

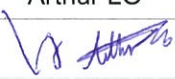
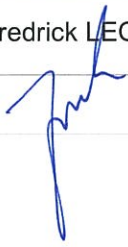

Entrusted Portion of Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling Stage 2

Baseline Monitoring Report

October 2013

Submitted to

Environmental Protection Department

Date	Revision	Prepared By	Checked By	Approved By
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Meinhardt Infrastructure and Environment Limited

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

Baseline Monitoring Report

(October 2013)

Certified by: Fredrick Leong 

Position: Environmental Team Leader

Date: 18 October 2013



Our ref AFK/TK/bw/T329380/22.05/L-0001

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Your ref

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Dear Sir,

18 October 2013

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 3.2 – Submission of Baseline Monitoring Report for the portion of Stage 2 works entrusted to CEDD under Contract No. CV/2012/09

We refer to the revised Baseline Monitoring Report received on 16 October 2013 submitted by ET via email. Pursuant to EP Condition 3.2, I hereby verify the Baseline Monitoring Report (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

A handwritten signature in black ink, appearing to read 'Terence Kong'.

Terence Kong
Independent Environmental Checker

c.c. HyD – Mr. Chung Lok Chin (Fax: 2714 5198) / Ms. Jackei Yin (Fax: 2761 4864)
CEDD/BCP – Mr. Chris Wong / Mr. Desmond Lam (Fax: 2714 0103)
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EXECUTIVE SUMMARY

The widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling (the Project) aims 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 is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO). An Environmental Impact Assessment (EIA) Report together with an Environmental Monitoring and Audit (EM&A Manual were completed and approved under the EIAO on 14 July 2000 (Register Number: EIA-043/2000). The project was governed by an Environmental Permit (EP) (EP-324/2008) which 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.

The construction works for this Project 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.

The construction works of Stage 1 under the EP commenced in November 2009 and is planned to be completed in December 2013 tentatively, while the works of Stage 2 will be planned to commence in November 2013 and complete by end of 2016.

A portion of Stage 2 works has been 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 Construction & Engineering Co Ltd (Chun Wo). The demarcation of the entrusted portion of works is indicated in **Figure 1**.

Meinhardt Infrastructure & Environment Ltd 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.

Air Quality

The baseline air quality monitoring comprising three 1-hour and one 24-hour Total Suspended Particulates (TSP) was conducted at one monitoring station for 14 consecutive days from 4 September to 17 September 2013. The weather conditions during the monitoring period were mostly sunny with occasional cloudier conditions interspersed with bouts of rainfall in between. No major dust source affecting the monitoring results was observed. The data collected were reviewed and analysed to establish the Action and Limit Levels for air quality during impact monitoring period.

Airborne Noise

The baseline airborne noise monitoring comprising of monitoring of L_{eq} , L_{10} and L_{90} was conducted at one monitoring station over full continuous 24 hour periods between 4 September and 18 September 2013. There was no other major activity influencing the measured noise level during the baseline noise monitoring period. The dominant noise sources were railway and nearby traffic.

Water Quality

The baseline water quality monitoring comprising dissolved oxygen level, dissolved oxygen saturation, water temperature, turbidity, suspended solids and pH value was carried out 3 days per week for 4 weeks between 26 August 2013 and 20 September 2013 at three water quality monitoring locations. No water quality monitoring was conducted under inclement weather condition such as in the presence of rain. The possible influences in monitoring results were suspected to be animals and birds movements to disturb riverbed sediment, domestic discharges in the vicinity, and possible site runoff from other construction works along the upper stream of the river. The data collected were reviewed and analysed to establish the Action and Limit Levels for water quality during the impact monitoring period.

1.0 INTRODUCTION

1.1 Background

- 1.1.1 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 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.
- 1.1.2 The objective of the Widening of Tolo Highway / Fanling Highway between Island House Interchange and Fanling (the Project) 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.
- 1.1.3 The Project is a Designated Project under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO). An Environmental Impact Assessment (EIA) Report together with an Environmental Monitoring and Audit (EM&A Manual were completed and approved under the EIAO on 14 July 2000 (Register Number: EIA-043/2000). The project was governed by an Environmental Permit (EP) (EP-324/2008) which 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.
- 1.1.4 The construction works for this Project 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.
- 1.1.5 The construction works of Stage 1 under the EP commenced in November 2009 and is planned to be completed in December 2013 tentatively. The works of Stage 2 will be 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.
- 1.1.6 A portion of Stage 2 works of the Project has been 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 Construction & Engineering Co Ltd (Chun Wo). The demarcation of the entrusted portion of works is indicated in **Figure 1**. AECOM Asia Co Ltd was appointed by the Civil Engineering and Development Department (CEDD) as the consultant for the design and construction assignment for the Liantang development.
- 1.1.7 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.

1.1.8 The baseline monitoring was undertaken and this Baseline Monitoring Report was prepared prior to commencement of construction of Stage 2 works of the Project in accordance with Condition 3.2 of EP.

1.2 Purpose of the Baseline Monitoring Report

1.2.1 In accordance with the Updated EM&A Manual, environmental baseline monitoring was carried out at one air quality, one noise monitoring station, and three water monitoring locations within the entrusted portion of works. This Baseline Monitoring Report presents baseline findings of these monitoring stations, as well as the background noise levels monitored for future reference during the construction works phase.

1.2.2 The purposes of this Baseline Monitoring Report are to:

- Summarise the findings of baseline air quality, noise and water quality monitoring; and
- Establish the Action and Limit (A/L) levels in accordance with the Updated EM&A Manual for the subsequent impact monitoring during construction stage.

1.3 Report Structure

1.3.1 This Baseline Monitoring Report comprises the following sections:

- Section 1 introduces the background of the Project, entrusted portion of works and purpose of this Report;
- Section 2 presents the baseline monitoring requirements, methodologies and monitoring results of air quality;
- Section 3 presents the baseline monitoring requirements, methodologies and monitoring results of noise;
- Section 4 presents the baseline monitoring requirements, methodologies and monitoring results of water quality; and
- Section 5 concludes the findings of baseline monitoring.

2.0 AIR QUALITY MONITORING

2.1 Monitoring Requirement

2.1.1 In accordance with the Updated EM&A Manual, the baseline 1-hr and 24-hr total suspended particulate (TSP) levels should be established by conducting baseline 1-hr and 24-hr TSP monitoring daily for at least 14 consecutive days or at least two weeks prior to the commissioning of major construction works.

2.2 Monitoring Equipment

2.2.1 24-hr TSP air quality monitoring at the monitoring stations were performed using High Volume Sampler (HVS), of which their locations and operation satisfy, as far as practicable, all the requirements stated in the Updated EM&A Manual. Portable direct reading dust meters were used to carry out the 1-hr TSP monitoring. Portable direct reading dust meters used in this baseline monitoring were proven to be capable of achieving comparable result as that of the HVS and could be used for sampling. Brand and model of the equipment are given in **Table 2.1**.

Table 2.1 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

2.2.2 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.

2.2.3 Each HVS was calibrated using TE-5025A Calibration Kit prior to the commencement of baseline monitoring. Calibration certificate of the TE-5025A Calibration Kit and the HVS are provided in **Appendix A**.

2.2.4 The 1-hr TSP meter was calibrated at 1-year interval against a continuous particulate TEOM Monitor, Series 1400ab. Calibration certificates of the Laser Dust Monitors are provided in **Appendix A**.

2.3 Monitoring Locations

2.3.1 The Updated EM&A Manual specifies the baseline air quality monitoring location. However, the original monitoring station AM1, SR83A (Yuen Leng) (as indicated in **Figure 2**) fell within the demarcation of the captioned entrusted portion of works. It is known that the premises at and adjacent to SR83A will soon be resumed and then demolished to form the construction sites for Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure works (as illustrated in **Figure 3**). As such, SR83A was considered no longer appropriate to carry out the baseline and impact monitoring for the captioned entrusted portion of works.

2.3.2 Taking into consideration the selection criteria stated in the Updated EM&A Manual, the monitoring location has been relocated to SR77 (Yuen Leng 2) (also indicated in

Figures 2 and 3). This alternative monitoring location has been proposed to AECOM Asia Co Ltd (refer to the relocation proposal in **Appendix B**).

2.3.3 **Table 2.2** describes the details of air quality monitoring with the monitoring location shown in **Figure 3**.

Table 2.2 Details of Baseline Air Quality Monitoring

Air Monitoring Station ID	Original Monitoring Location (Station ID) in Updated EM&A Manual	Alternative Monitoring Location	Description	Monitoring Period
SR77 ⁽¹⁾	Yuen Leng (AM1, SR83A ⁽¹⁾)	Yuen Leng 2	Residential, Ground floor	4 Sep 2013 – 17 Sep 2013

Remark:

(1) 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

2.4 Monitoring Parameters, Frequency and Duration

2.4.1 **Table 2.3** summarises the monitoring parameters, frequency and duration of baseline TSP monitoring.

Table 2.3 Air Quality Monitoring Parameters, Frequency and Duration

Parameter	Duration	Frequency and
1-hr TSP	14 consecutive days or at least two weeks prior to commencement of major construction works	3 times per day
Continuous 24-hr TSP		Daily

2.5 Monitoring Methodology

24-hr TSP Monitoring

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

2.5.2 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>).

2.5.3 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.

2.5.4 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.

2.5.5 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-weighed 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.

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

1-hr TSP Monitoring

2.5.7 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.

2.5.8 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.

2.6 Results and Observations

2.6.1 The baseline air quality monitoring was conducted between 4 September and 17 September 2013. Apart from 4 September 2013 and 5 September 2013 being rainy days, the weather of remaining dates was sunny. No major dust source affecting the monitoring results was observed. Details of influencing factors such as weather conditions and site observation are presented in **Appendix C**.

2.6.2 The baseline monitoring results for 1-hr and 24-hr TSP are summarised in **Tables 2.4** and **2.5** respectively. Detailed air quality monitoring results and graphical presentation of air quality monitoring data are presented in **Appendix C**.

Table 2.4 Summary of 1-hr TSP Baseline Monitoring Results

1-hr TSP Levels	Yuen Leng 2
Dust Monitoring Station ID	SR77 ⁽¹⁾
Average (µg/m ³)	65.6
Range (µg/m ³)	27.0 – 109.0

Remark:

(1) 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 2.5 Summary of 24-hr TSP Baseline Monitoring Results

24-hr TSP Levels	Yuen Leng 2
Dust Monitoring Station ID	SR77 ⁽¹⁾
Average (µg/m ³)	62.0
Range (µg/m ³)	29.4 – 109.0

Remark:

(1) 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

2.7 Action and Limit Levels

2.7.1 The air quality monitoring results, in terms of 1-hr TSP and 24-hr TSP, were below the Limit Level set out in the EIAO-TM and Air Quality Objective (AQO) respectively at the monitoring locations. The Action and Limit Levels for air quality impact monitoring were

established according to the criteria and methodology in the Updated EM&A Manual as presented in **Table 2.6**.

Table 2.6 Derivation of Action and Limit Levels for Air Quality

Parameter	Action Level	Limit Level
1-hr TSP Level in $\mu\text{g}/\text{m}^3$	For Baseline Level $\leq 384 \mu\text{g}/\text{m}^3$, Action Level = (baseline level *1.3 + Limit level) /2 For Baseline Level $> 384 \mu\text{g}/\text{m}^3$, Action Level = Limit Level	500 $\mu\text{g}/\text{m}^3$
24-hr TSP Level in $\mu\text{g}/\text{m}^3$	For Baseline Level $\leq 200 \mu\text{g}/\text{m}^3$, Action Level = (baseline level *1.3 + Limit level) /2 For Baseline Level $> 200 \mu\text{g}/\text{m}^3$, Action Level = Limit Level	260 $\mu\text{g}/\text{m}^3$

2.7.2 **Table 2.7** shows the derived Action and Limit Levels for air quality impact monitoring for the Project.

Table 2.7 Action and Limit Levels for Air Quality

Parameter	Monitoring Station	Action Level ($\mu\text{g}/\text{m}^3$)	Limit Level ($\mu\text{g}/\text{m}^3$)
1-hr TSP Level in $\mu\text{g}/\text{m}^3$	SR77	292.7	500
24-hr TSP Level in $\mu\text{g}/\text{m}^3$		170.3	260

3.0 NOISE MONITORING

3.1 Monitoring Requirements

3.1.1 As stated in the Updated EM&A Manual, baseline noise monitoring is not normally required in accordance with the “Environmental Monitoring and Audit Guidelines for Development Projects in Hong Kong” issued by EPD in 1998. However, in order to obtain background noise levels for future reference, baseline noise monitoring was conducted for 14 consecutive days prior to the commissioning of major construction works.

3.2 Monitoring Equipment

3.2.1 Noise monitoring was performed using sound level meter at each monitoring station. The sound level meters deployed comply with the International Electrotechnical Commission Publications 651:1979 (Type 1) and 804:1985 (Type 1) specifications. Acoustic calibrators were deployed to check the sound level meters at a known sound pressure level. The brand and model of the equipment is given in **Table 3.1**.

Table 3.1 Noise Monitoring Equipment

Equipment	Brand and Model	Quantity	Serial Number
Integrated Sound Level Meter	B&K (Model No. 2238)	1	2694908
Acoustic Calibrator	B&K (Model No. 4231)	1	2685684

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

3.3 Monitoring Locations

3.3.1 Baseline monitoring was conducted at the proposed impact monitoring location as identified in the Updated EM&A Manual. The original monitoring station M1, SR83A (Yuen Leng) (as indicated in **Figure 2**) fell within the demarcation of the captioned entrusted portion of works. It is known that the premises at and adjacent to SR83A will soon be resumed and then demolished to form the construction sites for Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure works (as illustrated in **Figure 3**). As such, SR83A is considered no longer appropriate to carry out the baseline and impact monitoring for the captioned entrusted portion of works.

3.3.2 Taking into consideration the selection criteria stated in the Updated EM&A Manual, the monitoring location has been relocated to SR77 (Yuen Leng 2) (also indicated in **Figures 2 and 3**). This alternative monitoring location has been proposed to AECOM Asia Co Ltd (refer to the relocation proposal in **Appendix B**).

3.3.3 The baseline airborne noise monitoring was conducted between 4 September and 18 September 2013. **Figure 2 and 3** shows the location of the monitoring station. **Table 3.2** describes the details of the noise monitoring.

Table 3.2 Locations of Baseline Noise Monitoring Stations

Air Monitoring Station ID	Original Monitoring Location (Station ID) in Updated EM&A Manual	Alternative Monitoring Location	Description	Monitoring Period
SR77 ⁽¹⁾	Yuen Leng (AM1, SR83A ⁽¹⁾)	Yuen Leng 2	Residential, Ground floor	4 Sep 2013 – 18 Sep 2013

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

3.4 Monitoring Parameters, Frequency and Duration

3.4.1 **Table 3.3** summarises the monitoring parameters, frequency and duration of baseline noise monitoring.

Table 3.3 Noise Monitoring Parameters, Frequency and Duration

Time Period	Duration, min	Parameters
Daytime: 0700-1900 hrs on normal weekdays	30 ($L_{eq(30-min)}$)	L_{eq} , L_{10} & L_{90}
Evening: 1900-2300 hrs on normal weekdays	15 (average of 3 consecutive $L_{eq(5-min)}$)	
General Holidays and Sundays 0700-2300 hrs		
Night-time: 2300-0700 hrs on all days		

3.5 Monitoring Methodology

3.5.1 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: L_{eq} , L_{10} and L_{90}
 - (iv) time measurement: $L_{eq(30-min)}$ during non-restricted hours i.e. 07:00 – 1900 hrs on normal weekdays; $L_{eq(5-min)}$ 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.

3.6 Results and Observations

3.6.1 There was no other major activity influencing the measured noise level during the baseline noise monitoring period. The dominant noise sources were railway and nearby traffic. Details of influencing factors such as weather conditions and site observation are presented in **Appendix D**.

3.6.2 Baseline noise monitoring was conducted for 14 consecutive days to obtain the background noise data. The baseline noise monitoring results are summarised in **Tables 3.4 to 3.6**. Detailed noise monitoring results and the graphical presentation of noise level monitoring data are presented in **Appendix D**.

Table 3.4 Summary of Baseline Daytime Noise Monitoring Results

Noise Monitoring Station ID	Time period	30-min Average Noise Levels, dB(A) ⁽²⁾			Range, dB(A)		
		Leq	L10	L90	Leq	L10	L90
SR77 ⁽¹⁾	0700 – 1900 hrs of normal weekdays	67.8	71.1	59.0	65.7 – 72.2	69.6 – 75.3	57.2 – 61.3

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

Table 3.5 Summary of Baseline Evening, Sunday and Public Holiday Noise Monitoring Results

Noise Monitoring Station ID	Time period	5-min Average Noise Levels, dB(A) ⁽²⁾			Range, dB(A)		
		Leq	L10	L90	Leq	L10	L90
SR77 ⁽¹⁾	1900 – 2300 hrs of normal weekdays, 0700 – 2300 hrs of Sundays and Public Holidays	63.8	67.1	55.3	55.1 – 79.8	57.2 – 81.4	50.9 – 75.5

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

Table 3.6 Summary of Baseline Night-time Noise Monitoring Results

Noise Monitoring Station ID	Time period	5-min Average Noise Levels, dB(A) ⁽²⁾			Range, dB(A)		
		L _{eq}	L ₁₀	L ₉₀	L _{eq}	L ₁₀	L ₉₀
SR77 ⁽¹⁾	2300 - 0700 hrs	61.1	63.5	53.8	56.7 – 67.2	58.9 – 70.4	51.7 – 58.3

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

3.6.3 Results indicated that the average baseline daytime noise monitoring results at the monitoring location are within the criteria of 75dB(A) for residential premises.

3.7 Action and Limit Levels

3.7.1 During the impact monitoring period, the baseline noise level should be deducted from the future impact monitoring result for comparison with the Limit Level.

3.7.2 The Action and Limit Levels of noise monitoring have been set in accordance with the criteria specified in the Updated EM&A Manual as shown in **Table 3.8** below.

Table 3.7 Criteria for Action and Limit Levels for Construction Noise

Time Period	NSR ID	Monitoring Station	Action Level	Limit Level, dB(A)
0700-1900 hrs of normal weekdays	SR77 ⁽¹⁾	Yuen Leng 2	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

4.0 WATER QUALITY MONITORING

4.1 Monitoring Requirements

4.1.1 In accordance with the Updated EM&A Manual, baseline water quality monitoring was undertaken to establish the baseline water quality levels at three monitoring stations. The baseline monitoring was conducted 3 days per week for 4 weeks prior to the commencement of the entrusted works which is tentatively scheduled to commence in November 2013.

