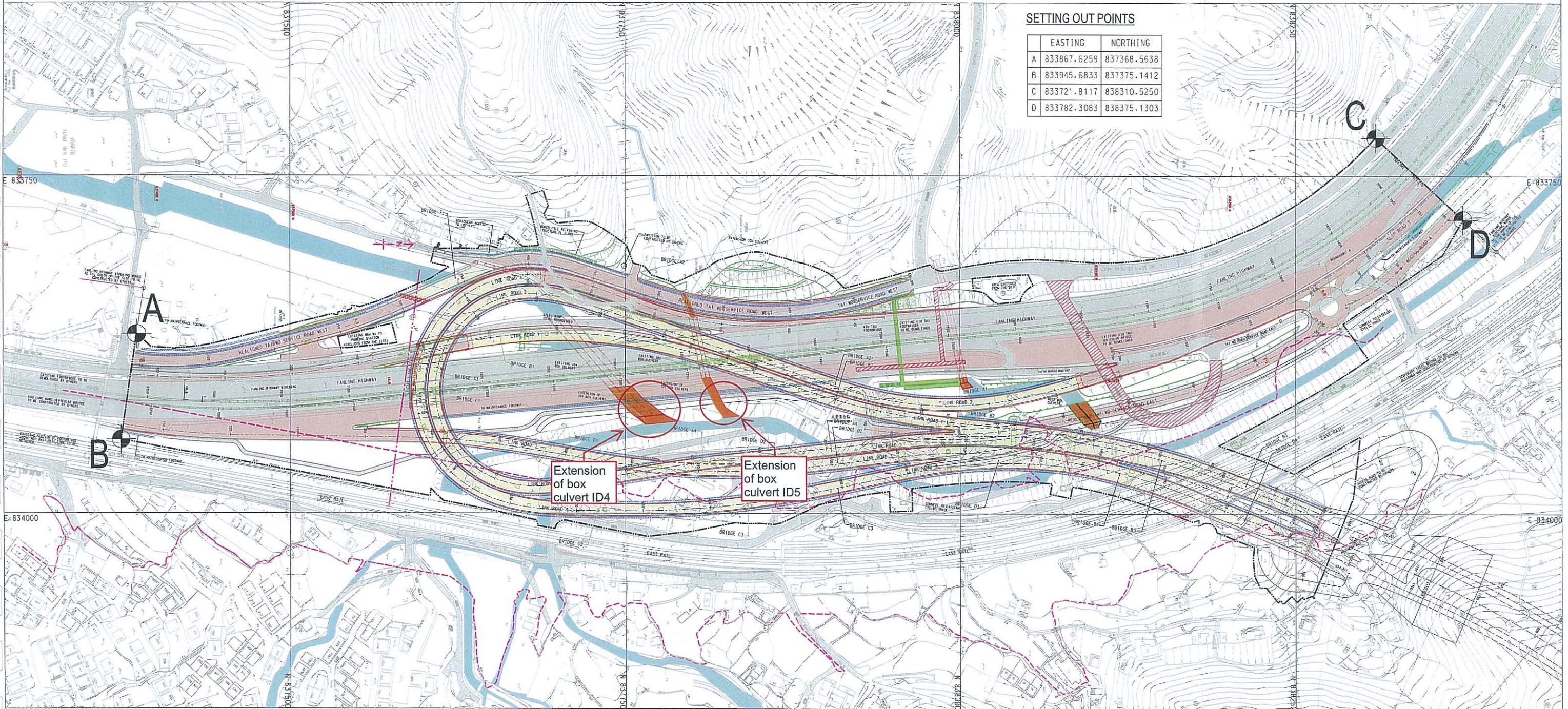
Construction works observed within close proximity of SR77 (Date: 20 January 2014)





