Black & Veatch Hong Kong Limited

Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works - Environmental Team

Monthly Environmental Monitoring and Audit Report for February 2019

(version 2.0)

Approved By _____

(Environmental Team Leader)

REMARKS:

The information supplied and contained within this report is, to the best of our knowledge, correct at the time of printing.

WELLAB accepts no responsibility for changes made to this report by third parties.

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EXECUTIVE SUMMARY

Introduction

1. This is the 2nd monthly Environmental Monitoring and Audit (EM&A) Report prepared for the project "Contract No. YL/2017/03 – Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works" (hereinafter called the "Contract"). This report documents the findings of EM&A Works conducted in February 2019.

Environmental Monitoring and Audit Progress

2. A summary of the monitoring activities in this reporting month is listed in **Table I** below:

Table I Summary Table for Monitoring Activities in the Reporting Month

Parameter(s)	**Date(s)**
1-hr TSP Monitoring	1st, 4th, 9th, 15th, 21th, 27th February 2019
24-hr TSP Monitoring	4th, 8th, 14th, 20th, 26th February 2019
Noise Monitoring	1st, 4th, 15th, 21st, 27th February 2019
Water Quality Monitoring	1st, 4th, 9th, 11th, 13th, 15th, 19th, 21nd, 23th, 25th, 28th February 2019
Ecological Monitoring (Avifauna Monitoring)	16th February 2019
Environmental Site Inspection	1st, 8th, 13th, 22th February 2019

Breaches of Action and Limit Levels

3. Summary of the environmental exceedances of the reporting month is tabulated in **Table II**.

Table II Summary Table for Events Recorded in the Reporting Month

Environmental Monitoring	Parameter	No. of non-project related Exceedance		Total No. of non-project related Exceedance	No. of Exceedance related to the Construction Activities of this Contract		Total No. of Exceedance related to the Construction Activities of this Contract
		Action Level	Limit Level		Action Level	Limit Level	
Air Quality	1-hr TSP	0	0	0	0	0	0
	24-hr TSP	0	0	0	0	0	0
Noise	$L_{eq(30min)}$	0	0	0	0	0	0
Water Quality	Dissolved Oxygen	0	2	2	0	0	0
	Turbidity	2	5	7	0	0	0
	Suspended Solids (SS)	0	7	7	0	0	0

1-hour TSP Monitoring

4. All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedances were recorded.

24-hour TSP Monitoring

5. All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedances were recorded.

Construction Noise

6. All construction noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

Water Quality

7. An updated Baseline Monitoring Report was submitted to incorporate the revised Action/Limit level to avoid causing false alarm for water quality monitoring.

8. Water monitoring station IS6 was found dried out in the monitoring period, thus, no monitoring was conducted. The water monitoring will resume once there is water flow at IS6. Other water quality monitoring was conducted as scheduled in the reporting month .Two (2) Limit Level non-project related exceedances for dissolved oxygen. Two (2) Action Level non-project related exceedances and Five (5) Limit Level non-project related exceedances were recorded for turbidity. Seven (7) Limit Level non-project related exceedances were recorded for suspended solids. After investigation, all exceedances are non-project related.

Ecological Monitoring

Avifauna

9. Avifauna monitoring was conducted as scheduled in the reporting month. No significant impact was identified.

Mammals

10. No construction works associated with the site formation and establishment works in the Ecological Area were conducted in the reporting month according to EP-477/2013 condition 2.7(h). Therefore, no monitoring of mammals was conducted in the reporting month.

11. No construction works of the temporary noise barriers at Ha Wan Tsuen Road and Lok Ma Chau Road were conducted in the reporting month according to EP-477/2013 condition 2.7(h). Therefore, no ecological monitoring was conducted in the reporting month.

Complaint Log

12. No environmental complaint was received in the reporting month.

Notification of Summons and Successful Prosecutions

13. No notification of summons and successful prosecution was received in the reporting month.

Reporting Changes

14. This report has been developed in compliance with the reporting requirements for the first monthly EM&A Report as required by the EM&A Manual for Development of Lok Ma Chau Loop (EM&A Manual).

Future Key Issues

15. Major site activities for the coming reporting month will include:

(a) Construction of land decontamination treatment plant;

(b) Excavation of top soil for land decontamination works at hot spot LD-001;

(c) Erection of 3m green fence;

(d) Installation of prefabricated vertical drains and strip drain;

(e) Piling for temporary bridge;

(f) Establishment of nursery areas for reed bed.

(g) Site clearance at Ecological Area Zone

1 INTRODUCTION

1.1 Wellab Limited (Wellab) was appointed by the Black & Veatch Hong Kong Limited (BV) as the Environmental Team (ET) to undertake the Environmental Monitoring and Audit (EM&A) programme for Contract No. YL/2017/03 – Development of Lok Ma Chau Loop" Land Decontamination and Advance Engineering Works (hereinafter called the "Contract").

Purpose of the report

1.2 This is the 2nd EM&A report which summarises the impact monitoring results and audit findings for the EM&A programme in February 2019.

Structure of the report

1.3 The structure of the report is as follows:
Section 1: **Introduction -** purpose and structure of the report.

Section 2: **Contract Information** - summarises background and scope of the Contract, site description, project organization and contact details, construction programme, the construction works undertaken and the status of Environmental Permits/Licenses during the reporting month.

Section 3: **Air Quality Monitoring -** summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.

Section 4: **Noise Monitoring -** summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.

Section 5: **Water Quality Monitoring -** summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations, Action and Limit Levels, monitoring results and Event / Action Plans.

Section 6: **Ecological Monitoring -** summarises the monitoring parameters, monitoring programmes, monitoring methodologies, monitoring frequency, monitoring locations and monitoring results.

Section 7: **Environmental Site Inspection -** summarises the audit findings of the weekly site inspections undertaken within the reporting month.

Section 8: **Environmental Non-conformance -** summarises any monitoring exceedance, environmental complaints, environmental summons and successful prosecutions within the reporting month.

Section 9: **Future Key Issues -** summarises the impact forecast and monitoring schedule for the next three months.

Section 10: **Conclusions and Recommendation**

2 CONTRACT INFORMATION

Background

2.1 The Lok Ma Chau Loop (the Loop) was once within the administrative boundary of Shenzhen Municipal Government and now becomes a part of Hong Kong Special Administrative Region (HKSAR) as a result of the trading of Shenzhen River. As mentioned in the Policy Address in 2007, the HKSAR Government would cooperate with the Shenzhen authorities to develop the land resources of the loop to meet the development needs in the future, as well as to consolidate the strategic position of both Hong Kong and Shenzhen in the Pan-Pearl River Delta Region.

2.2 The Loop development is a Designated Project (DP) under Schedule 3 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). In October 2013, the EIA Report for the Loop development was approved by DEP pursuant to the EIA Ordinance. The Environmental Permit (EP) was also granted in November 2013.

2.3 Land decontamination and advance engineering works (Advance Works) under Contract No. YL/2017/03 are to pave way for the ensuing site formation and infrastructure works within the Loop.

2.4 **Figure 1** shows the layout of the Contract and the scope of the Contract works comprises the following major items:

- Land decontamination treatment within the Loop in accordance with the Contamination Assessment Report/ Remedial Action Plan of the EIA Report;
- Construction of temporary access to the Loop (comprising an approximately 60-metre-long temporary vehicular bridge across the old ShenZhen River meander), minor improvements works to Ha Wan Tsuen East Road and other ancillary works;
- Establishment of and Ecological Area zone of about 12.8 ha within the Loop;
- Construction of temporary noise barriers and miscellaneous road works along Lok Ma Chau Road;
- Ground treatment works to the first batch of land parcels within the Loop for development of building and associated facilities for Phase 1 of the Hong Kong-Shenzhen innovation and Technology Park, and for development of the western electricity substation.
- Implementation of environmental mitigation measures and other ancillary works.

Contract Organisation

2.5 Different parties with different levels of involvement in the Contract organization include:

- Consultant – Black & Veatch Hong Kong Ltd. (B&V)
- Contractor – Sang Hing- Kuly Joint Venture (SKJV)
- Environmental Team (ET) – Wellab Ltd. (Wellab)
- Independent Environmental Checker (IEC) – Jacky Leung (Nature & Technologies (HK) Ltd.)

2.6 The key personnel contact names and numbers are summarized in **Table 2.1.**

Table 2.1 Key Contacts of the Contract

Party	Role	Contact Person	Phone No.	Fax No.
CEDD	Project Proponent	Mr. Cheung Biu, Jonathan	2417 6356	2412 0358
Black & Veatch	Consultant	Mr. Victor Go	2601 3988	--
Contractor (SKJV)	Project Director	Mr. Alan Sung	--	2452 5170
	Environmental Officer	Mr. David Nam	--	
Wellab	Environmental Team Leader	Dr. Priscilla Choy	2898 7388	2898 7076
Nature & Technologies (HK) Ltd	Independent Environmental Checker	Mr. Jacky Leung	2877 3122	2511 0922

Construction Programme

2.7 A copy of Contractor's construction programme is provided in **Appendix A**.

Summary of Construction Works Undertaken During Reporting Month

2.8 The major site activities undertaken in the reporting month included:

(a) Formation of haul road;

(b) Construction of land decontamination treatment plant;

(c) Excavation of top soil for land decontamination works at hot spot LD-001;

(d) Erection of 3m green fence;

(e) Installation of prefabricated vertical drains and strip drain;

(f) Piling for temporary bridge;

(g) Establishment of nursery areas for reed bed.

Status of Environmental Licences, Notification and Permits

2.9 A summary of the relevant permits, licences, and/or notifications on environmental protection for this Contract is presented in **Table 2.2**.

Table 2.2 Status of Environmental Licences, Notification and Permits

Permit / License No.	Valid Period		Status
	From	To	
Environmental Permit (EP)			
EP-477/2013	22/12/2013	N/A	Valid
Consruction Noise Permit (CNP)			
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Notification pursuant to Air Pollution Control (Construction Dust) Regulation			
435754	15/8/2018	N/A	Receipt acknowledged by EPD
Billing Account for Construction Waste Disposal			
7031266	16/08/2018	--	Valid
Registration of Chemical Waste Producer			
WPN 5213-542-S4120-01	08/08/2018	--	Valid
Effluent Discharge License under Water Pollution Control Ordinance			
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3 AIR QUALITY MONITORING

Monitoring Requirements

3.1 In accordance with the EM&A Manual, impact 1-hour TSP and 24-hour TSP monitoring were conducted to monitor the air quality for the Contract. **Appendix B** shows the established Action/Limit Levels for the air quality monitoring works.

3.2 Impact 1-hour TSP monitoring was conducted for at least three times every 6 days, while impact 24-hour TSP monitoring was conducted for at least once every 6 days at 4 air quality monitoring stations.

Monitoring Location

3.3 Impact air quality monitoring was conducted at the 4 monitoring stations under the Contract, as shown in **Figure 2**. **Table 3.1** describes the locations of the air quality monitoring stations.

Table 3.1 Location for Air Quality Monitoring Locations

Monitoring Stations	Location
DMS-1	Village House along Ha Wan Tsuen Road
DMS-2A (see Note 1)	Village House along Lok Ma Chau Road
DMS-3	Village House along Border Road
DMS-4A (see Note 2)	Hong Kong Police Force, Lok Ma Chau Operation Base at Horn Hill

Notes:

1. Monitoring at DMS-2 (originally proposed in the approved EM&A Manual) was denied during the baseline monitoring. An alternative location (DMS-2A) was proposed.
2. Proposed replacement monitoring location for ASR MTL-20 – Village house in Ma Tso Lung (DMS-4A) as no work will be conducted near ASR MTL-20 due to exclusion of the original ECR.

Monitoring Equipment

3.4 **Table 3.2** summarizes the equipment used in the impact air monitoring programme. Copies of calibration certificates are attached in **Appendix C**.

Table 3.2 Air Quality Monitoring Equipment

Equipment	Model and Make	Quantity
1-hour TSP Dust Meter	Met One Instruments Model No.: AEROCET-831	7
HVS Sampler	TISCH Model: TE-5170	4
Calibrator	TISCH Model: TE-5025A	1
Wind Anemometer	DAVIS Model: Vantage Vantage PRO2 6152CUK	1

Monitoring Parameters, Frequency and Duration

3.5 **Table 3.3** summarizes the monitoring parameters and frequencies of impact dust monitoring during the course of the Contract activities. The air quality monitoring schedule for the reporting month is shown in **Appendix D**.

Table 3.3 Impact Dust Monitoring Parameters, Frequency and Duration

Parameters	Frequency
1-hr TSP	Three times / 6 days
24-hr TSP	Once / 6 days

Monitoring Methodology and QA/QC Procedure

1-hour and 24-hour TSP Air Quality Monitoring

Instrumentation

3.6 High volume Samplers (HVS) completed with appropriate sampling inlets were employed for 24-hour TSP monitoring. Each sampler was composed of a motor, a filter holder, a flow controller and a sampling inlet and its performance specification complies with that required by USEPA Standard Title 40, Code of Federation Regulations Chapter 1 (Part 50).

HVS Installation

3.7 The following guidelines were adopted during the installation of HVS:

- A horizontal platform with appropriate support was provided to secure the samplers against gusty wind.
- No two samplers were placed less than 2 meters apart.
- The distance between the sampler and an obstacle, such as buildings, was at least twice the height that the obstacle protrudes above the sampler.
- A minimum of 2 meters of separation from walls, parapets and penthouses was required for rooftop samples.
- A minimum of 2 meters separation from any supporting structure, measured horizontally was required.
- No furnaces or incineration flues were nearby.
- Airflow around the sampler was unrestricted.
- The samplers were more than 20 meters from the drip line.
- Any wire fence and gate, to protect the sampler, should not cause any obstruction during monitoring.
- Permission and access to the monitoring stations have been obtained to set up the samplers; and
- a secured supply of electricity was provided to operate the samplers.

Filters Preparation

3.8 A HOKLAS accredited laboratory, Wellab Ltd., was responsible for the preparation of 24-hr conditioned and pre-weighed filter papers for monitoring team.

3.9 All filters, which were prepared by Wellab Ltd., were equilibrated in the conditioning environment for 24 hours before weighing. The conditioning environment temperature

was around 25 °C and not variable by more than ±3 °C; the relative humidity (RH) was < 50% and not variable by more than ±5%. A convenient working RH was 40%.

3.10 Wellab Ltd. has a comprehensive quality assurance and quality control programmes.

Operating/Analytical Procedures

3.11 Operating/analytical procedures for the air quality monitoring were highlighted as follows:

- Prior to the commencement of the dust sampling, the flow rate of the HVS was properly set (between 1.1 m3/min. and 1.4 m3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50.
- The power supply was checked to ensure the sampler worked properly.
- On sampling, the sampler was operated for 5 minutes to establish thermal equilibrium before placing any filter media at the designated air quality monitoring station.
- The filter holding frame was then removed by loosening the four nuts and carefully a weighted and conditioned filter was centered with the stamped number upwards, on a supporting screen.
- The filter was aligned on the screen so that the gasket formed an airtight seal on the outer edges of the filter. Then the filter holding frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- The shelter lid was closed and secured with the aluminum strip.
- The timer was then programmed. Information was recorded on the record sheet, which included the starting time, the weather condition and the filter number (the initial weight of the filter paper can be found out by using the filter number).
- After sampling, the filter was removed and kept in a clean and tightly sealed plastic bag. The filter paper was then be returned to the HOKLAS laboratory (Wellab Ltd.) for reconditioning in the humidity-controlled chamber followed by accurate weighting by an electronic balance with a readout down to 0.1mg. The elapsed time was also recorded.
- Before weighing, all filters were equilibrated in a conditioning environment for 24 hours. The conditioning environment temperature should be between 25°C and 30°C and not vary by more than ±3°C; the relative humidity (RH) should be < 50% and not vary by more than ±5%. A convenient working RH is 40%. Weighing results were returned for further analysis of TSP concentrations collected by each filter.

Maintenance/Calibration

3.12 The following maintenance/calibration was required for the HVS:

- The high volume motors and their accessories were properly maintained. Appropriate maintenance such as routine motor brushes replacement and electrical wiring checking were made to ensure that the equipment and necessary power supply are in good working condition.
- All HVS were calibrated (five point calibration) using Calibration Kit prior to the commencement of the baseline monitoring and thereafter at bi-monthly intervals.

Results and Observations

3.13 The monitoring results for 1-hour TSP and 24-hour TSP are summarized in **Table 3.4 and 3.5** respectively. Detailed monitoring results and graphical presentations of 1-hour and 24-hour TSP monitoring results are shown in **Appendix E and F** respectively.

Table 3.4 Summary Table of 1-hour TSP Monitoring Results during the Reporting Month

Monitoring Station	Concentration (µg/m3)		Action Level, µg/m³	Limit Level, µg/m³
	Average	Range		
DMS – 1	126.9	42.2 – 302.2	353	500
DMS – 2A	109.3	62.0 – 190.5	370	
DMS – 3	123.4	59.5 – 236.2	351	
DMS – 4A	112.8	65.1 – 210.3	350	

Table 3.5 Summary Table of 24-hour TSP Monitoring Results during the Reporting Month

Monitoring Station	Concentration (µg/m3)		Action Level, µg/m³	Limit Level, µg/m³
	Average	Range		
DMS – 1	69.1	46.7 – 127.6	184	260
DMS – 2A	70.9	56.0 – 85.6	166	
DMS – 3	62.8	50.6 – 82.3	166	
DMS – 4A	43.4	24.2 – 87.7	152	

3.14 All 1-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedances were recorded.

3.15 All 24-hour TSP monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedances were recorded.

3.16 According to our field observations, the major dust source identified at the designated air quality monitoring stations in the reporting month are as follows:

Table 3.6 Observation at Dust Monitoring Stations

Monitoring Station	Major Dust Source
DMS-1	Excavator, Dump truck, Backhoe, Crane, Drill rig, Road traffic
DMS-2A	Road traffic
DMS-3	Excavator, Dump Truck
DMS-4A	Road traffic

3.17 The wind speed and wind direction were recorded by the installed Wind Anemometer set at DMS-4A. The location is shown in **Figure 3**.

3.18 The wind data for the reporting month is summarized in **Appendix J**.

Event and Action Plan

3.19 Should non-compliance of the criteria occur, action in accordance with the Action Plan in **Appendix K** shall be carried out.

4 NOISE MONITORING

Monitoring Requirements

4.1 In accordance with EM&A Manual, four noise monitoring stations, namely NMS-1, NMS-2, NMS-3 and NMS-4A were selected for impact monitoring for the Contract. Impact noise monitoring was conducted for at least once per week during the construction phase of the Contract. **Appendix B** shows the established Action and Limit Levels for the noise monitoring works.

Monitoring Location

4.2 Impact noise monitoring was conducted at the 4 monitoring stations under the Contract, as shown in **Figure 3**. **Table 4.1** describes the locations of the noise monitoring stations.

Table 4.1 Location for Noise Monitoring Stations

Monitoring Stations	Location
NMS-1	Village house in Ha Wan Tsuen
NMS-2	Village house along existing Ha Wan Tsuen East Road
NMS-3	Village house along Border Road
NMS-4A(see Note 1)	Hong Kong Police Force, Lok Ma Chau Operation Base at Horn Hill

Notes:

1. Proposed replacement monitoring location for NSR MTL-20 – Village house in Ma Tso Lung (DMS-4A) as no work will be conducted near NSR MTL-20 due to exclusion of the original ECR.

Monitoring Equipment

4.3 **Table 4.2** summarizes the noise monitoring equipment. Copies of calibration certificates are provided in **Appendix C**.

Table 4.2 Noise Monitoring Equipment

Equipment	Model and Make	Qty.
Integrating Sound Level Meter	SVAN955, SVAN957	2
Calibrator	SV 30A	1

Monitoring Parameters, Frequency and Duration

4.4 **Table 4.3** summarizes the monitoring parameters, frequency and total duration of monitoring. The noise monitoring schedule is shown in **Appendix D**.

Table 4.3 Noise Monitoring Parameters, Frequency and Duration

Monitoring Stations	Parameter	Period	Frequency
NMS-1 NMS-2 NMS-3 NMS-4A	L_{10}(30 min.) dB(A) L_{90}(30 min.) dB(A) L_{eq}(30 min.) dB(A) (as six consecutive $L_{eq, 5min}$ readings)	0700-1900 hrs on normal weekdays	Once per week

Monitoring Methodology and QA/QC Procedures

- 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.
- The battery condition was checked to ensure the correct functioning of the meter.
- Parameters such as frequency weighting, the time weighting and the measurement time were set as follows:
  - frequency weighting : A
  - time weighting : Fast
  - time measurement : L_{eq}(30 min.) dB(A) (as six consecutive $L_{eq, 5min}$ readings) during non-restricted hours (i.e. 0700-1900 hrs on normal weekdays)
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94.0 dB at 1000 Hz. If the difference in the calibration level before and after measurement was more than 1.0 dB, the measurement would be considered invalid and repeat of noise measurement would be required after re-calibration or repair of the equipment.
- During the monitoring period, the L_{eq}, L_{90} and L_{10} were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Noise measurement was paused temporarily during periods of high intrusive noise (e.g. dog barking, helicopter noise) if possible and observation was recorded when intrusive noise was not avoided.
- Noise monitoring was cancelled in the presence of fog, rain, and wind with a steady speed exceeding 5 m/s, or wind with gusts exceeding 10 m/s. The wind speed shall be checked with a portable wind speed meter capable of measuring the wind speed in m/s.

Maintenance and Calibration

4.5 The microphone head of the sound level meter and calibrator were cleaned with a soft cloth at quarterly intervals.

4.6 The sound level meter and calibrator were checked and calibrated at yearly intervals.

4.7 Immediately prior to and following each noise measurement the accuracy of the sound level meter shall be checked using an acoustic calibrator generating a known sound pressure level at a known frequency. Measurements may be accepted as valid only if the calibration levels from before and after the noise measurement agree to within 1.0 dB.

Results and Observations

4.8 The noise monitoring results are summarized in **Table 4.4**. Detailed monitoring results and graphical presentations of noise monitoring are shown in **Appendix G**.

Table 4.4 Summary Table of Noise Monitoring Results during the Reporting Month

Monitoring Station	Noise Level, $L_{eq\ (30min)}$ dB(A)		Limit Level
	Average	Range	
NMS-1	56.8	39.0 – 59.5	75 dB(A)
NMS-2	71.7	65.8 – 73.7	
NMS-3	53.1	47.1 – 55.8	
NMS-4A	50.4	49.1 – 51.6	

Remark: +3dB(A) Façade correction included

4.9 All noise monitoring was conducted as scheduled in the reporting month. No Action/Limit Level exceedance was recorded.

4.10 According to our field observations, the major noise source identified at the designated noise monitoring stations in the reporting month are as follows:

Table 4.5 Observation at Noise Monitoring Stations

Monitoring Station	Major Noise Source
NMS-1	Mobile crane, Dump trucks, Backhoe, Band Drain, Drill rig, Road traffic
NMS-2	Road traffic
NMS-3	Road traffic
NMS-4A	N/A

Event and Action Plan

4.11 Should non-compliance of the criteria occur, action in accordance with the Action Plan in **Appendix K** shall be carried out.

5 WATER QUALITY MONITORING

Monitoring Requirements

5.1 According to EM&A Manual, impact water quality monitoring shall be carried out three days per week during the construction period. The interval between two sets of monitoring will not be less than 36 hours.

5.2 Replicate in-situ measurements and samples collected from each independent sampling event shall be collected to ensure a robust statistically interpretable database.

5.3 Impact water quality monitoring was conducted at three depths (i.e. 1m below surface, mid-depth and 1m above seabed, except where the water depth less than 6m, mid-depth station may be omitted. Should the water depth be less than 3m, only the mid-depth station was monitored) Dissolved oxygen (DO) concentration, DO saturation, Suspended solids (SS), turbidity, pH, salinity and temperature were monitored in accordance with the requirements set out in the EM&A Manual.

5.4 **Appendix B** shows the established Action/Limit Levels for the water quality monitoring works.

Monitoring Locations

5.5 Impact water quality monitoring was conducted at 7 monitoring stations under the Contract which are summarized in **Table 5.1**. The location of monitoring station are shown in **Figure 4**.

Table 5.1 Location for Marine Water Quality Monitoring Locations

Monitoring Stations	Description
CS1	Control Station at Old Shenzhen River Meander
IS1	Impact Station at Old Shenzhen River Meander
IS2	Impact Station at Old Shenzhen River Meander
IS4	Impact Station at Ping Hang Stream
CS5	Control Station at south of Lung Hau Road
IS6	Impact Station near Lung Hau Road
BS1	Impact Station at Old Shenzhen River Meander

Monitoring Equipment

Instrumentation

5.6 A multi-parameter meters (Model YSI 6820-C-M) were used to measure DO, turbidity, salinity, pH and temperature.

Dissolved Oxygen (DO) and Temperature Measuring Equipment

5.7 The instrument for measuring dissolved oxygen and temperature was portable and weatherproof complete with cable, sensor, comprehensive operation manuals and use DC power source. It was capable of measuring:

- a dissolved oxygen level in the range of 0-20 mg/L and 0-200% saturation; and
- a temperature of 0-45 degree Celsius.

5.8 It has a membrane electrode with automatic temperature compensation complete with a cable.

5.9 Sufficient stocks of spare electrodes and cables were available for replacement where necessary.

5.10 Salinity compensation was built-in in the DO equipment.

Turbidity

5.11 Turbidity was measured in situ by the nephelometric method. The instrument was portable and weatherproof using a DC power source complete with cable, sensor and comprehensive operation manuals. The equipment was capable of measuring turbidity between 0-1000 NTU. The probe cable was not less than 25m in length. The meter was calibrated in order to establish the relationship between NTU units and the levels of suspended solids. The turbidity measurement was carried out on split water sample collected from the same depths of suspended solids samples.

Sampler

5.12 A water sampler, consisting of a transparent Polyvinyl Chloride (PVC) of a capacity of not less than two litres which can be effectively sealed with cups at both ends was used. The water sampler has a positive latching system to keep it open and prevent premature closure until released by a messenger when the sampler was at the selected water depth. In addition, a sampling cup attached to a fixed or extendable rod was also used for sampling at the monitoring station with shallow water.

Water Depth Detector

5.13 A portable, battery-operated echo sounder was used for the determination of water depth at each designated monitoring station.

pH

5.14 The instrument was consisting of a potentiometer, a glass electrode, a reference electrode and a temperature-compensating device. It was readable to 0.1pH in a range of 0 to 14. Standard buffer solutions of at least pH 7 and pH 10 were used for calibration of the instrument before and after use.

Salinity

5.15 A portable salinometer capable of recording salinity within the range of 0-40 ppt was used for salinity measurements.

Sample Container and Storage

5.16 Following collection, water samples for laboratory analysis were stored in high density

polythene bottles (250ml/1L) with no preservatives added, packed in ice (cooled to 4°C without being frozen) and kept in dark during both on-site temporary storage and shipment to the testing laboratory. The samples were delivered to the laboratory as soon as possible and the laboratory determination works were started within 24 hours after collection of the water samples. Sufficient volume of samples was collected to achieve the detection limit.

5.17 **Table 5.2** also summarizes the type of sampling bottles and preservation method for laboratory testing.

Table 5.2 Types of Sampling Bottles and Preservation Methods

Parameters to be tested	Preservation	Type of Sample Container
Total Suspended Solids	Refrigerate	1 liter plastic bottle

Calibration of In Situ Instruments

5.18 All in situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring programme. Responses of sensors and electrodes were checked with certified standard solutions before each use. Wet bulb calibration for a DO meter was carried out before measurement at each monitoring event.

5.19 For the on site calibration of field equipment (Multi-parameter Water Quality System), the BS 1427:2009, "Guide to on-site test methods for the analysis of waters" was observed.

5.20 Sufficient stocks of spare parts were maintained for replacements when necessary. Backup monitoring equipment was also being made available so that monitoring can proceed uninterrupted even when some equipment was under maintenance, calibration, etc.

5.21 The equipment used for impact water quality monitoring is shown in **Table 5.3** and copies of the calibration certificates are shown in **Appendix C**. All the monitoring equipment complied with the requirements set out in the EM&A Manual.

Table 5.3 Water Quality Monitoring Equipment

Equipment	Model and Make	Qty
Sonar Water Depth Detector	Garmin Fishfinder 140	2
Multi-parameter Water Quality System	YSI EXO	2

Monitoring Parameters, Frequency

5.22 **Table 5.4** summarizes the monitoring parameters, monitoring period and frequencies of the water quality monitoring. The water quality monitoring schedule for the reporting month is shown in **Appendix D**.