4.2 Monitoring Equipment

4.2.1 Equipment used in the baseline water quality monitoring programme is summarised in **Table 4.1**. A copy of the calibration certificates for the water quality monitoring equipments are attached in **Appendix A**.

Table 4.1 Water Quality Monitoring Equipment

Equipment	Model and Make
DO and Temperature Meter, Salinity Meter, pH meter	YSI Model Professional Plus (Serial no. 09K100735)
Turbidimeter	HACH Model 2100 Q (Serial no. 11050C001264)

4.3 Monitoring Parameters, Frequency and Duration

4.3.1 Measurements for each monitoring station were conducted 3 days per week for 4 weeks between 26 August 2013 and 20 September 2013. **Table 4.2** summarises the monitoring parameters, frequency and duration of the baseline water quality monitoring.

Table 4.2 Water Quality Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter, unit	Frequency
<i>Control Stations: C3a and C3b</i> <i>Impact Station: I5</i>	<ul style="list-style-type: none"> • Depth, m • Temperature, °C • Salinity, ppt • pH • DO, mg/L • DO Saturation, % • Turbidity, NTU • SS, mg/L 	3 days per week (for 4 weeks)

4.4 Monitoring Locations

4.4.1 According to the Updated EM&A Manual, the measurements were taken at all impact and control stations summarised in **Table 4.3**. The locations of the monitoring stations are shown in **Figure 4**.

Table 4.3 Locations of Water Quality Impact Stations

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

4.5 Monitoring Methodology

Instrumentation

- 4.5.1 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

- 4.5.2 Since water depths for all monitoring stations were less than 1m throughout the whole baseline measurement period, only mid-depth level was monitored.

- 4.5.3 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.

- 4.5.4 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 are 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 E**.

Maintenance and Calibration

- 4.5.5 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.

4.6 Results and Observations

- 4.6.1 The baseline water quality monitoring for all the three monitoring stations was conducted between 26 August 2013 and 20 September 2013. The monitoring results are summarised in **Tables 4.4**. Details of water quality monitoring results and graphical presentation of water quality monitoring data are presented in **Appendix F**.

Table 4.4 Summary of Baseline Water Quality Monitoring Results

Locations		Parameters				
		Salinity (ppt)	Dissolved Oxygen (mg/L)	pH	Turbidity (NTU)	Suspended Solids (mg/L)
I5	Avg.	<0.1	8.0	7.8	26.1	16.4
	Min.	<0.1	6.6	7.6	11.9	6
	Max.	<0.1	8.8	8.2	92.3	47
C3a	Avg.	<0.1	7.5	7.5	22.6	16.1
	Min.	<0.1	5.6	7.3	8.3	4
	Max.	<0.1	8.7	8.3	86.9	51
C3b	Avg.	<0.1	7.6	8.1	51.2	34.3
	Min.	<0.1	6.5	7.5	12.8	7
	Max.	<0.1	8.4	10.1	116.0	88

4.6.2 The weather conditions during the monitoring period were sunny and cloudy. No water quality monitoring was conducted under inclement weather conditions.

4.6.3 The possible influences in monitoring results were suspected to be the presence of fish disturbing riverbed sediment, domestic discharges, and possible erosion of silt after rainfall at up-stream locations.

4.7 Action and Limit Levels

4.7.1 The water quality criteria, namely Action and Limit Levels, specified in the Updated EM&A Manual is shown in **Table 4.5**.

Table 4.5 Derivation of Action and Limit Levels for Water Quality

Parameters	Action	Limit
DO in mg/L (Surface, Middle & Bottom)	5%-ile of baseline data	4 mg/L or 40% saturation at 15 degree Celsius
SS in mg/L (depth-averaged)	95%-ile of baseline data or 120% of upstream control station's SS at the same tide of the same day	99%-ile of baseline, or 130% of upstream station's SS at the same tide of the same day and specific sensitive receiver water quality requirements
Turbidity (Tby) in NTU (depth averaged)	95%-ile of baseline data or 120% of upstream control station's Tby at the same tide of the same day	99%-ile of baseline or 130% of upstream control station's Tby

Notes:

- (1) For DO, non-compliance of the water quality limits occurs when monitoring result is lower than the limits.
- (2) For SS and Tby, non-compliance of the water quality limits occurs when monitoring result is higher than the limits.
- (3) All the figures given in the table are used for reference only and the EPD may amend the figures whenever it is considered as necessary.

4.7.2 Based on the baseline water quality monitoring results and the derivation criteria specified in the Updated EM&A Manual, the Action and Limit Levels have been derived and are presented in **Table 4.6**.

Table 4.6 Derived of Action and Limit Levels for Water Quality

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 at the same tide of the same day	46.8 mg/L or 130% of upstream station's SS at the same tide of the same day and specific sensitive receiver water quality requirements
Turbidity (Tby) in NTU	81.9 mg/L or 120% of upstream control station's Tby at the same tide of the same day	91.9 mg/L or 130% of upstream control station's Tby

5.0 CONCLUSION

5.1 Air Quality

5.1.1 Baseline air quality monitoring was carried out between 4 September and 17 September 2013 at 1 monitoring station SR77. The air quality monitoring results were measured, and the Action and Limit Levels for air quality were derived.

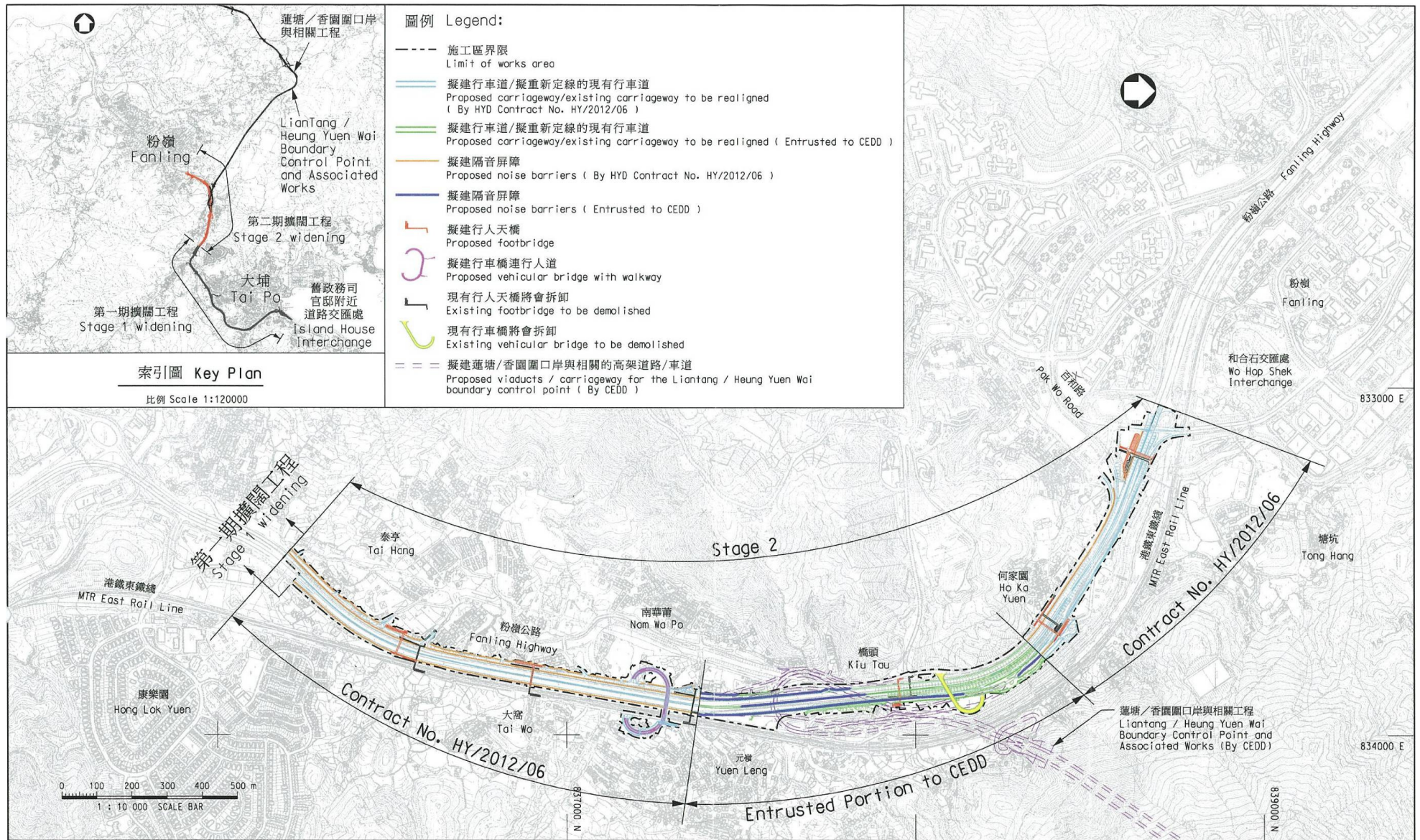
5.2 Construction Noise

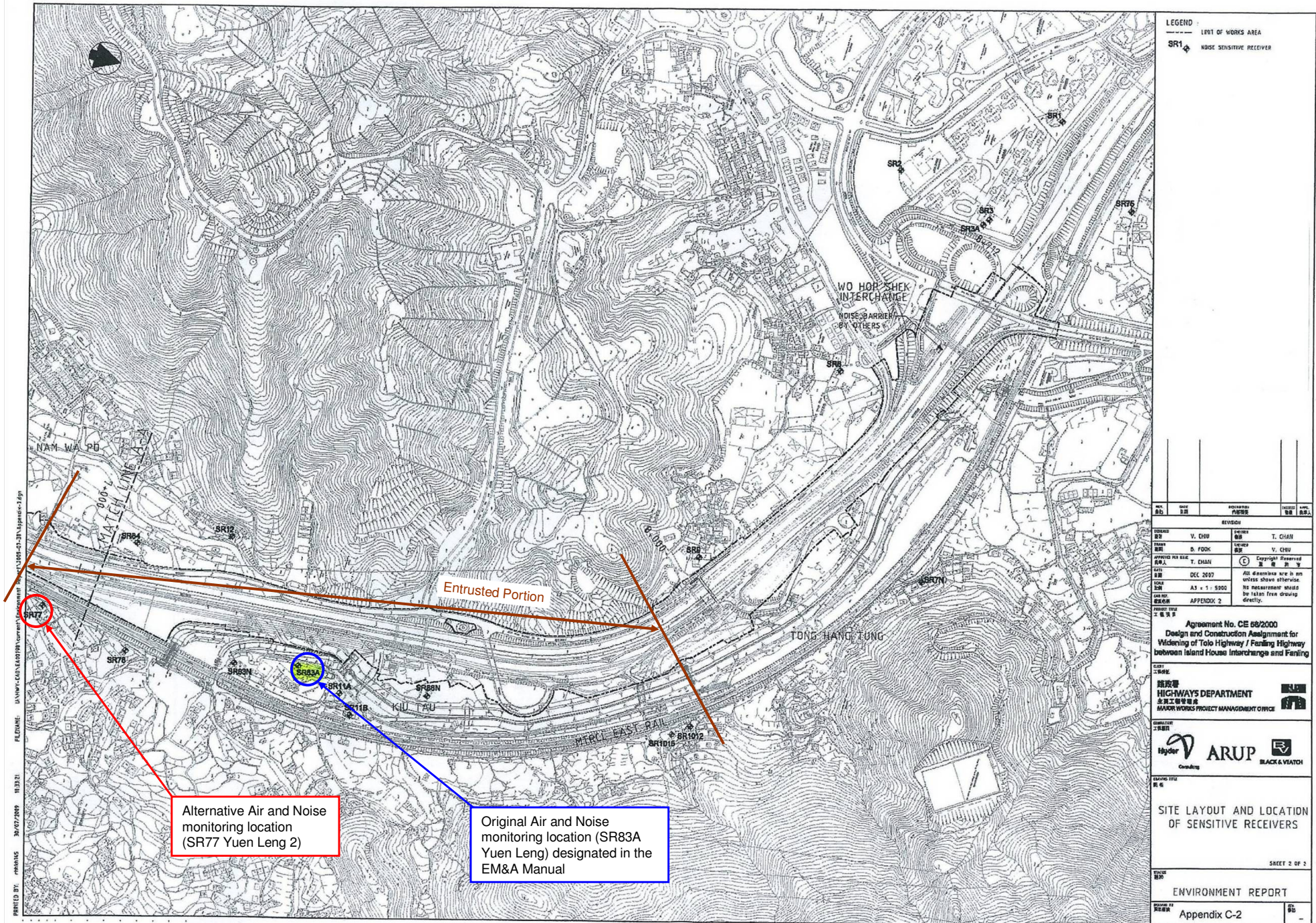
5.2.1 Baseline noise quality monitoring was carried out between 4 September and 18 September 2013 at 1 monitoring station SR77. The averaged baseline daytime noise monitoring results were measured, and the Action Level of construction noise is based on documented valid complaints received, while the Limit Level for each monitoring location is set at a specific limit.

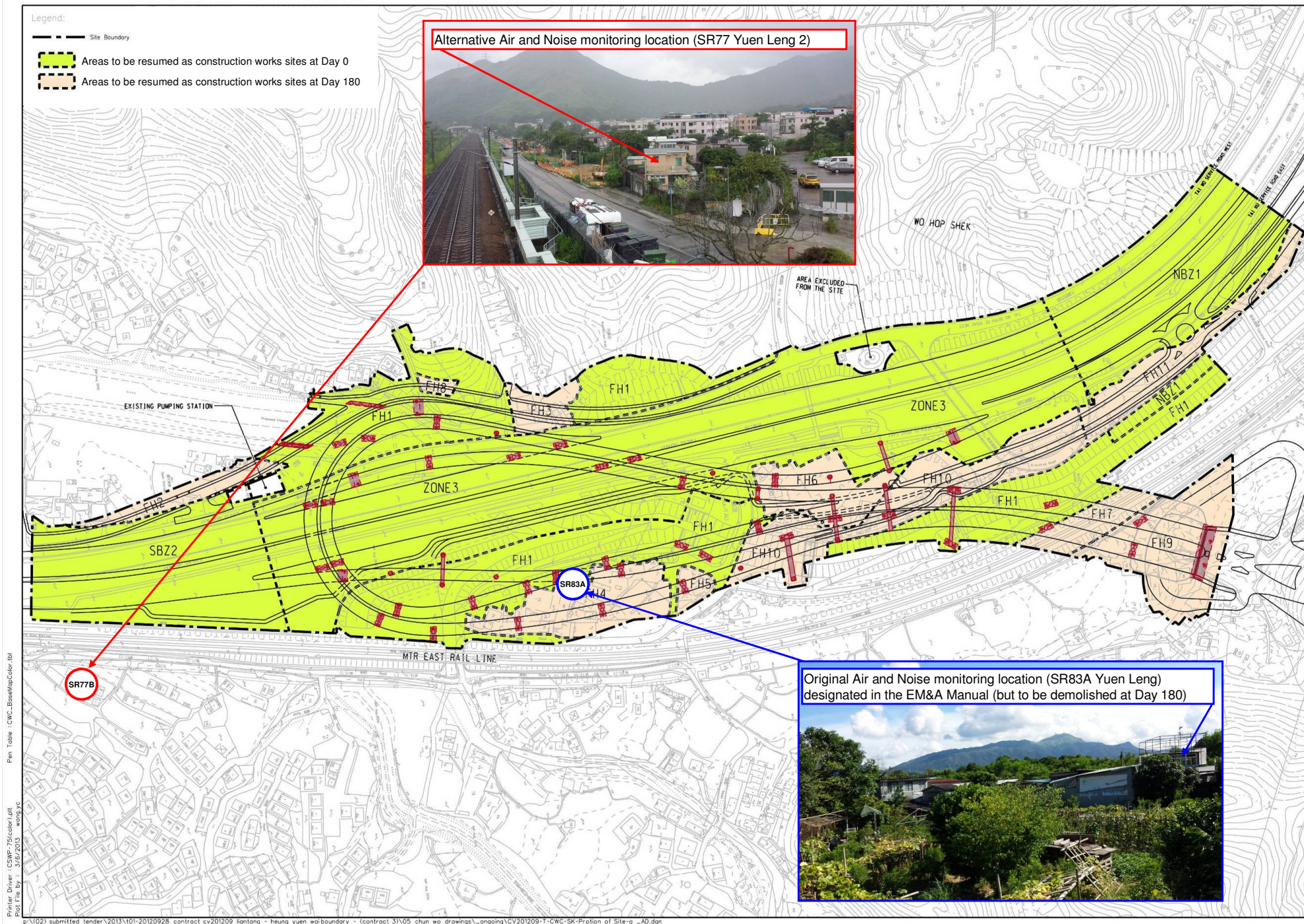
5.3 Water Quality

5.3.1 Baseline water quality monitoring was conducted between 26 August and 20 September 2013 at one impact (I5) and two control stations (C3a and C3b). The water quality monitoring results were measured, and the Action and Limit Levels were derived.