SETTING OUT POINTS

	EASTING	NORTHING
A	833867.6259	837368.5638
B	833945.6833	837375.1412
C	833721.8117	838310.5250
D	833782.3083	838375.1303



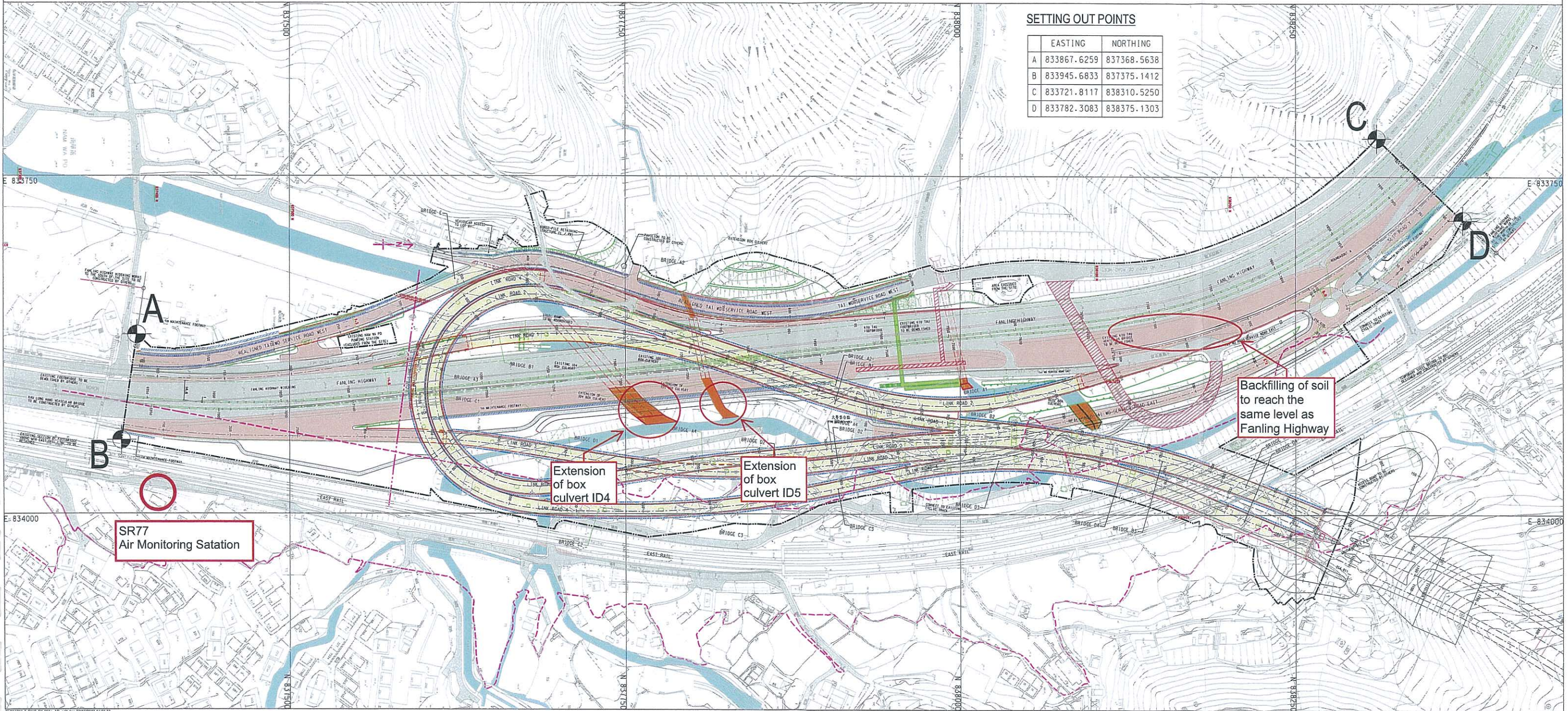
Contract No. CV/2012/09
 Liantang / Heung Yuen Wai Boundary Control Point
 Site Formation and Infrastructure Works - Contract 3



俊和建築工程有限公司
 CHUN WO CONSTRUCTION & ENGINEERING CO., LTD.