Table 5.4 Water Quality Monitoring Parameters and Frequency

Monitoring Stations	Parameters, unit	Depth	Frequency
CS1, IS1, IS2, IS4, CS5, IS6, BS1	• Temperature(°C) • pH(pH unit) • turbidity (NTU) • water depth (m) • salinity (ppt) • dissolved oxygen (DO) (mg/L and % of saturation) • suspended solids (SS) (mg/L)	• 3 water depths: 1m below water surface, mid-depth and 1m above river bed. • If the water depth is less than 3m, mid-depth sampling only. • If water depth less than 6m, mid-depth may be omitted.	• 3 days per week during the construction period of the Contract

5.23 Monitoring location/position, time, water depth, sampling depth, pH, salinity, DO saturation, water temperature, tidal stages, weather conditions and any special phenomena or work underway nearby were recorded.

Monitoring Methodology

Instrumentation

5.24 A multi-parameter meters (Model YSI 6820-C-M) were used to measure DO, turbidity, salinity, pH and temperature.

Operating/Analytical Procedures

5.25 At each measurement, two consecutive measurements of DO concentration, DO saturation, salinity, turbidity, pH and temperature were taken. The probes were retrieved out of the water after the first measurement and then re-deployed for the second measurement. Where the difference in the value between the first and second readings of each set was more than 25% of the value of the first reading, the reading was discarded and further readings were taken.

Laboratory Analytical Methods

5.26 The testing of all parameters was conducted by Wellab Ltd. (HOKLAS Registration No.083) for the water samples and comprehensive quality assurance and control procedures in place in order to ensure quality and consistency in results. The testing method, reporting limit and detection limit are provided in **Table 5.5**.

Table 5.5 Methods for Laboratory Analysis for Water Samples

Determinant	Instrumentation	Analytical Method	Limit of Reporting	Detection Limit
Suspended Solid (SS)	Weighing	APHA 17ed 2540 D	2.5 mg/L	0.5 mg/L

QA/QC Requirements

Decontamination Procedures

5.27 Water sampling equipment used during the course of the monitoring programme was decontaminated by manual washing and rinsed clean seawater/distilled water after each sampling event. All disposal equipment was discarded after sampling.

Sampling Management and Supervision

5.28 All sampling bottles were labelled with the sample I.D, laboratory number and sampling date. Water samples were dispatched to the testing laboratory for analysis as soon as possible after the sampling. All samples were stored in a cool box and kept at less than 4°C but without frozen. All water samples were handled under chain of custody protocols and relinquished to the laboratory representatives at locations specified by the laboratory.

5.29 The laboratory determination works were started as soon as possible after collection of the water samples.

Quality Control Measures for Sample Testing

5.30 The sample testing and following quality control programme were performed by Wellab Ltd. for every batch of 20 samples:

- ✧ One method blank;and
- ✧ One set of quality control (QC) samples.

Maintenance and Calibration

5.31 All in situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the water quality monitoring programme.

Results and Observations

5.33 The monitoring results and graphical presentation of water quality at the monitoring stations is shown in **Appendix H.**

5.34 The summary of exceedance record in reporting month is shown in **Appendix L** and summarized in the **Table 5.6**.

Table 5.6 Summary of Water Quality Exceedances

Station	Exceedance Level	DO	Turbidity	SS	Total No. of non-project related Exceedance
IS1	Action Level		13/02/19 25/02/19		2
	Limit Level	19/02/19 25/02/19	15/02/19 23/02/19	13/02/19 15/02/19 23/02/19	7
IS2	Action Level				
	Limit Level		21/02/19 23/02/19	21/02/19 23/02/19	4
IS4	Action Level				
	Limit Level				
BS1	Action Level				
	Limit Level		23/02/19	21/02/19 23/02/19	3
Total	Action Level	0	2	0	2
	Limit Level	2	5	7	14

5.35 An updated Baseline Monitoring Report was submitted to incorporate the revised Action/Limit level to avoid causing false alarm for water quality monitoring.

5.36 Water monitoring station IS6 was found dried out in the monitoring period, thus, no monitoring was conducted. The water monitoring will resume once there is water flow at IS6. Other water quality monitoring was conducted as scheduled in the reporting month .Two (2) Limit Level non-project related exceedances for dissolved oxygen. Two (2) Action Level non-project related exceedances and Five (5) Limit Level non-project related exceedances were recorded for turbidity. Seven (7) Limit Level non-project related exceedances were recorded for suspended solids. After investigation, all exceedances are non-project related.

5.37 According to the investigation, the exceedances are considered not due to the Contract due to the following reasons:

1) No water-based construction activity was conducted;
2) No pollution discharge from land-based construction activity was observed;
3) The exceeded result were similar or within the range of baseline monitoring results
4) On 21/2/2019, influx of muddy water was observed from Shenzhen River (Mainland China) to old Shenzhen River meander (Hong Kong) during the monitoring which caused the dispersion of riverbed sediment to the monitoring station.
5) On 25/2/2019, green color of river water was observed, it is considered due to rapid growth of algae that caused high turbidity and led to decrease in dissolved oxygen level.

Event and Action Plan

5.38 Should non-compliance of the criteria occur, action in accordance with the Action Plan in **Appendix K** shall be carried out.

6 ECOLOGICAL MONITORING

Monitoring Requirements (Avifauna Monitoring)

Monitoring Requirements

6.1 As required under Section 11.4.1.1 of the EM&A Manual, a flight line corridor survey is required from the beginning of work until 12 months after the establishment of the Ecological Area or completion of work on the Western Connect Road, whichever is the later.

6.2 The purpose of the survey is to identify the number and species composition of birds using the flight line and monitor if any impact from construction works.

Monitoring Frequency

6.3 Flight line survey is required to be carried out on monthly basis.

Monitoring Location

6.4 The flight line corridor survey work should be carried out at the LMC Lookout, according to Section 11.4.1.1 of the EM&A Manual. The location at LMC Lookout is shown in **Figure 5.**

Monitoring Methodology

6.5 Flight lines of birds through the area were surveyed once monthly at LMC Lookout, adjacent to LMC Loop.

6.6 Observations were carried out at LMC Lookout for two hours from 30 minutes before sunrise in the early morning.

6.7 During the survey, the surveyor marked on a standard map the estimated location of the flight path used by waterbird species, birds of prey or other larger species of conservation interest passing through the area. Flights involving short hops from point to point were not recorded. The focus was on the flight line corridor over LMC Loop or the southwest section of LMC Meander.

6.8 During the survey, species generally commensal with man (e.g. Black-collared Starling), common and widespread in HK (e.g. Crested Myna) or small in size and not prone to following flight lines en masse (e.g. Barn Swallow) were ignored in order to concentrate on species of conservation interest and/or those prone to using flight lines (e.g. large waterbirds).

6.9 For each observation of birds in flight, the number, the species and their height above the ground was recorded. Height above the ground was estimated in relation to the level of LMC Loop and adjacent fish pond area, and/or the location of the observer.

6.10 Given the difficulty of accurately measuring height above ground from a distance, three

height classes were used: 10m, 20m and 30m or above. In practice, this means birds were assigned to ranges of 5-15m (10m height class), 15-25m (20m height class) and 25m or above (30m height class). Approximate heights of observation points were 40m at LMC Lookout.

6.11 Flight line locations marked on the maps were then overlain by a 100m grid, each square having a unique number.

6.12 The number of birds of each species passing through each 100m square (the number of "bird-flights") and their height above ground were then entered into an Excel spreadsheet. These data were then mapped, and on the figures produced a greater intensity of colour indicates a higher number of birds, as shown in **Figure 6.**

Monitoring Day

6.13 The flight line survey was carried out on 16th February 2019. The survey started at 6:25 am (sunrise time at 6:55 am) and lasted for 2 hours. The weather was clear and sunny during the entire survey.

Monitoring Result

6.14 A total of 1600 birds, in 10 species, were recorded during the survey in the reporting month. The 10 species included Great Cormorant, Little Egret, Great Egret, Grey Heron, Black-faced Spoonbill, Chinese Pond Heron, Pied Kingfisher, Collared Crow, Purple Heron and Black Kite. **Table 6.1** shows the summary of the number of birds observed in this Survey.

Table 6.1 Number of birds recorded in February 2019

Species	Number of birds
Great Cormorant 鸕鷀	1318
Little Egret 小白鷺	136
Great Egret 大白鷺	115
Grey Heron 蒼鷺	13
Black-faced Spoonbill 黑臉琵鷺	7
Chinese Pond Heron 池鷺	5
Pied Kingfisher 斑魚狗	2
Collared Crow 白頸鴉	2
Purple Heron 草鷺	1
Black Kite 黑鳶	1

6.15 The total number of bird-flights (number of birds of each species passing through each 100m square) observed across all 100m grid squares was 15735. **Table 6.2** shows the number of bird-flights for the ten species respectively.

Table 6.2 Number of bird-flights of the ten species

Species	Total Bird-Flight
Great Cormorant 鸕鷀	13106
Little Egret 小白鷺	1231
Great Egret 大白鷺	1104
Grey Heron 蒼鷺	120
Black-faced Spoonbill 黑臉琵鷺	70
Chinese Pond Heron 池鷺	48
Pied Kingfisher 斑魚狗	20
Collared Crow 白頸鴉	20
Purple Heron 草鷺	8
Black Kite 黑鳶	8

6.16 **Figure 6** illustrating the location of recorded flight lines. 6 flight lines can be distinguished and identified, which was listed below:

1. Along the Meander
2. Across the fish ponds on the south of the Meander.
3. Across the fish ponds beside the LMC Lookout point
4. Directly on top of construction site
5. Along Ecological Area Zone
6. Along the Shenzhen River.
7. Across the fish ponds beside the LMC Lookout point and continue flying towards SW.

6.17 Flight line of Little Egret, Great Egret and Great Cormorant were mostly located over LMC Meander and adjacent areas. For other species, the number of individual birds or flock observed were too little to provide significant result.

6.18 Little Egret were more likely to pass through the area of LMC loop than other species. For Great Egret and Great Cormorant, they were more concentrated along the LMC Meander.

6.19 The majority of bird flights were at the height of 30m.

Comparison of the Survey Result to the EIA Report

6.20 The comparison of species number was summarized in **Table 6.3**. No species mentioned in the Table 6.3 which were not recorded in the EIA Report.

Table 6.3 Comparison of the Survey Result to the EIA Report

Species	Numbers in Feb 2010	Numbers in Feb 2019
Great Cormorant 鸕鷀	1370	1318
Little Egret 小白鷺	23	136
Great Egret 大白鷺	289	115
Grey Heron 蒼鷺	5	13
B-f Spoonbill 黑臉琵鷺	3	7

Species	Numbers in Feb 2010	Numbers in Feb 2019
Chinese Pond Heron 池鷺	0	5

6.21 In comparison with the flight line distribution mentioned in the EIA report, the result of this survey showed a similar distribution, which means a concentration of flight line from the southwest side of the Lok Ma Chau Loop to the northeast along the Meander. The distribution of flight line usage in this survey and the EIA report was shown in **Figure 6** and **Figure 7** respectively.

7 ENVIRONMENTAL SITE INSPECTION

Site Audits

7.1 Site audits were carried out by ET on weekly basis to monitor the timely implementation of proper environmental management practices and mitigation measures in the Contract site. The summaries of site audits are attached in **Appendix M**.

7.2 Site audits were conducted on 1st, 8th, 13th and 22nd February 2019 by ET after the commencement of construction works for the Contract. A joint site audit with the representative with ER, the Contractor, IEC and the ET was carried out on 13th February 2019. The details of observations during site audit can refer to **Table 7.1**.

Implementation Status of Environmental Mitigation Measures

7.3 According to the EIA Study Report, Environmental Permit and the EM&A Manual, the mitigation measures detailed in the documents are recommended to be implemented during the construction phase. An updated summary of the EMIS is provided in **Appendix N**.

7.4 During site inspections in the reporting month, no non-conformance was identified. The observations and recommendations made during the audit sessions are summarized in **Table 7.1**.

Table 7.1 Observations and Recommendations of Site Audit

Parameters	Date	Observations and Recommendations	Follow-up
Water Quality	13/2/2019	The soak away method from the wetsep tank is not recommended, Contractor should implement an alternate system to discharge water according to discharge license.	Rectification/improvement was not observed during the follow-up audit session, follow-up action will be reported in the next monthly report.
	13/2/2019	Cut-off drain near the temporary bridge should be enhanced.	Rectification/improvement was not observed during the follow-up audit session, follow-up action will be reported in the next monthly report.
	13/2/2019	The tires of dump trucks after using the wheel wash facility were observed muddy, Contractor should improve the wheel washing facility.	Rectification/improvement was not observed during the follow-up audit session, follow-up action will be reported in the next monthly report.
Ecology	11/1/2019	3m high olive green fence shall be erected around the construction area	Improvement was observed during follow-up audit session on 8 February 2019.
	25/1/2019	Indication operating hours for PMEs near site office was established, but the indicator near the decontamination zone 2 is yet to be set up. Contractor was reminded to ensure there is a clear indicator within 100m of meander.	Improvement was observed during follow-up audit session on 22 February 2019.
Air Quality	04/1/2019	The PVD installation equipment was observed without NRMM label. Contractor was reminded to display it conspicuously during operation.	Improvement was observed during follow-up audit session on 1 February 2019.
	04/1/2019	The Contractor was reminded to provide watering at least once per hour on the exposed work sites and haul road for dust suppression.	Rectification/improvement was not observed during the follow-up audit session, follow-up action will be reported in the next monthly report.
	01/2/2019	Stockpile shall be covered properly with impervious material to avoid dust generation	Rectification was observed during follow-up audit session on 22 February 2019.
	13/2/2019	Cement mixing machine should be carried out in an enclosed system.	Rectification was observed during follow-up audit session on 22 February 2019.
	13/2/2019	Hoarding should be provided along the site area near the temp. bridge.	Rectification/improvement was not observed during the follow-up audit session, follow-up action will be reported in the next monthly report.
Noise	N/A(1)	N/A(1)	N/A(1)
Waste / Chemical Management	18/1/2019	Chemical containers near the wetsep shall be stored properly.	Rectification was observed during follow-up audit session on 22 February 2019.

Parameters	Date	Observations and Recommendations	Follow-up
	08/2/2019	The setup of chemical waste storage area was observed not complying with the EPD requirement. The Contractor was reminded to review the relevant requirement to modify it.	Rectification was observed during follow-up audit session on 22 February 2019.
	13/2/2019	A number of drip trays were observed filled with sediments and should be sealed.	Rectification/improvement was not observed during the follow-up audit session, follow-up action will be reported in the next monthly report.
	22/2/2019	Chemical containers should be stored properly with drip try to avoid any on site contamination	Follow up action will be reported in the next monthly report.
Landscape & Visual Impact	N/A(1)	N/A(1)	N/A(1)
Permits/Licences	N/A(1)	N/A(1)	N/A(1)
Other	N/A(1)	N/A(1)	N/A(1)

Remark: N/A(1) - No major environmental deficiency was identified during the site inspection in the reporting month.

Solid and Liquid Waste Management Status

7.5 The amount of waste generated by the activities of the project in the reporting month and cumulative quantity are shown **Table 7.2**.

Table 7.2 Quantities of Waste Generated in the Reporting Month

Waste Type		Quantity this month	Cumulative Quantity-to-Date	Disposal/Dumping Grounds
Inert	C&D materials disposed [in m^3]	--	--	--
	C&D materials recycled [in m^3]	2000	17000	Haul road
Non-inert	C&D materials disposed [in kg]	--	--	--
	C&D materials recycled [in kg]	--	--	--
	Chemical waste disposed [in kg]	--	--	--

7.6 The detail of amount of waste generated by the activities of the project during the reporting month is shown in **Appendix O**.

8 ENVIRONMENTAL NON-CONFORMANCE (EXCEEDANCES)

Summary of Exceedances

8.1 Summary of exceedance is provided in **Appendix L**.

8.2 No Action/Limit Level exceedance was recorded for air quality and construction noise.

8.3 Two (2) Limit Level non-project related exceedances for dissolved oxygen. Two (2) Action Level non-project related exceedances and Five (5) Limit Level non-project related exceedances were recorded for turbidity. Seven (7) Limit Level non-project related exceedances were recorded for suspended solids. After investigation, all exceedances are non-project related.

Summary of Environmental Complaint

8.4 No environmental related complaints were received in the reporting month. The Complaint Log is attached in **Appendix P**.

Summary of Notification of Summons and Successful Prosecution

8.5 There was no prosecution or notification of summons received since the Contract commencement. Summary of successful prosecution as attached in **Appendix Q**.

9 FUTURE KEY ISSUES

Key Issues in the Coming Month

9.1 Major site activities for the coming reporting month will include:

(a) Construction of land decontamination treatment plant;

(b) Excavation of top soil for land decontamination works at hot spot LD-001;

(c) Erection of 3m green fence;

(d) Installation of prefabricated vertical drains and strip drain;

(e) Piling for temporary bridge;

(f) Establishment of nursery areas for reed bed.

(g) Site clearance at Ecological Area Zone

Monitoring Schedule for the Next Month

9.2 The tentative environmental monitoring schedule for the next month is shown in **Appendix D**.

Construction Programme for the Next Month

9.3 A tentative construction programme is provided in **Appendix A**.

10 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

10.1 The Environmental Monitoring and Audit (EM&A) Report presents the EM&A works undertaken in February 2019 in accordance with EM&A Manual.

10.2 No Action /Limit Level exceedance was recorded for air quality and construction noise.

10.3 An updated Baseline Monitoring Report was submitted to incorporate the revised Action/Limit level to avoid causing false alarm for water quality monitoring.

10.4 Water monitoring station IS6 was found dried out in the monitoring period, thus, no monitoring was conducted. The water monitoring will resume once there is water flow at IS6. Other water quality monitoring was conducted as scheduled in the reporting month .Two (2) Limit Level non-project related exceedances for dissolved oxygen. Two (2) Action Level non-project related exceedances and Five (5) Limit Level non-project related exceedances were recorded for turbidity. Seven (7) Limit Level non-project related exceedances were recorded for suspended solids. After investigation, all exceedances are non-project related.

10.5 Avifauna monitoring was carried out on 16th February 2019. No adverse impact was noticeable from general observations.

10.6 Environmental site inspection was conducted on 1st, 8th, 13th, 22nd February 2019 by ET in the reporting month.

10.7 There was no environmental complaints, no notification of summons and successful prosecution received in the reporting month.

10.8 The ET will keep track on the EM&A programme to ensure compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Recommendations

10.9 According to the environmental audit performed in the reporting month, the following recommendations were made:

Air Quality Impact

- To implement dust suppression measures such as water spray on all haul roads, stockpiles, dry surfaces and during unloading of material.
- To cover stockpile of dusty material by impervious material
- To avoid dark smoke emitted from the PMEs.
- NRMM labels should be properly displayed on PMEs during operation.

Noise Impact

- To inspect the noise sources inside the site.
- To space out noisy equipment and position the equipment as far away as possible from sensitive receivers.
- To provide temporary noise barriers for operations of noisy equipment near the noise sensitive receivers, if necessary.

Water Impact

- To prevent any surface runoff discharge into meander or stream.
- To review and implement temporary drainage system.
- To identify any wastewater discharges from site.
- To remove the sand or dusty material away from the meander or stream.
- To divert all the water generated from construction site to de-silting facilities with enough handling capacity before discharge.
- To review the capacity of de-silting facilities for discharge.

Ecology Impact

- To continuously set up the 3m high olive green fence around the construction site.
- To set up a clear signal around the site to indicate the restricted operation time for PMEs near 100m of meander

Waste/Chemical Management

- To check for any accumulation of waste materials or rubbish on site.
- To carry out inspection of dump truck at site exit to ensure inert and non-inert C&D materials are properly segregated before removing off site.
- To avoid any discharge or accidental spillage of chemical waste or oil directly from the site.
- To avoid improper handling or storage of oil drum or chemical containers on site.

FIGURE(S)

位置圖 LOCATION PLAN 比例 SCALE 1 : 150 000

N

深圳市
Shenzhen Shi

深圳河

落馬洲河套地區
Lok Ma Chau Loop

蠔殼圍
Hoo Hok Wai

馬草壟
Ma Tso Lung

落馬洲
Lok Ma Chau

新田
San Tin

落馬洲站
Lok Ma Chau Station

落馬洲路
Lok Ma Chau Road

下灣村東路
Ha Wan Tsuen East Road

落馬洲管制站
Lok Ma Chau Control Point

新田村路
San Tin Tsuen Road

新深路
San Sham Road

Fanling Highway

大沙洛
TA SHA LOK

料壆
Liu Pok

雙孖鯉魚
LUCKY PASS (SEUNG MA LEI YUE)

大石嶺
CREST HILL (TAI SHEK MO)

馬草壟信義新村
Ma Tso Lung Lutheran New Village

牛角山
HORN HILL (NGAU KOK SHAN)

馬草壟新村
Ma Tso Lung San Tsuen

屏洲
PING HANG

大羅口
TA LAW HAU

鳳崗山
FUNG KONG SHAN

下灣漁民新村
Ha Wan Fisherman San Tsuen

潘屋村
Pun Uk Tsuen

米埔
MAI PO

深圳河
SHENZHEN RIVER

圖例 LEGEND

- 擬議土地除污及相關工程 Proposed Land Decontamination and Associated Works
- 擬議土地處理工程 Proposed Ground Treatment Works
- 擬議生態區 Proposed Ecological Area
- 擬議臨時行車橋 Proposed Temporary Vehicular Bridge
- 擬議小型道路改善工程 Proposed Minor Road Improvement Works
- 擬議臨時隔音屏障及各種道路工程 Proposed Temporary Noise Barriers and Miscellaneous Road Works

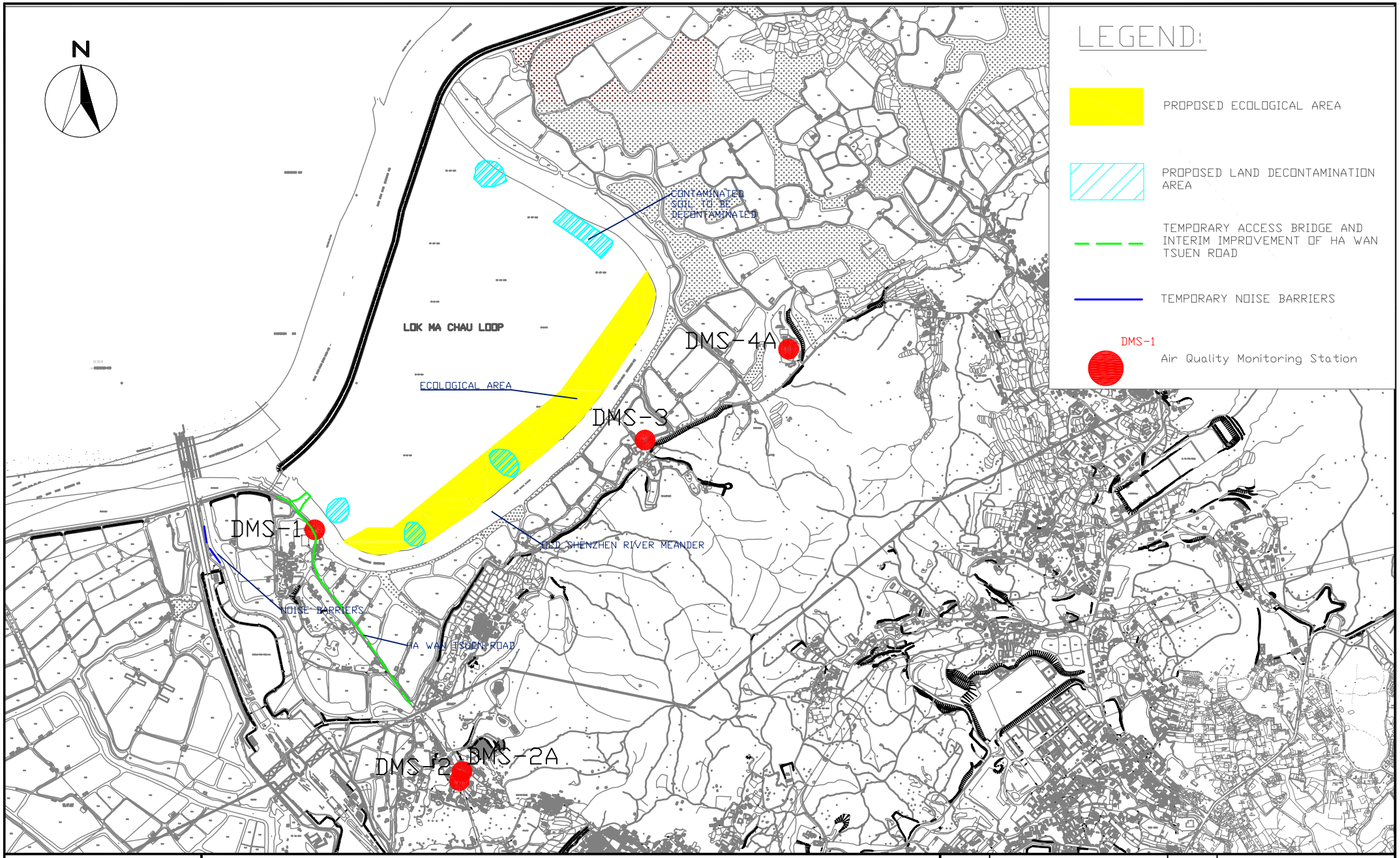
工務計劃項目第748CL號—落馬洲河套地區發展：土地除污及前期工程
PWP ITEM No. 748CL-DEVELOPMENT OF LOK MA CHAU LOOP : LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS

平面圖
LAYOUT PLAN

R:\Sketch-WDO\W1\W1-008\W1-008.dgn

1/2/2018

A3 420MM X 297MM



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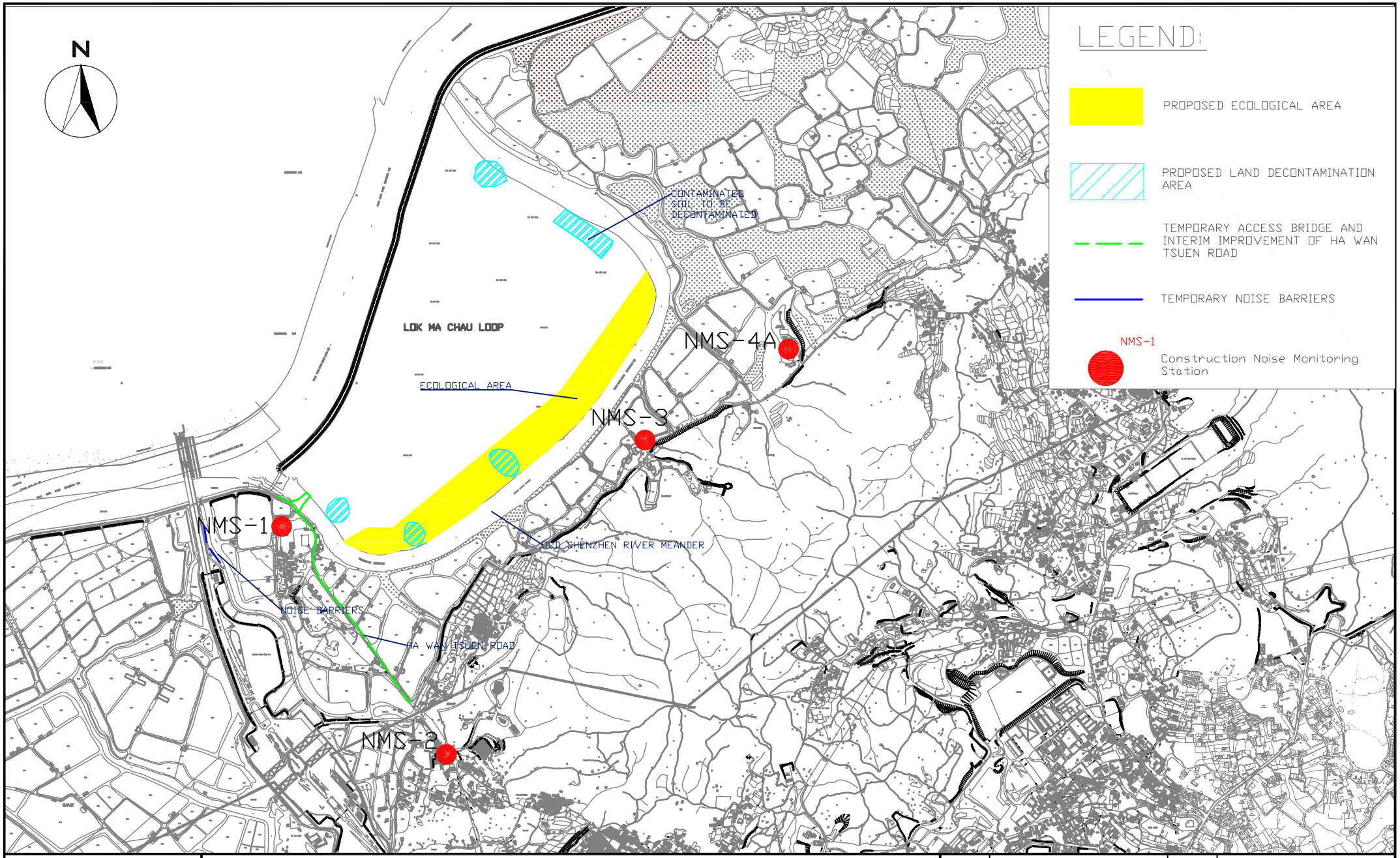
consulting . testing . research