Figures

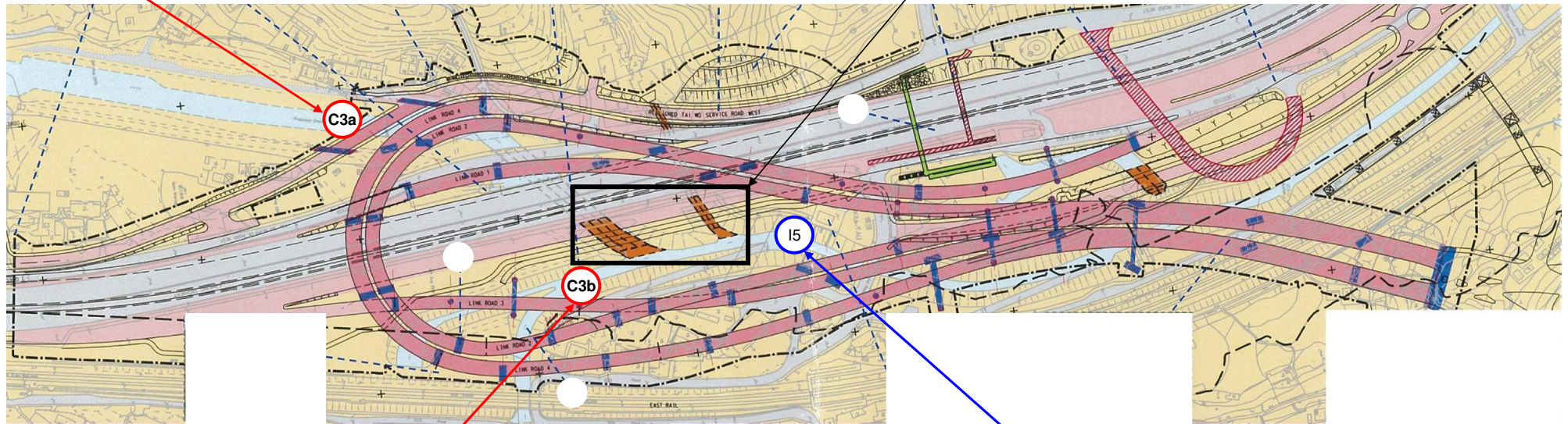








Culvert extension works relevant to Entrusted Portion of Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling – Stage 2



- Impact Water Monitoring Location
- Control Water Monitoring Location

Appendix A

Calibration Certificates of Monitoring Equipment



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE.
 VILLAGE OF CLEVELAND, OH 45002
 513.467.9000
 877.263.7610 TOLL FREE
 513.467.9009 FAX
 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

$$Vstd = \text{Diff. Vol} [(Pa - \text{Diff. Hg}) / 760] (298 / Ta)$$

$$Qstd = Vstd / \text{Time}$$

$$Va = \text{Diff Vol} [(Pa - \text{Diff Hg}) / Pa]$$

$$Qa = Va / \text{Time}$$

For subsequent flow rate calculations:

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

$$Qa = 1/m \{ [\text{SQRT}(H2O(Ta/Pa))] - b \}$$

TSP Sampler Calibration**SITE**

Location: **Lian Tang 3** Date: **September 4, 2013**
Sampler: **TE-5170 MFC (Serial # : 2359)** Tech: **Sam Wong**

CONDITIONS

Barometric Pressure (in Hg):	39.80	Corrected Pressure (mm Hg):	1011
Temperature (deg F):	79	Temperature (deg K):	299
Average Press. (in Hg):	39.80	Corrected Average (mm Hg):	1011
Average Temp. (deg F):	79	Average Temp. (deg K):	299

CALIBRATION ORIFICE

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

CALIBRATIONS

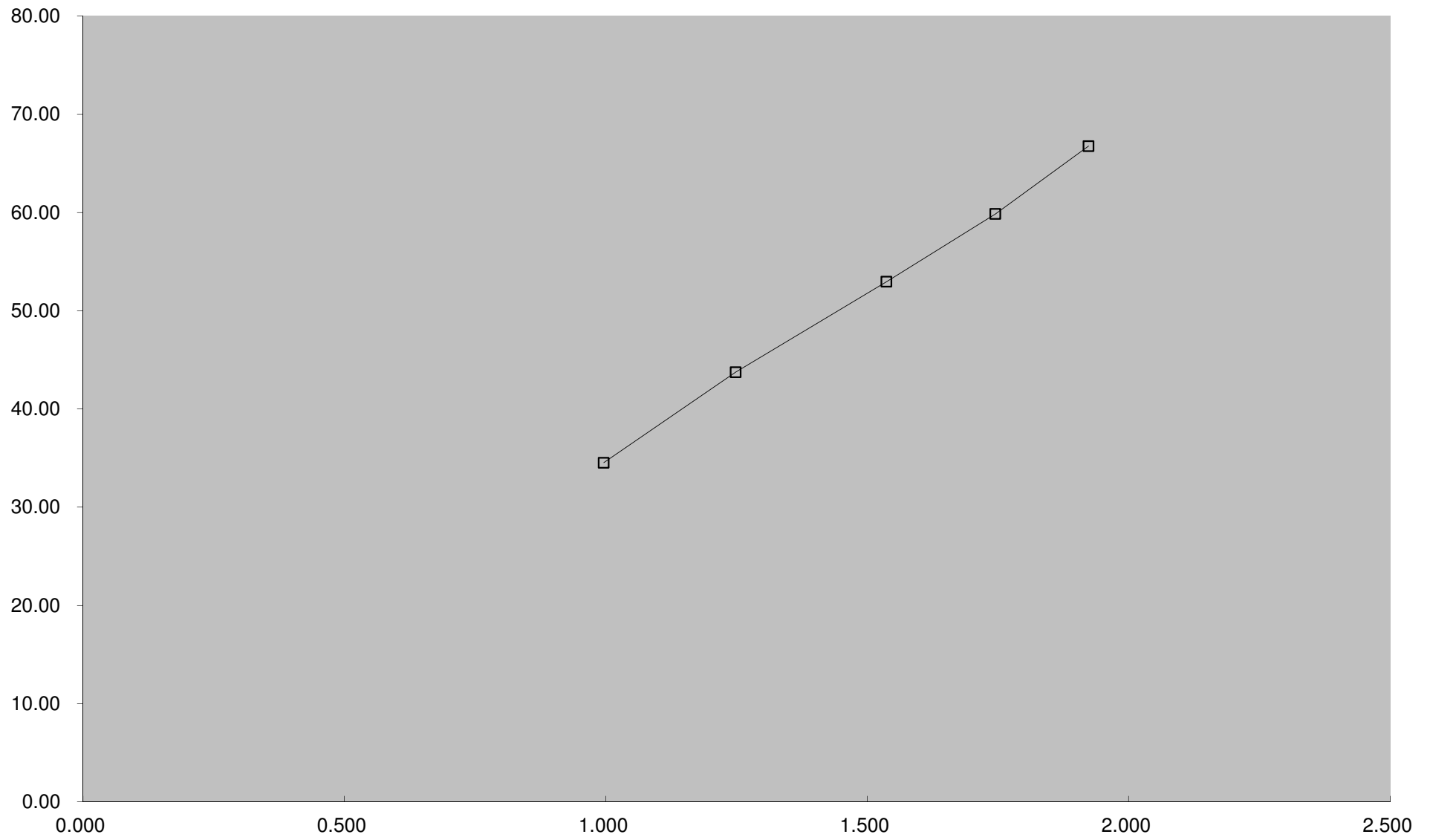
Plate or Test #	H2O (in)	Qstd (m3/min)	I (chart)	IC (corrected)	LINEAR REGRESSION	
1	12.40	1.923	58.0	66.77	Slope =	34.2153
2	10.20	1.745	52.0	59.86	Intercept =	0.5950
3	7.90	1.537	46.0	52.95	Corr. coeff.=	0.9995
4	5.20	1.248	38.0	43.74		
5	3.30	0.996	30.0	34.54	# of Observations:	5

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



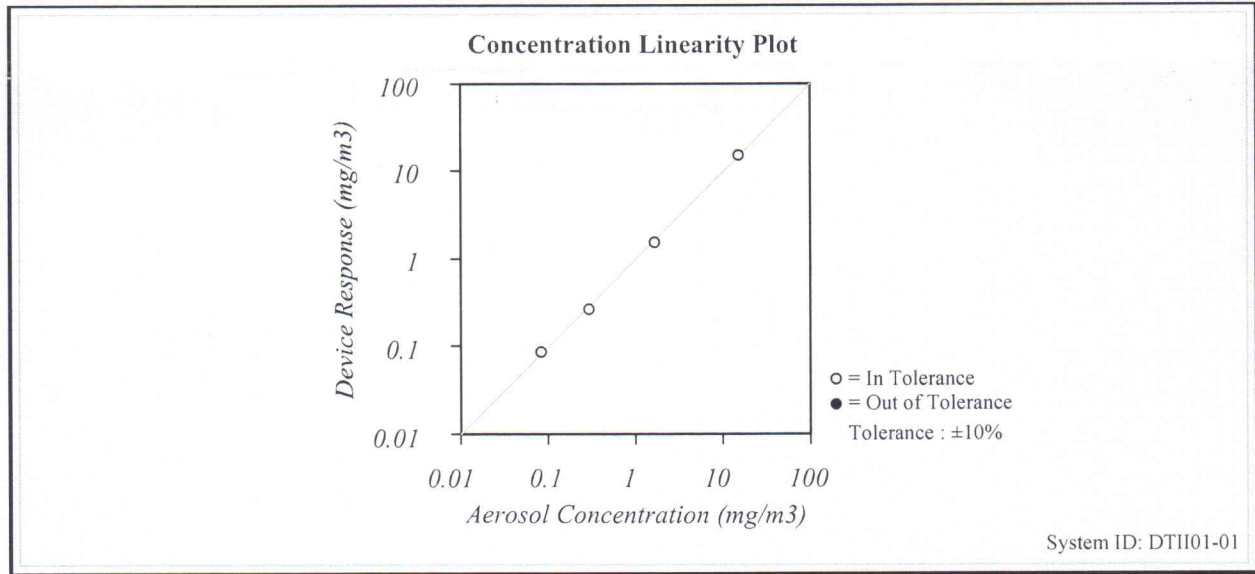


CERTIFICATE OF CALIBRATION AND TESTING

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, A1 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 Vang

Calibrated

Final Function Check

February 12, 2013

Date



Calibration Certificate

Certificate No. 27147

Page 1 of 2 Pages

Customer : Enovative Environmental Service Limited

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

Order No. : Q22746

Date of receipt : 18-Oct-12

Item Tested

Description : Sound Level Calibrator

Manufacturer : B&K

Model : Type 4231

Serial No. : 2685684

Test Conditions

Date of Test : 31-Oct-12

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	13535	NIM-PRC & SCL-HKSAR
S024	Sound Level Calibrator	15136	NIM-PRC & SCL-HKSAR
S041	Universal Counter	15610	SCL-HKSAR
S206	Sound Level Meter	16338	SCL-HKSAR
S031	6½ dgt. Multimeter	20032	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 : 
Stephen Chu

Approved by : 
Dorothy Cheuk

Date: 31-Oct-12

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. 27147

Page 2 of 2 Pages

Results :

1. Level Accuracy

UUT Nominal Value (dB)	Measured Value (dB)	IEC 942 Class 1 Spec.
94	94.10	± 0.3 dB
114	114.03	

Uncertainty : ± 0.1 dB

2. Frequency

UUT Nominal Value	Measured Value	IEC 942 Class 1 Spec.
1 kHz	0.999 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 : < 1.5 %

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 : 1009 hPa.

----- END -----



Calibration Certificate

Certificate No. **27146**

Page 1 of 3 Pages

Customer : Enovative Environmental Service Limited

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

Order No. : Q22746

Date of receipt : 18-Oct-12

Item Tested

Description : Sound Level Meter

Manufacturer : B&K

Model : 2238

Serial No. : 2694908

Test Conditions

Date of Test : 31-Oct-12

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 651 Type1 and IEC 804 Type1 specifications after adjustment.

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	C101623	SCL-HKSAR
S024	Sound Level Calibrator	15136	NIM-PRC & 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 : 
Stephen Chu

Approved by : 
Dorothy Cheuk

Date: 31-Oct-12

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. 27146

Page 2 of 3 Pages

Results :

1. SPL Accuracy

UUT Setting				Applied Value (dB)	UUT Reading (dB)
Range	Freq. Wgt.	Bandwith	Center Freq.		
20 ~ 100	A	BB/F	--	94.0	93.9
	A	BB/S	--		93.9
	C	BB/F	--		93.9
40 ~ 120	A	BB/F	--	94.0	94.0
	A	BB/F	--	114.0	113.8

IEC 651 Type 1 Spec. : ± 0.7 dB

Uncertainty : ± 0.1 dB

2. Level Stability : 0.0 dB

IEC 651 Type 1 Spec. : ± 0.3 dB

Uncertainty : ± 0.01 dB

3. Linearity

3.1 Level Linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec. (Primary Indicator Range)
140	114.0	114.0	0.0	± 0.7 dB
130	104.0	104.0	0.0	
120	94.0	94.0 (Ref.)	--	
110	84.0	84.1	+ 0.1	
100	74.0	74.1	+ 0.1	
90	64.0	64.0	0.0	
80	54.0	54.0	0.0	

Uncertainty : ± 0.1 dB

3.2 Differential level linearity

UUT Range (dB)	Applied Value (dB)	UUT Reading (dB)	Variation (dB)	IEC 651 Type 1 Spec.
120	84.0	84.1	+ 0.1	± 0.4 dB
	94.0	94.0 (Ref.)	--	
	95.0	95.0	0.0	± 0.2 dB

Uncertainty : ± 0.1 dB



Calibration Certificate

Certificate No. 27146

Page 3 of 3 Pages

4. Frequency Weighting

A weighting

Frequency	Attenuation (dB)	IEC 651 Type 1 Spec.
31.5 Hz	- 39.3	- 39.4 dB, ± 1.5 dB
63 Hz	- 26.1	- 26.2 dB, ± 1.5 dB
125 Hz	- 16.2	- 16.1 dB, ± 1 dB
250 Hz	- 8.7	- 8.6 dB, ± 1 dB
500 Hz	- 3.3	- 3.2 dB, ± 1 dB
1 kHz	0.0 (Ref)	0 dB, ± 1 dB
2 kHz	+ 1.2	+ 1.2 dB, ± 1 dB
4 kHz	+ 0.9	+ 1.0 dB, ± 1 dB
8 kHz	- 1.2	- 1.1 dB, + 1.5 dB ~ -3 dB
16 kHz	- 6.7	- 6.6 dB, + 3 dB ~ - ∞

Uncertainty : ± 0.1 dB

5. Time Averaging

Applied Burst duty Factor	Applied Leq Value (dB)	UUT Reading (dB)	IEC 804 Type 1 Spec.
continuous	40.0	40.0	--
1/10	40.0	39.9	± 0.5 dB
1/10 ²	40.0	39.9	
1/10 ³	40.0	39.8	± 1.0 dB
1/10 ⁴	40.0	39.8	

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 : 1009 hPa
 4. The UUT was adjusted with the supplied 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: HK1322426
LABORATORY: HONG KONG
DATE RECEIVED: 17/08/2013
DATE OF ISSUE: 23/08/2013

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: 23 August, 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
Fax: 852-2610 2021
Email: hongkong@alsglobal.com


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

This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.

Page 1 of 2

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



Work Order: HK1322426
Date of Issue: 23/08/2013
Client: ALS TECHNICHEM (HK) PTY LTD

Equipment Type: Multimeter
Brand Name: YSI
Model No.: Professional Plus
Serial No.: 09K100735
Equipment No.: --
Date of Calibration: 23 August, 2013 **Date of next Calibration:** 23 November, 2013

Parameters:

Conductivity

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

Expected Reading (uS/cm)	Displayed Reading (uS/cm)	Tolerance (%)
146.9	147.1	0.1
6667	6564	-1.5
12890	12424	-3.6
58670	58800	0.2
Tolerance Limit (±%)		10.0

Dissolved Oxygen

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
4.38	4.49	0.11
7.04	7.19	0.15
8.48	8.57	0.09
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	4.11	0.11
7.0	7.06	0.06
10.0	9.98	-0.02
Tolerance Limit (±pH unit)		0.20

Salinity

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	--
10	10.36	3.6
20	20.85	4.3
30	30.40	1.3
Tolerance Limit (±%)		10.0

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)
12.0	12.8	0.8
23.0	23.5	0.5
38.0	37.7	-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



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,
PROJECT: N.T., HONG KONG

WORK ORDER: HK1318971
LABORATORY: HONG KONG
DATE RECEIVED: 15/07/2013
DATE OF ISSUE: 17/07/2013

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: Turbidity
Equipment Type: Turbidimeter
Brand Name: HACH
Model No.: 2100 Q
Serial No.: 11050C001264
Equipment No.: --
Date of Calibration: 15 July, 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

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

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Page 1 of 2

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

Work Order: HK1318971
Date of Issue: 17/07/2013
Client: ALS TECHNICHEM (HK) PTY LTD



Equipment Type: Turbidimeter
Brand Name: HACH
Model No.: 2100 Q
Serial No.: 11050C001264
Equipment No.: --
Date of Calibration: 15 July, 2013

Date of next Calibration: 15 October, 2013

Parameters:

Turbidity

Method Ref: APHA 21st Ed. 2130B

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.40	--
4	4.33	8.3
40	36.8	-8.0
80	77.3	-3.4
400	383	-4.3
800	798	-0.3
	Tolerance Limit ($\pm\%$)	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

Appendix B

Proposal of Alternative Air and Noise Monitoring Location

Our Ref.: HJC/FL/19645/91321T.301/mw
Date: 2 September 2013

By Fax (2674 7732) and Post

AECOM Site Office
No. 217 D, Kwan Tei North Tsuen
Fanling
NT

Attn.: Mr. Kelvin K.T. Lee

**Meinhardt Infrastructure and
Environment Ltd**
邁進基建環保工程顧問有限公司

4/F Wah Ming Centre
421 Queen's Road West
Hong Kong
香港皇后大道西421號華明中心4樓

Tel 電話: +852 2858 0738
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mail@meinhardt.com.hk
www.meinhardtgroup.com

Dear Sirs

Re: 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
Proposal of Alternative Air and Noise Monitoring Location and
Commencement of Baseline Monitoring

Meinhardt Infrastructure & Environment Ltd has been appointed by the Contractor (Chun Wo Construction & Engineering Co Ltd) of the captioned entrusted portion of works as the Environmental Team (ET) to fulfill the corresponding EM&A requirements pursuant to Environmental Permit No. EP-324/2008A in accordance with the EM&A Manual (September 2009 version) for Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling – Stage 2. The demarcation of the captioned entrusted portion of works is indicated in the enclosed **Figure 1**.

The above mentioned EM&A Manual originally specified that the monitoring station SR83A (Yuen Leng) is one of the air and noise monitoring stations during the baseline and impact monitoring (as indicated in the enclosed **Figure 2**), which falls within the demarcation of the captioned entrusted portion of works. However, it is known that the premises at and adjacent to SR83A will soon be resumed and then demolished to form the construction sites for Liantang/Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure works, as illustrated in the enclosed **Figure 3**. As such, SR83A is considered no longer appropriate to carry out the baseline and impact monitoring for the captioned entrusted portion of works.

In accordance with Sections 2.5.2 and 3.4.2 of the above mentioned EM&A Manual, the ET should propose an alternative air and noise monitoring location based on the criteria set out in Sections 2.5.3, 2.5.4, 3.4.3 and 3.4.4, and seek the approval from the Engineer's Representative and the agreement from the Independent Environmental Checker (IEC) of the Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling – Stage 2.