SETTING OUT POINTS

	EASTING	NORTHING
A	833867.6259	837368.5638
B	833945.6833	837375.1412
C	833721.8117	838310.5250
D	833782.3083	838375.1303



SR77
 Air Monitoring Satation

Extension of box
 culvert ID4

Extension of box
 culvert ID5

Backfilling of soil
 to reach the
 same level as
 Fanling Highway

Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Investigation Report of Environmental Quality Exceedance(s)

Ref. No.: A140125_24TSP

Date	25 January 2014
Time	--
Monitoring Location	SR77.
Parameter	24-Hr Total Suspended Particulate
Action / Limit Levels	Action Level: $170.3\mu\text{g}/\text{m}^3$ Limit Level: $260\mu\text{g}/\text{m}^3$
Measured Level	$172.0\mu\text{g}/\text{m}^3$ (Action level being exceeded)
Possible reason for the exceedance	<p>It was noticed that there were construction works being undertaken by another Contractor (under Contract No. TP/2010/02) which then occurred immediately next to the High Volume Sampler (HVS) of the air quality monitoring station at SR77 (refer to the attached photo).</p> <p>Such works mainly involved excavation of earth materials, operation of excavator (with exhaust emission), handling and moving of earth materials, etc. These construction works are anticipated to have considerable suspended particulates impact that may lead to high TSP levels as have been measured by the nearby HVS.</p> <p>The construction works is anticipated to be completed by the end of April.</p> <p>Also, the HVS is located close to roadside. When there is traffic, the vehicles may disturb the fugitive dust from nearby open excavation sites, generates dust impact and affects the TSP results recorded by the HVS.</p> <p>On the other hand, construction works carried out during the monitoring period include backfilling works being carried out at northern side of the site and extension of box culverts, which were at a much farther distance from the air quality monitoring station at SR77 (refer to the attached location plan showing the works activities of the entrusted portion).</p> <p>Hence, considered the fact that TSP level has only marginally exceeded the action level by about $2\mu\text{g}/\text{m}^3$ and the exceedance is regarded as minor, as a conclusion, the exceedance was unlikely due to the construction works of the project.</p>

Action taken / to be taken	<p>As the exceedance was non-project related, no further investigation and specific remedial measure(s) would be recommended for the Entrusted Works.</p> <p>Nevertheless, the following mitigation measures had been implemented on-site for dust suppression:</p> <ol style="list-style-type: none">1. Exposed slopes near the river were covered with impervious sheets;2. Any open stockpile of construction materials were covered with impervious sheet;3. Sufficient watering was applied along the haul road.
Remarks	-

Construction works observed within close proximity of SR77 (Date: 25 January 2014)



Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Investigation Report of Environmental Quality Exceedance(s)

Ref. No.: A140130_24TSP

Date	30 January 2014
Time	--
Monitoring Location	SR77
Parameter	24-Hr Total Suspended Particulate
Action / Limit Levels	Action Level: 170.3 $\mu\text{g}/\text{m}^3$ Limit Level: 260 $\mu\text{g}/\text{m}^3$
Measured Level	175.8 $\mu\text{g}/\text{m}^3$ (Action level being exceeded)
Possible reason for the exceedance	<p>It was noticed that there were construction works being undertaken by another Contractor (under Contract No. TP/2010/02) which then occurred immediately next to the High Volume Sampler (HVS) of the air quality monitoring station at SR77 (refer to the attached photo).</p> <p>Such works mainly involved excavation of earth materials, operation of excavator (with exhaust emission), handling and moving of earth materials, etc. These construction works are anticipated to have considerable suspended particulates impact that may lead to high TSP levels as have been measured by the nearby HVS.</p> <p>The construction works is anticipated to be completed by the end of April.</p> <p>Also, the HVS is located close to roadside. When there is traffic, the vehicles may disturb the fugitive dust from nearby open excavation sites, generates dust impact and affects the TSP results recorded by the HVS.</p> <p>On the other hand, construction works carried out during the monitoring period include backfilling works being carried out at northern side of the site and extension of box culverts, which were at a much farther distance from the air quality monitoring station at SR77 (refer to the attached location plan showing the works activities of the entrusted portion).</p> <p>Hence, considered the fact that TSP level has only marginally exceeded the action level by about 6$\mu\text{g}/\text{m}^3$ and the exceedance is regarded as minor, as a conclusion, the exceedance was unlikely due to the construction works of the project.</p>