DEVELOPMENT OF LOK MA CHAU LOOP:
LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS - DESIGN AND CONSTRUCTION

LOCATION OF AIR QUALITY MONITORING STATION

SCALE	1:400 A4	DATE	NOV 2018
CHECK	IT	DRAWN	VW
JOB No.	WMA 18047	FIGURE NO.	Fig 2
		REV	-



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DEVELOPMENT OF LOK MA CHAU LOOP:
LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS - DESIGN AND CONSTRUCTION

LOCATION OF NOISE QUALITY MONITORING STATION

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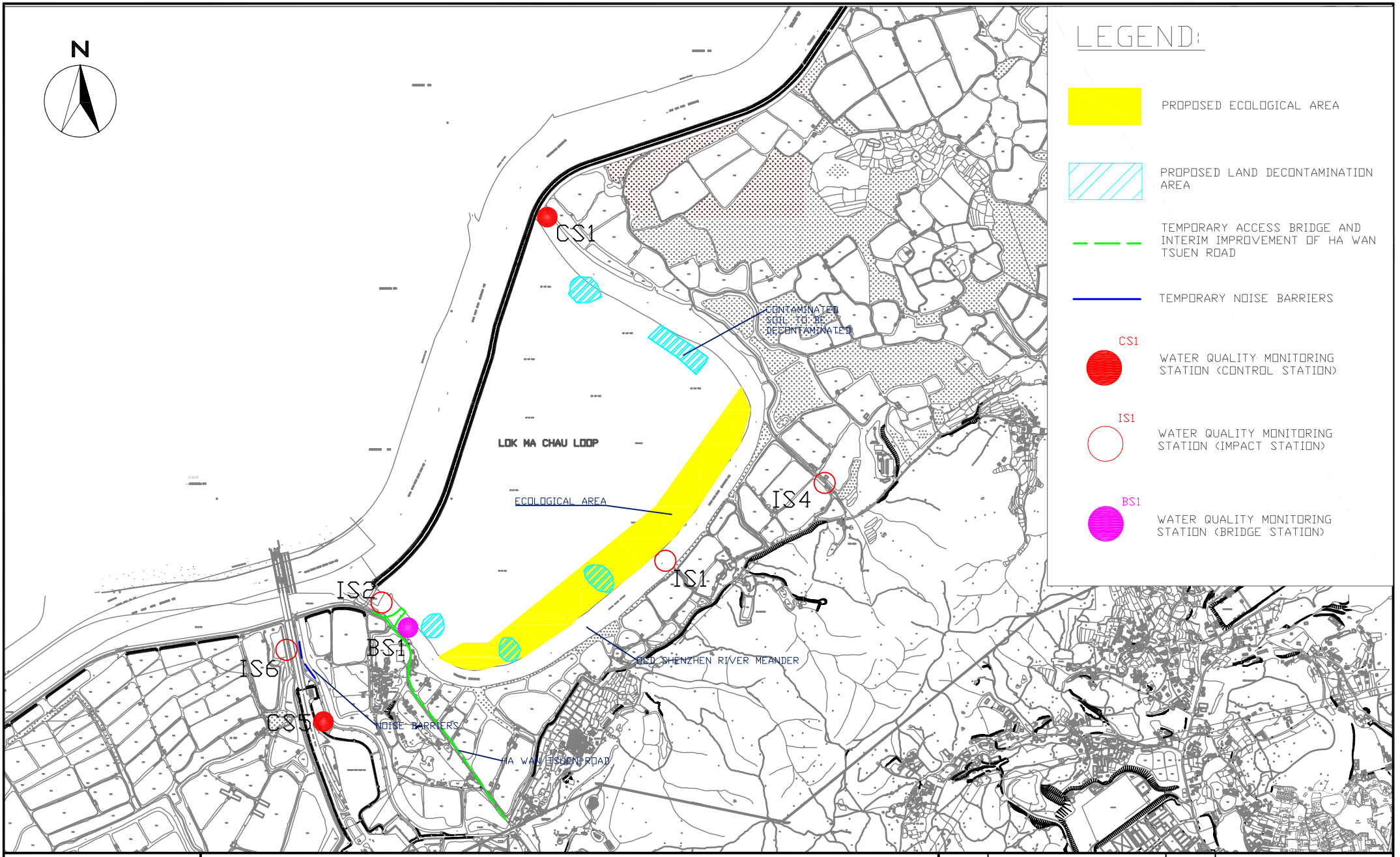
CHECK	IT	DRAWN	VW
JOB No.	WMA 18047	FIGURE NO.	Fig 3
		REV	-



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consulting . testing . research

DEVELOPMENT OF LOK MA CHAU LOOP:
LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS - DESIGN AND CONSTRUCTION

LOCATION OF WATER QUALITY MONITORING STATION

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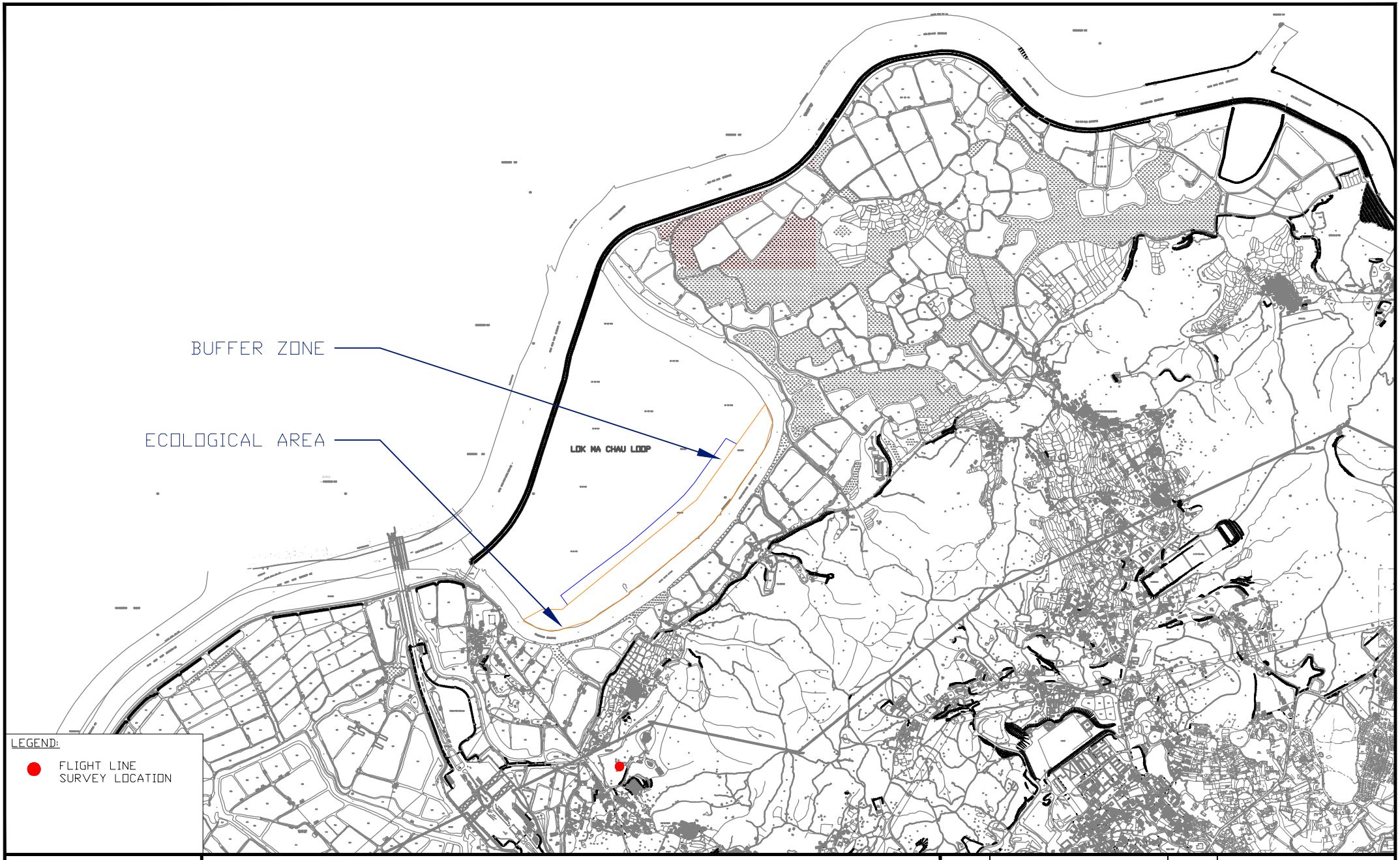
CHECK	IT	DRAWN	JW
JOB No.	WMA 18047	FIGURE NO.	Fig 4
		REV	-

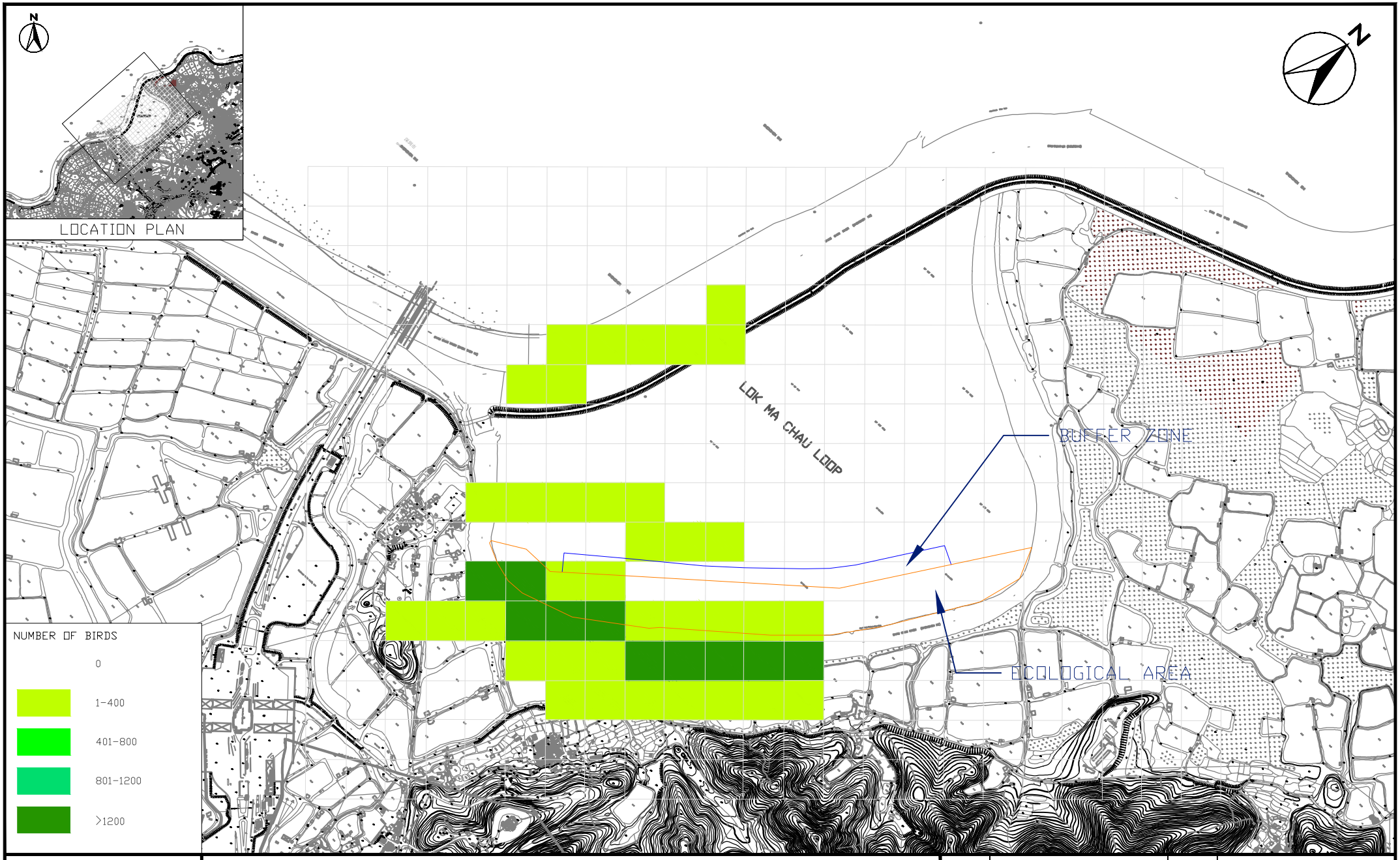


WELLAB

DEVELOPMENT OF LOK MA CHAU LOOP:
LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS - DESIGN AND CONSTRUCTION

COUNT LOCATION FOR FLIGHT LINES SURVEY OF ALL BIRD SPECIES AND LOCATIONS OF ECOLOGICAL AREA AND ITS BUFFER ZONE

SCALE	1:500 @A4	DATE	FEB 2019
CHECK	IT	DRAWN	JW
JOB No.	WMA 18047	FIGURE NO.	Fig 5
		REV	-

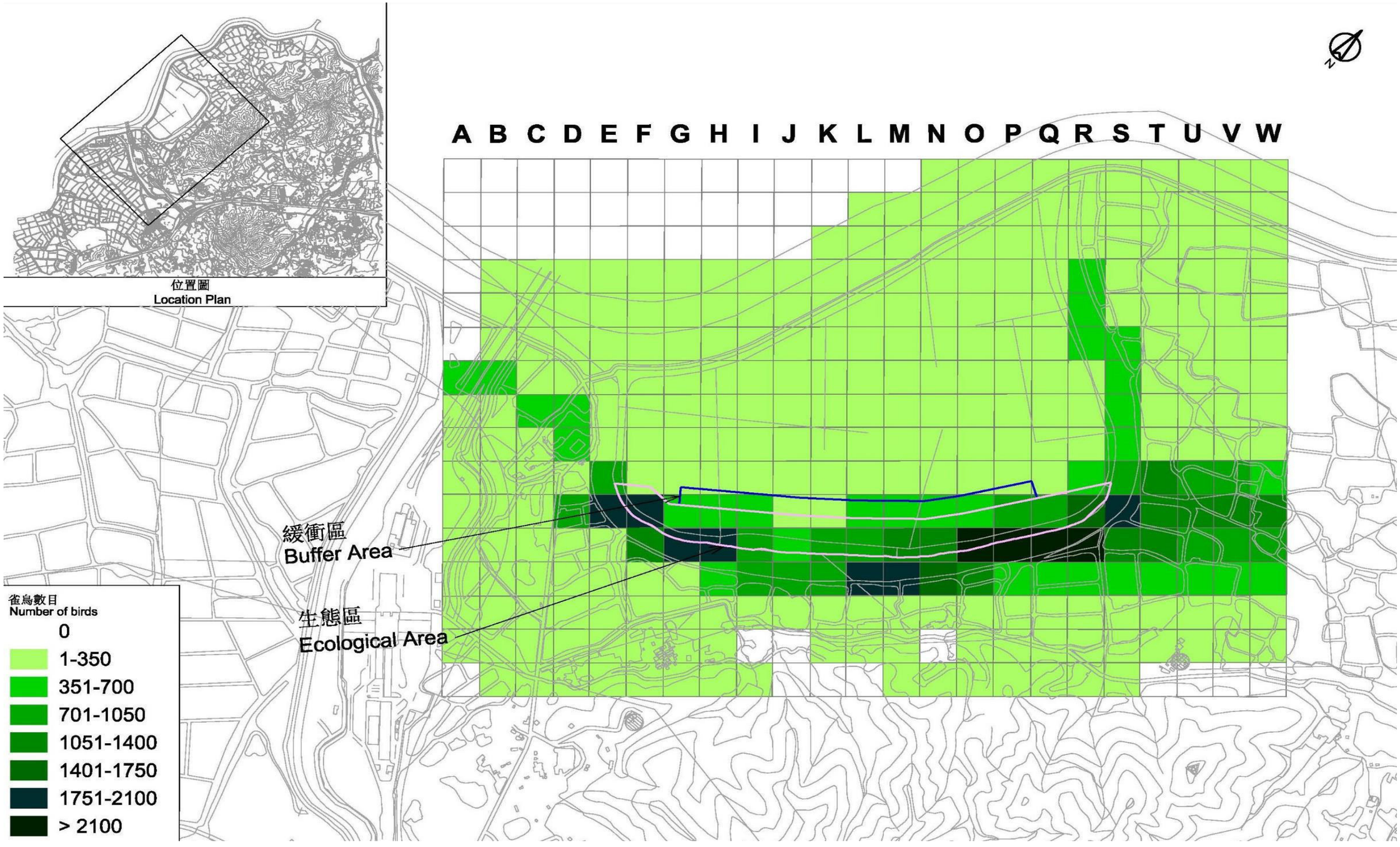


WELLAB

DEVELOPMENT OF LOK MA CHAU LOOP:
LAND DECONTAMINATION AND ADVANCE ENGINEERING WORKS - DESIGN AND CONSTRUCTION

FLIGHT LINES OF ALL BIRD SPECIES AND LOCATIONS OF ECOLOGICAL AREA AND ITS BUFFER ZONE

SCALE	1:300 @A4	DATE	FEB 2019
CHECK	IT	DRAWN	JW
JOB No.	WMA 18047	FIGURE NO.	Fig 6
		REV	-



WELLAB	Title: Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction	Scale: N.T.S	Project No.: WMA18047
	Flight Line of All Bird Species from the EIA Report	Date: Jan-19	Figure: 7

APPENDIX A
CONSTRUCTION PROGRAMME

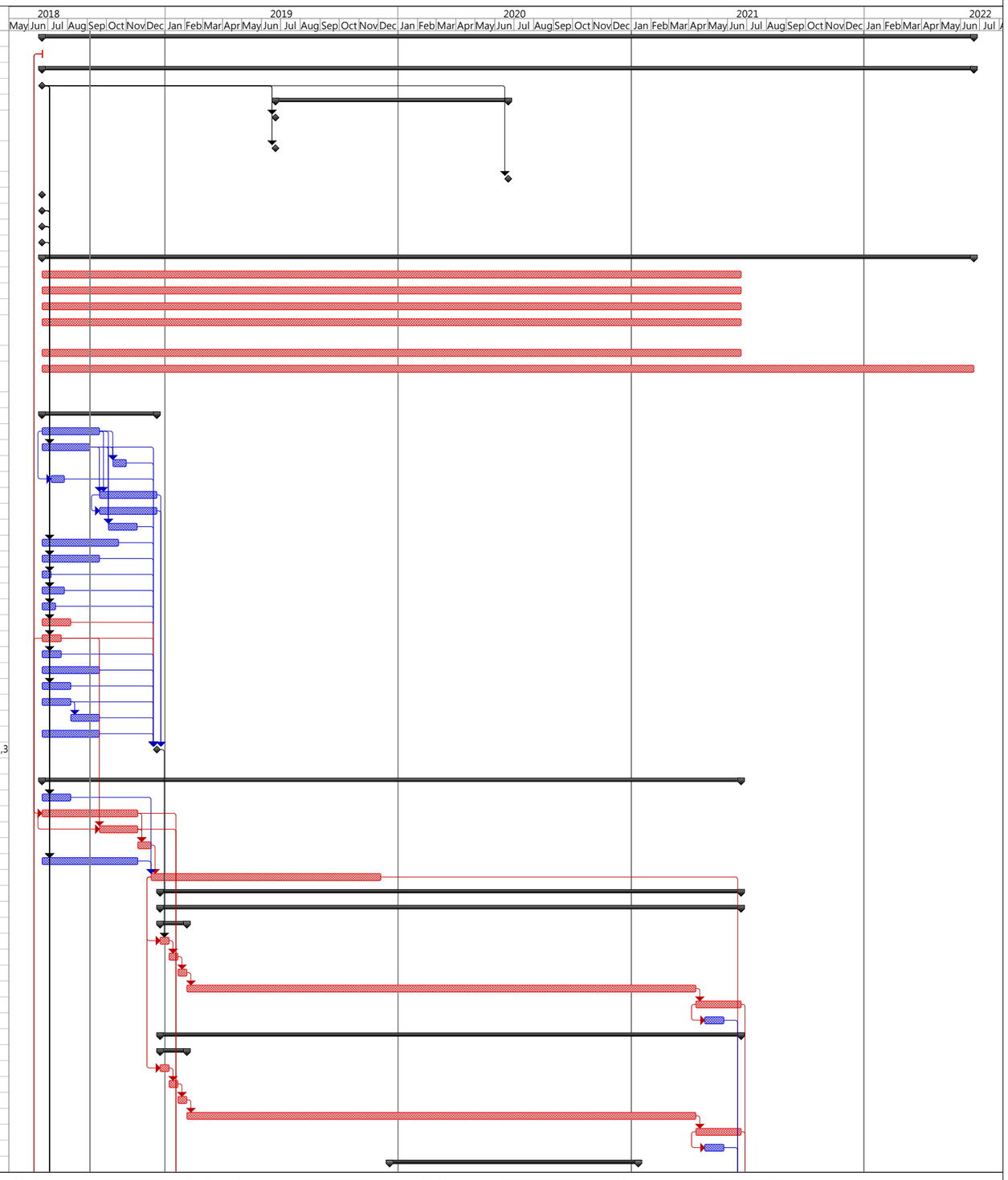
Contract No. YL/2017/03

Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works

Project Programme of the Works **Rev.2 (Data Date : 28 Aug 2018)**

Sang Hing - Kuly Joint Venture

ID	Activity ID	Task Name	Duration	Time risk allowance	Start	Finish	Float	Predecessors
1	**000000**	**Project Programme of the Works**	**1461 days?**		**Fri 22/6/18**	**Tue 21/6/22**	**0 days?**	
2			1 day?		Fri 22/6/18	Fri 22/6/18	0 days?	
3	**100000**	**1. Contract Key Dates**	**1461 days**		**Fri 22/6/18**	**Tue 21/6/22**	**0 days**	
4	**110000**	**1.1 Date for Commencement of the Works**	**0 days**		**Fri 22/6/18**	**Fri 22/6/18**	**0 days**	
5	**120000**	**1.2 Key Dates**	**365 days**		**Sat 22/6/19**	**Sun 21/6/20**	**0 days**	
6	121000	Completion of land decontamination works within the EA zone and ground treatment areas	0 days		Sat 22/6/19	Sat 22/6/19	0 days	4FS+366 days
7	122000	Completion of the temporary vehicular bridge across the old Shenzhen River meander	0 days		Sat 22/6/19	Sat 22/6/19	0 days	4FS+366 days
8	123000	Completion of Ecological Area within the Loop	0 days		Sun 21/6/20	Sun 21/6/20	0 days	4FS+731 days
9	**130000**	**1.3 Site Possession Dates**	**0 days**		**Fri 22/6/18**	**Fri 22/6/18**	**0 days**	
10	131000	Portion A	0 days		Fri 22/6/18	Fri 22/6/18	0 days	
11	132000	Portion B	0 days		Fri 22/6/18	Fri 22/6/18	0 days	
12	133000	Portion C	0 days		Fri 22/6/18	Fri 22/6/18	0 days	
13	**140000**	**1.4 Section Completion of the Works**	**1461 days**		**Fri 22/6/18**	**Tue 21/6/22**	**0 days**	
14	141000	Section I - works in the Portion A	1096 days		Fri 22/6/18	Mon 21/6/21	0 days	
15	142000	Section II - works in the Portion B	1096 days		Fri 22/6/18	Mon 21/6/21	0 days	
16	143000	Section III - decontamination work in the Portion B and the Portion C	1096 days		Fri 22/6/18	Mon 21/6/21	0 days	
17	144000	Section IV - ground treatment works and associated works in the Portion C	1096 days		Fri 22/6/18	Mon 21/6/21	0 days	
18	145000	Section V - all landscape softworks	1096 days		Fri 22/6/18	Mon 21/6/21	0 days	
19	146000	Section VI - all establishment and further establishment work in the Portion B	1461 days		Fri 22/6/18	Tue 21/6/22	0 days	
20								
21	**200000**	**2. Preliminary Works**	**180 days**		**Fri 22/6/18**	**Tue 18/12/18**	**5 days**	
22	201000	Subcontracting submission and approval	90 days		Fri 22/6/18	Wed 19/9/18	5 days	
23	202000	Design and approval of Hoarding & Fencing	75 days		Fri 22/6/18	Tue 4/9/18	20 days	4
24	203000	Construction of Hoarding & Fencing for Site Offices	21 days		Thu 11/10/18	Wed 31/10/18	53 days	23,22FS+21 days
25	204000	Set up Engineer's Temp Accommodation	21 days		Fri 6/7/18	Thu 26/7/18	150 days	22SS+14 days
26	205000	Set up Engineer's Office	90 days		Thu 20/9/18	Tue 18/12/18	5 days	23,22
27	206000	Set up Contractor's Site Office	90 days		Thu 20/9/18	Tue 18/12/18	5 days	26SS
28	207000	Submission and construction of Project Signboard	45 days		Thu 4/10/18	Sat 17/11/18	36 days	23,22FS+14 days
29	208000	Initial topographic survey	120 days		Fri 22/6/18	Fri 19/10/18	65 days	4
30	209000	Prepare, submit & Approve ICE	90 days		Fri 22/6/18	Wed 19/9/18	95 days	4
31	210000	Prepare, Submit Draft Safety Plan	14 days		Fri 22/6/18	Thu 5/7/18	171 days	4
32	211000	Review & Approve Safety Plan	35 days		Fri 22/6/18	Thu 26/7/18	150 days	4
33	212000	Prepare, Submit, Approve Environmental Management Plan	21 days		Fri 22/6/18	Thu 12/7/18	164 days	4
34	213000	Application & Approve Environmental Licenses	45 days		Fri 22/6/18	Sun 5/8/18	0 days	4
35	214000	Prepare, Submit & Approve Traffic Consultant	30 days		Fri 22/6/18	Sat 21/7/18	0 days	4
36	215000	Prepare and Submit Smart Card System	30 days		Fri 22/6/18	Sat 21/7/18	155 days	4
37	216000	Site Liaison Group	90 days		Fri 22/6/18	Wed 19/9/18	95 days	
38	217000	Permit Application for Temporary Access along Border Road	45 days		Fri 22/6/18	Sun 5/8/18	140 days	4
39	218000	Forming of temporary Access Road for Pedestrian	45 days		Fri 22/6/18	Sun 5/8/18	95 days	
40	219000	Installation of 3M-high Olive Green Fence along major reed marsh area	45 days		Mon 6/8/18	Wed 19/9/18	95 days	39
41	220000	Searching for Otter holts / dens and Herpetofaunal species	90 days		Fri 22/6/18	Wed 19/9/18	95 days	
42	299999	Complete all preliminary items	0 days		Tue 18/12/18	Tue 18/12/18	5 days	23,24,25,26,27,28,29,30,31,3
43								
44	**300000**	**3. Section I of the works - Works in the Portion A**	**1096 days**		**Fri 22/6/18**	**Mon 21/6/21**	**0 days**	
45	301000	Tree survey and submission	45 days		Fri 22/6/18	Sun 5/8/18	126 days	10,11
46	302000	Application for XP	150 days		Fri 22/6/18	Sun 18/11/18	0 days	35SS
47	303000	Prepare TTA for TMLG and approval from TD and RMO	60 days		Thu 20/9/18	Sun 18/11/18	0 days	46SS+90 days,35
48	304000	Application of Traffic Advice and Road Work Advice	21 days		Mon 19/11/18	Sun 9/12/18	0 days	46,47
49	305000	Liaison / coordination to Utility Undertakers / UU diversion	150 days		Fri 22/6/18	Sun 18/11/18	21 days	10,11
50	306000	tree felling / site clearance	360 days		Mon 10/12/18	Wed 4/12/19	0 days	48,49,45
51	**307000**	**Improvement of Ha Wan Tsuen East Road (approx. 850m)**	**911 days**		**Mon 24/12/18**	**Mon 21/6/21**	**0 days**	
52	**307100**	**Workfront I - Road works**	**911 days**		**Mon 24/12/18**	**Mon 21/6/21**	**0 days**	
53	**307110**	**Stage 1**	**42 days**		**Mon 24/12/18**	**Sun 3/2/19**	**0 days**	
54	307120	Drainage work - gully and u-channel & PL ducting	14 days	2 days	Mon 24/12/18	Sun 6/1/19	0 days	50SS+14 days,42
55	307130	Carriageway	14 days	2 days	Mon 7/1/19	Sun 20/1/19	0 days	54
56	307140	Footpath	14 days	1 day	Mon 21/1/19	Sun 3/2/19	0 days	55
57	**307150**	**Stage 2 - 20**	**798 days**	**60 days**	**Mon 4/2/19**	**Sun 11/4/21**	**0 days**	**56**
58	307160	Road marking, traffic sign and road furniture	71 days	6 days	Mon 12/4/21	Mon 21/6/21	0 days	57
59	307161	Lighting Installation by HyD	30 days		Mon 26/4/21	Tue 25/5/21	27 days	58SS+14 days
60	**307200**	**Workfront II - Road works**	**911 days**		**Mon 24/12/18**	**Mon 21/6/21**	**0 days**	
61	**307210**	**Stage 1**	**42 days**		**Mon 24/12/18**	**Sun 3/2/19**	**0 days**	
62	307220	Drainage work - gully and u-channel & PL ducting	14 days	2 days	Mon 24/12/18	Sun 6/1/19	0 days	50SS+14 days
63	307230	Carriageway	14 days	2 days	Mon 7/1/19	Sun 20/1/19	0 days	62
64	307240	Footpath	14 days	1 day	Mon 21/1/19	Sun 3/2/19	0 days	63
65	**307250**	**Stage 2 - 20**	**798 days**	**60 days**	**Mon 4/2/19**	**Sun 11/4/21**	**0 days**	**64**
66	**307260**	**Road marking, traffic sign and road furniture**	**71 days**	**6 days**	**Mon 12/4/21**	**Mon 21/6/21**	**0 days**	**65**
67	307261	Lighting Installation by HyD	30 days		Mon 26/4/21	Tue 25/5/21	27 days	66SS+14 days
68	**307300**	**Workfront III - Road works**	**390 days**		**Thu 19/12/19**	**Mon 11/1/21**	**161 days**	