We have conducted site visits and identified an alternative air and noise monitoring location in the nearby premises SR77 (Yuen Leng 2) as also indicated in **Figures 2 and 3**. The basic information and on-site conditions of SR77 have been reviewed and summarized below:

Our Ref.: HJC/FL/19645/91321T.301/mw
Date: 2 September 2013
Page 2

- It has already been identified as also the air and noise sensitive receivers in the above mentioned EM&A Manual (Tables 1-2 and 1-3);
- It is located nearer and hence more representative to the entrusted Fanling Highway widening works, and it is more distant from the Liantang works;
- It is suitable for the installation of a High Volume Sampler, real-time dust meter and sound level meter; and
- It has the direct line of sight towards the works sites of the entrusted Fanling Highway widening works.

As such, we consider SR77 is appropriate as the alternative location for carrying out the air and noise monitoring for the captioned entrusted portion of works, and hereby propose its replacement of the originally designated SR83A monitoring location. We would like to solicit for your approval on the above proposal and your facilitation to also obtain the approval and agreement from the ER and IEC, respectively, of the Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling – Stage. Enclosed please find the schedule of the baseline air and noise monitoring.

Also, as the Contractor has informed you that our baseline water quality monitoring at the locations in **Figure 4** has been commenced, please find the baseline monitoring schedule for your notification to the relevant parties, including the EPD.

Should you have any queries, please do not hesitate to contact our ET Leader, Mr. Fredrick Leong, at 2859 1739 or the undersigned.

Yours faithfully
MEINHARDT INFRASTRUCTURE AND ENVIRONMENT LTD



Helen Cochrane
Director

Encl.

c.c. : Chun Wo – Site Office (By Post) (w/e)
Chun Wo – Head Office (By Fax 2785 6728 & Post) (w/e)

Distn. : HJC FL

Tentative Baseline Monitoring Schedule - August 2013

August 2013						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31
	Water Quality		Water Quality		Water Quality	

Tentative Baseline Monitoring Schedule - September 2013

September 2013						
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1	2	3	4	5	6	7
	Water Quality	3 x 1h and 24h TSP Continuous noise	3 x 1h and 24h TSP Continuous noise Water Quality	3 x 1h and 24h TSP Continuous noise	3 x 1h and 24h TSP Continuous noise Water Quality	3 x 1h and 24h TSP Continuous noise
8	9	10	11	12	13	14
3 x 1h and 24h TSP Continuous noise	3 x 1h and 24h TSP Continuous noise Water Quality	3 x 1h and 24h TSP Continuous noise	3 x 1h and 24h TSP Continuous noise Water Quality	3 x 1h and 24h TSP Continuous noise	3 x 1h and 24h TSP Continuous noise Water Quality	3 x 1h and 24h TSP Continuous noise
15	16	17	18	19	20	21
3 x 1h and 24h TSP Continuous noise	3 x 1h and 24h TSP Continuous noise Water Quality	3 x 1h and 24h TSP Continuous noise	3 x 1h and 24h TSP Continuous noise Water Quality	3 x 1h and 24h TSP Continuous noise Water Quality	3 x 1h and 24h TSP Continuous noise Water Quality	3 x 1h and 24h TSP Continuous noise Water Quality
22	23	24	25	26	27	28
29	30					

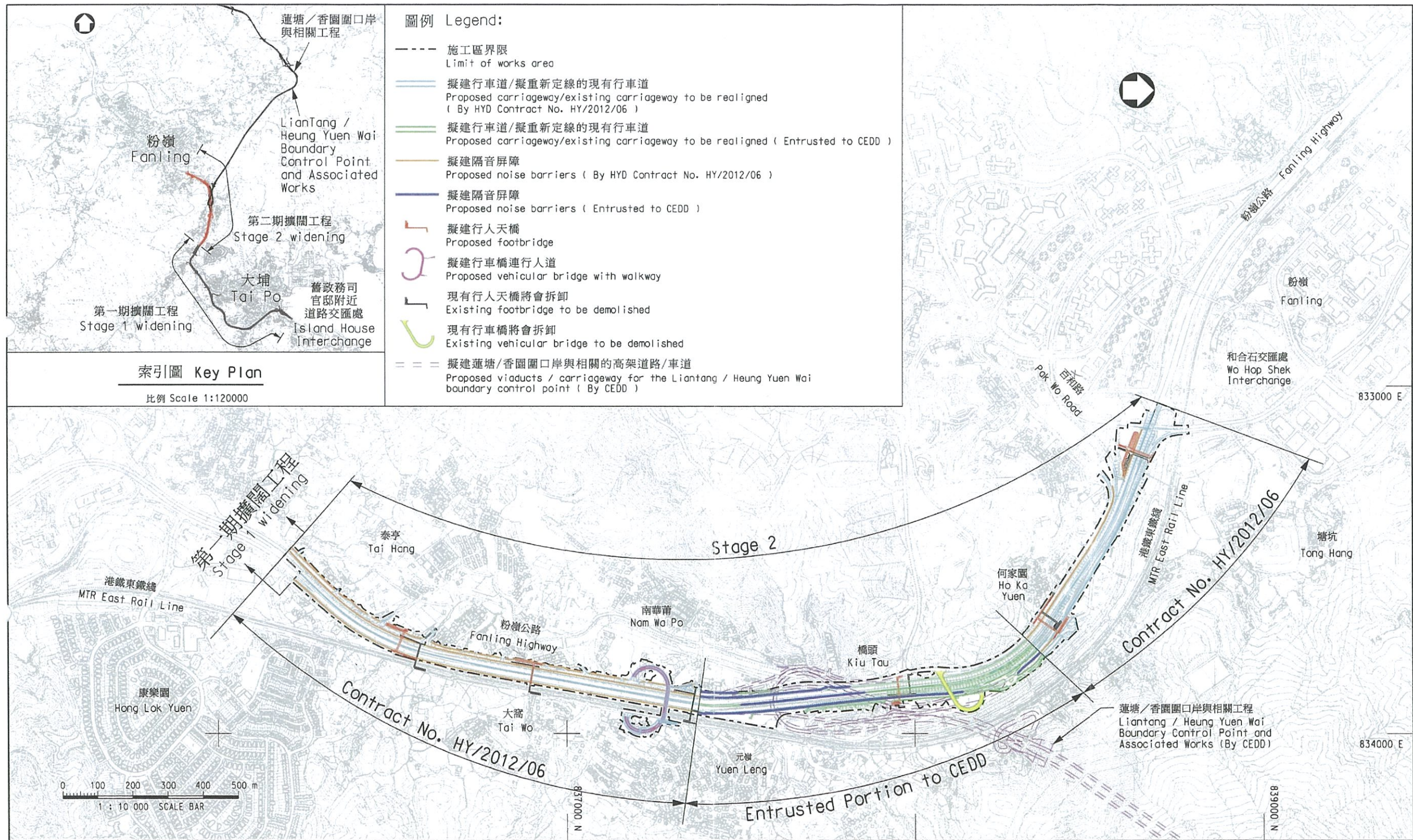


Figure 1: Demarcation of Entrusted Portion of Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling – Stage 2

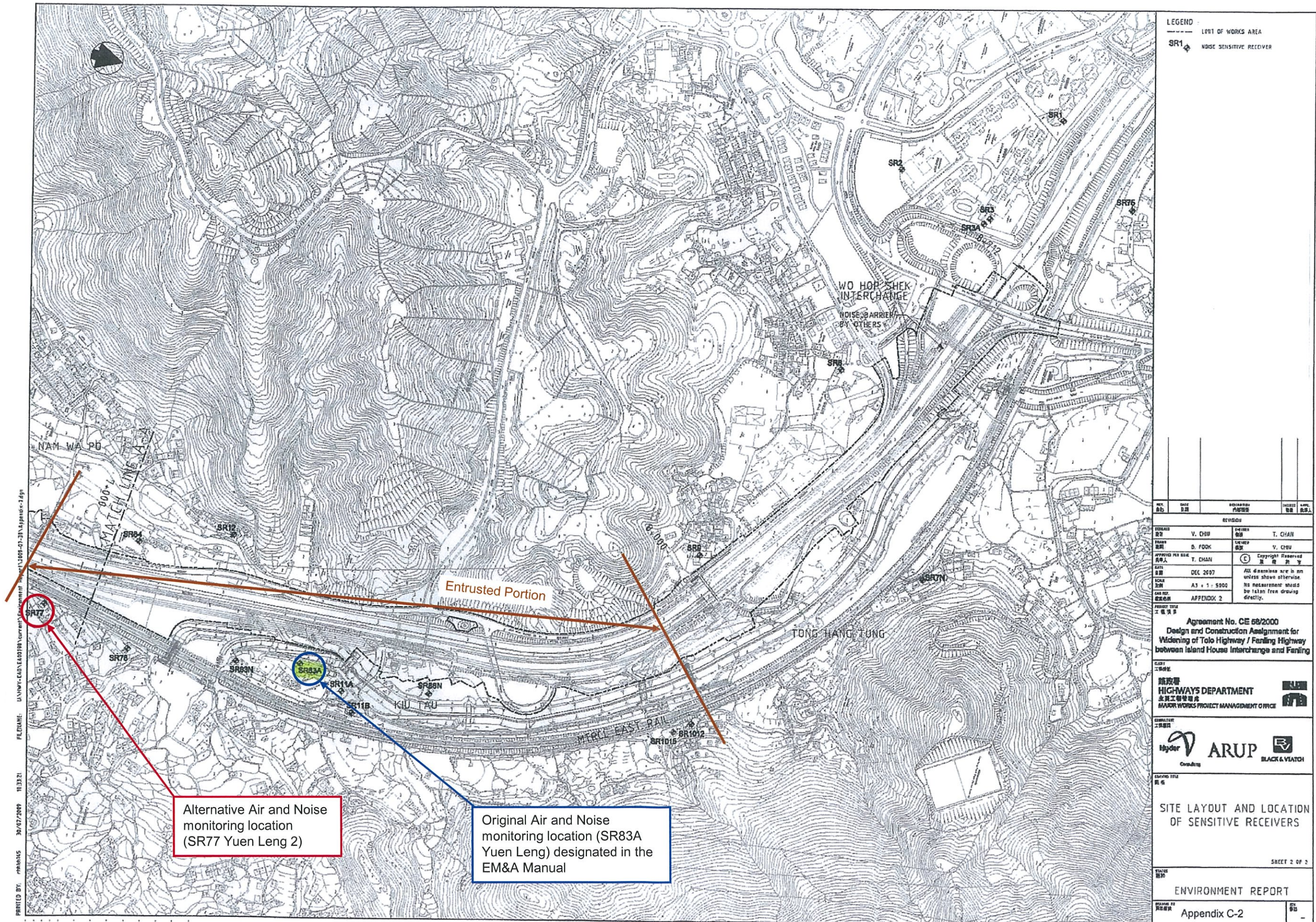


Figure 2: Original and Proposed Alternative Air and Noise Monitoring Locations

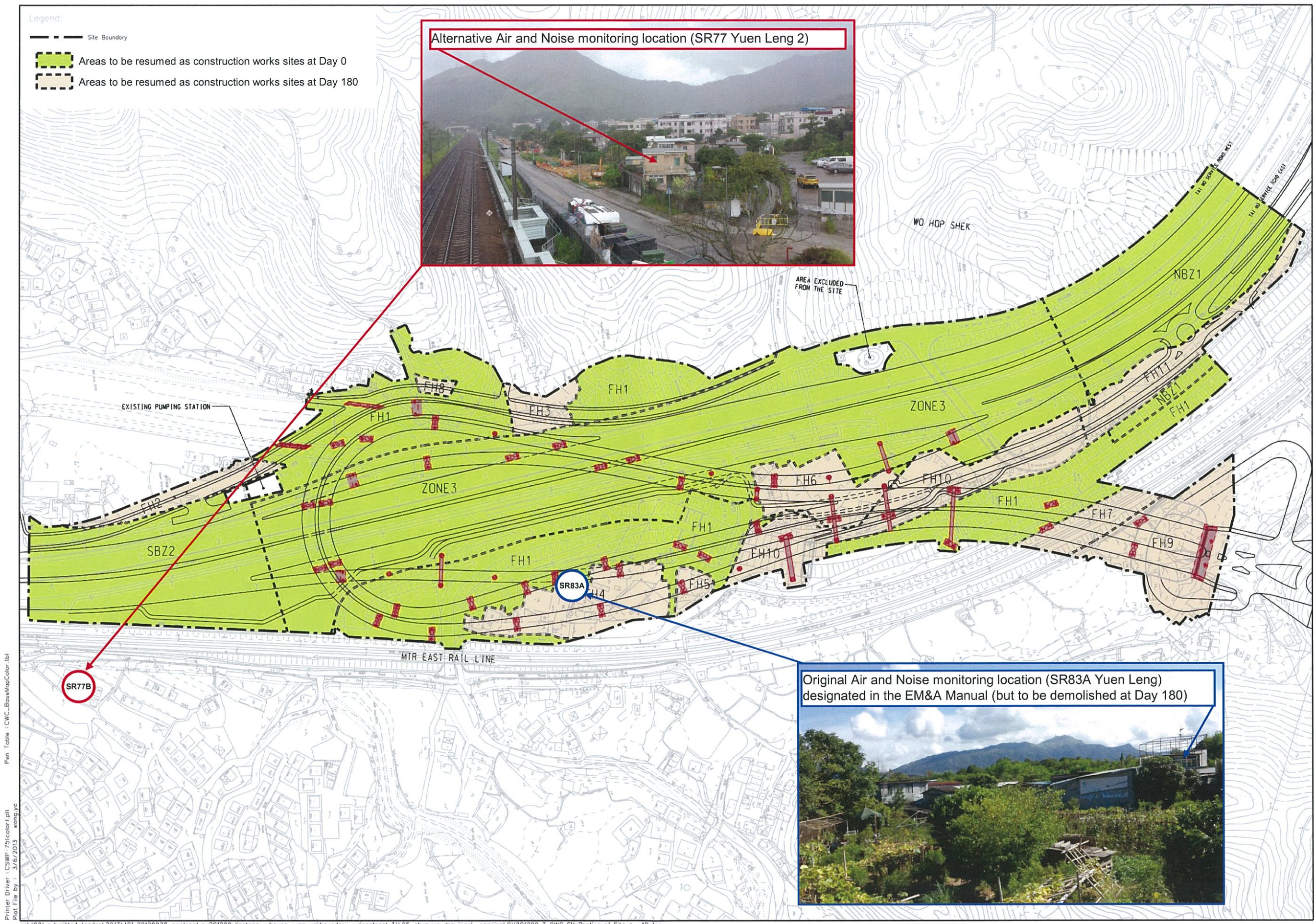
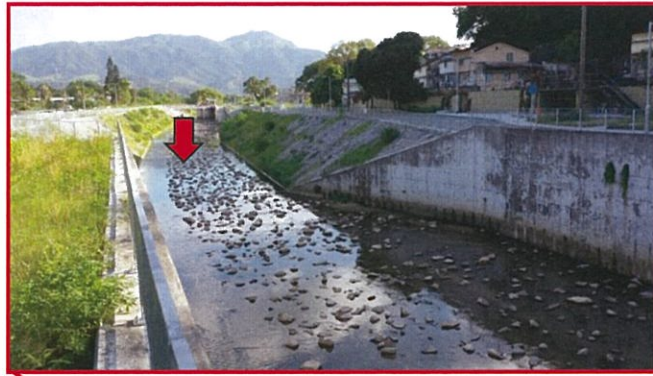
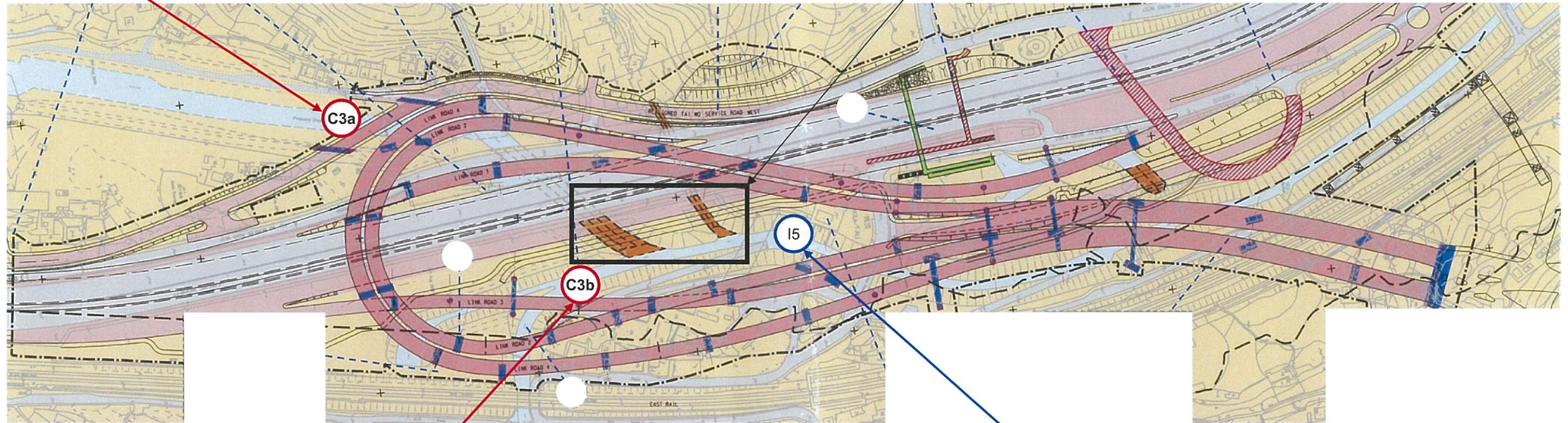


Figure 3: Demarcation of Sites for Resumption for Liantang / Heung Yuen Wai Boundary Control Point Site Formation and Infrastructure works



Culvert extension works relevant to Entrusted Portion of Widening of Tolo Highway/Fanling Highway between Island House Interchange and Fanling – Stage 2