Action taken / to be taken	<p>As the exceedance was non-project related, no further investigation and specific remedial measure(s) would be recommended for the Entrusted Works.</p> <p>Nevertheless, the following mitigation measures had been implemented on-site for dust suppression:</p> <ol style="list-style-type: none">1. Exposed slopes near the river were covered with impervious sheets;2. Any open stockpile of construction materials were covered with impervious sheet;3. Sufficient watering was applied along the haul road.
Remarks	-

Construction works observed within close proximity of SR77 (Date: 30 January 2014)



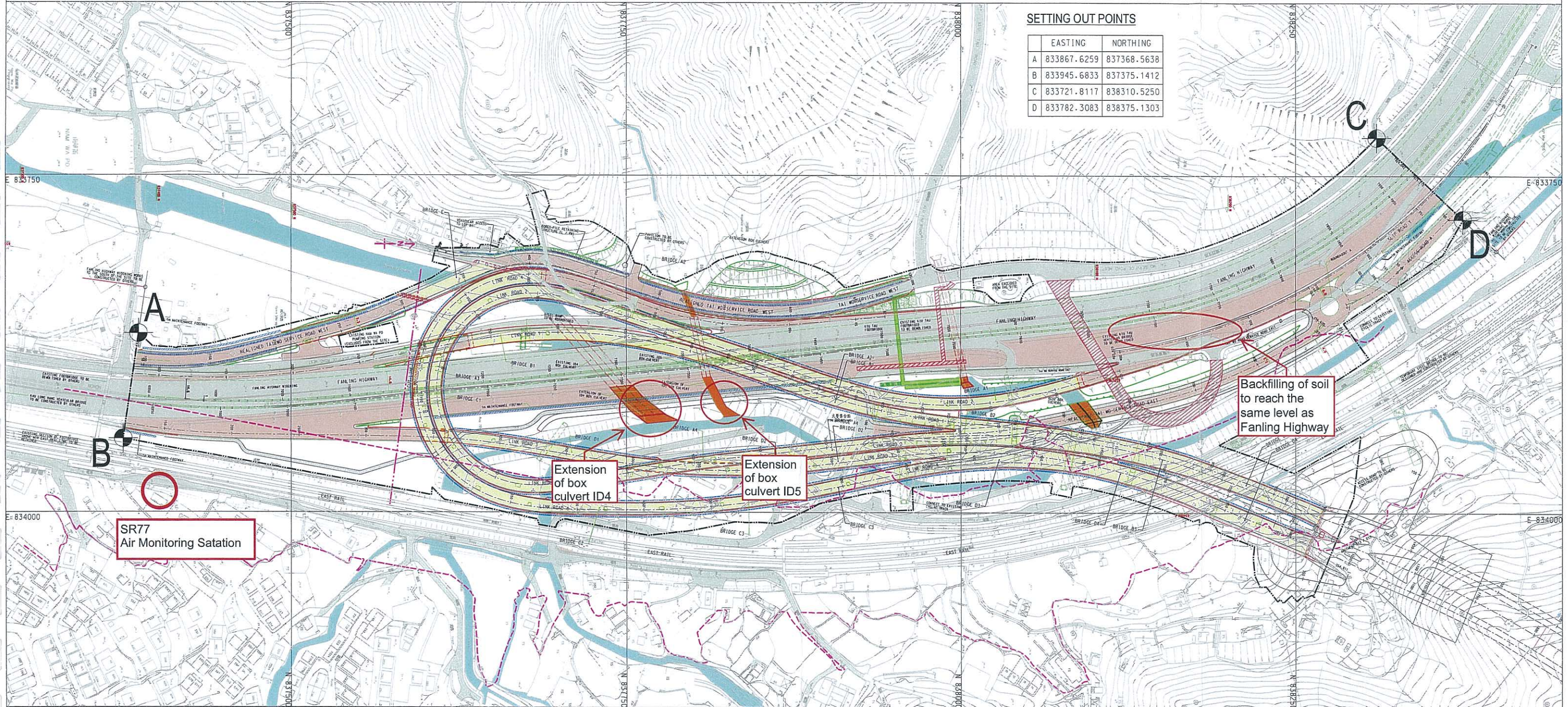
Contract No. CV/2012/09
 Liantang / Heung Yuen Wai Boundary Control Point
 Site Formation and Infrastructure Works - Contract 3