Project: YL/2017/03 Development of Lok Ma Chau
Data Date: 28 Aug 2018
Submission: 30 Aug 2018

Task | Summary | Rolled Up Milestone | External Tasks | Inactive Task | Manual Task | Manual Summary | Progress
Critical Task | Rolled Up Task | Rolled Up Progress | Project Summary | Inactive Milestone | Duration-only | Start-only | Deadline
Milestone | Rolled Up Critical Task | Split | Group By Summary | Inactive Summary | Manual Summary Rollup | Finish-only

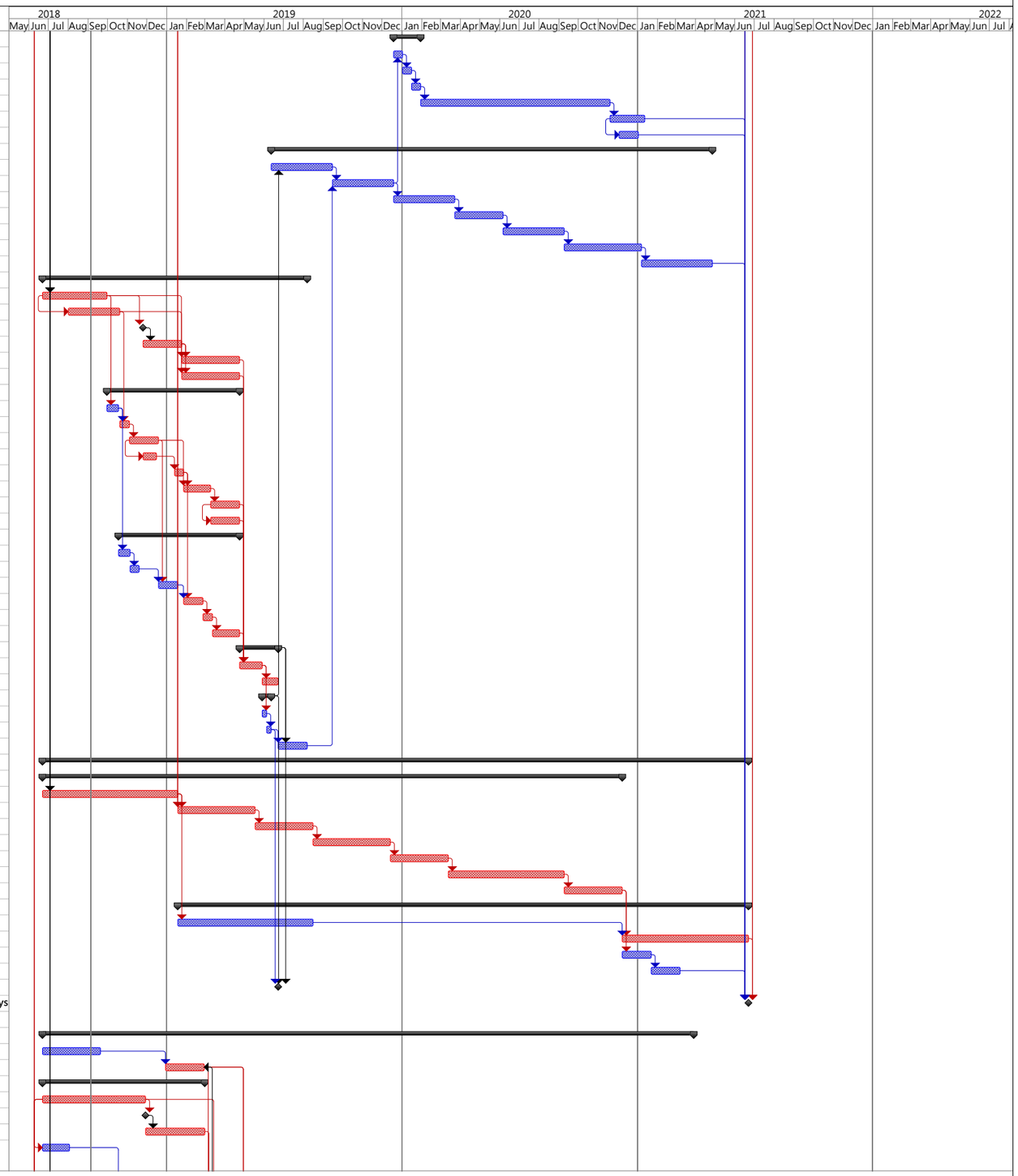
Contract No. YL/2017/03

Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works

Project Programme of the Works **Rev.2 (Data Date : 28 Aug 2018)**

Sang Hing - Kuly Joint Venture

ID	Activity ID	Task Name	Duration	Time risk allowance	Start	Finish	Float	Predecessors
69	**307310**	**Stage 1**	**42 days**		**Thu 19/12/19**	**Wed 29/1/20**	**161 days**	
70	307320	Drainage work - gully and u-channel & PL ducting	14 days	2 days	Thu 19/12/19	Wed 1/1/20	161 days	78
71	307330	Carriageway	14 days	2 days	Thu 2/1/20	Wed 15/1/20	161 days	70
72	307340	Footpath	14 days	1 day	Thu 16/1/20	Wed 29/1/20	161 days	71
73	**307350**	**Stage 2 - 8**	**294 days**	**28 days**	**Thu 30/1/20**	**Wed 18/11/20**	**161 days**	**72**
74	307360	Road marking, traffic sign and road furniture	54 days	6 days	Thu 19/11/20	Mon 11/1/21	161 days	73
75	307361	Lighting Installation by HyD	30 days		Thu 3/12/20	Fri 1/1/21	171 days	74SS+14 days
76	**307400**	**Workfront IV - Retaining Wall**	**685 days**		**Wed 12/6/19**	**Mon 26/4/21**	**26 days**	
77	307410	RW1.5 ~ RW1.8, RW3.4	95 days	7 days	Wed 12/6/19	Sat 14/9/19	26 days	110
78	307420	RW3.5, RW2.9 ~ RW3.3	95 days	7 days	Sun 15/9/19	Wed 18/12/19	26 days	77,113
79	307430	RW1.1 ~ RW1.4	95 days	7 days	Thu 19/12/19	Sun 22/3/20	26 days	78
80	307440	RW2.0 - RW2.3	75 days	7 days	Mon 23/3/20	Fri 5/6/20	26 days	79
81	307450	RW2.4 - RW2.8	95 days	7 days	Sat 6/6/20	Tue 8/9/20	26 days	80
82	307460	Backfilling	120 days	10 days	Wed 9/9/20	Wed 6/1/21	26 days	81
83	307470	Drainage work and roadwork	110 days	10 days	Thu 7/1/21	Mon 26/4/21	26 days	82
84	**308000**	**Vehicular Bridge**	**411 days**		**Fri 22/6/18**	**Tue 6/8/19**	**65 days**	
85	308100	Preparation and submission/CSD Preparation and submission	100 days	9 days	Fri 22/6/18	Sat 29/9/18	0 days	10,11
86	308200	Liaison and obtained approval from DSD & EPD for works in Meander	80 days		Wed 1/8/18	Fri 19/10/18	0 days	85SS+40 days
87	308210	Last day for approval of CSD and return to confirming design	0 days		Sun 25/11/18	Sun 25/11/18	0 days	85
88	308220	Approval from Supervisor and relevant government department	60 days		Sun 25/11/18	Wed 23/1/19	0 days	87
89	308300	Steel bridge fabrication	90 days	5 days	Thu 24/1/19	Tue 23/4/19	0 days	86FS+46 days,88
90	308400	Bearings and movement joints fabrication	90 days	5 days	Thu 24/1/19	Tue 23/4/19	0 days	85FS+60 days,88
91	**308500**	**Central Pier and South Abutment**	**206 days**		**Sun 30/9/18**	**Tue 23/4/19**	**0 days**	
92	308510	Site clearance and formation trimming	18 days	2 days	Sun 30/9/18	Wed 17/10/18	2 days	85
93	308520	Temporary Platform forming for Central Pier and South Abutment	15 days	2 days	Sat 20/10/18	Sat 3/11/18	0 days	92,86
94	308530	Predrilling work and determination of pile founding level	45 days	5 days	Sun 4/11/18	Tue 18/12/18	0 days	93
95	308540	Installation of preliminary pile	21 days	2 days	Sun 25/11/18	Sat 15/12/18	0 days	94SS+21 days
96	308550	Pile testing to preliminary pile	14 days	1 day	Sun 13/1/19	Sat 26/1/19	0 days	95FS+28 days
97	308560	Piling work (10 nos. for SA, 8 nos. for CP)	42 days	4 days	Sun 27/1/19	Sat 9/3/19	0 days	96,94
98	308570	Substructure - Pile Cap and Abutment	45 days	5 days	Sun 10/3/19	Tue 23/4/19	0 days	97
99	308580	Substructure - Pile cap and Pier	45 days	5 days	Sun 10/3/19	Tue 23/4/19	0 days	98SS
100	**308600**	**North Abutment**	**188 days**		**Thu 18/10/18**	**Tue 23/4/19**	**0 days**	
101	308610	Site clearance and formation trimming	18 days	2 days	Thu 18/10/18	Sun 4/11/18	39 days	92
102	308620	Temporary platform forming for North Abutment	14 days	1 day	Mon 5/11/18	Sun 18/11/18	39 days	101
103	308630	Predrilling work and determination of pile founding level	30 days	3 days	Wed 19/12/18	Thu 17/1/19	9 days	102,94
104	308640	Piling work (8 nos. for NA))	30 days	3 days	Sun 27/1/19	Mon 25/2/19	0 days	103,96
105	308650	Pile testing	15 days	1 day	Tue 26/2/19	Tue 12/3/19	0 days	104
106	308660	Substructure - Pile Cap and Abutment	42 days	4 days	Wed 13/3/19	Tue 23/4/19	0 days	105
107	**308700**	**Installation of superstructure**	**60 days**		**Wed 24/4/19**	**Sat 22/6/19**	**0 days**	
108	308710	Installation, Site Welding for Steel Structure	35 days	4 days	Wed 24/4/19	Tue 28/5/19	0 days	99,89,98,90,106
109	308720	RC decking and bituminous pavement	25 days	2 days	Wed 29/5/19	Sat 22/6/19	0 days	108
110	**308800**	**Association temporary road works for matching with bridge**	**14 days**		**Wed 29/5/19**	**Tue 11/6/19**	**11 days**	
111	308810	Temporary road formation works by backfilling	7 days	2 days	Wed 29/5/19	Tue 4/6/19	11 days	108
112	308820	Temporary road surface pavement	7 days	1 day	Wed 5/6/19	Tue 11/6/19	11 days	111
113	308900	Removal of temporary platform	45 days	4 days	Sun 23/6/19	Tue 6/8/19	65 days	107,112
114	**309000**	**Construction of Noise Barrier along Lok Ma Chau Road**	**1096 days**		**Fri 22/6/18**	**Mon 21/6/21**	**0 days**	
115	**309100**	**Construction of Concrete Footing**	**900 days**		**Fri 22/6/18**	**Mon 7/12/20**	**0 days**	
116	309110	Preparation and submission	210 days		Fri 22/6/18	Thu 17/1/19	0 days	10,11
117	309120	TNB10 and TNB13	120 days	10 days	Fri 18/1/19	Fri 17/5/19	0 days	46,47,116
118	309130	TNB 14	90 days	8 days	Sat 18/5/19	Thu 15/8/19	0 days	117
119	309140	TNB 8 and TNB 12	120 days	10 days	Fri 16/8/19	Fri 13/12/19	0 days	118
120	309150	TNB 9	90 days	8 days	Sat 14/12/19	Thu 12/3/20	0 days	119
121	309160	TNB 7, TNB 6, TNB 5 and TNB 16	180 days	15 days	Fri 13/3/20	Tue 8/9/20	0 days	120
122	309170	TNB 4, TNB 3, TNB 2 and TNB 11	90 days	8 days	Wed 9/9/20	Mon 7/12/20	0 days	121
123	**309200**	**Installation of Acrylic Noise Barrier**	**886 days**		**Fri 18/1/19**	**Mon 21/6/21**	**0 days**	
124	309210	Fabrication of acrylic noise barrier	210 days	15 days	Fri 18/1/19	Thu 15/8/19	480 days	116
125	309220	Installation of acrylic noise barrier	196 days	15 days	Tue 8/12/20	Mon 21/6/21	0 days	124,122
126	309300	TNB 1	45 days	4 days	Tue 8/12/20	Thu 21/1/21	106 days	122
127	309400	TNB 15	45 days	4 days	Fri 22/1/21	Sun 7/3/21	106 days	126
128	**310000**	**Key Date for temporary Vehicular Bridge**	**0 days**		**Sat 22/6/19**	**Sat 22/6/19**	**0 days**	**107,110,112**
129	**399999**	**Completion of Section I of the Works**	**0 days**		**Mon 21/6/21**	**Mon 21/6/21**	**0 days**	**127,58,66,74,83FS+30 days**
130								
131	**400000**	**4. Section II of the Works - Works in the Portion B**	**1011 days**		**Fri 22/6/18**	**Sun 28/3/21**	**0 days**	
132	410000	Tree survey and submission	90 days		Fri 22/6/18	Wed 19/9/18	101 days	
133	420000	Tree felling / site clearance	60 days	7 days	Sun 30/12/18	Wed 27/2/19	0 days	144FF-1 day,132
134	**430000**	**Preparation and submission**	**252 days**		**Fri 22/6/18**	**Thu 28/2/19**	**0 days**	
135	431000	Method statement and submission/CSD preparation	160 days		Fri 22/6/18	Wed 28/11/18	0 days	
136	431100	Last day for approval of CSD and return to confirming design	0 days		Wed 28/11/18	Wed 28/11/18	0 days	135
137	431200	Approval from Supervisor and relevant government department	92 days		Thu 29/11/18	Thu 28/2/19	0 days	136
138	432000	Preparation for all necessary submission by EP for notification to EPD for commencement of construction works. (by Contractor)	42 days		Fri 22/6/18	Thu 2/8/18	76 days	135SS



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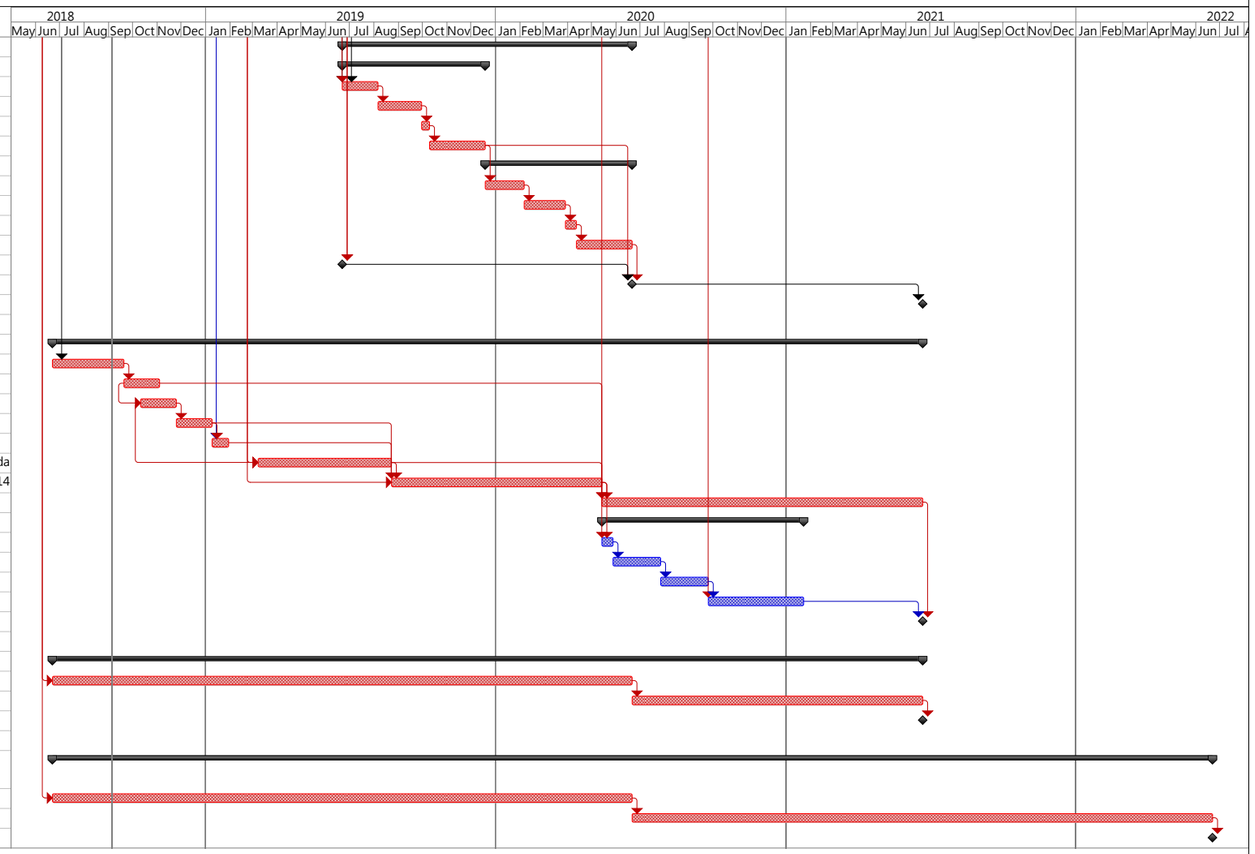
Task	Summary	Rolled Up Milestone	External Tasks	Inactive Task	Manual Task	Manual Summary	Progress
Critical Task	Rolled Up Task	Rolled Up Progress	Project Summary	Inactive Milestone	Duration-only	Start-only	Deadline
Milestone	Rolled Up Critical Task	Split	Group By Summary	Inactive Summary	Manual Summary Rollup	Finish-only	

ID	Activity ID	Task Name	Duration	Time risk allowance	Start	Finish	Float	Predecessors
139	432100	Appointment of ET/IEC (by others)	90 days		Fri 22/6/18	Wed 19/9/18	0 days	135SS
140	432200	Conduct Baseline Monitoring by ET (by others)	28 days		Thu 20/9/18	Wed 17/10/18	0 days	139
141	433000	Submission to EPD for notification of commencement of construction works at Portion B	30 days		Thu 18/10/18	Fri 16/11/18	0 days	140,138
142	440000	Determination of the toe level of stone column by cone penetration test (by other)	75 days		Thu 28/2/19	Mon 13/5/19	0 days	133,140
143	**450000**	**Works for stone column**	**245 days**		**Fri 1/3/19**	**Thu 31/10/19**	**0 days**	
144	450010	Commencement of construction works at Portion B	0 days		Fri 1/3/19	Fri 1/3/19	0 days	141FS+104 days,137
145	**451000**	**Stone column - workfront I (North Embankment)**	**194 days**		**Fri 1/3/19**	**Tue 10/9/19**	**0 days**	
146	451100	Excavation	60 days	5 days	Fri 1/3/19	Mon 29/4/19	0 days	144
147	451120	Rock filling	60 days	5 days	Fri 15/3/19	Mon 13/5/19	0 days	146SS+14 days,135
148	451130	Construction of stone column	120 days	10 days	Tue 14/5/19	Tue 10/9/19	0 days	147SS+60 days,142
149	**452000**	**Stone column - workfront II (South Embankment)**	**194 days**		**Fri 1/3/19**	**Tue 10/9/19**	**0 days**	
150	452100	Excavation	60 days	5 days	Fri 1/3/19	Mon 29/4/19	0 days	146SS
151	452200	Rock filling	60 days	5 days	Fri 15/3/19	Mon 13/5/19	0 days	150SS+14 days
152	452300	Construction of stone column	120 days	10 days	Tue 14/5/19	Tue 10/9/19	0 days	151SS+60 days,142
153	**453000**	**Stone column - workfront III (North Embankment)**	**174 days**		**Tue 30/4/19**	**Sun 20/10/19**	**11 days**	
154	453100	Excavation	90 days	7 days	Tue 30/4/19	Sun 28/7/19	11 days	133,146
155	453200	Rock filling	100 days	10 days	Tue 14/5/19	Wed 21/8/19	11 days	154SS+14 days,147
156	453300	Construction of stone column	100 days	10 days	Sat 13/7/19	Sun 20/10/19	11 days	155SS+60 days,142
157	**454000**	**Stone column - workfront IV (South Embankment)**	**174 days**		**Tue 30/4/19**	**Sun 20/10/19**	**11 days**	
158	454100	Excavation	90 days	7 days	Tue 30/4/19	Sun 28/7/19	11 days	133,150
159	454200	Rock filling	100 days	10 days	Tue 14/5/19	Wed 21/8/19	11 days	158SS+14 days,151
160	454300	Construction of stone column	100 days	10 days	Sat 13/7/19	Sun 20/10/19	11 days	159SS+60 days,142
161	**455000**	**Stone column - workfront V (Inter. Embankment)**	**215 days**		**Sun 31/3/19**	**Thu 31/10/19**	**0 days**	
162	455100	Excavation	100 days	7 days	Sun 31/3/19	Mon 8/7/19	0 days	146SS+30 days
163	455200	Rock filling	120 days	10 days	Sun 14/4/19	Sun 11/8/19	0 days	162SS+14 days
164	455300	Construction of stone column	120 days	10 days	Thu 4/7/19	Thu 31/10/19	0 days	163SS+81 days
165	461000	Excavation for EA zone (Workfront I)	90 days	7 days	Sat 3/8/19	Thu 31/10/19	0 days	152FS-39 days,148FS-39 da
166	462000	Excavation for EA zone (Workfront II)	83 days	7 days	Sun 1/3/20	Fri 22/5/20	0 days	156,160,165FS+120 days
167	463000	Planting of Vegetation inside EA Zone	30 days	2 days	Sat 23/5/20	Sun 21/6/20	0 days	166
168	471000	Construction of drainage incl. inlet, outlet structures and overflow weir	188 days	15 days	Wed 11/9/19	Mon 16/3/20	0 days	148,152
169	472000	Construction of PE pipes by trenchless method	120 days	10 days	Thu 9/1/20	Thu 7/5/20	50 days	168SS+120 days
170	473000	Installation of associated works (Penstocks and valves)	90 days	7 days	Mon 22/6/20	Sat 19/9/20	5 days	168,169,174
171	**481000**	**Construction of Embankment (North Embankment)**	**130 days**		**Sat 3/8/19**	**Tue 10/12/19**	**67 days**	
172	481100	Rockfill	90 days	10 days	Sat 3/8/19	Thu 31/10/19	67 days	165SS
173	481200	Eco-bag system construction	40 days	3 days	Fri 1/11/19	Tue 10/12/19	67 days	172
174	**482000**	**Construction of Embankment (South Embankment)**	**97 days**		**Tue 17/3/20**	**Sun 21/6/20**	**0 days**	
175	482100	Rockfill	70 days	7 days	Tue 17/3/20	Mon 25/5/20	0 days	168,173FS+30 days
176	482200	Eco-bag system construction	27 days	2 days	Tue 26/5/20	Sun 21/6/20	0 days	175
177	483000	Construction of access road along south embankment	95 days	12 days	Mon 22/6/20	Thu 24/9/20	0 days	176
178	484000	Construction of access road along intermediate embankment	90 days	10 days	Fri 25/9/20	Wed 23/12/20	0 days	177,170
179	485100	Construction of bird hide	95 days	7 days	Thu 24/12/20	Sun 28/3/21	0 days	178
180	485200	Construction of otter holts	95 days	7 days	Thu 24/12/20	Sun 28/3/21	0 days	179SS
181	486000	Installation of fencing along north embankment	95 days	7 days	Thu 24/12/20	Sun 28/3/21	0 days	179SS
182	**490000**	**Key Date**	**0 days**		**Sun 21/6/20**	**Sun 21/6/20**	**0 days**	**166,174,167**
183	**491000**	**Early completion of Section II of Works**	**0 days**		**Sun 28/3/21**	**Sun 28/3/21**	**0 days**	**181,180**
184	**499999**	**Completion of Section II of the Works**	**0 days**		**Mon 21/6/21**	**Mon 21/6/21**	**0 days**	**177,181,180,183FS+85 days**
185								
186	**500000**	**5. Section III of the Works - Land decontamination works in the Portions B & C**	**730 days**		**Fri 22/6/18**	**Sat 20/6/20**	**0 days**	
187	510000	Preparation and submission	90 days		Fri 22/6/18	Wed 19/9/18	1 day	12
188	520000	Treatment plants establishment	45 days	4 days	Thu 20/9/18	Sat 3/11/18	1 day	187
189	**530000**	**Soil decontamination**	**626 days**		**Thu 4/10/18**	**Sat 20/6/20**	**0 days**	
190	**531000**	**Works within the EA zone and ground treatment area**	**261 days**		**Thu 4/10/18**	**Fri 21/6/19**	**0 days**	
191	**531100**	**LD - 01 (ground improvement area - Portion C)**	**96 days**	**25 days**	**Thu 4/10/18**	**Mon 7/1/19**	**1 day**	
192	531110	Excavation of top layer of soil	21 days	2 days	Thu 4/10/18	Wed 24/10/18	1 day	188SS+14 days
193	531120	Excavation of contaminate soil and decontamination	35 days	3 days	Thu 25/10/18	Wed 28/11/18	1 day	192
194	531130	Confirming test of contamination area	10 days	1 day	Thu 29/11/18	Sat 8/12/18	1 day	193
195	531140	Backfilling and compaction	30 days	3 days	Sun 9/12/18	Mon 7/1/19	1 day	194
196	**531200**	**LD - 02 (Ecological area - Portion B)**	**113 days**		**Fri 1/3/19**	**Fri 21/6/19**	**0 days**	
197	531210	Excavation for contaminated soil for stockpiled for further treatment	21 days	4 days	Fri 1/3/19	Thu 21/3/19	0 days	146SS
198	531220	Excavation of contaminate soil and decontamination	35 days	10 days	Fri 22/3/19	Thu 25/4/19	0 days	197
199	531221	Confirming test of contamination area	12 days	1 day	Fri 26/4/19	Tue 7/5/19	0 days	198
200	531230	Backfilling and compaction	45 days	10 days	Wed 8/5/19	Fri 21/6/19	0 days	188FS+120 days,199
201	**531300**	**LD - 03 (Ecological area - Portion B)**	**113 days**		**Fri 1/3/19**	**Fri 21/6/19**	**0 days**	
202	531310	Excavation for contaminated soil for stockpiled for further treatment	21 days	4 days	Fri 1/3/19	Thu 21/3/19	0 days	197SS
203	531320	Excavation of contaminate soil and decontamination	35 days	10 days	Fri 22/3/19	Thu 25/4/19	0 days	197,202
204	531321	Confirming test of contamination area	12 days	1 day	Fri 26/4/19	Tue 7/5/19	0 days	203
205	531330	Backfilling and compaction	45 days	10 days	Wed 8/5/19	Fri 21/6/19	0 days	188FS+120 days,204