- Impact Water Monitoring Location
- Control Water Monitoring Location

Figure 4: Water Monitoring Locations

Appendix C

Baseline Air Quality Monitoring Results

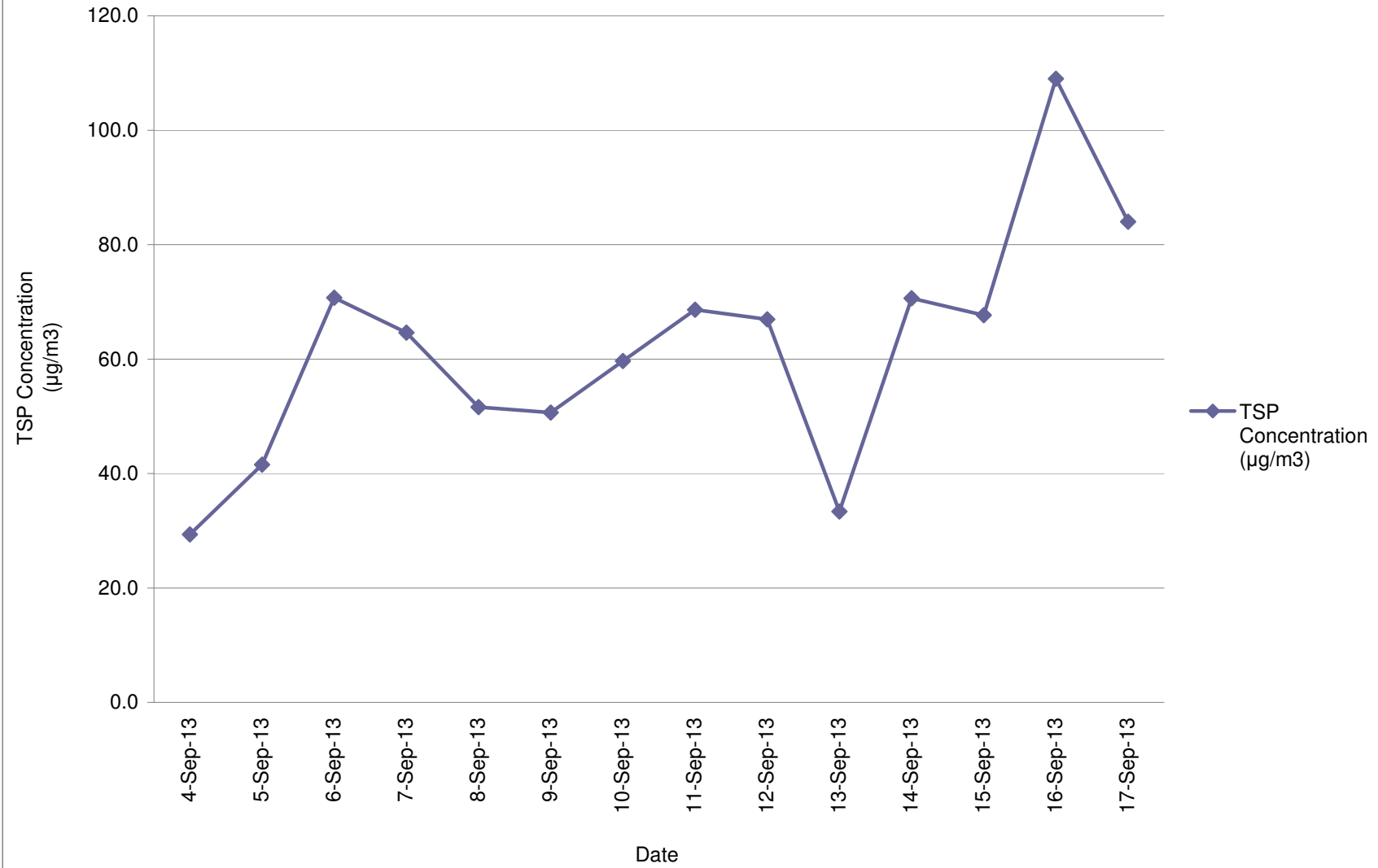
Appendix C
 Baseline Air Quality Monitoring Results
 24-hour TSP Monitoring Results

24-Hour TSP Monitoring Result at station: SR77

Sampling Date	Weather Condition	Wt. of paper (g)			Elapse Time			Flow Rate (m ³ /min)			Total Volume (m ³)	TSP Concentration (µg/m ³)
		Initial Wt.	Final Wt.	Wt. of Dust	Initial	Final	Sampling Hour	Initial	Final	Avg Flow Rate		
4-Sep-13	Rainy	3.5689	3.6276	0.0587	101.39	125.40	24.01	1.36	1.42	1.39	1998.87	29.4
5-Sep-13	Rainy	3.5320	3.6167	0.0847	125.40	149.40	24.00	1.42	1.42	1.42	2038.81	41.5
6-Sep-13	Sunny	3.5377	3.6819	0.1442	149.40	173.40	24.00	1.42	1.42	1.42	2038.81	70.7
7-Sep-13	Sunny	3.5439	3.6756	0.1317	173.40	197.40	24.00	1.42	1.42	1.42	2038.81	64.6
8-Sep-13	Sunny	3.5455	3.6507	0.1052	197.40	221.40	24.00	1.42	1.42	1.42	2038.81	51.6
9-Sep-13	Sunny	3.5565	3.6598	0.1033	221.40	245.40	24.00	1.42	1.42	1.42	2038.81	50.7
10-Sep-13	Sunny	3.5560	3.6776	0.1216	245.40	269.40	24.00	1.42	1.42	1.42	2038.81	59.6
11-Sep-13	Sunny	2.7214	2.8613	0.1399	269.40	293.40	24.00	1.42	1.42	1.42	2038.81	68.6
12-Sep-13	Sunny	2.7198	2.8563	0.1365	293.40	317.40	24.00	1.42	1.42	1.42	2038.81	67.0
13-Sep-13	Sunny	2.7202	2.7882	0.0680	317.40	341.40	24.00	1.42	1.42	1.42	2038.81	33.4
14-Sep-13	Sunny	2.7154	2.8594	0.1440	341.40	365.40	24.00	1.42	1.42	1.42	2038.81	70.6
15-Sep-13	Sunny	2.7196	2.8576	0.1380	365.40	389.40	24.00	1.42	1.42	1.42	2038.81	67.7
16-Sep-13	Sunny	2.7308	2.9530	0.2222	389.40	413.40	24.00	1.42	1.42	1.42	2038.81	109.0
17-Sep-13	Sunny	2.7298	2.9011	0.1713	413.40	437.40	24.00	1.42	1.42	1.42	2038.81	84.0
											Average	62.0
											Min	29.4
											Max	109.0

Note: No major dust source observed during the monitoring period

24-Hour TSP Monitoring Result at Station: SR77



Appendix C

Baseline Air Quality Monitoring Results

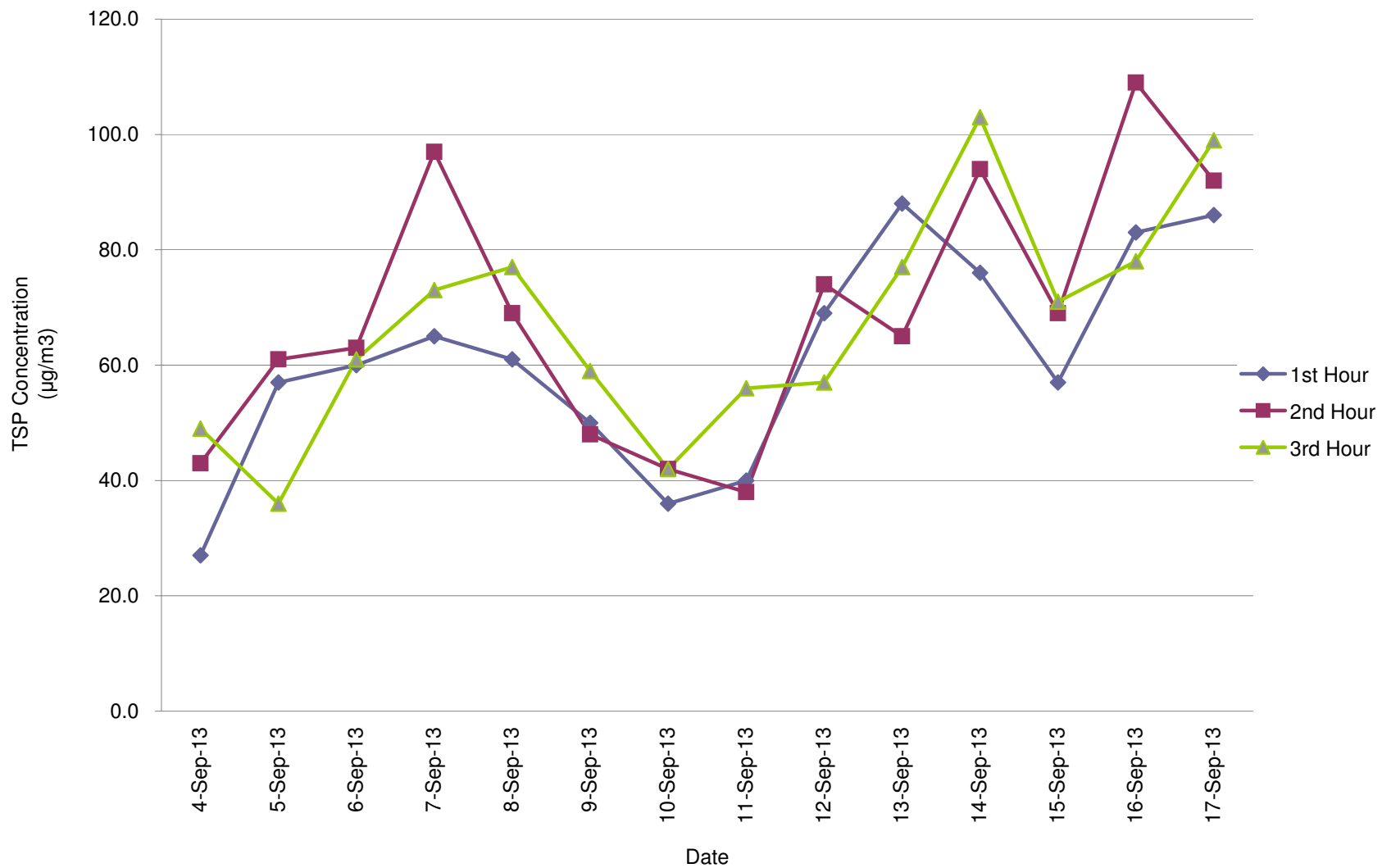
24-hour TSP Monitoring Results

1-Hour TSP Monitoring Result at station: SR77

Date	Weather Condition	Time	Conc.(µg/m ³)		
			1 st Hour	2 nd Hour	3 rd Hour
4-Sep-13	Rainy	11:20 - 14:24	27.0	43.0	49.0
5-Sep-13	Rainy	11:18 - 14:22	57.0	61.0	36.0
6-Sep-13	Sunny	7:53 - 10:57	60.0	63.0	61.0
7-Sep-13	Sunny	9:11 - 12:15	65.0	97.0	73.0
8-Sep-13	Sunny	10:00 - 13:04	61.0	69.0	77.0
9-Sep-13	Sunny	9:30 - 12:34	50.0	48.0	59.0
10-Sep-13	Sunny	12:00 - 15:04	36.0	42.0	42.0
11-Sep-13	Sunny	12:00 - 15:04	40.0	38.0	56.0
12-Sep-13	Sunny	12:00 - 15:04	69.0	74.0	57.0
13-Sep-13	Sunny	12:00 - 15:04	88.0	65.0	77.0
14-Sep-13	Sunny	12:00 - 15:04	76.0	94.0	103.0
15-Sep-13	Sunny	12:00 - 15:04	57.0	69.0	71.0
16-Sep-13	Sunny	12:00 - 15:04	83.0	109.0	78.0
17-Sep-13	Sunny	12:00 - 15:04	86.0	92.0	99.0
			Average	65.6	
			Max	109.0	
			Min	27.0	

Note: No major dust source observed during the monitoring period

1-Hour TSP Monitoring Result at station: SR77



Appendix D

Baseline Noise Monitoring Results

Appendix D

Baseline Noise Monitoring Results

Location: SR77 Yuen Leng

Monitoring Period: 4 Sep 2013 - 18 Sep 2013

Weather: Apart from 4 and 5 Sept 2013 being rainy days, the weather of remaining dates were sunny.

Baseline Daytime Noise Level, dB(A)

Start time	Finish time	Leq	L10	L90
7:00	7:30	67.1	70.9	57.8
7:30	8:00	68.0	71.0	57.9
8:00	8:30	68.3	71.6	59.4
8:30	9:00	68.5	71.8	59.8
9:00	9:30	68.3	71.9	59.6
9:30	10:00	68.0	71.4	59.4
10:00	10:30	67.7	71.0	59.3
10:30	11:00	72.2	75.3	60.5
11:00	11:30	69.4	73.1	59.7
11:30	12:00	67.6	70.7	58.8
12:00	12:30	66.7	70.4	58.3
12:30	13:00	66.5	70.0	58.7
13:00	13:30	67.4	71.0	59.3
13:30	14:00	68.1	70.8	59.5
14:00	14:30	67.5	70.6	59.5
14:30	15:00	68.8	71.4	61.3
15:00	15:30	67.9	71.6	59.9
15:30	16:00	69.0	70.9	58.9
16:00	16:30	67.2	70.7	58.7
16:30	17:00	67.3	70.3	58.6
17:00	17:30	66.9	70.1	58.5
17:30	18:00	66.2	69.7	58.0
18:00	18:30	66.7	69.9	57.8
18:30	19:00	65.7	69.6	57.2
	average	67.8	71.1	59.0
	min	65.7	69.6	57.2
	max	72.2	75.3	61.3

Note: +3dB(A) façade correction included

Appendix D

Baseline Noise Monitoring Results

Location: SR77 Yuen Leng

Monitoring Period: 4 Sep 2013 - 18 Sep 2013

Weather: Apart from 4 and 5 Sept 2013 being rainy days, the weather of remaining dates were sunny.

Baseline Evening, Sunday and Public Holiday Noise Level, dB(A)

Start time	Finish time	Leq	L10	L90
7:00	7:05	62.8	67.9	53.3
7:05	7:10	64.8	69.3	54.2
7:10	7:15	65.1	69.2	53.9
7:15	7:20	65.4	70.2	55.0
7:20	7:25	63.0	66.1	53.6
7:25	7:30	70.8	69.8	53.5
7:30	7:35	64.9	69.4	54.8
7:35	7:40	64.2	68.7	55.4
7:40	7:45	64.3	70.0	54.9
7:45	7:50	64.9	66.6	54.5
7:50	7:55	64.9	69.2	55.6
7:55	8:00	64.9	68.4	55.8
8:00	8:05	65.5	68.5	55.6
8:05	8:10	66.7	72.5	55.8
8:10	8:15	64.6	68.8	56.1
8:15	8:20	64.4	68.7	55.7
8:20	8:25	73.6	70.2	56.4
8:25	8:30	66.0	70.8	57.1
8:30	8:35	63.7	67.8	54.9
8:35	8:40	64.6	68.9	56.2
8:40	8:45	67.8	71.1	56.2
8:45	8:50	65.7	69.7	56.2
8:50	8:55	66.6	70.1	56.1
8:55	9:00	64.5	66.9	56.8
9:00	9:05	65.6	70.2	55.6
9:05	9:10	64.0	68.0	55.6
9:10	9:15	66.6	68.0	56.1
9:15	9:20	66.4	71.6	55.1
9:20	9:25	63.5	65.5	56.6
9:25	9:30	66.1	70.2	56.5
9:30	9:35	66.9	69.2	56.7
9:35	9:40	64.6	68.5	56.3
9:40	9:45	65.9	70.7	56.1
9:45	9:50	64.3	67.5	57.0
9:50	9:55	65.8	69.8	56.1
9:55	10:00	66.4	70.0	56.2
10:00	10:05	66.3	69.2	56.5
10:05	10:10	64.2	69.2	56.3
10:10	10:15	66.2	70.4	56.2
10:15	10:20	65.7	70.3	56.9
10:20	10:25	72.5	74.7	64.9
10:25	10:30	73.4	76.7	65.5
10:30	10:35	79.8	81.4	75.5
10:35	10:40	72.3	76.8	58.8
10:40	10:45	66.5	71.8	57.2
10:45	10:50	63.2	66.2	56.2
10:50	10:55	65.4	69.1	56.3
10:55	11:00	65.1	70.2	56.3
11:00	11:05	66.3	71.2	56.1
11:05	11:10	66.2	71.1	56.5
11:10	11:15	62.9	64.0	56.7
11:15	11:20	65.2	69.3	56.7
11:20	11:25	66.2	71.2	57.1
11:25	11:30	65.6	69.0	56.7
11:30	11:35	65.9	70.0	56.8
11:35	11:40	64.9	67.9	55.9
11:40	11:45	65.3	71.1	56.0
11:45	11:50	64.4	69.7	56.3

Appendix D

Baseline Noise Monitoring Results

Location: SR77 Yuen Leng

Monitoring Period: 4 Sep 2013 - 18 Sep 2013

Weather: Apart from 4 and 5 Sept 2013 being rainy days, the weather of remaining dates were sunny.