俊和建築工程有限公司
 CHUN WO CONSTRUCTION & ENGINEERING CO., LTD.

SETTING OUT POINTS

	EASTING	NORTHING
A	833867.6259	837368.5638
B	833945.6833	837375.1412
C	833721.8117	838310.5250
D	833782.3083	838375.1303



Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Investigation Report of Environmental Quality Exceedance(s)

Ref. No.: W140102_Tby

Date	2 January 2014
Time	10:44
Monitoring Location	I5
Parameter	Turbidity
Action / Limit Levels	Action level: 81.9 NTU or 120% of upstream control station's Tby of the same day (i.e. 31.1NTU) Limit Level: 91.9 NTU or 130% of upstream control station's Tby of the same day (i.e. 33.7NTU)
Measured Level	32.5NTU (Action level being exceeded - 120% of C3b)
Possible reason for the exceedance	<p>Construction within proximity of the river channel is listed as follows:</p> <p><u>Box Culvert ID4</u> Formworks erection for base slab</p> <p><u>Box Culvert ID5</u> Formworks erection for walls</p> <p>Construction works at the river stream are properly enclosed by a bund to avoid site runoff. No spillage is identified.</p> <p>Consider the suspended solids level for the water sample is only 9mg/L, which is significantly lower than the SS level in C3a (17.5mg/L) and C3b (21.5mg/L), it is considered that the exceedance would not due to the construction works.</p> <p>Site observation at C3b observed the river water quality would be at high turbidity level.</p> <p>For comparison, turbidity levels at C3a and C3b on 2 January 2014 are 18.9NTU and 25.9NTU respectively. During baseline monitoring the turbidity level can be as high as 86.9NTU and 116NTU at C3a and at C3b respectively. Recorded turbidity level at I5 has not exceeded the maximum recorded level of 92.3NTU during baseline monitoring.</p> <p>It is therefore considered that elevation of turbidity would be due to natural fluctuation.</p>

Action taken / to be taken	As the non-compliance was non-project related, no further investigation and remedial measure(s) would be required.
Remarks	-

Construction works are properly protected. (Date: 2 January 2014)



Site observation at C3b observed the river water quality would be at high turbidity level. (Date: 2 January 2014)



Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Investigation Report of Environmental Quality Exceedance(s)

Ref. No.: W140115_SS

Date	15 January 2014
Time	13:30
Monitoring Location	I5
Parameter	Suspended Solid
Action / Limit Levels	Action Level: 42.6 mg/L or 120% of upstream control station's SS of the same day (i.e. 8.4mg/L) Limit Level: 46.8 mg/L or 130% of upstream control station's SS of the same day (i.e. 9.1mg/L)
Measured Level	11mg/L (Limit level being exceeded - 130% of C3a)
Possible reason for the exceedance	<p>Construction within proximity of the river channel is listed as follows:</p> <p><u>Box Culvert ID4</u> (refer to attached photos) Formworks erection for top slabs Steel bar fixing for outfall structure <u>Box Culvert ID5</u> (refer to attached photos) Formworks erection for box culvert Laying blinding for the outfall structure</p> <p>Construction works at the river stream are properly enclosed by a bund to avoid site runoff. No spillage is identified. (refer to attached photos)</p> <p>For comparison, suspended solids levels at C3a and C3b on 15 January 2014 are 7mg/L and 5.5mg/L respectively. The results are very low when comparing against the baseline monitoring where the suspended level can be as high as 51mg/L and 88mg/L at C3a and at C3b respectively. Also, recorded suspended solids level at I5 has not exceeded the maximum recorded level of 47mg/L during baseline monitoring and significantly below the absolute action level of 42.6mg/L.</p> <p>In addition, the turbidity level for the water sample at I5 on the same day is 22.1NTU, which is similar to the turbidity level in C3a (17.4NTU) and C3b (21.9NTU), it is considered that the water quality has not been worsened and hence the exceedance would not due to the construction works.</p>