Project: YL/2017/03 Development of Lok Ma Chau
Data Date: 28 Aug 2018
Submission: 30 Aug 2018

Task
Critical Task
Milestone
Summary
Rolled Up Task
Rolled Up Critical Task
Rolled Up Milestone
Rolled Up Progress
Split
External Tasks
Project Summary
Group By Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
Progress
Deadline

ID	Activity ID	Task Name	Duration	Time risk allowance	Start	Finish	Float	Predecessors
206	**532000**	**Works within Portion C**	**365 days**		**Sat 22/6/19**	**Sat 20/6/20**	**0 days**	
207	**532100**	**LD - 04 (Portion C)**	**180 days**	**35 days**	**Sat 22/6/19**	**Wed 18/12/19**	**0 days**	
208	532110	Excavation of top layer of soil	45 days	4 days	Sat 22/6/19	Mon 5/8/19	0 days	191,196,203
209	532120	Excavation of contaminate soil and decontamination	55 days	5 days	Tue 6/8/19	Sun 29/9/19	0 days	208
210	532130	Confirming test of contamination area	10 days	1 day	Mon 30/9/19	Wed 9/10/19	0 days	209
211	532140	Backfilling and compaction	70 days	6 days	Thu 10/10/19	Wed 18/12/19	0 days	210
212	**532200**	**LD - 05 (Portion C)**	**185 days**	**35 days**	**Thu 19/12/19**	**Sat 20/6/20**	**0 days**	
213	532210	Excavation of top layer of soil	49 days	5 days	Thu 19/12/19	Wed 5/2/20	0 days	211
214	532220	Excavation of contaminate soil and decontamination	52 days	5 days	Thu 6/2/20	Sat 28/3/20	0 days	213
215	532230	Confirming test of contamination area	14 days	1 day	Sun 29/3/20	Sat 11/4/20	0 days	214
216	532240	Backfilling and compaction	70 days	7 days	Sun 12/4/20	Sat 20/6/20	0 days	215
217	**540000**	**Key Date for works in EA zone and ground improvement area**	**0 days**		**Fri 21/6/19**	**Fri 21/6/19**	**0 days**	**205,200**
218	550000	Early completion of Section III of Works	0 days		Sat 20/6/20	Sat 20/6/20	0 days	217,211,216
219	**599999**	**Completion of Section III of the Works**	**0 days**		**Mon 21/6/21**	**Mon 21/6/21**	**0 days**	**218FS+366 days**
220								
221	**600000**	**6. Section IV of the Works - Ground treatment works in the Portion C**	**1096 days**		**Fri 22/6/18**	**Mon 21/6/21**	**0 days**	
222	610000	Preparation and submission	90 days		Fri 22/6/18	Wed 19/9/18	0 days	12
223	620000	Installation of instrumentation and monitoring	45 days	2 days	Thu 20/9/18	Sat 3/11/18	0 days	222
224	631000	Installation of PVD (Area I - Early handover part)	45 days	3 days	Thu 11/10/18	Sat 24/11/18	0 days	223SS+21 days
225	632000	Installation of PVD (Area II - Remaining Part - other than LD001)	45 days	3 days	Sun 25/11/18	Tue 8/1/19	0 days	224
226	633000	Installation of PVD (Area II - Remaining Part - LD-001 location)	21 days	1 day	Wed 9/1/19	Tue 29/1/19	0 days	225,195
227	641000	Surcharge filling and monitoring (Area I - Early handover part)	168 days	5 days	Fri 8/3/19	Thu 22/8/19	0 days	224SS+30 days,146SS+7 da
228	642000	Surcharge filling and monitoring (Area II - Remaining part)	265 days	5 days	Fri 23/8/19	Wed 13/5/20	0 days	227,225,226FS+205 days,14
229	651000	Instrumentation monitoring	404 days		Thu 14/5/20	Mon 21/6/21	0 days	228,223,227
230	**660000**	**Construction of Stone Column**	**254 days**		**Thu 14/5/20**	**Fri 22/1/21**	**150 days**	
231	661000	CPT Test as directed by SO	14 days		Thu 14/5/20	Wed 27/5/20	150 days	142,228
232	662000	Excavation	60 days	5 days	Thu 28/5/20	Sun 26/7/20	150 days	231
233	663000	Rock filling	60 days	5 days	Mon 27/7/20	Thu 24/9/20	150 days	232
234	664000	Construction of stone column	120 days	10 days	Fri 25/9/20	Fri 22/1/21	150 days	233,164
235	**699999**	**Completion of Section IV of the Works**	**0 days**		**Mon 21/6/21**	**Mon 21/6/21**	**0 days**	**234,229**
236								
237	**700000**	**7. Section V of the Works - Landscape softworks**	**1096 days**		**Fri 22/6/18**	**Mon 21/6/21**	**0 days**	
238	710000	Preparation Works	730 days	10 days	Fri 22/6/18	Sat 20/6/20	0 days	2SS
239	720000	Planting Works	366 days	20 days	Sun 21/6/20	Mon 21/6/21	0 days	238
240	**799999**	**Completion of Section V of the Works**	**0 days**		**Mon 21/6/21**	**Mon 21/6/21**	**0 days**	**239**
241								
242	**800000**	**8. Section VI of the Works - establishment and further establishment works in the Portion B**	**1461 days**		**Fri 22/6/18**	**Tue 21/6/22**	**0 days**	
243	810000	Preparation and Planting Works	730 days	10 days	Fri 22/6/18	Sat 20/6/20	0 days	2SS
244	820000	Establishment Works	731 days	20 days	Sun 21/6/20	Tue 21/6/22	0 days	243
245	**899999**	**Completion of Section V of the Works**	**0 days**		**Tue 21/6/22**	**Tue 21/6/22**	**0 days**	**244**



APPENDIX B
ACTION AND LIMIT LEVELS

Appendix B - Action and Limit Levels

Table B-1 Action and Limit Levels for 1-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
DMS – 1	353	500
DMS – 2A	370	
DMS – 3	351	
DMS – 4A	350	

Table B-2 Action and Limit Levels for 24-Hour TSP

Location	Action Level, µg/m^3	Limit Level, µg/m^3
DMS – 1	184	260
DMS – 2A	166	
DMS – 3	166	
DMS – 4A	152	

Table B-3 Action and Limit Levels for Construction Noise

Time Period	Action Level	Limit Level
0700-1900 hrs on normal weekdays	When one documented complaint is received	75 dB(A) *

Noted: If works are to be carried during restricted hours, the conditions stipulated in the construction noise permit issued by the Noise Control Authority have to be followed.
(*) reduce to 70 dB(A) for schools and 65 dB(A) during school examination periods.

Table B-4 Action and Limit Levels for Water Quality

Parameter (unit)	Water Depth	Action Level	Limit Level
Dissolved Oxygen (mg/L)	Depth average	CS1: 4.7 IS1: 7.0 IS2: 5.3 IS4: 4.1 CS5: 5.9 BS1:3.9	CS1: 4.5 IS1: 6.8 IS2: 5.2 IS4: 3.8 CS5: 5.8 BS1: 3.7
Turbidity (NTU)	Depth average	CS1: 13.6 IS1: 27.7 IS2: 35.5 IS4: 70.9 CS5: 4.9 BS1:29.9	CS1: 13.8 IS1: 29.9 IS2: 38.1 IS4: 74.6 CS5: 5.0 BS1:32.6
		IS6: 120% of upstream control station	IS6: 130% of upstream control station
Suspended Solids (mg/L)	Depth average	CS1: 18.5 IS1: 28.0 IS2: 39.8 IS4: 155 CS5: 5.0 BS1:36.5	CS1: 19.7 IS1: 28.8 IS2: 41.2 IS4: 175 CS5: 5.8 BS1:36.9
		IS6: 120% of upstream control station	IS6: 130% of upstream control station

Note:
(1) Depth-averaged is calculated by taking the arithmetic means of reading of all three depths
(2) For DO, non-compliance of the water quality limit occurs when monitoring result is lower that the limit.
(3) For SS & turbidity, non-compliance of the water quality limits occur when monitoring result is higher than the limits.

APPENDIX C
COPIES OF CALIBRATION CERTIFCATES

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	30677
Date of Issue:	2019-01-14
Date Received:	2019-01-11
Date Tested:	2019-01-11
Date Completed:	2019-01-14
Next Due Date:	2019-03-13
Page:	1 of 1

ATTN: **Mr. W. K. Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X23807
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-01

Test Conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.185

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse
PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
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Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	30677A
Date of Issue:	2019-01-14
Date Received:	2019-01-11
Date Tested:	2019-01-11
Date Completed:	2019-01-14
Next Due Date:	2019-03-13
Page:	1 of 1

ATTN: **Mr. W. K. Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X23808
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-02

Test Conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.159

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
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Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	30677B
Date of Issue:	2019-01-14
Date Received:	2019-01-11
Date Tested:	2019-01-11
Date Completed:	2019-01-14
Next Due Date:	2019-03-13
Page:	1 of 1

ATTN: **Mr. W. K. Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X23809
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-03

Test Conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.211

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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WELLAB LIMITED
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TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	30677C
Date of Issue:	2019-01-14
Date Received:	2019-01-11
Date Tested:	2019-01-11
Date Completed:	2019-01-14
Next Due Date:	2019-03-13
Page:	1 of 1

ATTN: **Mr. W. K. Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X23810
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-04

Test Conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.233

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse

PATRICK TSE
Laboratory Manager

WELLAB 匯力
Testing & Research

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	30914
Date of Issue:	2019-02-25
Date Received:	2019-02-22
Date Tested:	2019-02-22
Date Completed:	2019-02-25
Next Due Date:	2019-04-24
Page:	1 of 1

ATTN: **Mr. W. K. Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X24476
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-05

Test Conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.131

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
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Website: www.wellab.com.hk

TEST REPORT

Test Report No.:	30573A
Date of Issue:	2018-12-24
Date Received:	2018-12-21
Date Tested:	2018-12-21
Date Completed:	2018-12-24
Next Due Date:	2019-02-23
Page:	1 of 1

ATTN: **Mr. W. K. Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X24477
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-06

Test Conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.159

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	30677D
Date of Issue:	2019-01-14
Date Received:	2019-01-11
Date Tested:	2019-01-11
Date Completed:	2019-01-14
Next Due Date:	2019-03-13
Page:	1 of 1

ATTN: **Mr. W. K. Tang**

Certificate of Calibration

Item for Calibration:

Description	: Dust Monitor
Manufacturer	: Met One Instruments
Model No.	: AEROCET-831
Serial No.	: X24475
Flow rate	: 0.1 cfm
Zero Count Test	: 0 count per 1 minute
Equipment No.	: WA-01-07

Test Conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications & Methodology:

1. Instruction and Operation Manual High Volume Sampler, Tisch Environmental Inc.
2. In-house method in according to the instruction manual: The Dust Monitor was compared with a calibrated High Volume Sampler and the result was used to generate the Correlation Factor (CF) between the Dust Monitor and High Volume Sampler.

Results:

Correlation Factor (CF)	1.195

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
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Technology Park, 18 On Lai Street,
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Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	29813
Date of Issue:	2018-09-15
Date Received:	2018-09-14
Date Tested:	2018-09-14
Date Completed:	2018-09-15
Next Due Date:	2019-09-14

ATTN: **Mr. W.K. Tang**

Page: 1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 955
Serial No.	: 12563
Microphone No.	: 34377
Equipment No.	: N-08-03

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	29499
Date of Issue:	2018-08-13
Date Received:	2018-08-11
Date Tested:	2018-08-11
Date Completed:	2018-08-13
Next Due Date:	2019-08-12
Page:	1 of 1

Certificate of Calibration

Item for calibration:

Description	: 'SVANTEK' Integrating Sound Level Meter
Manufacturer	: SVANTEK
Model No.	: SVAN 957
Serial No.	: 21459
Microphone No.	: 43676
Equipment No.	: N-08-08

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Test Specifications:

Performance checking at 94 and 114 dB

Methodology:

In-house method, according to manufacturer instruction manual

Results:

Reference Set Point, dB	Instrument Readings, dB
94	94.0
114	114.0

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

Patrick Tse
PATRICK TSE
Laboratory Manager

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
Room 1710, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

Test Report No.:	29816
Date of Issue:	2018-09-29
Date Received:	2018-09-28
Date Tested:	2018-09-28
Date Completed:	2018-09-29
Next Due Date:	2019-09-28
Page:	1 of 1

ATTN: **Mr. W.K. Tang**

Item for calibration:

Description	: Acoustical Calibrator
Manufacturer	: SVANTEK
Model No.	: SV30A
Serial No.	: 24803
Equipment No.	: N-09-03

Test conditions:

Room Temperatre	: 17-22 degree Celsius
Relative Humidity	: 40-70%

Methodology:

The Sound Level Calibrator has been calibrated in accordance with the documented procedures and using standard(s) and instrument(s) which are recommended by the manufacturer, or equivalent.

Results:

Sound Pressure Level (1kHz)	Measured SPL	Tolerance
At 94 dB SPL	94.0	94.0 ± 0.1 dB
At 114 dB SPL	114.0	114.0 ± 0.1 dB

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

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High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. WMA18047/75/0002

Station: DMS-1 - Village House along Ha Wan Tsuen Road Operator: HL

Date: 10-Jan-19 Next Due Date: 9-Mar-19

Equipment No.: A-01-75 Serial No. 2203

Ambient Condition			
Temperature, Ta (K)	291.2	Pressure, Pa (mmHg)	769

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.2	3.41	58.19	7.0	2.69
2	9.7	3.17	54.16	5.8	2.45
3	7.5	2.79	47.62	4.6	2.18
4	5.4	2.36	40.41	3.4	1.88
5	3.3	1.85	31.59	2.3	1.54

By Linear Regression of Y on X

Slope , mw = 0.0425 **Intercept, bw =** 0.1757

Correlation coefficient* = 0.9977

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.88**

Remarks:

Conducted by: LEE MAN HEI Signature: [signature] Date: 10/1/2019

Checked by: WK Tang Signature: [signature] Date: 10/1/2019

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High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. WMA18047/75/0002

Station: DMS-1 - Village House along Ha Wan Tsuen Road Operator: HL

Date: 9-Feb-19 Next Due Date: 8-Apr-19

Equipment No.: A-01-75 Serial No. 2203

Ambient Condition			
Temperature, Ta (K)	292.6	Pressure, Pa (mmHg)	766.5

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	11.6	3.45	58.98	7.2	2.72
2	9.8	3.17	54.22	5.8	2.44
3	7.4	2.76	47.11	4.7	2.20
4	5.3	2.33	39.87	3.3	1.84
5	3.4	1.87	31.94	2.3	1.54

By Linear Regression of Y on X

Slope , mw = **0.0431** **Intercept, bw =** **0.1440**

Correlation coefficient* = **0.9978**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.89**

Remarks:

Conducted by: [illegible] Signature: [signature] Date: 9-2-2019

Checked by: [illegible] Signature: [signature] Date: 9/2/2019

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High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

DMS-2A - File No. WMA18047/15/0002

Station: Village House along Lok Ma Chau Road Operator: HL

Date: 10-Jan-19 Next Due Date: 9-Mar-19

Equipment No.: A-01-15 Serial No. 10576

Ambient Condition			
Temperature, Ta (K)	291.5	Pressure, Pa (mmHg)	768.8

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	**mc x Qstd + bc = $[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$**			
Next Calibration Date:	13-Feb-19	**Qstd = $\{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$ -bc} / mc**			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.2	3.55	60.69	6.7	2.63
2	10.3	3.26	55.77	5.5	2.38
3	7.3	2.75	46.95	4.3	2.11
4	5.4	2.36	40.38	3.5	1.90
5	3.1	1.79	30.60	2.3	1.54

By Linear Regression of Y on X

Slope , mw = 0.0351 **Intercept, bw :** 0.4693

Correlation coefficient* = 0.9978

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

mw x Qstd + bw = $[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$

Therefore, Set Point; W = (mw x Qstd + bw)^2 x (760 / Pa) x (Ta / 298) = **3.78**

Remarks:

Conducted by: [illegible] Signature: [signature] Date: 10/1/2-19

Checked by: [illegible] Signature: [signature] Date: 10/1/2019

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High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. WMA18047/15/0003

DMS-2A -

Station: Village House along Lok Ma Chau Road Operator: HL

Date: 9-Feb-19 Next Due Date: 8-Apr-19

Equipment No.: A-01-15 Serial No. 10576

Ambient Condition			
Temperature, Ta (K)	292.7	Pressure, Pa (mmHg)	766.3

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	12.0	3.51	59.97	6.9	2.66
2	9.8	3.17	54.20	5.7	2.42
3	7.6	2.79	47.73	4.6	2.17
4	5.5	2.38	40.60	3.4	1.87
5	3.2	1.81	30.97	2.1	1.47

By Linear Regression of Y on X

Slope , mw = 0.0411 **Intercept, bw =** 0.2006

Correlation coefficient* = 0.9999

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.77

Remarks:

Conducted by: Ho Man Hei Signature: [signature] Date: 9-2-2019

Checked by: W K Tang Signature: [signature] Date: 9/2/2019

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High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. WMA18047/24/0002

Station: DMS-3 - Village House along Border Road Operator: HL

Date: 10-Jan-19 Next Due Date: 9-Mar-19

Equipment No.: A-01-24 Serial No. 1659

Ambient Condition			
Temperature, Ta (K)	293	Pressure, Pa (mmHg)	768.5

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.6	3.74	63.91	7.6	2.80
2	10.7	3.32	56.68	6.3	2.55
3	7.9	2.85	48.71	4.8	2.22
4	4.8	2.22	37.97	3.3	1.84
5	2.7	1.67	28.48	2.0	1.43

By Linear Regression of Y on X

Slope , mw = **0.0383** **Intercept, bw =** **0.3630**

Correlation coefficient* = **0.9994**

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.92**

Remarks:

Conducted by: LEE MAN HOI Signature: [signature] Date: 10/1/2019

Checked by: WK Tang Signature: [signature] Date: 10/1/2019

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High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. WMA18047/24/0003

Station: DMS-3 - Village House along Border Road Operator: HL

Date: 9-Feb-19 Next Due Date: 8-Apr-19

Equipment No.: A-01-24 Serial No. 1659

Ambient Condition			
Temperature, Ta (K)	293	Pressure, Pa (mmHg)	766.2

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	14.0	3.79	64.74	7.8	2.83
2	10.6	3.30	56.33	6.5	2.58
3	7.7	2.81	48.02	4.6	2.17
4	5.3	2.33	39.84	3.4	1.87
5	2.9	1.72	29.47	2.1	1.47

By Linear Regression of Y on X

Slope , mw = 0.0395 **Intercept, bw =** 0.3017

Correlation coefficient* = 0.9980

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.90**

Remarks:

Conducted by: LEE MAN HEI Signature: Lei Date: 9-2-2019

Checked by: W.K. Tang Signature: Kwai Date: 9/2/2019

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High-Volume TSP Sampler

5-POINT CALIBRATION DATA SHEET

File No. WMA18047/69/0002

Station: DMS-4A - Hong Kong Police Force, Lok Ma Chau Operation Base at Horn Hill
Operator: HL
Date: 10-Jan-19
Next Due Date: 9-Mar-19
Equipment No.: A-01-69
Serial No. 3222

Ambient Condition			
Temperature, Ta (K)	293.4	Pressure, Pa (mmHg)	768.3

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.7	3.75	64.09	7.9	2.85
2	10.2	3.24	55.30	6.2	2.52
3	7.8	2.83	48.36	4.8	2.22
4	5.4	2.35	40.24	3.3	1.84
5	3.3	1.84	31.46	2.4	1.57

By Linear Regression of Y on X

Slope , mw = 0.0403 **Intercept, bw =** 0.2727

Correlation coefficient* = 0.9980

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ 3.91

Remarks:

Conducted by: Lee Man Hoi Signature: Lei Date: 10/1/2019
Checked by: Wk Tang Signature: Kwai Date: 10/1/2019

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High-Volume TSP Sampler
5-POINT CALIBRATION DATA SHEET

Station: DMS-4A - Hong Kong Police Force, Lok Ma Chau Operation Base at Horn Hill
File No.: WMA18047/69/0003
Operator: HL
Date: 9-Feb-19
Next Due Date: 8-Apr-19
Equipment No.: A-01-69
Serial No.: 3222

Ambient Condition			
Temperature, Ta (K)	293.5	Pressure, Pa (mmHg)	769.7

Orifice Transfer Standard Information					
Serial No.	2896	Slope, mc	0.0585	Intercept, bc	-0.00045
Last Calibration Date:	13-Feb-18	$mc \times Qstd + bc = [\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$			
Next Calibration Date:	13-Feb-19	$Qstd = \{[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2} - bc\} / mc$			

Calibration of TSP Sampler

Calibration Point	Orfice			HVS	
	ΔH (orifice), in. of water	$[\Delta H \times (Pa/760) \times (298/Ta)]^{1/2}$	Qstd (CFM) **X - axis**	ΔW (HVS), in. of water	$[\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$ **Y-axis**
1	13.7	3.75	64.14	8.0	2.87
2	10.6	3.30	56.42	6.4	2.57
3	7.9	2.85	48.70	5.1	2.29
4	5.4	2.36	40.27	3.4	1.87
5	3.6	1.92	32.88	2.3	1.54

By Linear Regression of Y on X

Slope , mw = 0.0427 **Intercept, bw =** 0.1566

Correlation coefficient* = 0.9982

*If Correlation Coefficient < 0.990, check and recalibrate.

Set Point Calculation

From the TSP Field Calibration Curve, take Qstd = 43 CFM

From the Regression Equation, the "Y" value according to

$$mw \times Qstd + bw = [\Delta W \times (Pa/760) \times (298/Ta)]^{1/2}$$

Therefore, Set Point; $W = (mw \times Qstd + bw)^2 \times (760 / Pa) \times (Ta / 298) =$ **3.86**

Remarks:

Conducted by: Ho Man Ho Signature: Ho Date: 9-2-2019
Checked by: Wk. Tang Signature: Kwan Date: 9/2/2019

TISCH Environmental

RECALIBRATION DUE DATE:
February 13, 2019

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	February 13, 2018	**Rootsmeter S/N:** 438320	**Ta:** 293	°K
Operator:	Jim Tisch		**Pa:** 763.3	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **2896**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4670	3.2	2.00
2	3	4	1	1.0380	6.4	4.00
3	5	6	1	0.9220	8.0	5.00
4	7	8	1	0.8840	8.8	5.50
5	9	10	1	0.7250	12.8	8.00

Data Tabulation

Vstd (m3)	Qstd (x-axis)	$\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}$ (y-axis)	Va	Qa (x-axis)	$\sqrt{\Delta H\left(Ta/Pa\right)}$ (y-axis)
1.0172	0.6934	1.4293	0.9958	0.6788	0.8762
1.0129	0.9758	2.0213	0.9916	0.9553	1.2392
1.0107	1.0962	2.2599	0.9895	1.0732	1.3854
1.0097	1.1422	2.3702	0.9885	1.1182	1.4530
1.0043	1.3853	2.8586	0.9832	1.3562	1.7524
QSTD	**m=**	**2.06726**	**QA**	**m=**	**1.29448**
	b=	**-0.00045**		**b=**	**-0.00028**
	r=	**0.99992**		**r=**	**0.99992**

Calculations			
Vstd=	ΔVol((Pa-ΔP)/Pstd)(Tstd/Ta)	**Va=**	ΔVol((Pa-ΔP)/Pa)
Qstd=	Vstd/ΔTime	**Qa=**	Va/ΔTime
For subsequent flow rate calculations:			
Qstd=	$1/m\left(\left(\sqrt{\Delta H\left(\frac{Pa}{Pstd}\right)\left(\frac{Tstd}{Ta}\right)}\right)-b\right)$	**Qa=**	$1/m\left(\left(\sqrt{\Delta H\left(Ta/Pa\right)}\right)-b\right)$

Standard Conditions	
Tstd:	298.15 °K
Pstd:	760 mm Hg
Key	
ΔH: calibrator manometer reading (in H2O)	
ΔP: rootsmeter manometer reading (mm Hg)	
Ta: actual absolute temperature (°K)	
Pa: actual barometric pressure (mm Hg)	
b: intercept	
m: slope	

RECALIBRATION

US EPA recommends annual recalibration per 1998 40 Code of Federal Regulations Part 50 to 51, Appendix B to Part 50, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere, 9.2.17, page 30

Tisch Environmental, Inc.
145 South Miami Avenue
Village of Cleves, OH 45002

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TOLL FREE: (877)263-7610
FAX: (513)467-9009

WELLAB 匯力 Testing & Research

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Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W.K. Tang**

Test Report No.:	30911
Date of Issue:	2019-01-29
Date Received:	2019-01-28
Date Tested:	2019-01-28
Date Completed:	2019-01-29
Next Due Date:	2019-07-28
Page:	1 of 2

Certificate of Calibration

Item for calibration:

Description	: Weather Stations, Vantage Pro2
Manufacturer	: Davis Instruments
Model No.	: 6152CUK
Serial No.	: AK130520007

Test conditions:

Room Temperature	: 17-22 degree Celsius
Relative Humidity	: 40-70 %

Test Specifications:

1. Performance check of anemometer
2. Performance check of wind direction sensor

Methodology:

In-house method with reference anemometer (RS232 Integral Vane Digital Anemometer)

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

Test Report No.:	30911
Date of Issue:	2019-01-29
Date Received:	2019-01-28
Date Tested:	2019-01-28
Date Completed:	2019-01-29
Next Due Date:	2019-07-28
Page:	2 of 2

Results:

1. Performance check of anemometer

Air Velocity, m/s		Difference D (m/s)
Instrument Reading (V1)	Reference Value (V1)	D = V1 – V2
2.00	2.00	0.00

2. Performance check of wind direction sensor

Wind Direction (°)		Difference D (°)
Instrument Reading (W1)	Reference Value (W2)	D = W1 - W2
0	0	0
45.1	45	0.1
90	90	0
135.2	135	0.2
180	180	0
225.1	225	0.1
270	270	0
315	315	0
360	360	0

**********END OF REPORT**********

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W. K. Tang**

Test Report No.:	30912
Date of Issue:	2019-02-02
Date Received:	2019-02-02
Date Tested:	2019-02-02
Date Completed:	2019-02-02
Next Due Date:	2019-05-01
Page:	1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-09
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	16H102988
- EXO conductivity/Temperature Sensor, Ti	599870	16G102310
- EXO Turbuduty Sensor, Ti	599101-01	16H102467
- EXO pH Sensor Assembly, Guarded, Ti	599701	18C102842

Test conditions:

Room Temperature : 17-22 degree Celsius
Relative Humidity : 40-70%

Test Specifications:

Performance checking for Conductivity, Temperature, pH, Dissolved oxygen (D.O.) and Turbidity

Methodology:

According to manufacturer instruction manual, APHA 20e 4500-O C

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

Test Report No.:	30912
Date of Issue:	2019-02-02
Date Received:	2019-02-02
Date Tested:	2019-02-02
Date Completed:	2019-02-02
Next Due Date:	2019-05-01

Certificate of Calibration

Results:

Conductivity performance checking

	Instrument Readings (μS/cm)	Accetance Criteria	Comment
KCl stock solution (12890 μS/cm)	13000	12246-13534	Pass

Temperature performance checking

Reference thermometer-E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.0	20.002	-0.002	N/A

pH performance checking

	Instrument Readings (pH unit)	Accetance Criteria	Comment
pH QC buffer 4.00	4.01	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.86	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.19	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Accetance Criteria	Comment
Zero DO soultion	0.08	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Accetance Criteria	Comment
8.00	8.00	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.01	9.0-11.0	Pass
50 NTU	50.01	45.0-55.0	Pass
100 NTU	100.6	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Accetance Criteria	Comment
0.5 meter	0.50	0.45-0.55	Pass

**********END OF REPORT**********

WELLAB 匯力 Testing & Research

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TEST REPORT

APPLICANT: **Cinotech Consultants Limited**
RM 1710, Technology Park,
18 On Lai Street,
Shatin, N.T., Hong Kong

Test Report No.:	30303
Date of Issue:	2018-11-24
Date Received:	2018-11-24
Date Tested:	2018-11-24
Date Completed:	2018-11-24
Next Due Date:	2019-02-23

ATTN: **Miss Mei Ling Tang**

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.: SW-08-159	
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	17K100317
- EXO conductivity/Temperature Sensor, Ti	599870	17H103441
- EXO Turbuduty Sensor, Ti	599101-01	17K100325
- EXO pH Sensor Assembly, Guarded, Ti	599795-01	17K103094

Test conditions:

Room Temperature : 17-22 degree Celsius
Relative Humidity : 40-70%

Test Specifications:

Performance checking for Conductivity, Temperature, pH, Dissolved oxygen (D.O.) and Turbidity

Methodology:

According to manufacturer instruction manual, APHA 20e 4500-O C

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PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
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Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

Test Report No.:	30303
Date of Issue:	2018-11-24
Date Received:	2018-11-24
Date Tested:	2018-11-24
Date Completed:	2018-11-24
Next Due Date:	2019-02-23

Certificate of Calibration

Results:

Conductivity performance checking

	Instrument Readings (μS/cm)	Accetance Criteria	Comment
KCl stock solution (12890 μS/cm)	13000	12246-13534	Pass

Temperature performance checking

Reference thermometer-E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.0	20.001	-0.001	N/A

pH performance checking

	Instrument Readings (pH unit)	Accetance Criteria	Comment
pH QC buffer 4.00	4.02	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.87	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.16	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Accetance Criteria	Comment
Zero DO soultion	0.06	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Accetance Criteria	Comment
8.00	8.02	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.02	9.0-11.0	Pass
50 NTU	50.04	45.0-55.0	Pass
100 NTU	100.2	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Accetance Criteria	Comment
0.5 meter	0.50	0.45-0.55	Pass

**********END OF REPORT**********

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
Technology Park, 18 On Lai Street,
Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Wellab Limited**
(EM&A Department)
Room 1701, Technology Park,
18 On Lai Street,
Shatin, NT, Hong Kong

ATTN: **Mr. W. K. Tang**

Test Report No.:	30915E
Date of Issue:	2019-02-23
Date Received:	2019-02-23
Date Tested:	2019-02-23
Date Completed:	2019-02-23
Next Due Date:	2019-05-22
Page:	1 of 2

Certificate of Calibration

Item for calibration:

YSI EXO1 Multiparameter Sondes	Equipment No.:	SW-08-159
Manufacturer:	YSI Incorporated, a Xylem brand	
Description:	Model No.	Serial No.
- EXO Optical DO Sensor, Ti	599100-01	17K100317
- EXO conductivity/Temperature Sensor, Ti	599870	17H103441
- EXO Turbuduty Sensor, Ti	599101-01	17K100325
- EXO pH Sensor Assembly, Guarded, Ti	599795-01	17K103094

Test conditions:

Room Temperature : 17-22 degree Celsius
Relative Humidity : 40-70%

Test Specifications:

Performance checking for Conductivity, Temperature, pH, Dissolved oxygen (D.O.) and Turbidity

Methodology:

According to manufacturer instruction manual, APHA 20e 4500-O C

****

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
Laboratory Manager

WELLAB 匯力 Testing & Research

WELLAB LIMITED
Rms 1214, 1502, 1516, 1701 & 1716,
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Shatin, N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
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TEST REPORT

Test Report No.:	30915E
Date of Issue:	2019-02-23
Date Received:	2019-02-23
Date Tested:	2019-02-23
Date Completed:	2019-02-23
Next Duc Datc:	2019-05-22

Certificate of Calibration

Results:

Conductivity performance checking

	Instrument Readings (μS/cm)	Accetance Criteria	Comment
KCl stock solution (12890 μS/cm)	13000	12246-13534	Pass

Temperature performance checking

Reference thermometer-E431 Readings (°C)	Instrument Readings (°C)	Correction (°C)	Comment
20.0	20.002	-0.002	N/A

pH performance checking

	Instrument Readings (pH unit)	Accetance Criteria	Comment
pH QC buffer 4.00	4.01	4.00 ± 0.10	Pass
pH QC buffer 6.86	6.87	6.86 ± 0.10	Pass
pH QC buffer 9.18	9.19	9.18 ± 0.10	Pass

D.O. performance checking

	Instrument Readings (mg/L)	Accetance Criteria	Comment
Zero DO soultion	0.08	<0.1mg/L	Pass

Winkler Titration value (mg/L)	Instrument Readings (mg/L)	Accetance Criteria	Comment
8.00	8.04	Difference between Titration value and instrument reading <0.2mg/L	Pass

Turbidity performance checking

Turbidity stock solution	Instrument Readings (NTU)	Accetance Criteria	Comment
10 NTU	10.04	9.0-11.0	Pass
50 NTU	50.01	45.0-55.0	Pass
100 NTU	101.0	90.0-110.0	Pass

Depth performance checking

Water Depth	Instrument Readings (NTU)	Accetance Criteria	Comment
0.5 meter	0.50	0.45-0.55	Pass

**********END OF REPORT**********

APPENDIX D
ENVIRONMENTAL MONITORING SCHEDULES

Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction

Impact Air Quality and Noise Monitoring Schedule (February 2019)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Feb	2-Feb
					1 hr TSP X3 Noise	
3-Feb	4-Feb	**5-Feb**	**6-Feb**	**7-Feb**	8-Feb	9-Feb
	1 hr TSP X3 Noise 24 hr TSP				24 hr TSP	1 hr TSP X3
10-Feb	11-Feb	12-Feb	13-Feb	14-Feb	15-Feb	16-Feb
				24 hr TSP	1 hr TSP X3 Noise	
17-Feb	18-Feb	19-Feb	20-Feb	21-Feb	22-Feb	23-Feb
			24 hr TSP	1 hr TSP X3 Noise		
24-Feb	25-Feb	26-Feb	27-Feb	28-Feb		
		24 hr TSP	1 hr TSP X3 Noise			

Air Quality Monitoring Station

DMS-1 - Village House along Ha Wan Tsuen Road
DMS-2A - Village House along Lok Ma Chau Road
DMS-3 - Village House along Border Road
DMS-4A - Hong Kong Police Force, Lok Ma Chau Operation Base at Horn Hill

Noise Monitoring Station

NMS-1 - Village house in Ha Wan Tsuen
NMS-2 - Village house along existing Ha Wan Tsuen East Road
NMS-3 - Village house along Border Road
NMS-4A - Hong Kong Police Force, Lok Ma Chau Operation Base at Horn Hill

Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction

Tentative Impact Air Quality and Noise Monitoring Schedule (March 2019)

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1-Mar	2-Mar
3-Mar	4-Mar	5-Mar	6-Mar	7-Mar	8-Mar	9-Mar
	24 hr TSP	1 hr TSP X3 Noise			24 hr TSP	
10-Mar	11-Mar	12-Mar	13-Mar	14-Mar	15-Mar	16-Mar
	1 hr TSP X3			24 hr TSP	1 hr TSP X3 Noise	
17-Mar	18-Mar	19-Mar	20-Mar	21-Mar	22-Mar	23-Mar
			24 hr TSP	1 hr TSP X3 Noise		
24-Mar	25-Mar	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar
		24 hr TSP	1 hr TSP X3 Noise			
31-Mar						

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

Air Quality Monitoring Station

DMS-1 - Village House along Ha Wan Tsuen Road
DMS-2A - Village House along Lok Ma Chau Road
DMS-3 - Village House along Border Road
DMS-4A - Hong Kong Police Force, Lok Ma Chau Operation Base at Horn Hill

Noise Monitoring Station

NMS-1 - Village house in Ha Wan Tsuen
NMS-2 - Village house along existing Ha Wan Tsuen East Road
NMS-3 - Village house along Border Road
NMS-4A - Hong Kong Police Force, Lok Ma Chau Operation Base at Horn Hill

Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction

Impact Water Quality Monitoring Schedule in February 2019

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

Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop:
Land Decontamination and Advance Engineering Works – Design and Construction

Tentative Impact Water Quality Monitoring Schedule in March 2019

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

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

APPENDIX E
1-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix E - 1-hour TSP Monitoring Results

Location DMS-1 - Village House along Ha Wan Tsuen Road			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
1-Feb-19	13:00	Cloudy	82.8
1-Feb-19	14:00	Cloudy	80.9
1-Feb-19	15:00	Cloudy	80.8
4-Feb-19	8:30	Fine	302.2
4-Feb-19	9:30	Fine	191.0
4-Feb-19	10:30	Fine	184.5
9-Feb-19	13:00	Cloudy	134.4
9-Feb-19	14:00	Cloudy	122.9
9-Feb-19	15:00	Cloudy	130.7
15-Feb-19	13:00	Fine	45.1
15-Feb-19	14:00	Fine	47.9
15-Feb-19	15:00	Fine	42.2
21-Feb-19	13:00	Sunny	72.5
21-Feb-19	14:00	Sunny	81.7
21-Feb-19	15:00	Sunny	83.3
27-Feb-19	13:00	Cloudy	194.6
27-Feb-19	14:00	Cloudy	210.0
27-Feb-19	15:00	Cloudy	196.5
		Minimum	42.2
		Maximum	302.2
		Average	126.9

Appendix E - 1-hour TSP Monitoring Results

Location DMS-2A - Village House along Lok Ma Chau Road			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
1-Feb-19	13:35	Cloudy	85.1
1-Feb-19	14:35	Cloudy	86.9
1-Feb-19	15:35	Cloudy	84.0
4-Feb-19	13:00	Cloudy	119.4
4-Feb-19	14:00	Cloudy	113.4
4-Feb-19	15:00	Cloudy	131.2
9-Feb-19	13:00	Cloudy	133.2
9-Feb-19	14:00	Cloudy	126.2
9-Feb-19	15:00	Cloudy	141.4
15-Feb-19	13:00	Cloudy	62.0
15-Feb-19	14:00	Cloudy	64.1
15-Feb-19	15:00	Cloudy	78.4
21-Feb-19	13:00	Sunny	65.3
21-Feb-19	14:00	Sunny	62.2
21-Feb-19	15:00	Sunny	63.5
27-Feb-19	13:30	Cloudy	178.6
27-Feb-19	14:30	Cloudy	181.3
27-Feb-19	15:30	Cloudy	190.5
		Minimum	62.0
		Maximum	190.5
		Average	109.3

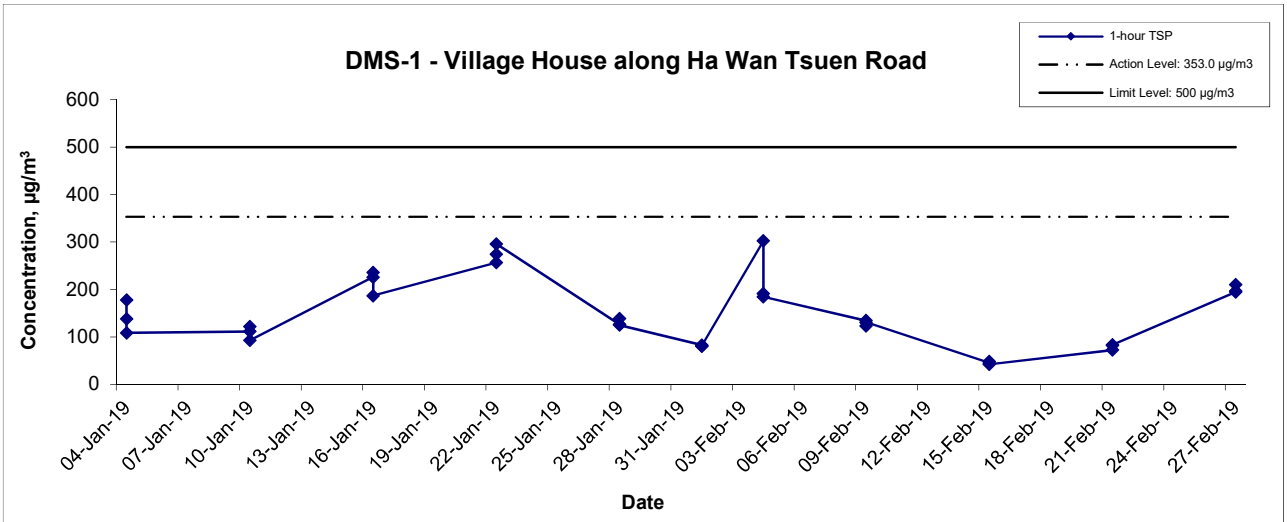
Appendix E - 1-hour TSP Monitoring Results

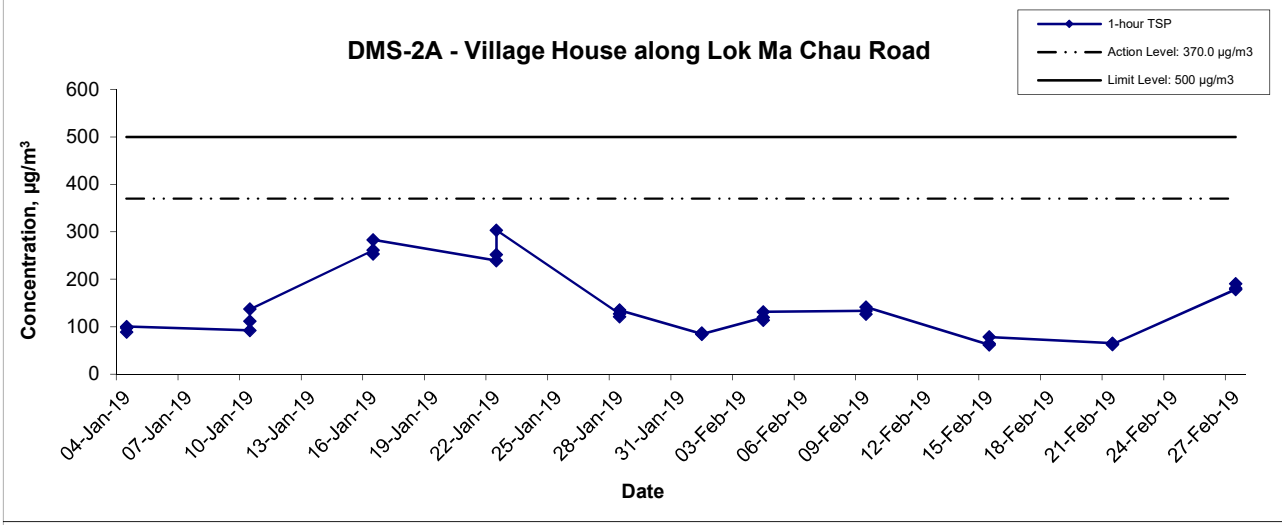
Location DMS-3 - Village House along Border Road			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
1-Feb-19	8:20	Cloudy	80.7
1-Feb-19	9:20	Cloudy	102.3
1-Feb-19	10:20	Cloudy	77.9
4-Feb-19	9:00	Cloudy	236.2
4-Feb-19	10:00	Cloudy	185.3
4-Feb-19	11:00	Cloudy	165.5
9-Feb-19	8:50	Cloudy	146.8
9-Feb-19	9:50	Cloudy	142.0
9-Feb-19	10:50	Cloudy	128.5
15-Feb-19	9:00	Cloudy	79.5
15-Feb-19	10:00	Cloudy	87.5
15-Feb-19	11:00	Cloudy	82.0
21-Feb-19	9:00	Sunny	91.9
21-Feb-19	10:00	Sunny	59.5
21-Feb-19	11:00	Sunny	69.3
27-Feb-19	9:00	Cloudy	154.3
27-Feb-19	10:00	Cloudy	156.9
27-Feb-19	11:00	Cloudy	174.5
		Minimum	59.5
		Maximum	236.2
		Average	123.4

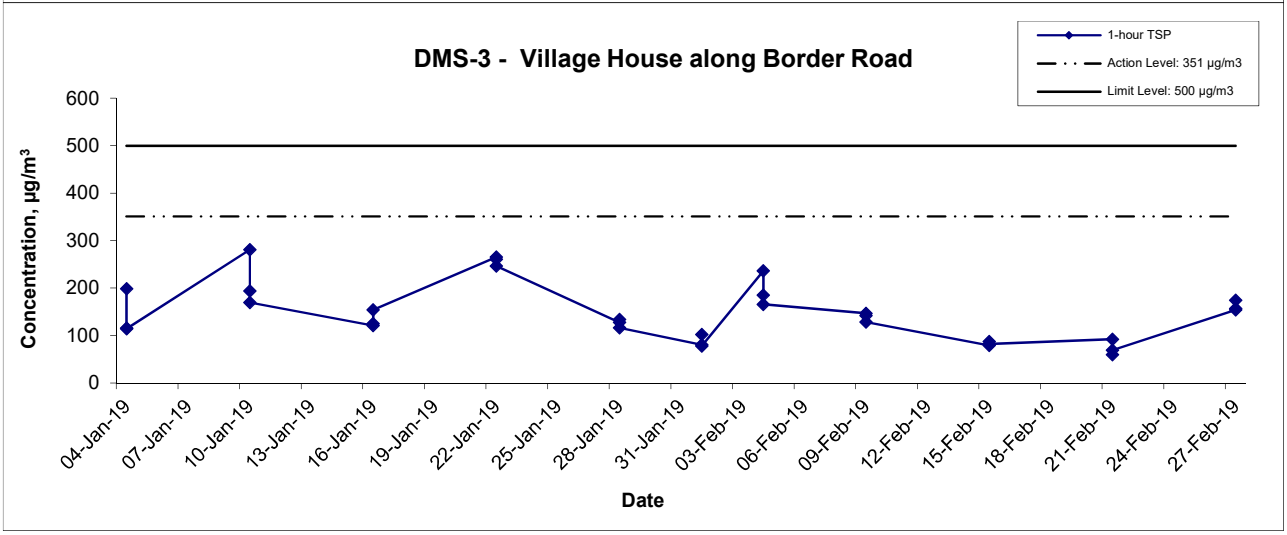
Appendix E - 1-hour TSP Monitoring Results

Location DMS-4A - Hong Kong Police Force, Lok Ma Chau Operation Base at Horn Hill			
Date	Time	Weather	Particulate Concentration ($\mu g/m^3$)
1-Feb-19	8:55	Cloudy	74.4
1-Feb-19	9:55	Cloudy	78.7
1-Feb-19	10:55	Cloudy	77.8
4-Feb-19	13:00	Fine	159.1
4-Feb-19	14:00	Fine	141.1
4-Feb-19	15:00	Fine	163.2
9-Feb-19	8:50	Cloudy	140.0
9-Feb-19	9:50	Cloudy	118.1
9-Feb-19	10:50	Cloudy	125.2
15-Feb-19	8:30	Fine	69.3
15-Feb-19	9:30	Fine	69.7
15-Feb-19	10:30	Fine	73.5
21-Feb-19	8:15	Sunny	73.7
21-Feb-19	9:15	Sunny	65.1
21-Feb-19	10:15	Sunny	74.6
27-Feb-19	8:45	Cloudy	163.7
27-Feb-19	9:45	Cloudy	153.0
27-Feb-19	10:45	Cloudy	210.3
		Minimum	65.1
		Maximum	210.3
		Average	112.8

1-hour TSP Concentration Levels

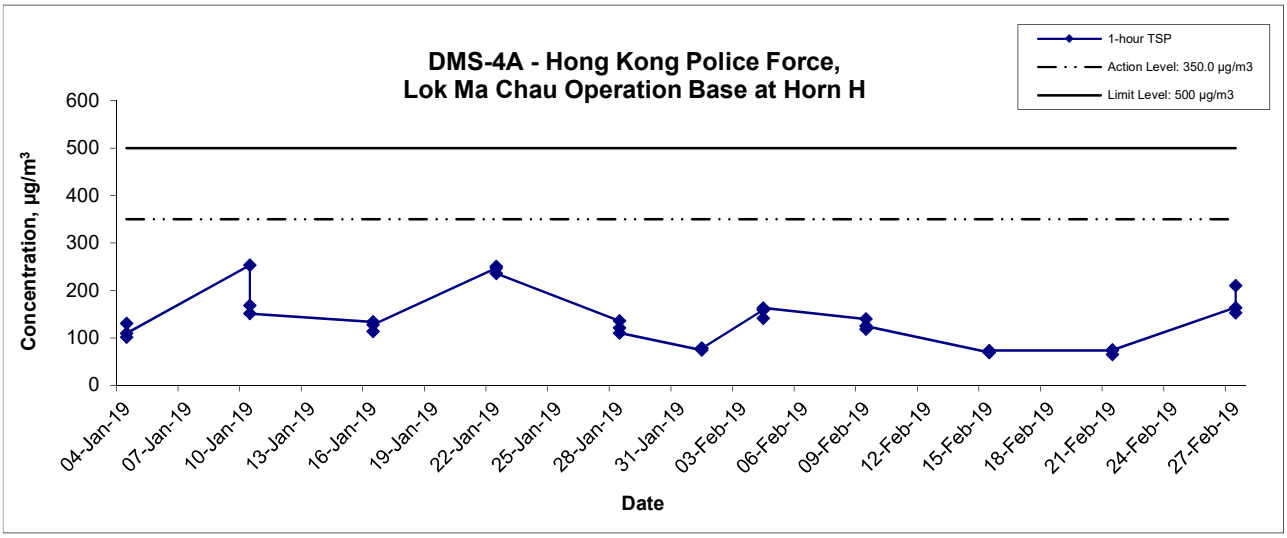






Title: Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S Date: Feb 19	Project No.: WMA18047 Appendix: E	WELLAB 匯力 consulting . testing . research

1-hour TSP Concentration Levels



Title: Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction Graphical Presentation of 1-hour TSP Monitoring Results	Scale: N.T.S Date: Feb 19	Project No.: WMA18047 Appendix: E	WELLAB 匯力 consulting . testing . research

APPENDIX F
24-HOUR TSP MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix F - 24-hour TSP Monitoring Results

Location DMS-1 - Village House along Ha Wan Tsuen Road

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
4-Feb-19	Cloudy	291.2	767.6	3.3541	3.4576	0.1035	2931.4	2955.4	24.0	1.220	1.220	1.220	1756.7	58.9
8-Feb-19	Cloudy	296.1	764.6	3.3702	3.4514	0.0812	2955.4	2979.4	24.0	1.207	1.206	1.206	1737.0	46.7
14-Feb-19	Cloudy	294.4	769.1	2.9675	3.0509	0.0834	2979.4	3003.4	24.0	1.218	1.218	1.218	1753.7	47.6
20-Feb-19	Sunny	296.1	767.4	2.9945	3.2173	0.2228	3003.4	3027.4	24.0	1.213	1.212	1.213	1746.2	127.6
26-Feb-19	Cloudy	291.7	767.3	2.9722	3.0859	0.1137	3027.4	3051.4	24.0	1.223	1.222	1.222	1760.2	64.6
													Min	46.7
													Max	127.6
													Average	69.1

Location DMS-2A - Village House along Lok Ma Chau Road

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. ($\mu g/m^3$)
				Initial	Final		Initial	Final		Initial	Final			
4-Feb-19	Cloudy	291.6	767.5	3.3883	3.5115	0.1232	498.3	522.3	24.0	1.219	1.218	1.218	1754.3	70.2
8-Feb-19	Cloudy	296.4	764.8	2.9655	3.0805	0.1150	522.3	546.3	24.0	1.203	1.202	1.203	1731.6	66.4
14-Feb-19	Cloudy	294.3	769.7	2.9674	3.0659	0.0985	546.3	570.3	24.0	1.221	1.221	1.221	1758.4	56.0
20-Feb-19	Sunny	296.5	767.6	3.3554	3.5051	0.1497	570.3	594.3	24.0	1.215	1.214	1.214	1748.5	85.6
26-Feb-19	Cloudy	291.8	767.0	3.3733	3.5078	0.1345	594.3	618.3	24.0	1.225	1.224	1.225	1763.4	76.3
													Min	56.0
													Max	85.6
													Average	70.9

Appendix F - 24-hour TSP Monitoring Results

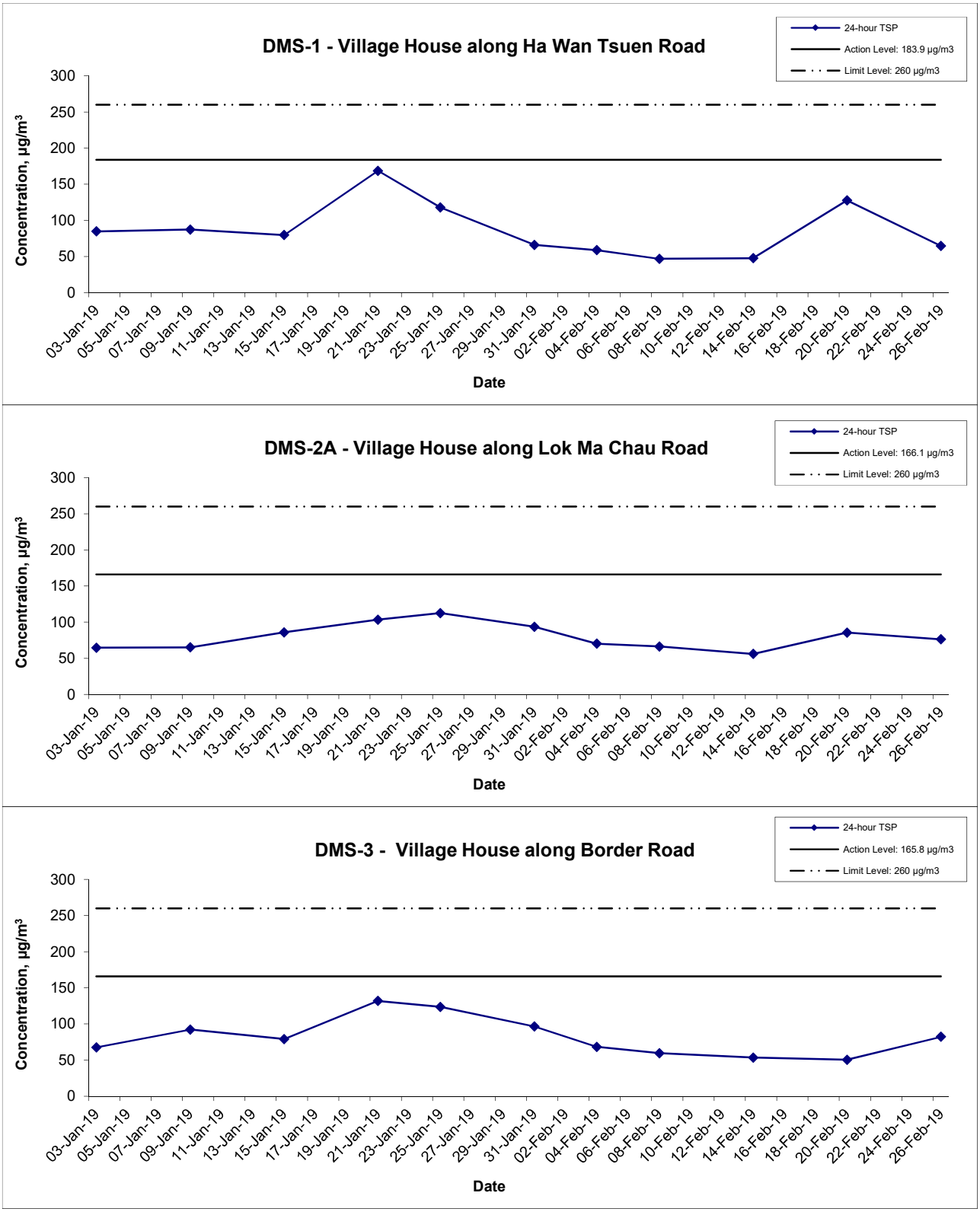
Location DMS-3 - Village House along Border Road

Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. (μg/m^3)
				Initial	Final		Initial	Final		Initial	Final			
4-Feb-19	Cloudy	291.7	767.1	3.3678	3.4871	0.1193	9047.6	9071.6	24.0	1.214	1.213	1.214	1747.5	68.3
8-Feb-19	Cloudy	296.8	764.2	2.9582	3.0609	0.1027	9071.6	9095.6	24.0	1.198	1.198	1.198	1725.1	59.5
14-Feb-19	Cloudy	294.4	769.6	2.9735	3.0671	0.0936	9096.8	9120.8	24.0	1.217	1.216	1.216	1751.5	53.4
20-Feb-19	Sunny	296.1	767.0	3.3730	3.4611	0.0881	9120.8	9144.8	24.0	1.210	1.209	1.210	1742.1	50.6
26-Feb-19	Cloudy	291.5	767.4	3.3789	3.5237	0.1448	9144.8	9168.8	24.0	1.222	1.221	1.221	1758.8	82.3
													Min	50.6
													Max	82.3
													Average	62.8

Location DMS-4A - Hong Kong Police Force, Lok Ma Chau Operation Base at Horn Hill