Baseline Evening, Sunday and Public Holiday Noise Level, dB(A)

Start time	Finish time	Leq	L10	L90
11:50	11:55	64.7	69.0	56.4
11:55	12:00	67.0	70.4	56.7
12:00	12:05	65.6	70.4	56.3
12:05	12:10	65.4	70.1	55.8
12:10	12:15	65.5	71.1	55.5
12:15	12:20	67.1	70.0	55.3
12:20	12:25	67.0	68.7	55.3
12:25	12:30	62.4	67.8	55.1
12:30	12:35	65.1	70.2	55.0
12:35	12:40	65.0	69.2	55.5
12:40	12:45	66.3	70.5	56.0
12:45	12:50	67.5	68.2	56.0
12:50	12:55	67.3	68.2	55.5
12:55	13:00	64.9	70.2	55.6
13:00	13:05	64.7	67.4	55.8
13:05	13:10	65.6	71.4	55.7
13:10	13:15	62.7	66.4	55.1
13:15	13:20	64.7	69.7	55.4
13:20	13:25	65.2	70.2	55.9
13:25	13:30	66.0	70.4	56.4
13:30	13:35	65.6	68.8	55.8
13:35	13:40	65.9	69.0	56.7
13:40	13:45	64.2	66.7	56.1
13:45	13:50	65.5	69.7	55.2
13:50	13:55	65.5	71.2	55.9
13:55	14:00	63.6	68.2	56.1
14:00	14:05	63.8	67.0	55.1
14:05	14:10	65.2	68.8	55.2
14:10	14:15	64.1	69.0	55.0
14:15	14:20	66.0	69.2	55.4
14:20	14:25	62.7	65.4	55.2
14:25	14:30	65.0	69.2	55.5
14:30	14:35	66.9	70.4	55.7
14:35	14:40	63.9	68.4	55.4
14:40	14:45	63.9	67.6	56.0
14:45	14:50	64.4	68.2	55.6
14:50	14:55	65.0	69.9	55.9
14:55	15:00	64.6	69.3	56.2
15:00	15:05	65.5	69.4	56.4
15:05	15:10	64.8	69.4	56.3
15:10	15:15	65.8	71.1	56.4
15:15	15:20	66.5	71.8	56.2
15:20	15:25	65.1	70.2	56.2
15:25	15:30	68.1	70.7	56.9
15:30	15:35	66.2	69.8	57.1
15:35	15:40	66.1	69.9	57.2
15:40	15:45	66.0	71.1	55.6
15:45	15:50	65.2	67.7	56.1
15:50	15:55	65.3	69.7	55.7
15:55	16:00	65.7	70.1	57.1
16:00	16:05	64.7	67.6	56.1
16:05	16:10	65.4	69.8	56.1
16:10	16:15	66.5	70.6	56.4
16:15	16:20	64.9	69.3	56.6
16:20	16:25	66.4	70.4	56.6
16:25	16:30	66.1	71.1	56.4
16:30	16:35	66.9	70.3	57.2
16:35	16:40	66.4	71.0	56.4

Appendix D

Baseline Noise Monitoring Results

Location: SR77 Yuen Leng

Monitoring Period: 4 Sep 2013 - 18 Sep 2013

Weather: Apart from 4 and 5 Sept 2013 being rainy days, the weather of remaining dates were sunny.

Baseline Evening, Sunday and Public Holiday Noise Level, dB(A)

Start time	Finish time	Leq	L10	L90
16:40	16:45	66.1	70.3	56.1
16:45	16:50	64.7	68.4	56.7
16:50	16:55	65.0	69.3	56.0
16:55	17:00	66.5	71.1	54.4
17:00	17:05	66.0	70.6	56.1
17:05	17:10	65.2	70.4	55.9
17:10	17:15	69.8	69.5	55.8
17:15	17:20	65.7	71.0	56.0
17:20	17:25	64.3	67.9	55.8
17:25	17:30	64.5	67.3	57.4
17:30	17:35	66.2	70.8	57.3
17:35	17:40	66.0	71.3	57.7
17:40	17:45	66.2	70.4	57.1
17:45	17:50	65.6	70.4	58.1
17:50	17:55	67.9	71.6	58.7
17:55	18:00	67.2	70.8	58.6
18:00	18:05	66.5	71.6	57.9
18:05	18:10	66.0	71.3	57.2
18:10	18:15	67.1	72.2	56.8
18:15	18:20	66.3	70.8	57.5
18:20	18:25	65.9	70.1	57.7
18:25	18:30	66.6	70.7	57.6
18:30	18:35	66.3	70.6	57.1
18:35	18:40	66.1	70.3	56.9
18:40	18:45	65.9	70.4	56.8
18:45	18:50	62.6	65.6	56.1
18:50	18:55	67.0	72.6	56.5
18:55	19:00	65.5	70.0	55.9
19:00	19:05	64.2	67.7	56.5
19:05	19:10	64.5	68.5	56.9
19:10	19:15	65.8	68.9	56.9
19:15	19:20	65.8	69.2	56.5
19:20	19:25	65.7	68.9	56.7
19:25	19:30	65.3	68.4	56.6
19:30	19:35	64.6	68.9	56.5
19:35	19:40	65.7	68.7	56.3
19:40	19:45	66.3	69.7	56.5
19:45	19:50	65.2	69.6	56.3
19:50	19:55	66.2	69.9	56.3
19:55	20:00	66.4	69.5	56.4
20:00	20:05	67.6	70.3	56.5
20:05	20:10	65.4	68.9	56.1
20:10	20:15	66.0	69.9	56.3
20:15	20:20	65.3	69.3	56.3
20:20	20:25	64.8	69.1	56.4
20:25	20:30	66.4	69.1	56.6
20:30	20:35	66.3	69.0	56.4
20:35	20:40	65.6	68.6	56.5
20:40	20:45	65.1	68.5	56.7
20:45	20:50	65.4	68.5	56.6
20:50	20:55	65.0	68.5	56.3
20:55	21:00	65.7	68.6	56.1
21:00	21:05	64.6	68.5	55.9
21:05	21:10	65.4	68.9	56.2
21:10	21:15	66.6	69.4	56.2
21:15	21:20	65.0	68.8	56.1
21:20	21:25	65.0	67.9	56.4
21:25	21:30	65.0	68.7	56.4

Appendix D

Baseline Noise Monitoring Results

Location: SR77 Yuen Leng

Monitoring Period: 4 Sep 2013 - 18 Sep 2013

Weather: Apart from 4 and 5 Sept 2013 being rainy days, the weather of remaining dates were sunny.

Baseline Evening, Sunday and Public Holiday Noise Level, dB(A)

Start time	Finish time	Leq	L10	L90
21:30	21:35	64.8	68.5	56.0
21:35	21:40	64.8	68.5	56.5
21:40	21:45	64.5	68.5	56.3
21:45	21:50	65.2	68.9	56.6
21:50	21:55	66.6	69.4	56.8
21:55	22:00	65.5	69.8	56.6
22:00	22:05	65.3	69.4	56.4
22:05	22:10	65.0	69.0	56.8
22:10	22:15	64.4	68.5	56.3
22:15	22:20	64.9	69.1	56.3
22:20	22:25	64.8	68.5	56.1
22:25	22:30	64.8	68.5	56.1
22:30	22:35	65.8	69.8	56.3
22:35	22:40	65.8	69.4	55.8
22:40	22:45	65.4	69.4	56.1
22:45	22:50	65.2	68.8	56.1
22:50	22:55	65.6	69.1	55.9
22:55	23:00	65.2	68.6	56.0
23:00	23:05	66.0	69.2	55.8
23:05	23:10	65.4	69.1	55.7
23:10	23:15	65.0	69.3	55.5
23:15	23:20	64.8	68.9	55.5
23:20	23:25	65.8	69.5	55.7
23:25	23:30	64.5	68.1	55.8
23:30	23:35	65.3	68.6	55.3
23:35	23:40	64.1	67.0	55.4
23:40	23:45	64.6	67.7	55.1
23:45	23:50	63.7	67.3	55.1
23:50	23:55	65.9	67.7	55.2
23:55	0:00	63.7	65.5	54.8
0:00	0:05	62.6	64.7	54.5
0:05	0:10	64.6	67.1	54.9
0:10	0:15	64.0	68.0	54.5
0:15	0:20	63.1	65.8	53.7
0:20	0:25	64.5	68.0	54.1
0:25	0:30	62.0	63.2	54.2
0:30	0:35	64.1	65.6	54.0
0:35	0:40	63.2	63.3	53.7
0:40	0:45	63.0	65.4	53.8
0:45	0:50	62.7	63.3	54.3
0:50	0:55	62.5	63.6	53.8
0:55	1:00	62.2	62.5	53.6
1:00	1:05	61.9	62.5	53.3
1:05	1:10	61.7	61.4	53.0
1:10	1:15	59.3	60.3	53.1
1:15	1:20	58.6	59.6	52.8
1:20	1:25	58.6	59.4	52.1
1:25	1:30	58.2	59.5	52.3
1:30	1:35	57.5	59.1	52.4
1:35	1:40	57.2	59.1	52.3
1:40	1:45	57.7	59.3	52.0
1:45	1:50	57.4	58.7	52.0
1:50	1:55	57.3	58.5	51.7
1:55	2:00	57.0	58.4	52.0
2:00	2:05	57.6	58.7	51.1
2:05	2:10	57.5	58.3	51.9
2:10	2:15	56.4	58.2	51.4
2:15	2:20	56.4	58.4	51.3

Appendix D

Baseline Noise Monitoring Results

Location: SR77 Yuen Leng

Monitoring Period: 4 Sep 2013 - 18 Sep 2013

Weather: Apart from 4 and 5 Sept 2013 being rainy days, the weather of remaining dates were sunny.

Baseline Evening, Sunday and Public Holiday Noise Level, dB(A)

Start time	Finish time	Leq	L10	L90
2:20	2:25	56.5	58.3	51.4
2:25	2:30	56.8	58.8	51.9
2:30	2:35	57.9	58.7	51.1
2:35	2:40	55.9	58.1	51.2
2:40	2:45	56.9	58.3	51.8
2:45	2:50	57.6	59.1	52.7
2:50	2:55	57.0	58.8	52.0
2:55	3:00	56.8	58.3	51.4
3:00	3:05	56.0	58.1	51.4
3:05	3:10	57.0	58.3	51.4
3:10	3:15	56.4	57.8	51.7
3:15	3:20	56.4	58.3	51.3
3:20	3:25	55.1	57.2	51.0
3:25	3:30	55.6	57.9	51.0
3:30	3:35	56.1	57.7	50.9
3:35	3:40	55.7	57.8	50.9
3:40	3:45	56.5	58.5	51.8
3:45	3:50	56.6	58.8	51.4
3:50	3:55	56.9	58.8	52.3
3:55	4:00	56.4	58.3	51.7
4:00	4:05	56.9	58.6	52.1
4:05	4:10	55.9	58.3	51.6
4:10	4:15	56.4	58.7	51.9
4:15	4:20	56.4	58.5	51.2
4:20	4:25	56.4	58.7	51.3
4:25	4:30	56.5	58.9	51.5
4:30	4:35	55.7	58.2	51.1
4:35	4:40	55.7	58.1	51.2
4:40	4:45	55.6	58.4	51.2
4:45	4:50	56.3	58.6	51.2
4:50	4:55	58.0	58.9	51.1
4:55	5:00	57.9	59.3	51.6
5:00	5:05	58.0	59.9	51.9
5:05	5:10	56.9	59.2	52.5
5:10	5:15	58.1	59.6	52.1
5:15	5:20	57.3	59.3	52.0
5:20	5:25	59.0	60.1	52.3
5:25	5:30	58.6	60.7	53.2
5:30	5:35	58.5	60.4	52.8
5:35	5:40	59.6	61.0	53.4
5:40	5:45	58.7	60.2	52.8
5:45	5:50	60.3	61.5	53.2
5:50	5:55	63.9	67.0	54.0
5:55	6:00	65.3	67.4	53.6
6:00	6:05	63.1	64.4	54.4
6:05	6:10	63.5	66.5	54.6
6:10	6:15	64.2	67.7	55.2
6:15	6:20	63.7	68.0	55.4
6:20	6:25	63.6	66.0	55.8
6:25	6:30	64.0	68.1	56.0
6:30	6:35	67.1	70.4	56.7
6:35	6:40	66.3	70.0	58.2
6:40	6:45	66.3	70.4	58.5
6:45	6:50	66.6	70.2	58.5
6:50	6:55	66.5	69.7	58.3
6:55	7:00	66.0	69.3	58.7
	average	63.8	67.1	55.3
	min	55.1	57.2	50.9

Appendix D

Baseline Noise Monitoring Results

Location: SR77 Yuen Leng

Monitoring Period: 4 Sep 2013 - 18 Sep 2013

Weather: Apart from 4 and 5 Sept 2013 being rainy days, the weather of remaining dates were sunny.

Baseline Evening, Sunday and Public Holiday Noise Level, dB(A)

Start time	Finish time	Leq	L10	L90
	max	79.8	81.4	75.5

Note: +3dB(A) façade correction included

Appendix D

Baseline Noise Monitoring Results

Location: SR77 Yuen Leng

Monitoring Period: 4 Sep 2013 - 18 Sep 2013

Weather: Apart from 4 and 5 Sept 2013 being rainy days, the weather of remaining dates were sunny.

Baseline Nighttime Noise Level, dB(A)

Start time	Finish time	Leq	L10	L90
23:00	23:05	66.1	69.0	56.0
23:05	23:10	65.9	69.5	55.9
23:10	23:15	64.6	68.9	55.6
23:15	23:20	64.7	68.8	55.7
23:20	23:25	65.6	69.7	55.9
23:25	23:30	64.8	68.5	55.9
23:30	23:35	65.4	68.7	55.5
23:35	23:40	64.9	67.9	55.8
23:40	23:45	64.6	67.7	55.4
23:45	23:50	64.0	67.7	55.1
23:50	23:55	66.0	68.1	55.4
23:55	0:00	63.7	65.9	55.3
0:00	0:05	63.2	65.7	54.8
0:05	0:10	64.6	67.2	55.1
0:10	0:15	64.2	68.3	54.9
0:15	0:20	63.7	66.8	54.1
0:20	0:25	64.2	67.6	54.3
0:25	0:30	62.8	64.7	54.7
0:30	0:35	64.6	66.3	54.3
0:35	0:40	63.1	63.9	54.2
0:40	0:45	63.4	66.1	54.4
0:45	0:50	62.7	63.7	54.6
0:50	0:55	63.3	65.0	54.3
0:55	1:00	62.8	64.4	54.3
1:00	1:05	62.9	64.4	54.0
1:05	1:10	61.8	62.6	53.6
1:10	1:15	60.5	62.0	53.8
1:15	1:20	59.8	61.4	53.5
1:20	1:25	59.8	60.9	53.0
1:25	1:30	59.6	61.3	53.2
1:30	1:35	59.1	60.9	53.3
1:35	1:40	58.3	60.7	53.1
1:40	1:45	59.2	61.3	52.8
1:45	1:50	59.1	60.4	52.9
1:50	1:55	58.6	60.0	52.5
1:55	2:00	58.3	60.3	53.0
2:00	2:05	58.6	60.2	52.1
2:05	2:10	58.9	60.1	52.6
2:10	2:15	57.8	60.1	52.3
2:15	2:20	57.7	60.0	52.4
2:20	2:25	58.2	60.3	52.4
2:25	2:30	58.0	60.5	52.8
2:30	2:35	59.5	60.7	52.2
2:35	2:40	57.7	60.2	52.3
2:40	2:45	58.6	60.2	52.7
2:45	2:50	59.3	60.9	53.7
2:50	2:55	58.5	60.6	53.0
2:55	3:00	58.4	60.3	52.0
3:00	3:05	57.9	60.1	52.3
3:05	3:10	58.3	60.2	52.3
3:10	3:15	58.5	59.8	52.6
3:15	3:20	57.8	60.3	52.2
3:20	3:25	56.7	58.9	51.9
3:25	3:30	57.1	59.5	52.1
3:30	3:35	57.9	59.8	52.0
3:35	3:40	57.7	60.0	52.1
3:40	3:45	58.2	60.4	52.8
3:45	3:50	58.1	60.5	52.7

Appendix D

Baseline Noise Monitoring Results

Location: SR77 Yuen Leng

Monitoring Period: 4 Sep 2013 - 18 Sep 2013

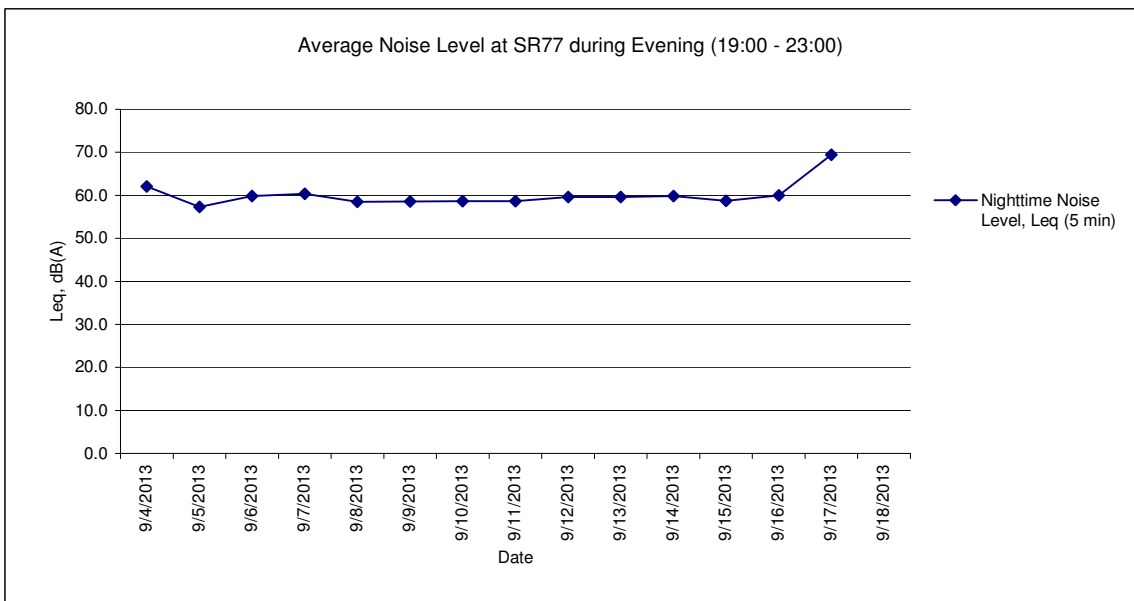
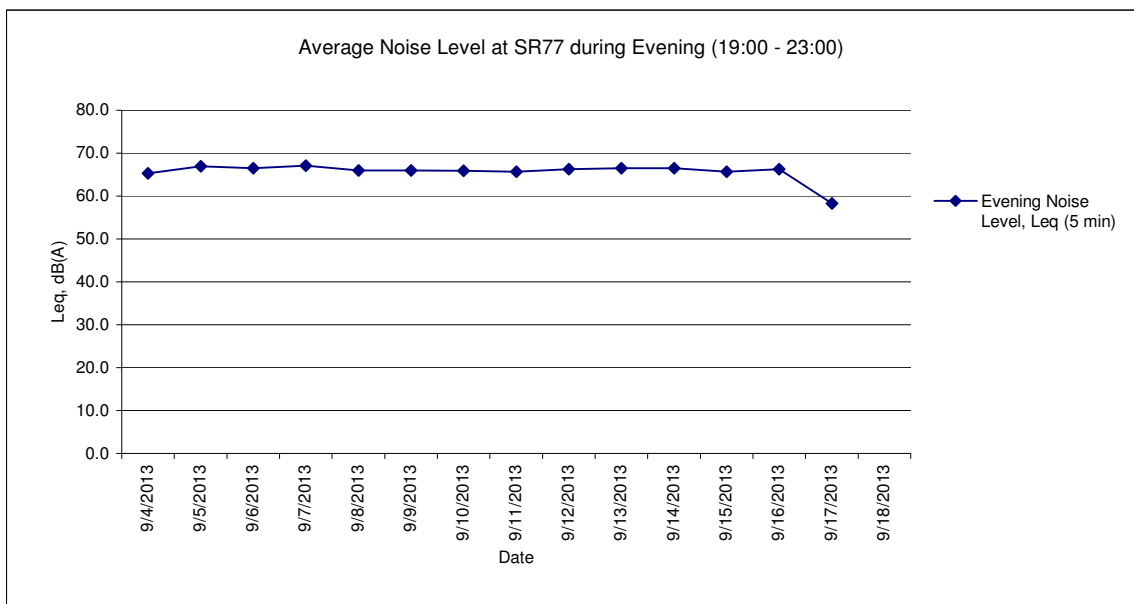
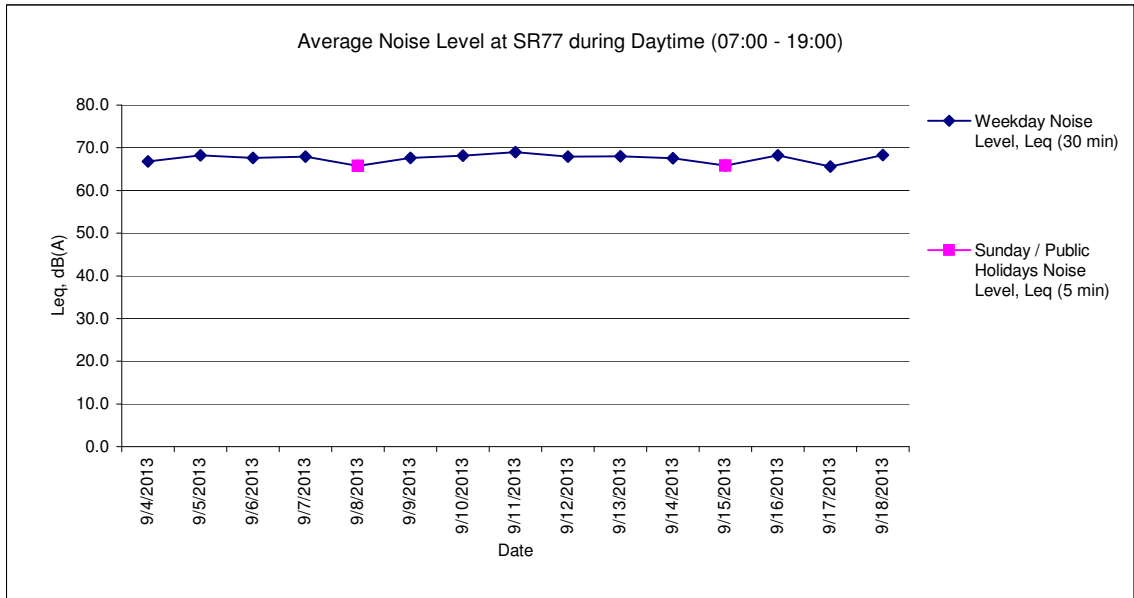
Weather: Apart from 4 and 5 Sept 2013 being rainy days, the weather of remaining dates were sunny.