	It is therefore considered that elevation of suspended solids would be due to natural fluctuation.
Action taken / to be taken	As the non-compliance was non-project related, no further investigation and remedial measure(s) would be required.
Remarks	-

Construction works at ID4 (15 January 2014)



Construction works at ID5 (15 January 2014)



The construction works are properly protected with sand bags. (Date: 15 January 2014)



Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Investigation Report of Environmental Quality Exceedance(s)

Ref. No.: W140124_SS

Date	24 January 2014
Time	13:33
Monitoring Location	I5
Parameter	Suspended Solids
Action / Limit Levels	Action Level: 42.6 mg/L or 120% of upstream control station's SS of the same day (i.e. 7.2mg/L) Limit Level: 46.8 mg/L or 130% of upstream control station's SS of the same day (i.e. 7.8mg/L)
Measured Level	9.5mg/L (Limit level being exceeded - 130% of C3b)
Possible reason for the exceedance	<p>Construction within proximity of the river channel is listed as follows:</p> <p><u>Box Culvert ID4</u> (refer to attached photos) - Formworks erection for external wall of Bay 2 - Steel bar fixing for headwall</p> <p><u>Box Culvert ID5</u> (refer to attached photos) - Formworks erection for headwall and wall of Bay 3</p> <p>Construction works at the river stream are properly enclosed by a bund to avoid site runoff. No spillage is identified. (refer to attached photos)</p> <p>For comparison, suspended solids levels at C3a and C3b on 24 January 2014 are 4mg/L and 6mg/L respectively. The results are very low when comparing against the baseline monitoring where the suspended level can be as high as 51mg/L and 88mg/L at C3a and at C3b respectively. Also, recorded suspended solids level at I5 has not exceeded the maximum recorded level of 47mg/L during baseline monitoring and significantly below the absolute action level of 42.6mg/L.</p> <p>In addition, the turbidity level for the water sample at I5 on the same day is 30.4NTU, which is similar to the turbidity level in C3b (29.4NTU) but not C3a (15.9NTU). It is therefore considered that the water quality has been influenced from the upstream at C3b and hence the exceedance would not due to the construction works.</p>

	<p>Site walk at about 11:00 on the same day identified some muddy water being discharged at upstream of C5b. This may contribute to the elevation of SS level at I5. (refer to attached photos)</p> <p>Aquatic plants growth was also identified in the river course between C3a and I5. Since the location of plantation growth located before the Box Culvert ID4 the growth would not be introduced by construction works. The plants being washed away by the water would cause the level of suspended solid level to elevate. (refer to attached photos)</p> <p>It is therefore considered that elevation of suspended solids would be due to natural fluctuation.</p>
<p>Action taken / to be taken</p>	<p>As the non-compliance was non-project related, no further investigation and remedial measure(s) would be required.</p>
<p>Remarks</p>	<p>-</p>

Construction works at ID4 (24 January 2014)



Construction works at ID5 (24 January 2014)