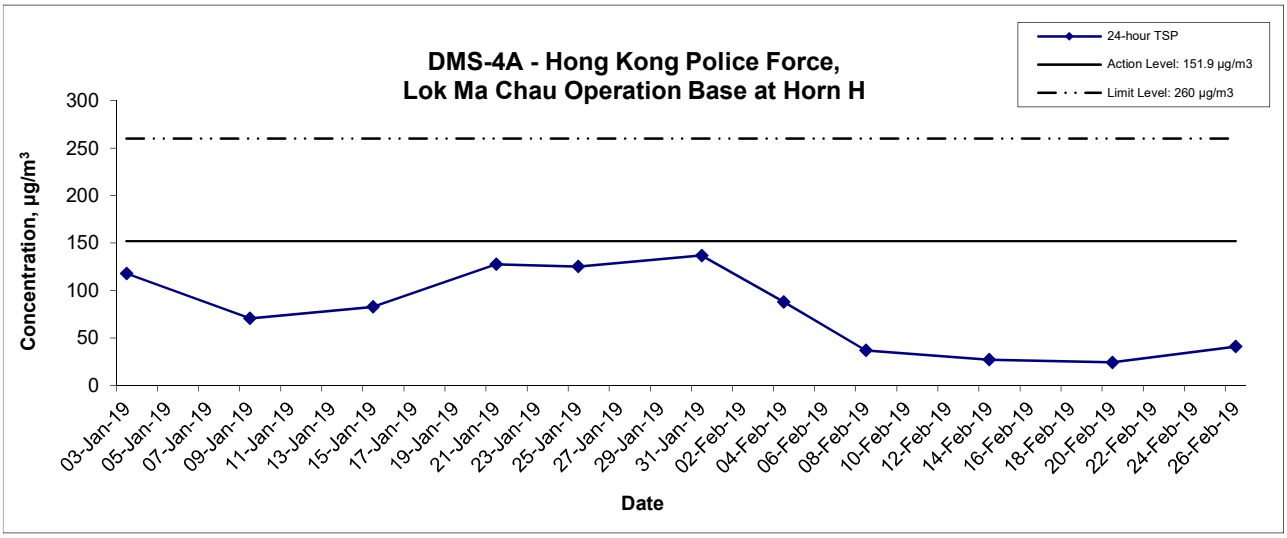
Start Date	Weather Condition	Air Temp. (K)	Atmospheric Pressure, Pa (mmHg)	Filter Weight (g)		Particulate weight (g)	Elapse Time		Sampling Time(hrs.)	Flow Rate (m^3/min.)		Av. flow (m^3/min)	Total vol. (m^3)	Conc. (μg/m^3)
				Initial	Final		Initial	Final		Initial	Final			
4-Feb-19	Cloudy	291.5	767.3	3.3654	3.5192	0.1538	9351.6	9375.6	24.0	1.218	1.217	1.217	1753.0	87.7
8-Feb-19	Cloudy	296.4	764.7	2.9756	3.0394	0.0638	9375.6	9399.6	24.0	1.204	1.203	1.203	1732.8	36.8
14-Feb-19	Cloudy	294.1	768.9	2.9724	3.0201	0.0477	9399.6	9423.6	24.0	1.222	1.221	1.221	1758.8	27.1
20-Feb-19	Sunny	296.6	767.4	2.9857	3.0281	0.0424	9423.6	9447.6	24.0	1.215	1.214	1.215	1748.9	24.2
26-Feb-19	Cloudy	291.4	767.6	2.9812	3.0536	0.0724	9447.6	9471.6	24.0	1.227	1.226	1.226	1766.0	41.0
													Min	24.2
													Max	87.7
													Average	43.4

24-hour TSP Concentration Levels



Title: Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction Graphical Presentation of 24-hour TSP Monitoring Results	Scale: N.T.S Date: Feb 19	Project No.: WMA18047 Appendix: F	WELLAB 匯力 consulting . testing . research

24-hour TSP Concentration Levels



Title	Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction Graphical Presentation of 24-hour TSP Monitoring Results	Scale N.T.S Date Feb 19	Project No. WMA18047 Appendix F	WELLAB 匯力 consulting . testing . research

APPENDIX G
NOISE MONITORING RESULTS AND GRAPHICAL PRESENTATION

Appendix F - Noise Monitoring Results

Location NMS-1 -Village house in Ha Wan Tsuen								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
1-Feb-19	Cloudy	13:00	60.0	59.6	53.0	57.4	47.3	57.0
		13:05	55.2	57.9	50.4			
		13:10	58.2	59.3	52.3			
		13:15	55.5	57.6	51.5			
		13:20	55.6	57.7	51.5			
		13:25	57.5	59.9	52.7			
4-Feb-19	Cloudy	9:35	48.6	47.2	39.5	47.9		39.0
		9:40	48.0	50.3	40.4			
		9:45	47.7	50.7	39.0			
		9:50	47.4	50.8	39.3			
		9:55	47.7	51.0	39.3			
		10:00	47.7	50.9	39.4			
15-Feb-19	Cloudy	14:55	58.5	61.5	52.5	58.1		57.7
		15:00	59.5	62.1	52.4			
		15:05	58.7	61.9	52.5			
		15:10	59.7	62.7	52.6			
		15:15	55.8	58.3	51.4			
		15:20	53.6	55.0	49.2			
21-Feb-19	Sunny	13:00	54.4	57.0	50.2	56.6		56.1
		13:05	55.4	58.5	51.3			
		13:10	57.3	60.7	51.3			
		13:15	57.2	60.3	51.4			
		13:20	56.9	58.9	53.2			
		13:25	57.7	59.7	52.5			
27-Feb-19	Cloudy	14:00	61.4	64.7	55.0	59.8		59.5
		14:05	59.6	62.9	54.3			
		14:10	59.5	62.9	54.4			
		14:15	59.7	61.7	55.5			
		14:20	59.5	61.6	55.3			
		14:25	58.3	61.0	55.2			

Appendix F - Noise Monitoring Results

Location NMS-2 - Village house along existing Ha Wan Tsuen East Road								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
1-Feb-19	Cloudy	16:00	68.8	71.7	54.2	73.4	68.4	71.7
		16:05	73.3	77.4	57.3			
		16:10	74.3	77.2	58.0			
		16:15	74.1	77.3	57.9			
		16:20	73.5	77.8	57.4			
		16:25	74.4	77.3	58.3			
4-Feb-19	Cloudy	15:00	74.5	78.1	55.5	73.1		71.3
		15:05	69.7	74.1	54.2			
		15:10	75.3	77.2	65.0			
		15:15	74.4	79.5	55.1			
		15:20	70.5	75.5	54.4			
		15:25	70.4	74.0	54.1			
15-Feb-19	Cloudy	13:30	74.8	78.1	48.5	74.0		72.6
		13:35	73.9	77.2	50.8			
		13:40	73.4	75.1	53.8			
		13:45	74.5	77.7	53.7			
		13:50	74.5	76.3	54.3			
		13:55	72.4	75.3	55.9			
21-Feb-19	Sunny	14:00	76.4	78.6	57.3	74.8		73.7
		14:05	75.1	78.8	59.5			
		14:10	75.3	79.3	51.6			
		14:15	75.1	78.3	51.9			
		14:20	72.8	77.6	52.2			
		14:25	72.9	78.0	52.4			
27-Feb-19	Cloudy	15:30	70.3	74.2	49.0	70.3		65.8
		15:35	70.2	74.7	59.7			
		15:40	70.7	74.4	58.2			
		15:45	70.1	74.2	49.6			
		15:50	70.3	74.4	49.8			
		15:55	70.3	74.3	49.1			

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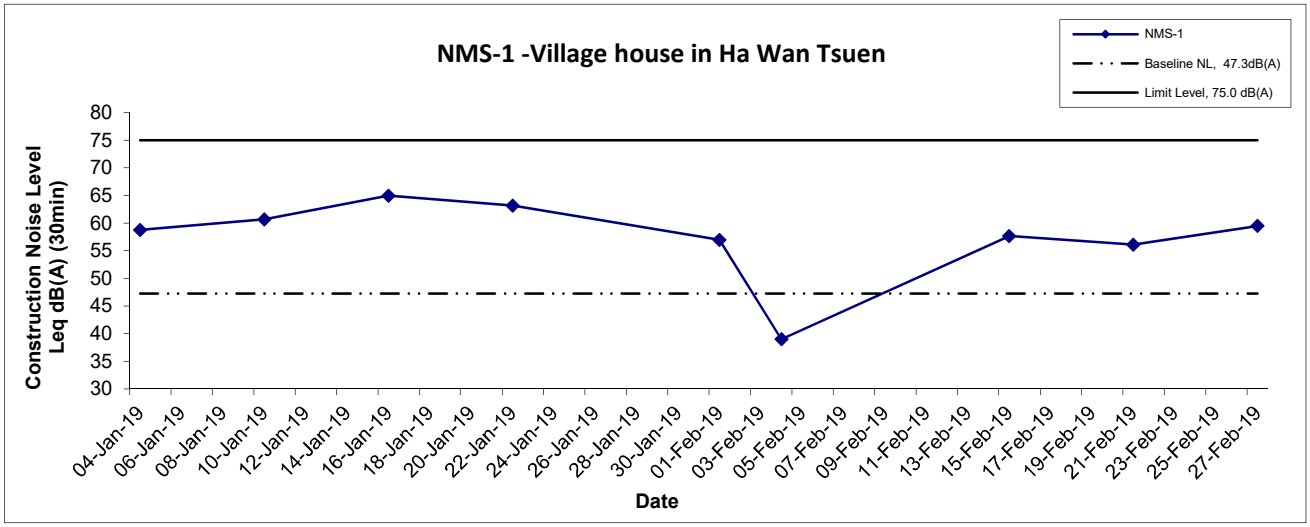
Appendix F - Noise Monitoring Results

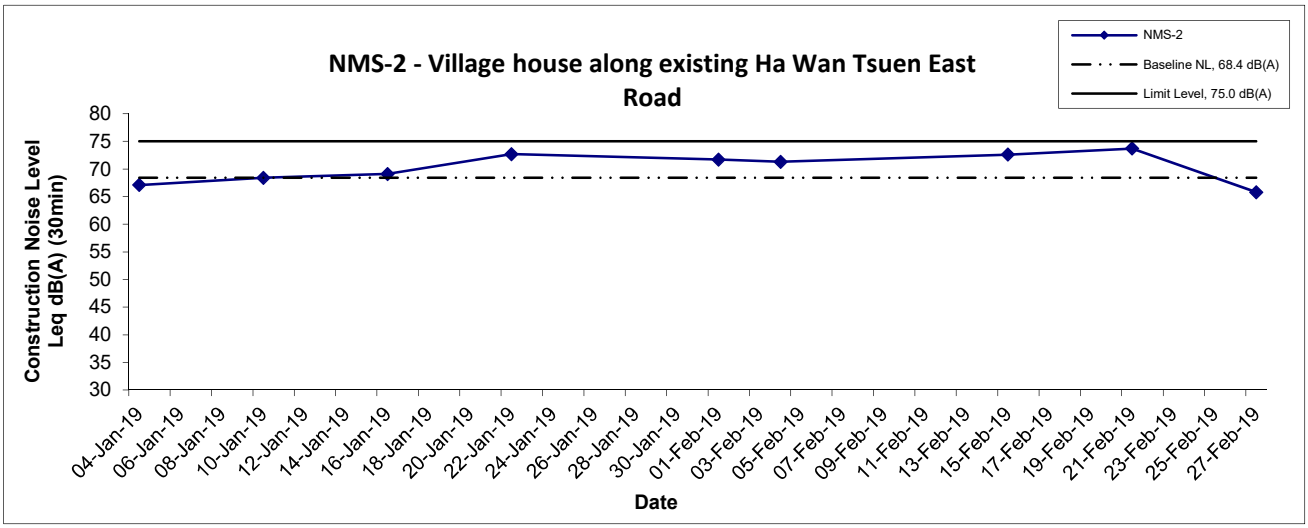
Location NMS-3 - Village house along Border Road								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
1-Feb-19	Cloudy	8:45	56.6	58.5	49.8	55.8	56.2	55.8 Measured ≦ Baseline Level
		8:50	56.7	58.4	50.4			
		8:55	54.9	57.4	49.9			
		9:00	55.9	57.8	51.1			
		9:05	55.5	57.8	50.4			
		9:10	54.8	57.2	49.9			
4-Feb-19	Cloudy	9:00	58.7	59.4	57.2	58.7		55.1
		9:05	58.5	59.4	57.3			
		9:10	58.7	59.4	57.3			
		9:15	59.3	59.5	57.3			
		9:20	58.5	59.4	57.4			
		9:25	58.6	59.5	57.8			
15-Feb-19	Cloudy	9:15	48.9	51.7	43.2	49.4		49.4 Measured ≦ Baseline Level
		9:20	51.1	54.3	43.5			
		9:25	50.9	53.5	42.3			
		9:30	48.0	50.2	43.3			
		9:35	48.8	50.5	43.9			
		9:40	47.4	49.7	41.9			
21-Feb-19	Sunny	9:15	57.7	59.1	56.0	56.7		47.1
		9:20	58.5	60.1	55.9			
		9:25	56.2	57.7	52.2			
		9:30	57.5	55.6	52.1			
		9:35	54.0	55.3	52.3			
		9:40	54.5	55.4	52.4			
27-Feb-19	Cloudy	11:00	52.3	53.8	49.4	52.5		52.5 Measured ≦ Baseline Level
		11:05	52.4	53.9	49.4			
		11:10	52.3	53.9	49.8			
		11:15	52.4	53.9	49.3			
		11:20	52.7	54.1	49.4			
		11:25	52.8	53.9	49.3			

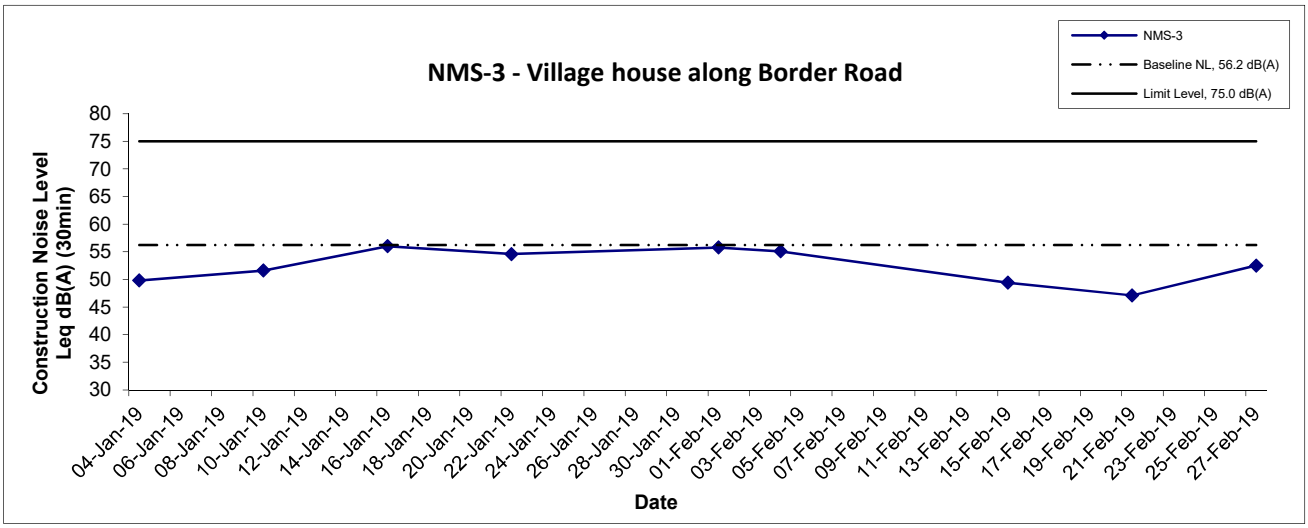
Appendix F - Noise Monitoring Results

Location NMS-4A - Hong Kong Police Force, Lok Ma Chau Operation								
Date	Weather	Time	Unit: dB (A) (5-min)			Average	Baseline Level	Construction Noise Level
			L_{eq}	L_{10}	L_{90}	L_{eq}	L_{eq}	L_{eq}
1-Feb-19	Cloudy	10:10	52.5	53.5	51.1	51.6	52.5	51.6 Measured ≦ Baseline Level
		10:15	51.9	52.8	50.8			
		10:20	51.0	52.9	49.6			
		10:25	51.2	52.0	50.0			
		10:30	51.7	52.2	50.0			
		10:35	51.3	52.0	50.0			
4-Feb-19	Cloudy	14:00	50.9	52.9	45.1	50.9		50.9 Measured ≦ Baseline Level
		14:05	51.2	53.7	45.1			
		14:10	50.8	52.7	45.0			
		14:15	50.8	52.9	45.1			
		14:20	50.9	53.0	45.2			
		14:25	50.9	52.4	45.0			
15-Feb-19	Cloudy	9:10	50.8	51.1	44.0	50.1		50.1 Measured ≦ Baseline Level
		9:15	50.9	51.2	44.0			
		9:20	50.1	52.9	43.4			
		9:25	50.5	52.2	43.7			
		9:30	50.2	52.1	43.4			
		9:35	47.6	50.3	43.2			
21-Feb-19	Sunny	9:00	51.1	53.6	45.9	50.3		50.3 Measured ≦ Baseline Level
		9:05	53.6	54.6	45.2			
		9:10	47.8	49.4	43.9			
		9:15	48.3	50.0	45.1			
		9:20	49.6	50.3	46.0			
		9:25	48.1	49.3	47.0			
27-Feb-19	Cloudy	9:00	48.8	49.5	41.2	49.1		49.1 Measured ≦ Baseline Level
		9:05	48.9	50.0	41.3			
		9:10	51.0	53.2	44.1			
		9:15	48.9	50.1	41.4			
		9:20	48.7	49.6	42.0			
		9:25	47.3	50.2	41.0			

Noise Levels







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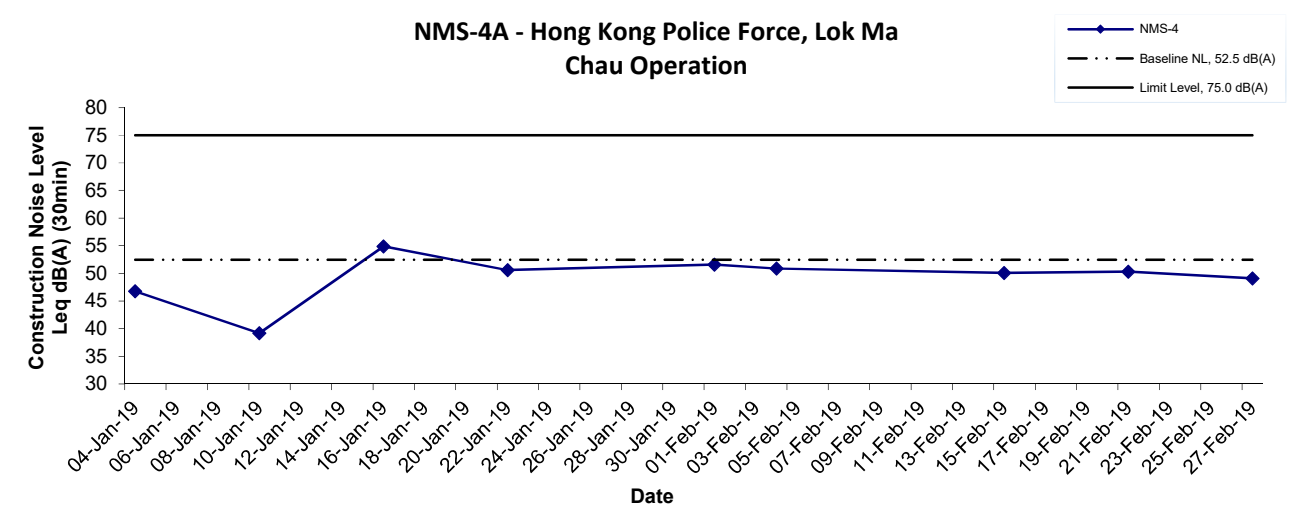
Noise Levels



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APPENDIX H
WATER QUALITY MONITORING RESULTS AND GRAPHICAL PRESENTATION

Water Quality Monitoring Results at BS1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
1-Feb-19	Cloudy	Calm	14:02	Middle	0.4	20.1 20.1	20.1	7.8 7.8	7.8	5.3 5.3	5.3	107.4 107.0	107.2	9.5 9.4	9.5	22.6 22.9	22.8	23 23	23.0
4-Feb-19	Cloudy	Calm	08:06	Middle	0.4	20.5 20.5	20.5	7.9 7.9	7.9	5.6 5.5	5.6	108.7 108.8	108.8	9.5 9.5	9.5	25.2 25.6	25.4	27 27	27.0
9-Feb-19	Cloudy	Calm	09:53	Middle	0.3	22.7 22.7	22.7	7.8 7.8	7.8	6.5 6.5	6.5	83.3 83.9	83.6	6.9 7.0	7.0	17.7 17.7	17.7	22 22	22.0
11-Feb-19	Cloudy	Calm	10:06	Middle	0.4	21.6 21.6	21.6	7.4 7.4	7.4	6.6 6.6	6.6	64.6 65.1	64.9	5.5 5.5	5.5	19.5 19.7	19.6	24 24	24.0
13-Feb-19	Cloudy	Calm	10:15	Middle	0.3	21.7 21.7	21.7	7.6 7.6	7.6	6.2 6.1	6.2	87.7 101.3	94.5	7.5 8.6	8.1	20.0 19.1	19.6	28 28	28.0
15-Feb-19	Cloudy	Calm	14:09	Middle	0.4	23.3 23.3	23.3	8.3 8.2	8.3	6.3 6.3	6.3	144.1 139.0	141.6	11.9 11.4	11.7	22.3 22.1	22.2	32 32	32.0
19-Feb-19	Rainy	Calm	10:05	Middle	0.4	20.3 20.3	20.3	7.4 7.4	7.4	6.2 6.2	6.2	60.0 60.1	60.1	5.2 5.2	5.2	18.3 18.3	18.3	20 20	20.0
21-Feb-19	Sunny	Calm	14:05	Middle	0.4	24.8 24.7	24.8	7.8 7.8	7.8	5.1 5.2	5.2	125.4 128.0	126.7	10.1 10.3	10.2	27.3 27.4	27.4	49 50	49.5
23-Feb-19	Cloudy	Calm	09:24	Middle	0.4	22.9 22.9	22.9	7.4 7.4	7.4	5.2 5.2	5.2	62.6 62.8	62.7	5.2 5.2	5.2	39.1 38.4	38.8	37 37	37.0
25-Feb-19	Cloudy	Calm	10:11	Middle	0.4	20.0 20.0	20.0	7.3 7.3	7.3	4.6 4.6	4.6	44.3 44.6	44.5	3.9 4.0	4.0	28.3 28.0	28.2	28 28	28.0
28-Feb-19	Cloudy	Calm	11:00	Middle	0.3	22.3 22.3	22.3	7.9 7.9	7.9	4.8 4.8	4.8	117.1 117.6	117.4	9.9 10.0	10.0	23.3 23.4	23.4	34 34	34.0

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at CS1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
1-Feb-19	Cloudy	Calm	14:19	Middle	0.7	20.0 20.0	20.0	7.8 7.8	7.8	4.1 4.1	4.1	90.4 89.5	90.0	8.0 8.0	8.0	19.5 19.7	19.6	18 18	18.0
4-Feb-19	Cloudy	Calm	08:25	Middle	0.6	20.6 20.6	20.6	7.6 7.6	7.6	4.4 4.4	4.4	82.1 81.8	82.0	7.2 7.2	7.2	19.0 19.1	19.1	24 25	24.5
9-Feb-19	Cloudy	Calm	10:09	Middle	0.6	22.5 22.5	22.5	7.7 7.7	7.7	4.7 4.7	4.7	68.5 68.6	68.6	5.8 5.8	5.8	17.8 17.6	17.7	23 23	23.0
11-Feb-19	Cloudy	Calm	10:27	Middle	0.7	21.4 21.4	21.4	7.6 7.5	7.6	4.8 4.8	4.8	56.8 56.6	56.7	4.9 4.9	4.9	16.4 16.8	16.6	28 28	28.0
13-Feb-19	Cloudy	Calm	11:00	Middle	0.7	21.4 21.4	21.4	7.5 7.5	7.5	5.1 5.1	5.1	62.8 61.7	62.3	5.4 5.3	5.4	18.6 18.3	18.5	27 26	26.5
15-Feb-19	Cloudy	Calm	14:58	Middle	0.7	23.1 23.2	23.2	8.7 8.6	8.7	5.3 5.3	5.3	167.4 166.3	166.9	13.9 13.8	13.9	23.1 21.2	22.2	28 27	27.5
19-Feb-19	Rainy	Calm	10:35	Middle	0.6	20.4 20.4	20.4	7.2 7.2	7.2	5.1 5.1	5.1	29.7 29.1	29.4	2.6 2.6	2.6	18.8 18.9	18.9	20 19	19.5
21-Feb-19	Sunny	Calm	14:28	Middle	0.7	24.9 24.9	24.9	8.7 8.7	8.7	5.2 5.2	5.2	180.7 180.8	180.8	14.5 14.5	14.5	17.3 17.3	17.3	32 32	32.0
23-Feb-19	Cloudy	Calm	09:50	Middle	0.6	22.7 22.7	22.7	7.3 7.3	7.3	5.2 5.2	5.2	20.2 20.7	20.5	1.7 1.7	1.7	23.7 23.3	23.5	22 22	22.0
25-Feb-19	Cloudy	Calm	10:31	Middle	0.6	19.5 19.5	19.5	7.3 7.3	7.3	5.2 5.2	5.2	26.4 26.2	26.3	2.4 2.3	2.4	20.7 20.6	20.7	20 20	20.0
28-Feb-19	Cloudy	Calm	11:19	Middle	0.6	21.6 21.6	21.6	7.9 7.9	7.9	5.4 5.4	5.4	106.6 106.5	106.6	9.1 9.1	9.1	17.0 17.3	17.2	26 25	25.5

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at CS5 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
1-Feb-19	Cloudy	Calm	11:40	Middle	0.2	18.4	18.4	8.4	8.4	0.2	0.2	117.8	118.1	11.1	11.1	4.0	4.0	3	3.0
						18.4		8.4		0.2		118.4		11.1		4.0		3	
4-Feb-19	Cloudy	Calm	09:52	Middle	0.1	19.8	19.8	8.3	8.3	0.4	0.4	84.0	83.9	7.7	7.7	4.7	4.7	<2.5	<2.5
						19.8		8.3		0.4		83.8		7.6		4.6		<2.5	
9-Feb-19	Cloudy	Calm	10:45	Middle	0.1	21.7	21.7	8.6	8.6	0.3	0.4	107.4	107.4	9.4	9.4	4.2	4.2	<2.5	<2.5
						21.7		8.5		0.4		107.4		9.4		4.2		<2.5	
11-Feb-19	Cloudy	Calm	11:18	Middle	0.1	19.5	19.5	8.5	8.5	0.4	0.4	104.9	105.0	9.6	9.6	3.9	3.9	3	3.5
						19.5		8.5		0.4		105.0		9.6		3.9		4	
13-Feb-19	Cloudy	Calm	11:43	Middle	0.1	22.6	22.6	8.5	8.5	0.4	0.4	118.4	118.5	10.2	10.2	4.5	4.5	3	3.0
						22.6		8.5		0.4		118.5		10.2		4.5		3	
15-Feb-19	Cloudy	Calm	13:01	Middle	0.1	24.2	24.2	8.9	8.9	0.3	0.3	129.3	129.3	10.8	10.8	3.4	3.4	3	3.0
						24.2		8.9		0.3		129.3		10.8		3.4		3	
19-Feb-19	Rainy	Calm	11:47	Middle	0.1	20.9	20.9	8.6	8.6	0.2	0.2	96.8	96.8	8.6	8.6	22.7	22.7	17	17.0
						20.9		8.6		0.2		96.8		8.6		22.7		17	
21-Feb-19	Sunny	Calm	12:55	Middle	0.1	29.1	29.1	8.3	8.3	0.2	0.2	114.1	114.3	8.7	8.8	5.7	5.8	6	6.0
						29.1		8.3		0.2		114.5		8.8		5.8		6	
23-Feb-19	Cloudy	Calm	10:48	Middle	0.1	19.9	19.9	8.4	8.4	0.4	0.4	99.6	99.6	9.1	9.1	4.9	4.9	4	4.0
						19.9		8.4		0.4		99.6		9.1		4.8		4	
25-Feb-19	Cloudy	Calm	11:49	Middle	0.1	18.9	18.9	8.6	8.6	0.4	0.4	112.4	112.5	10.4	10.4	5.3	5.2	5	5.0
						18.9		8.6		0.4		112.5		10.4		5.0		5	
28-Feb-19	Cloudy	Calm	13:05	Middle	0.1	28.7	28.7	9.5	9.5	0.3	0.3	145.7	145.9	11.3	11.3	4.4	4.5	4	4.5
						28.7		9.5		0.3		146.1		11.3		4.6		5	

Remarks: *DA: Depth-Averaged

**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

The reporting limit for laboratory analysis of suspended solids is 2.5 mg/L. For the results below the reporting limit, the SS level will be taken as 2.5 mg/L.