Baseline Nighttime Noise Level, dB(A)

Start time	Finish time	Leq	L10	L90
3:50	3:55	58.8	61.0	53.5
3:55	4:00	58.1	60.2	53.0
4:00	4:05	58.5	60.7	53.1
4:05	4:10	57.6	60.4	52.5
4:10	4:15	58.4	61.0	52.9
4:15	4:20	58.2	60.5	52.3
4:20	4:25	58.1	60.6	52.3
4:25	4:30	58.0	60.7	52.5
4:30	4:35	57.3	60.1	52.0
4:35	4:40	58.6	60.2	52.1
4:40	4:45	58.0	60.4	52.1
4:45	4:50	57.1	59.5	52.0
4:50	4:55	59.4	60.9	51.7
4:55	5:00	59.5	61.0	52.3
5:00	5:05	59.0	60.9	52.9
5:05	5:10	58.0	60.5	53.2
5:10	5:15	59.3	61.5	53.0
5:15	5:20	58.8	61.0	52.7
5:20	5:25	60.7	61.6	53.0
5:25	5:30	60.4	62.0	53.8
5:30	5:35	59.5	62.1	53.5
5:35	5:40	61.3	62.6	53.8
5:40	5:45	60.9	62.5	53.5
5:45	5:50	61.0	62.8	53.7
5:50	5:55	64.1	67.5	54.2
5:55	6:00	65.6	67.6	54.1
6:00	6:05	63.7	66.0	54.6
6:05	6:10	63.6	66.7	54.7
6:10	6:15	64.4	68.1	55.2
6:15	6:20	64.1	68.4	55.5
6:20	6:25	64.0	66.9	55.8
6:25	6:30	64.1	68.4	56.0
6:30	6:35	67.2	70.4	56.6
6:35	6:40	65.9	69.4	57.9
6:40	6:45	66.3	70.4	58.3
6:45	6:50	66.4	70.1	58.3
6:50	6:55	66.0	69.1	58.0
6:55	7:00	65.8	69.4	58.2
	average	61.1	63.5	53.8
	min	56.7	58.9	51.7
	max	67.2	70.4	58.3

Note: +3dB(A) façade correction included

Appendix D
Baseline Noise Monitoring Results



Appendix E

Laboratory Results for Water Quality



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1323148
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		
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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 Samples Received	: 26-AUG-2013
Order number	: ----			Issue Date	: 05-SEP-2013
C-O-C number	: ----			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 30-AUG-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1323148**

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.

Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics



Analytical Results

Sub-Matrix: WATER

				Client sample ID	C3A-1	C3A-2	C3B-1	C3B-2	I5-1
				Client sampling date / time	[26-AUG-2013]	[26-AUG-2013]	[26-AUG-2013]	[26-AUG-2013]	[26-AUG-2013]
Compound	CAS Number	LOR	Unit		HK1323148-001	HK1323148-002	HK1323148-003	HK1323148-004	HK1323148-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		9	10	8	8	21



Sub-Matrix: WATER				Client sample ID	15-2				
				Client sampling date / time	[26-AUG-2013]				
Compound	CAS Number	LOR	Unit	HK1323148-006					
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L	20					



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: 3037578)								
HK1322949-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1323167-001	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

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	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3037578)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	91.5	----	86	112	----	----

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

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



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1323378
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		
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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 Samples Received	: 28-AUG-2013
Order number	: ----			Issue Date	: 06-SEP-2013
C-O-C number	: ----			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 02-SEP-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1323378**

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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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics



Analytical Results

Sub-Matrix: WATER

				Client sample ID	C3A-1	C3A-2	C3B-1	C3B-2	I5-1
				Client sampling date / time	[28-AUG-2013]	[28-AUG-2013]	[28-AUG-2013]	[28-AUG-2013]	[28-AUG-2013]
Compound	CAS Number	LOR	Unit		HK1323378-001	HK1323378-002	HK1323378-003	HK1323378-004	HK1323378-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		8	8	7	7	8



Sub-Matrix: WATER				Client sample ID	I5-2				
				Client sampling date / time	[28-AUG-2013]				
Compound	CAS Number	LOR	Unit	HK1323378-006					
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L	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 (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3040902)								
HK1323378-001	C3A-1	EA025: Suspended Solids (SS)	----	2	mg/L	8	8	0.0
HK1323380-005	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	9	10	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	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3040902)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	99.5	----	86	112	----	----

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

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



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1323636
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 Samples Received	: 30-AUG-2013
Order number	: ----			Issue Date	: 09-SEP-2013
C-O-C number	: ----			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 03-SEP-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1323636**

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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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics



Analytical Results

Sub-Matrix: WATER

				Client sample ID	C3A-1	C3A-2	C3B-1	C3B-2	I5-1
				Client sampling date / time	[30-AUG-2013]	[30-AUG-2013]	[30-AUG-2013]	[30-AUG-2013]	[30-AUG-2013]
Compound	CAS Number	LOR	Unit		HK1323636-001	HK1323636-002	HK1323636-003	HK1323636-004	HK1323636-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		18	18	24	24	22



Sub-Matrix: WATER				Client sample ID	I5-2				
				Client sampling date / time	[30-AUG-2013]				
Compound	CAS Number	LOR	Unit		HK1323636-006				
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		23				



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: 3043174)								
HK1323572-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	11	13	9.4
HK1323636-004	C3B-2	EA025: Suspended Solids (SS)	----	2	mg/L	24	25	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	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3043174)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	102	----	86	112	----	----

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

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



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1323767
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 Samples Received	: 02-SEP-2013
Order number	: ----			Issue Date	: 11-SEP-2013
C-O-C number	: ----			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 05-SEP-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1323767**

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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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics



Analytical Results

Sub-Matrix: WATER

				Client sample ID	C3A-1	C3A-2	C3B-1	C3B-2	I5-1
				Client sampling date / time	[02-SEP-2013]	[02-SEP-2013]	[02-SEP-2013]	[02-SEP-2013]	[02-SEP-2013]
Compound	CAS Number	LOR	Unit		HK1323767-001	HK1323767-002	HK1323767-003	HK1323767-004	HK1323767-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		32	32	16	14	12



Sub-Matrix: WATER				Client sample ID	I5-2				
				Client sampling date / time	[02-SEP-2013]				
Compound	CAS Number	LOR	Unit		HK1323767-006				
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		12				



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: 3046025)								
HK1323689-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1323765-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	20	21	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	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3046025)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	95.5	----	86	112	----	----

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

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



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1324037
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 Samples Received	: 04-SEP-2013
Order number	: ----			Issue Date	: 13-SEP-2013
C-O-C number	: ----			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 06-SEP-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1324037**

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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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics



Analytical Results

Sub-Matrix: WATER

				Client sample ID	C3A-1	C3A-2	C3B-1	C3B-2	I5-1
				Client sampling date / time	[04-SEP-2013]	[04-SEP-2013]	[04-SEP-2013]	[04-SEP-2013]	[04-SEP-2013]
Compound	CAS Number	LOR	Unit		HK1324037-001	HK1324037-002	HK1324037-003	HK1324037-004	HK1324037-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		47	51	76	75	47



Sub-Matrix: WATER				Client sample ID	I5-2			
				Client sampling date / time	[04-SEP-2013]			
Compound	CAS Number	LOR	Unit	HK1324037-006				
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	2	mg/L	46				



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: 3047500)								
HK1324033-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	62	64	3.1
HK1324037-001	C3A-1	EA025: Suspended Solids (SS)	----	2	mg/L	47	50	5.4

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	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3047500)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	104	----	86	112	----	----

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

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



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1324346
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 Samples Received	: 06-SEP-2013
Order number	: ----			Issue Date	: 17-SEP-2013
C-O-C number	: ----			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 11-SEP-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1324346**

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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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics



Analytical Results

Sub-Matrix: WATER

				Client sample ID	C3A-1	C3A-2	C3B-1	C3B-2	I5-1
				Client sampling date / time	[06-SEP-2013]	[06-SEP-2013]	[06-SEP-2013]	[06-SEP-2013]	[06-SEP-2013]
Compound	CAS Number	LOR	Unit		HK1324346-001	HK1324346-002	HK1324346-003	HK1324346-004	HK1324346-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		11	10	26	25	10



Sub-Matrix: WATER				Client sample ID	I5-2			
				Client sampling date / time	[06-SEP-2013]			
Compound	CAS Number	LOR	Unit	HK1324346-006				
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	2	mg/L	10				



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: 3055771)								
HK1324328-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	22	22	0.0
HK1324346-003	C3B-1	EA025: Suspended Solids (SS)	----	2	mg/L	26	26	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	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3055771)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	90.5	----	86	112	----	----

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

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



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1324528
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 Samples Received	: 09-SEP-2013
Order number	: ----			Issue Date	: 18-SEP-2013
C-O-C number	: ----			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 13-SEP-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1324528**

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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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics



Analytical Results

Sub-Matrix: WATER

				Client sample ID	C3A-1	C3A-2	C3B-1	C3B-2	I5-1
				Client sampling date / time	[09-SEP-2013]	[09-SEP-2013]	[09-SEP-2013]	[09-SEP-2013]	[09-SEP-2013]
Compound	CAS Number	LOR	Unit		HK1324528-001	HK1324528-002	HK1324528-003	HK1324528-004	HK1324528-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		5	4	20	19	9



Sub-Matrix: WATER				Client sample ID	I5-2			
				Client sampling date / time	[09-SEP-2013]			
Compound	CAS Number	LOR	Unit	HK1324528-006				
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	2	mg/L	8				



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: 3059132)								
HK1323975-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	75	72	3.2
HK1324528-004	C3B-2	EA025: Suspended Solids (SS)	----	2	mg/L	19	19	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	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3059132)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	100	----	86	112	----	----

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

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



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1324889
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 Samples Received	: 11-SEP-2013
Order number	: ----			Issue Date	: 19-SEP-2013
C-O-C number	: ----			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 17-SEP-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1324889**

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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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics



Analytical Results

Sub-Matrix: WATER

				Client sample ID	C3A-1	C3A-2	C3B-1	C3B-2	I5-1
				Client sampling date / time	[11-SEP-2013]	[11-SEP-2013]	[11-SEP-2013]	[11-SEP-2013]	[11-SEP-2013]
Compound	CAS Number	LOR	Unit		HK1324889-001	HK1324889-002	HK1324889-003	HK1324889-004	HK1324889-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		10	10	88	88	15



Sub-Matrix: WATER				Client sample ID	I5-2			
				Client sampling date / time	[11-SEP-2013]			
Compound	CAS Number	LOR	Unit	HK1324889-006				
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	2	mg/L	15				



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: 3062677)								
HK1324818-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	<2	<2	0.0
HK1324854-007	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	20	22	8.2

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	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3062677)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	100	----	86	112	----	----

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

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



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1325299
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 Samples Received	: 13-SEP-2013
Order number	: ----			Issue Date	: 24-SEP-2013
C-O-C number	: ----			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 21-SEP-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1325299**

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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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics



Analytical Results

Sub-Matrix: WATER

				Client sample ID	C3A-1	C3A-2	C3B-1	C3B-2	I5-1
				Client sampling date / time	[13-SEP-2013]	[13-SEP-2013]	[13-SEP-2013]	[13-SEP-2013]	[13-SEP-2013]
Compound	CAS Number	LOR	Unit		HK1325299-001	HK1325299-002	HK1325299-003	HK1325299-004	HK1325299-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		6	6	31	31	6



Sub-Matrix: WATER				Client sample ID	I5-2			
				Client sampling date / time	[13-SEP-2013]			
Compound	CAS Number	LOR	Unit	HK1325299-006				
EA/ED: Physical and Aggregate Properties								
EA025: Suspended Solids (SS)	----	2	mg/L	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 (%)
EA/ED: Physical and Aggregate Properties (QC Lot: 3071876)								
HK1325290-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	9	10	10.8
HK1325299-006	I5-2	EA025: Suspended Solids (SS)	----	2	mg/L	7	6	17.2

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	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3071876)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	95.5	----	86	112	----	----

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

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



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1325508
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 Samples Received	: 16-SEP-2013
Order number	: ----			Issue Date	: 25-SEP-2013
C-O-C number	: ----			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 24-SEP-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1325508**

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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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics



Analytical Results

Sub-Matrix: WATER

				Client sample ID	C3A-1	C3A-2	C3B-1	C3B-2	I5-1
				Client sampling date / time	[16-SEP-2013]	[16-SEP-2013]	[16-SEP-2013]	[16-SEP-2013]	[16-SEP-2013]
Compound	CAS Number	LOR	Unit		HK1325508-001	HK1325508-002	HK1325508-003	HK1325508-004	HK1325508-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		16	16	40	42	18



Sub-Matrix: WATER				Client sample ID	I5-2				
				Client sampling date / time	[16-SEP-2013]				
Compound	CAS Number	LOR	Unit	HK1325508-006					
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L	17					



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: 3073929)								
HK1325454-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	57	55	2.9
HK1325471-008	Anonymous	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				Method Blank (MB) Report		Laboratory Control Spike (LCS) and Laboratory Control Spike Duplicate (DCS) Report					
Method: Compound	CAS Number	LOR	Unit	Result	Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3073929)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	102	----	86	112	----	----

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

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



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1325822
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 Samples Received	: 18-SEP-2013
Order number	: ----			Issue Date	: 27-SEP-2013
C-O-C number	: ----			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 24-SEP-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1325822**

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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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics



Analytical Results

Sub-Matrix: WATER

				Client sample ID	C3A-1	C3A-2	C3B-1	C3B-2	I5-1
				Client sampling date / time	[18-SEP-2013]	[18-SEP-2013]	[18-SEP-2013]	[18-SEP-2013]	[18-SEP-2013]
Compound	CAS Number	LOR	Unit		HK1325822-001	HK1325822-002	HK1325822-003	HK1325822-004	HK1325822-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		8	9	67	69	20



Sub-Matrix: WATER				Client sample ID	I5-2				
				Client sampling date / time	[18-SEP-2013]				
Compound	CAS Number	LOR	Unit	HK1325822-006					
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L	19					



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: 3075646)								
HK1325775-001	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	23	23	0.0
HK1325789-007	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	28	28	3.6
EA/ED: Physical and Aggregate Properties (QC Lot: 3075647)								
HK1325822-006	I5-2	EA025: Suspended Solids (SS)	----	2	mg/L	19	19	0.0
HK1326004-002	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

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	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3075646)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	101	----	86	112	----	----
EA/ED: Physical and Aggregate Properties (QC Lot: 3075647)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	102	----	86	112	----	----

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

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



CERTIFICATE OF ANALYSIS

Client	: ENOVATIVE ENVIRONMENTAL SERVICE LTD	Laboratory	: ALS Technichem HK Pty Ltd	Page	: 1 of 4
Contact	: MR THOMAS WONG	Contact	: Fung Lim Chee, Richard	Work Order	: HK1325993
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 Samples Received	: 21-SEP-2013
Order number	: ----			Issue Date	: 27-SEP-2013
C-O-C number	: ----			No. of samples received	: 6
Site	: ----			No. of samples analysed	: 6

General Comments

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release. When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes. The completion date of analysis is: 24-SEP-2013

Key: LOR = Limit of reporting; CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

Specific comments for Work Order: **HK1325993**

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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Signatories