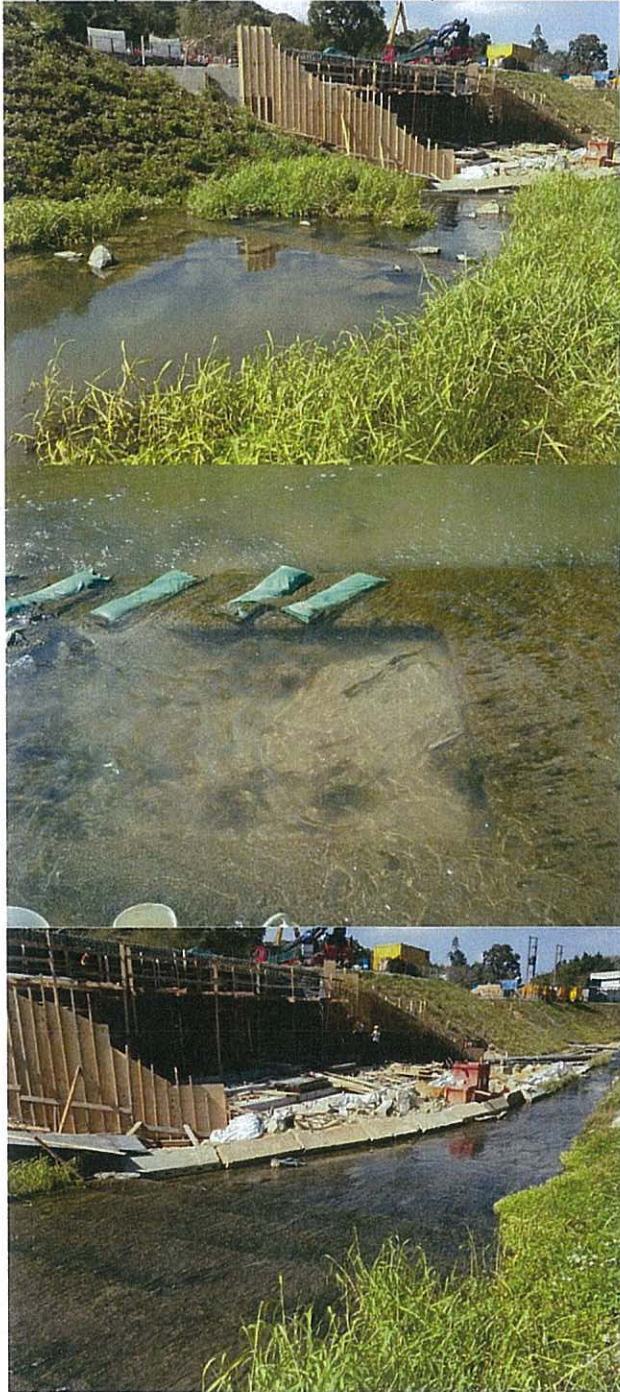
The construction works are properly protected with sand bags. (Date: 24 January 2014)



Muddy water observed at upstream of C3b. (Date: 24 January 2014)



Aquatic plant growth observed. (Date: 24 January 2014)



Appendix M Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions

Cumulative Complaint Log

Complaint Log No.	Date of Complaint	Received From and Received By	Location of Complainant	Nature of Complaint	Outcome	Status
C131126	November 26, 2013	Mr. Tony Hung from WWF	Mat Wat River (works sites for box culvert extension)	Suspected unauthorised discharge of water from a construction site to Ma Wat River, Tai Wo Service Road East, Tai Po	1) It was found that the water leaving the end of the steel pipes was the diverted water from the upstream of the existing box culverts, instead of being discharged from the construction works sites. 2) An EM&A Programme is being undertaken to monitor the environmental performance of the construction works, and the Contractor has also implemented appropriate mitigation measures to avoid silt-laden runoff discharging from the works sites into the river. 3) The complaint is considered an invalid complaint under this Project.	Completed

Cumulative Log for Notifications of Summons

Log No.	Date/Location	Subject	Status	Total Received in this reporting month	Total no. Received since project commencement

Cumulative log for Successful Prosecutions

Log No.	Date/Location	Subject	Status	Total Received in this reporting month	Total no. Received since project commencement



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