Position

Authorised results for

Fung Lim Chee, Richard

General Manager

Inorganics



Analytical Results

Sub-Matrix: WATER

				Client sample ID	C3A-1	C3A-2	C3B-1	C3B-2	I5-1
				Client sampling date / time	[20-SEP-2013]	[20-SEP-2013]	[20-SEP-2013]	[20-SEP-2013]	[20-SEP-2013]
Compound	CAS Number	LOR	Unit		HK1325993-001	HK1325993-002	HK1325993-003	HK1325993-004	HK1325993-005
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L		21	22	8	9	10



Sub-Matrix: WATER				Client sample ID	I5-2				
				Client sampling date / time	[20-SEP-2013]				
Compound	CAS Number	LOR	Unit	HK1325993-006					
EA/ED: Physical and Aggregate Properties									
EA025: Suspended Solids (SS)	----	2	mg/L	11					



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: 3075647)								
HK1325822-006	Anonymous	EA025: Suspended Solids (SS)	----	2	mg/L	19	19	0.0
HK1326004-002	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

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	Spike Recovery (%)		Recovery Limits (%)		RPD (%)	
						LCS	DCS	Low	High	Value	Control Limit
EA/ED: Physical and Aggregate Properties (QC Lot: 3075647)											
EA025: Suspended Solids (SS)	----	2	mg/L	<2	10 mg/L	102	----	86	112	----	----

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 F

Baseline Water Quality Monitoring Results

Appendix F Baseline Water Quality Monitoring Results

Monitoring Station: C3a

	Weather Condition	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
26-Aug	Sunny	C3a	17:03	<0.5	30.5	30.5	7.9	7.9	5.7	5.6	75.4	75.4	14.5	14.0	<0.1	<0.1	9	9.5
					30.5		7.9		5.6		75.3		13.5		<0.1		10	
28-Aug	Sunny	C3a	14:43	<0.5	33.2	33.2	7.6	7.6	8.3	8.3	116.2	115.9	13.0	13.3	<0.1	<0.1	8	8
					33.2		7.6		8.3		115.6		13.6		<0.1		8	
30-Aug	Cloudy/Rainly	C3a	15:43	<0.5	26.9	26.9	7.5	7.5	8.2	8.2	102.5	102.2	22.5	22.5	<0.1	<0.1	18	18
					26.9		7.5		8.1		101.9		22.5		<0.1		18	
2-Sep	Sunny	C3a	16:31	<0.5	26.3	26.3	7.4	7.4	8.3	8.3	103.2	103.2	31.4	31.2	<0.1	<0.1	32	32
					26.3		7.4		8.3		103.1		31.0		<0.1		32	
4-Sep	Cloudy/Rainly	C3a	12:52	<0.5	25.1	25.1	8.3	8.3	7.3	7.3	88.4	88.4	81.0	84.0	<0.1	<0.1	47	49
					25.1		8.3		7.3		88.3		86.9		<0.1		51	
6-Sep	Sunny	C3a	15:42	<0.5	27.3	27.3	7.4	7.4	8.1	8.1	102.4	102.4	12.4	12.3	<0.1	<0.1	11	10.5
					27.3		7.4		8.1		102.3		12.2		<0.1		10	
9-Sep	Sunny	C3a	15:12	<0.5	30.7	30.7	7.6	7.6	8.5	8.5	113.3	113.3	8.7	8.5	<0.1	<0.1	5	4.5
					30.7		7.6		8.5		113.3		8.3		<0.1		4	
11-Sep	Sunny	C3a	16:40	<0.5	28.3	28.3	7.4	7.4	7.9	7.9	101.1	101.0	12.4	11.8	<0.1	<0.1	10	10
					28.3		7.4		7.8		100.8		11.2		<0.1		10	
13-Sep	Sunny	C3a	16:23	<0.5	29.1	29.1	7.5	7.5	8.7	8.7	113.6	113.6	12.6	12.1	<0.1	<0.1	6	6
					29.1		7.5		8.7		113.5		11.5		<0.1		6	
16-Sep	Sunny	C3a	17:01	<0.5	29.5	29.5	7.3	7.3	6.1	6.1	79.5	79.5	23.5	23.4	<0.1	<0.1	16	16
					29.5		7.3		6.1		79.5		23.3		<0.1		16	
18-Sep	Sunny	C3a	17:06	<0.5	28.3	28.3	7.3	7.3	6.5	6.5	83.5	83.5	12.0	11.9	<0.1	<0.1	8	8.5
					28.3		7.3		6.5		83.5		11.8		<0.1		9	
20-Sep	Sunny	C3a	16:10	<0.5	30.6	30.6	7.4	7.4	6.7	6.7	89.1	89.2	27.3	26.7	<0.1	<0.1	21	21.5
					30.6		7.4		6.7		89.2		26.1		<0.1		22	

Appendix F Baseline Water Quality Monitoring Results

Monitoring Station: C3b

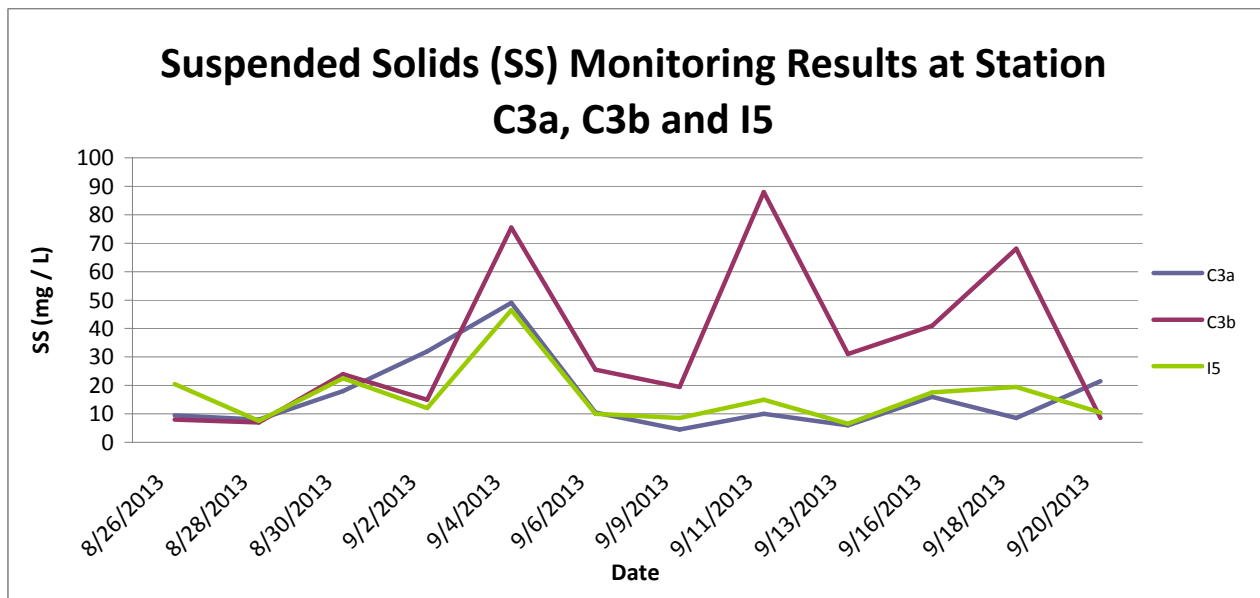
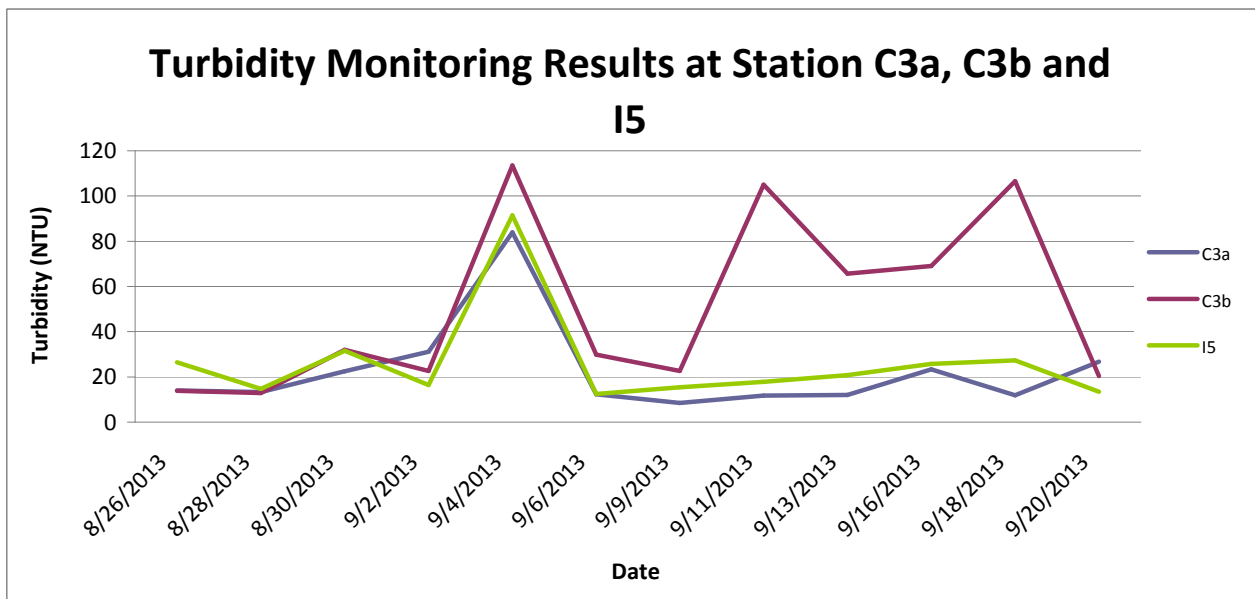
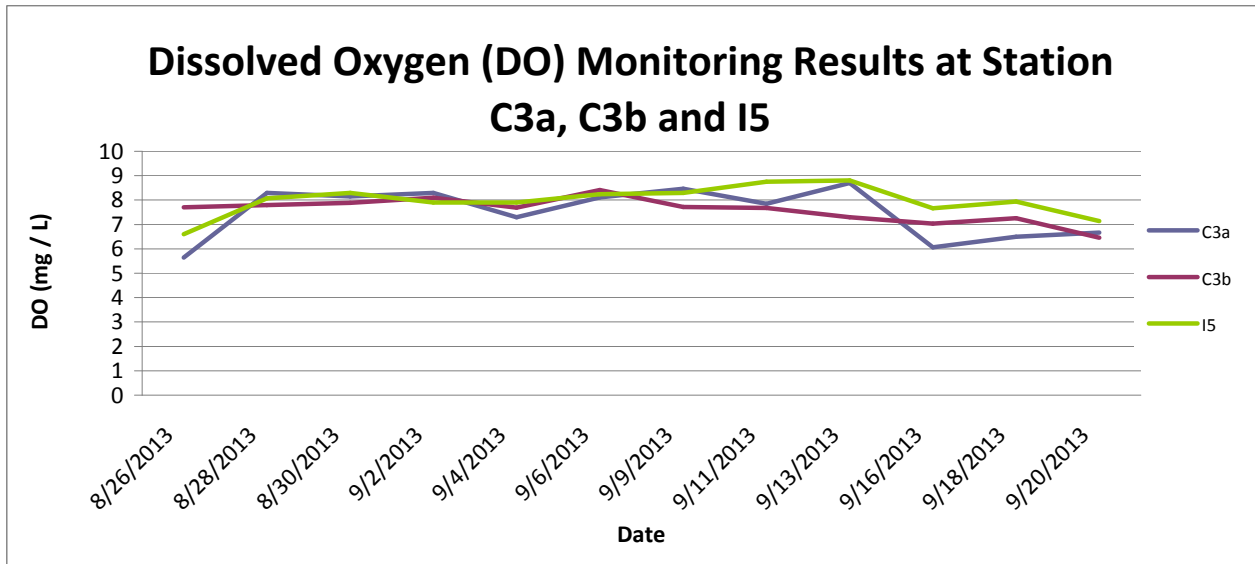
	Weather Condition	Monitoring Location	Time	Water Depth (m)	Temperature (°C)		pH		DO (mg/L)		DO (% saturation)		Turbidity (NTU)		Salinity (g/L)		SS (mg/L)	
					Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
26-Aug	Sunny	C3b	17:33	<0.5	27.4	27.4	7.8	7.8	7.7	7.7	97.6	97.5	14.0	13.9	<0.1	<0.1	8	8
					27.4		7.8		7.7		97.3		13.8		<0.1		8	
28-Aug	Sunny	C3b	14:27	<0.5	30.8	30.8	8.1	8.1	7.8	7.8	104.5	104.5	12.8	12.9	<0.1	<0.1	7	7
					30.8		8.1		7.8		104.4		13.0		<0.1		7	
30-Aug	Cloudy/Rainly	C3b	15:35	<0.5	26.4	26.4	7.7	7.7	7.8	7.9	97.1	97.9	32.8	32.1	<0.1	<0.1	24	24
					26.4		7.7		8.0		98.6		31.3		<0.1		24	
2-Sep	Sunny	C3b	16:13	<0.5	26.5	26.5	7.9	7.9	8.1	8.1	100.7	100.6	24.1	22.7	<0.1	<0.1	16	15
					26.5		7.8		8.1		100.5		21.3		<0.1		14	
4-Sep	Cloudy/Rainly	C3b	12:43	<0.5	24.6	24.6	10.1	10.1	7.7	7.7	92.4	92.5	111	113.5	<0.1	<0.1	76	75.5
					24.6		10.1		7.7		92.5		116		<0.1		75	
6-Sep	Sunny	C3b	15:32	<0.5	26.4	26.4	7.7	7.7	8.4	8.4	104.7	104.6	29.5	29.9	<0.1	<0.1	26	25.5
					26.4		7.7		8.4		104.5		30.3		<0.1		25	
9-Sep	Sunny	C3b	14:57	<0.5	29.2	29.2	7.8	7.8	7.7	7.7	100.8	100.7	22.8	22.7	<0.1	<0.1	20	19.5
					29.2		7.8		7.7		100.6		22.5		<0.1		19	
11-Sep	Sunny	C3b	16:30	<0.5	27.8	27.8	7.5	7.5	7.7	7.7	97.8	97.7	106.0	105.0	<0.1	<0.1	88	88
					27.8		7.5		7.7		97.6		104.0		<0.1		88	
13-Sep	Sunny	C3b	16:13	<0.5	28.1	28.1	9.1	9.0	7.3	7.3	93.7	93.4	63.7	65.7	<0.1	<0.1	31	31
					28.1		9.0		7.3		93.1		67.6		<0.1		31	
16-Sep	Sunny	C3b	16:52	<0.5	28.5	28.5	8.2	8.2	7.0	7.0	90.8	90.8	69.3	69.0	<0.1	<0.1	40	41
					28.5		8.2		7.0		90.7		68.7		<0.1		42	
18-Sep	Sunny	C3b	16:58	<0.5	27.2	27.2	8.2	8.2	7.3	7.3	91.6	91.5	110.0	106.5	<0.1	<0.1	67	68
					27.2		8.2		7.3		91.4		103.0		<0.1		69	
20-Sep	Sunny	C3b	16:01	<0.5	29.7	29.7	7.7	7.7	6.5	6.5	84.9	85.0	20.2	20.4	<0.1	<0.1	8	8.5
					29.7		7.7		6.5		85.1		20.6		<0.1		9	

Appendix F Baseline Water Quality Monitoring Results

Monitoring Station: 15

	Weather Condition	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
26-Aug	Sunny	15	17:13	<0.5	29.8	29.8	7.7	7.7	6.6	6.6	87.4	87.1	27.3	26.5	<0.1	<0.1	21	20.5
					29.8		7.7		6.6		86.8		25.6		<0.1		20	
28-Aug	Sunny	15	14:19	<0.5	32.6	32.6	7.8	7.8	8.1	8.1	111.6	111.8	14.9	14.8	<0.1	<0.1	8	7.5
					32.6		7.8		8.1		111.9		14.6		<0.1		7	
30-Aug	Cloudy/Rainly	15	15:11	<0.5	26.6	26.6	7.9	7.9	8.3	8.3	103.6	103.3	30.7	31.5	<0.1	<0.1	22	22.5
					26.6		7.8		8.3		102.9		32.3		<0.1		23	
2-Sep	Sunny	15	15:56	<0.5	26.5	26.5	7.7	7.7	7.9	7.9	97.8	97.9	16.5	16.5	<0.1	<0.1	12	12
					26.5		7.6		7.9		97.9		16.4		<0.1		12	
4-Sep	Cloudy/Rainly	15	12:28	<0.5	24.6	24.6	7.4	7.4	7.9	7.9	95.2	94.9	90.6	91.5	<0.1	<0.1	47	46.5
					24.6		7.4		7.9		94.6		92.3		<0.1		46	
6-Sep	Sunny	15	15:14	<0.5	28.4	28.4	7.7	7.7	8.3	8.2	106.2	106.1	11.9	12.4	<0.1	<0.1	10	10
					28.4		7.7		8.2		105.9		12.9		<0.1		10	
9-Sep	Sunny	15	14:33	<0.5	30.8	30.8	8.0	7.9	8.3	8.3	111.8	111.3	15.7	15.4	<0.1	<0.1	9	8.5
					30.8		7.9		8.3		110.7		15.1		<0.1		8	
11-Sep	Sunny	15	16:08	<0.5	29.2	29.2	8.0	8.0	8.8	8.8	114.3	114.3	17.8	17.9	<0.1	<0.1	15	15
					29.2		8.0		8.8		114.2		18.0		<0.1		15	
13-Sep	Sunny	15	15:55	<0.5	29.1	29.1	8.2	8.2	8.8	8.8	115.0	114.7	21.2	20.8	<0.1	<0.1	6	6.5
					29.1		8.2		8.8		114.3		20.4		<0.1		7	
16-Sep	Sunny	15	16:33	<0.5	30.2	30.2	7.9	7.9	7.7	7.7	101.8	101.7	25.0	25.8	<0.1	<0.1	18	17.5
					30.2		7.9		7.7		101.5		26.6		<0.1		17	
18-Sep	Sunny	15	16:41	<0.5	28.3	28.3	7.6	7.6	7.9	7.9	101.7	101.9	28.9	27.4	<0.1	<0.1	20	19.5
					28.3		7.6		8.0		102.1		25.8		<0.1		19	
20-Sep	Sunny	15	15:45	<0.5	30.9	30.9	7.7	7.7	7.2	7.1	96.1	96.0	14.0	13.5	<0.1	<0.1	10	10.5
					30.9		7.7		7.1		95.8		12.9		<0.1		11	

Appendix F Baseline Water Quality Monitoring Results





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