Water Quality Monitoring Results at IS1 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
1-Feb-19	Cloudy	Calm	14:10	Middle	0.5	20.0 20.0	20.0	8.4 8.4	8.4	4.8 4.8	4.8	144.0 144.7	144.4	12.7 12.8	12.8	19.9 19.9	19.9	23 23	23.0
4-Feb-19	Cloudy	Calm	08:12	Middle	0.4	21.3 21.3	21.3	7.9 7.9	7.9	5.5 5.5	5.5	113.1 113.3	113.2	9.7 9.7	9.7	19.8 19.7	19.8	27 26	26.5
9-Feb-19	Cloudy	Calm	10:02	Middle	0.4	22.3 22.3	22.3	7.5 7.5	7.5	6.1 6.1	6.1	93.0 93.0	93.0	7.8 7.8	7.8	26.8 26.8	26.8	26 25	25.5
11-Feb-19	Cloudy	Calm	10:16	Middle	0.4	21.2 21.2	21.2	7.5 7.5	7.5	6.3 6.3	6.3	90.3 90.2	90.3	7.7 7.7	7.7	24.5 24.2	24.4	18 19	18.5
13-Feb-19	Cloudy	Calm	10:47	Middle	0.5	20.7 20.7	20.7	7.7 7.7	7.7	6.0 6.0	6.0	96.4 96.4	96.4	8.4 8.4	8.4	28.8 29.1	29.0	32 32	32.0
15-Feb-19	Cloudy	Calm	14:40	Middle	0.5	22.3 22.3	22.3	8.3 8.3	8.3	6.0 6.0	6.0	134.0 129.0	131.5	11.3 10.8	11.1	29.9 30.8	30.4	38 38	38.0
19-Feb-19	Rainy	Calm	10:26	Middle	0.5	20.2 20.2	20.2	7.2 7.2	7.2	6.1 6.1	6.1	63.1 62.7	62.9	5.5 5.5	5.5	21.4 21.6	21.5	20 20	20.0
21-Feb-19	Sunny	Calm	14:21	Middle	0.4	24.4 24.4	24.4	8.5 8.6	8.6	5.9 5.9	5.9	196.2 197.7	197.0	15.9 16.0	16.0	21.4 21.3	21.4	28 28	28.0
23-Feb-19	Cloudy	Calm	09:39	Middle	0.4	22.2 22.2	22.2	7.7 7.7	7.7	5.8 5.8	5.8	85.1 85.7	85.4	7.2 7.2	7.2	34.0 33.5	33.8	45 44	44.5
25-Feb-19	Cloudy	Calm	10:22	Middle	0.5	19.0 19.0	19.0	7.5 7.5	7.5	5.6 5.6	5.6	69.7 69.1	69.4	6.3 6.2	6.3	29.3 29.4	29.4	25 24	24.5
28-Feb-19	Cloudy	Calm	11:10	Middle	0.4	21.0 21.0	21.0	8.2 8.2	8.2	5.4 5.4	5.4	138.4 136.0	137.2	12.0 11.8	11.9	20.3 19.8	20.1	26 26	26.0

Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at IS2 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
1-Feb-19	Cloudy	Calm	11:51	Middle	0.1	19.7 19.7	19.7	7.6 7.6	7.6	5.5 5.5	5.5	110.1 110.7	110.4	9.8 9.8	9.8	20.9 21.2	21.1	20 20	20.0
4-Feb-19	Cloudy	Calm	09:10	Middle	0.1	20.4 20.4	20.4	7.7 7.7	7.7	5.9 5.9	5.9	95.8 95.8	95.8	8.4 8.4	8.4	28.5 28.3	28.4	33 33	33.0
9-Feb-19	Cloudy	Calm	09:30	Middle	0.1	21.8 21.8	21.8	7.9 7.9	7.9	5.6 5.6	5.6	76.6 76.4	76.5	6.5 6.5	6.5	22.4 22.5	22.5	37 37	37.0
11-Feb-19	Cloudy	Calm	09:56	Middle	0.2	20.6 20.6	20.6	7.0 7.0	7.0	6.3 6.3	6.3	75.2 75.1	75.2	6.5 6.5	6.5	17.9 17.9	17.9	20 19	19.5
13-Feb-19	Cloudy	Calm	09:17	Middle	0.2	21.1 21.1	21.1	7.5 7.5	7.5	4.9 4.9	4.9	85.0 84.6	84.8	7.4 7.3	7.4	19.3 19.4	19.4	32 32	32.0
15-Feb-19	Cloudy	Calm	12:37	Middle	0.1	23.7 23.8	23.8	7.4 7.4	7.4	6.1 6.1	6.1	105.2 105.3	105.3	8.6 8.6	8.6	19.8 19.9	19.9	27 27	27.0
19-Feb-19	Rainy	Calm	09:32	Middle	0.1	20.2 20.1	20.2	6.8 6.8	6.8	6.0 6.0	6.0	68.6 67.8	68.2	6.0 5.9	6.0	24.8 24.9	24.9	26 26	26.0
21-Feb-19	Sunny	Moderate	12:34	Middle	0.2	26.1 26.1	26.1	6.9 7.0	7.0	3.4 3.4	3.4	76.2 76.3	76.3	6.1 6.1	6.1	160.9 165.3	163.1	210 210	210.0
23-Feb-19	Cloudy	Calm	09:05	Middle	0.1	21.7 21.7	21.7	7.3 7.3	7.3	4.9 4.9	4.9	61.6 61.5	61.6	5.3 5.3	5.3	41.3 41.5	41.4	46 46	46.0
25-Feb-19	Cloudy	Calm	09:52	Middle	0.1	19.0 19.0	19.0	7.1 7.2	7.2	4.4 4.4	4.4	66.8 66.7	66.8	6.0 6.0	6.0	33.0 33.1	33.1	35 35	35.0
28-Feb-19	Cloudy	Calm	10:11	Middle	0.1	22.5 22.5	22.5	7.0 7.1	7.1	4.6 4.6	4.6	80.2 80.1	80.2	6.8 6.8	6.8	27.8 27.9	27.9	34 35	34.5

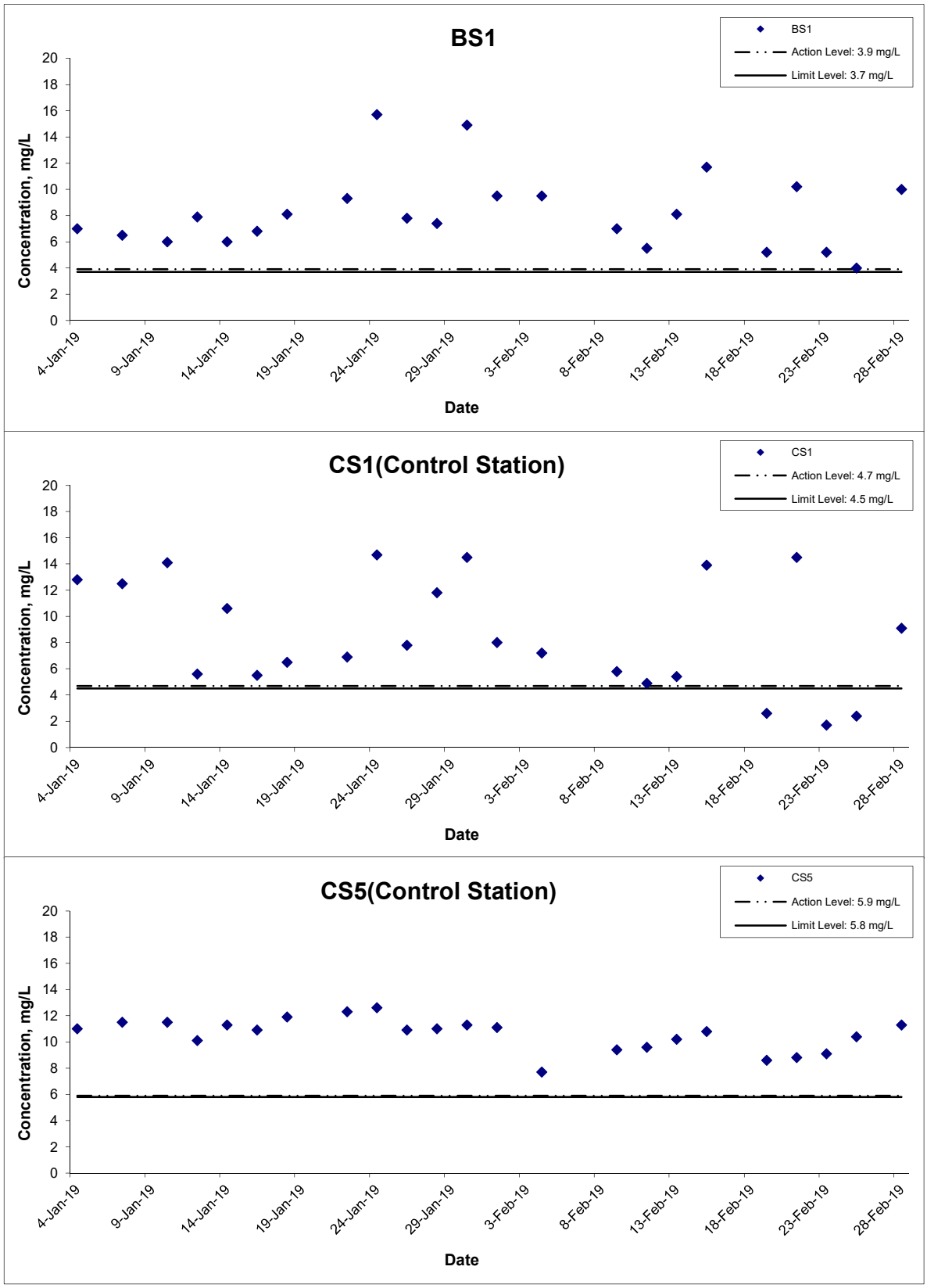
Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Water Quality Monitoring Results at IS4 - Mid-Ebb Tide

Date	Weather Condition	Sea Condition**	Sampling Time	Depth (m)		Temperature (°C)		pH		Salinity ppt		DO Saturation (%)		Dissolved Oxygen (mg/L)		Turbidity(NTU)		Suspended Solids (mg/L)	
						Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average
1-Feb-19	Cloudy	Calm	11:31	Middle	0.1	17.0 17.1	17.1	8.0 8.0	8.0	0.3 0.3	0.3	52.0 51.6	51.8	5.0 5.0	5.0	9.0 8.8	8.9	4 4	4.0
4-Feb-19	Cloudy	Calm	10:19	Middle	0.1	19.0 19.1	19.1	7.8 7.7	7.8	0.1 0.1	0.1	48.2 47.7	48.0	4.5 4.4	4.5	9.6 9.7	9.7	7 8	7.5
9-Feb-19	Cloudy	Calm	11:02	Middle	0.1	20.5 20.5	20.5	8.2 8.2	8.2	0.1 0.1	0.1	67.0 65.4	66.2	6.0 5.9	6.0	10.8 11.4	11.1	7 8	7.5
11-Feb-19	Cloudy	Calm	09:41	Middle	0.1	18.0 18.0	18.0	7.5 7.4	7.5	0.1 0.1	0.1	48.1 47.8	48.0	4.6 4.5	4.6	19.6 19.3	19.5	18 19	18.5
13-Feb-19	Cloudy	Calm	11:59	Middle	0.1	20.6 20.6	20.6	7.8 7.7	7.8	0.1 0.1	0.1	56.4 56.0	56.2	5.1 5.0	5.1	10.4 10.4	10.4	9 9	9.0
15-Feb-19	Cloudy	Calm	11:24	Middle	0.1	21.3 21.3	21.3	7.5 7.5	7.5	0.1 0.1	0.1	59.4 59.3	59.4	5.3 5.3	5.3	7.0 6.8	6.9	9 9	9.0
19-Feb-19	Rainy	Calm	08:28	Middle	0.1	18.9 18.9	18.9	7.3 7.3	7.3	0.1 0.1	0.1	59.2 59.0	59.1	5.5 5.5	5.5	10.8 10.8	10.8	5 6	5.5
21-Feb-19	Sunny	Calm	11:25	Middle	0.2	22.5 22.5	22.5	7.1 7.0	7.1	0.1 0.1	0.1	47.3 46.2	46.8	4.1 4.0	4.1	11.4 11.4	11.4	19 19	19.0
23-Feb-19	Cloudy	Calm	08:25	Middle	0.1	19.2 19.2	19.2	8.0 8.0	8.0	0.3 0.3	0.3	49.1 48.7	48.9	4.5 4.5	4.5	37.2 38.9	38.1	26 26	26.0
25-Feb-19	Cloudy	Calm	09:27	Middle	0.1	17.2 17.2	17.2	7.6 7.6	7.6	0.1 0.1	0.1	46.1 45.8	46.0	4.4 4.4	4.4	7.5 7.6	7.6	13 13	13.0
28-Feb-19	Cloudy	Calm	09:43	Middle	0.1	20.9 20.9	20.9	6.7 6.7	6.7	0.1 0.1	0.1	47.0 46.6	46.8	4.2 4.2	4.2	3.9 4.0	4.0	8 8	8.0

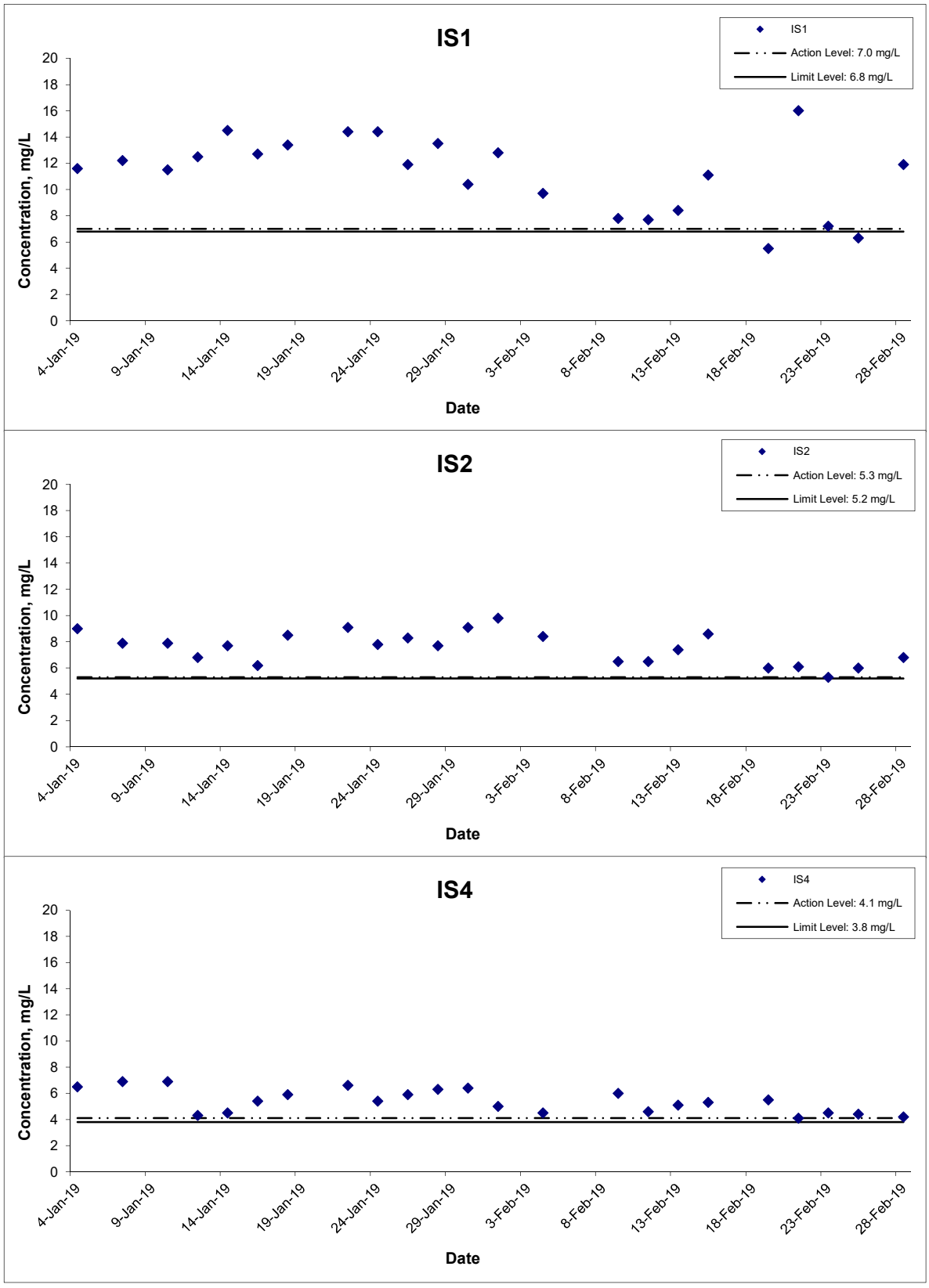
Remarks: *DA: Depth-Averaged
**Calm: Small or no wave; Moderate: Between calm and rough; Rough : White capped or rougher.

Dissolved Oxygen



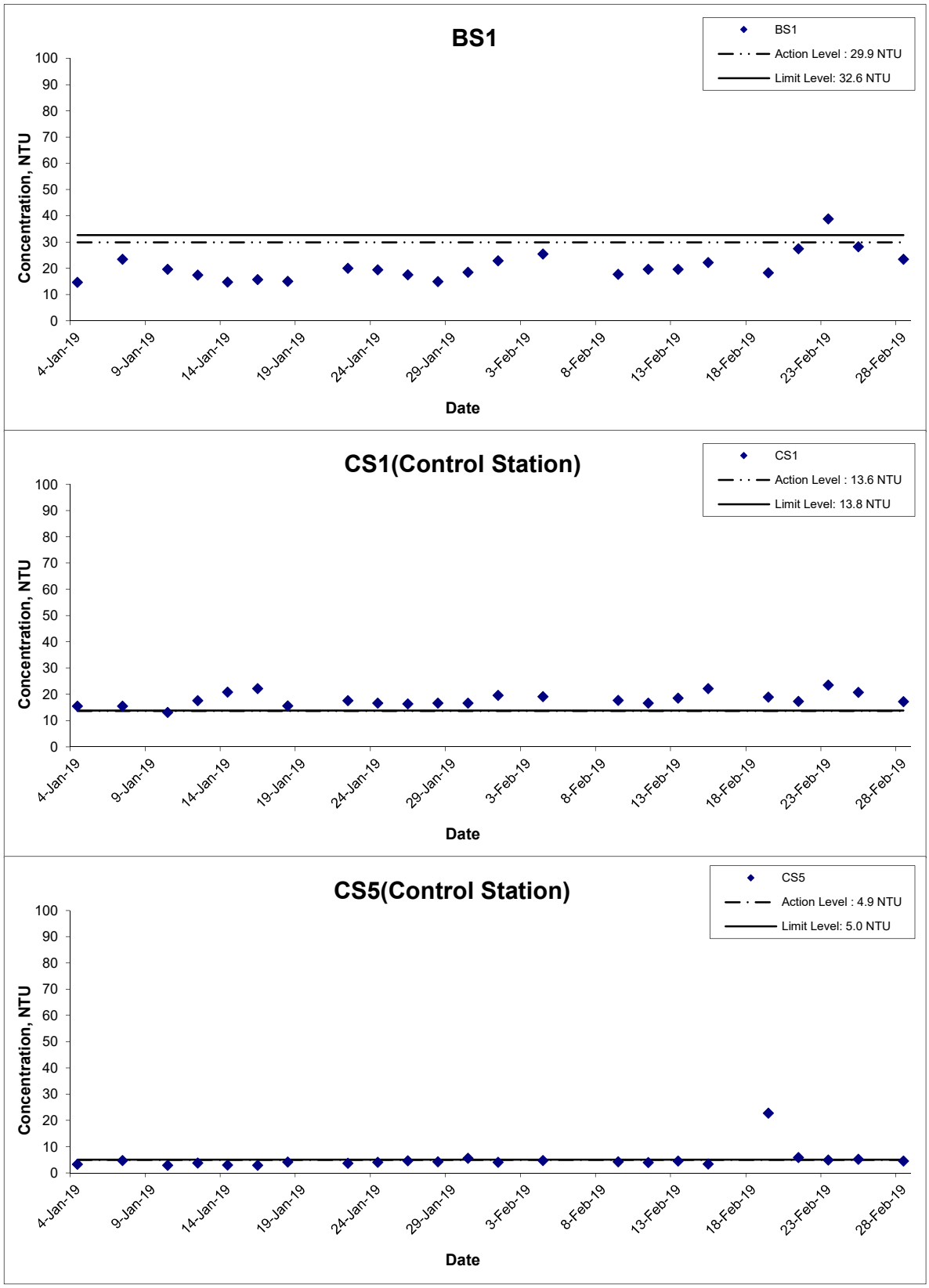
Title	Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. WMA18047	WELLAB 匯力 consulting . testing . research
		Date Feb 19	Appendix H	

Dissolved Oxygen



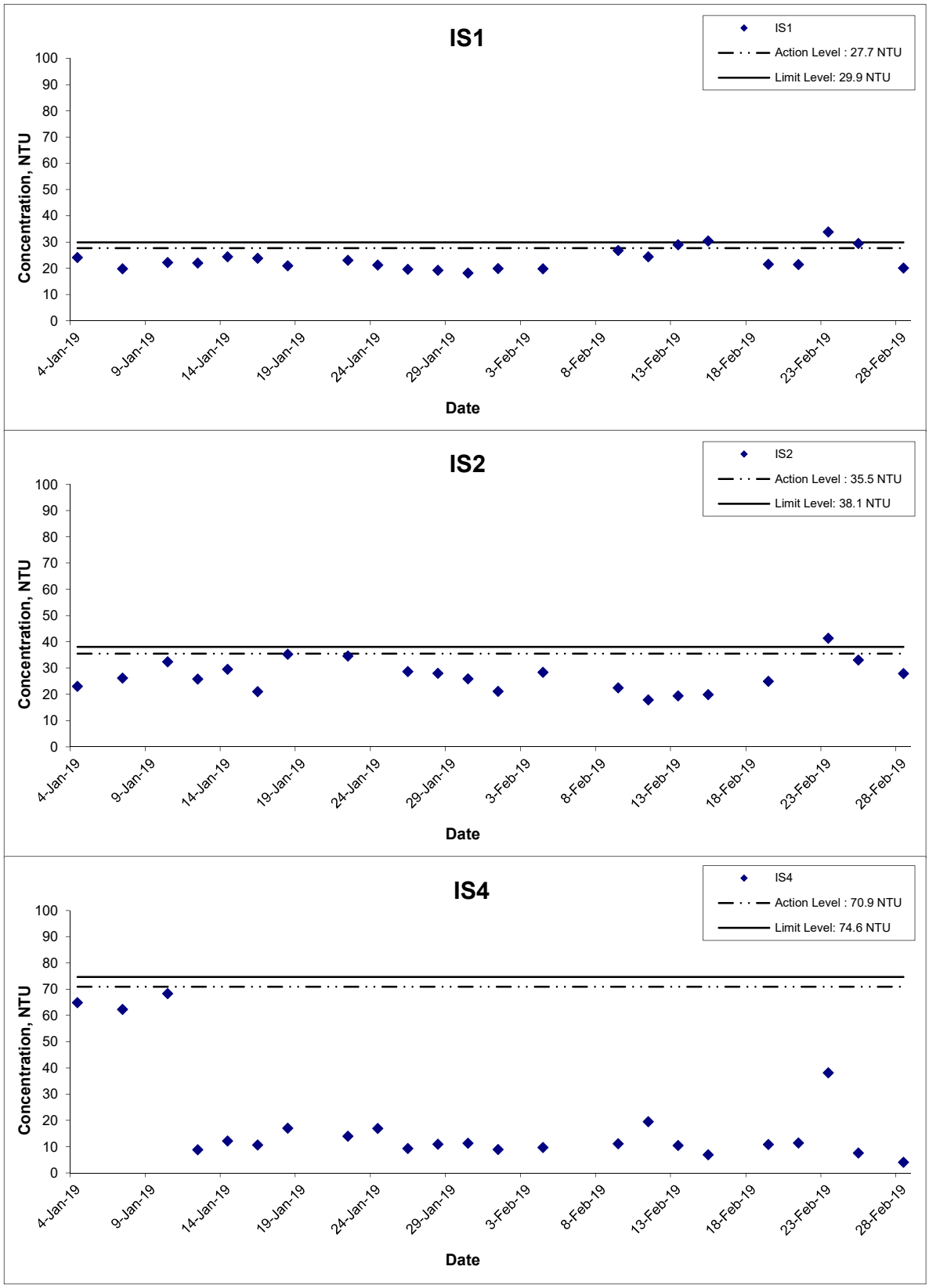
Title	Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S	Project No. WMA18047	WELLAB 匯力 consulting . testing . research
		Date Feb 19	Appendix H	

Turbidity



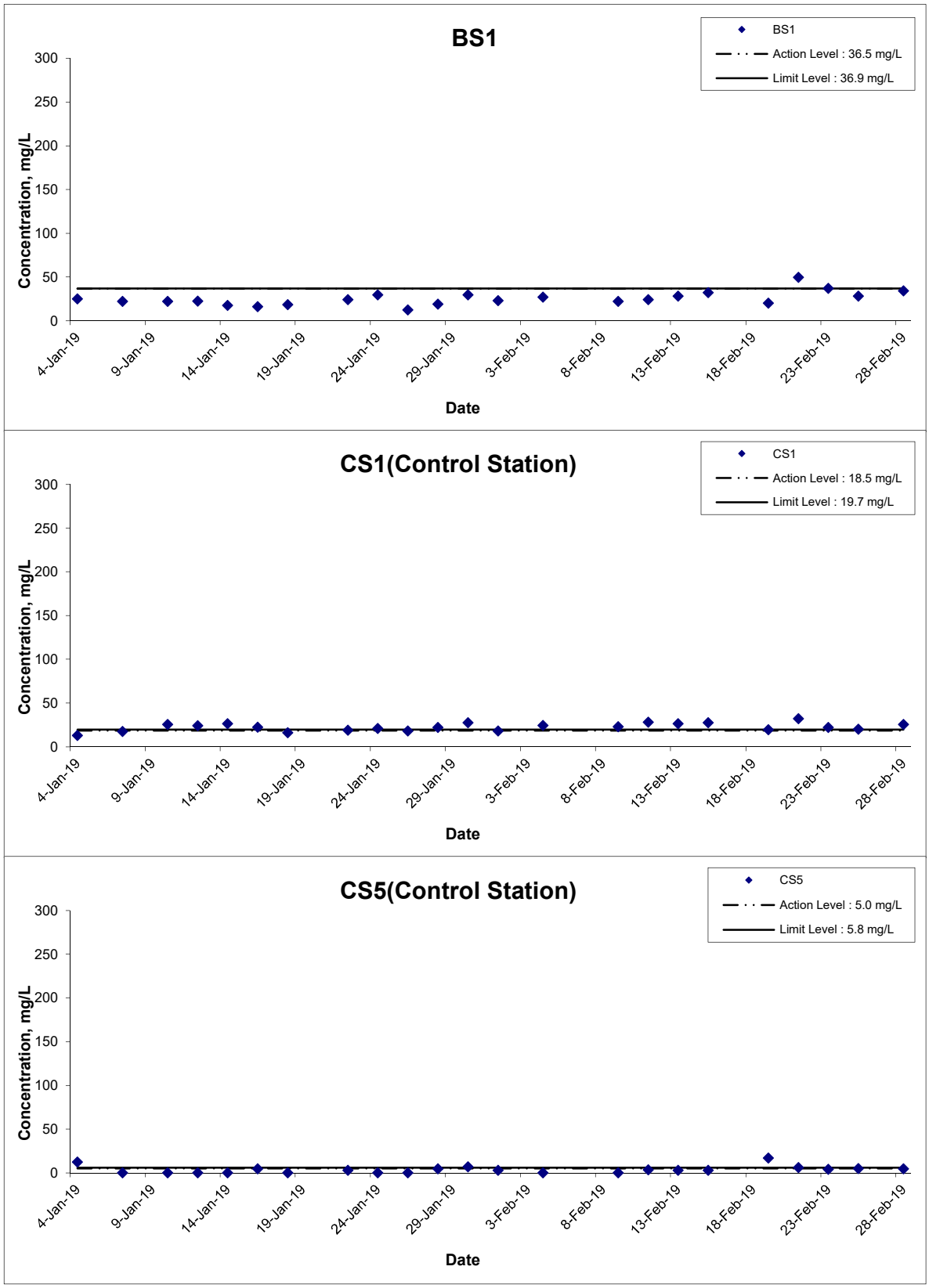
Title	Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S Date Feb 19	Project No. WMA18047 Appendix H	WELLAB 匯力 consulting . testing . research

Turbidity



Title	Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale N.T.S Date Feb 19	Project No. WMA18047 Appendix H	WELLAB 匯力 consulting . testing . research

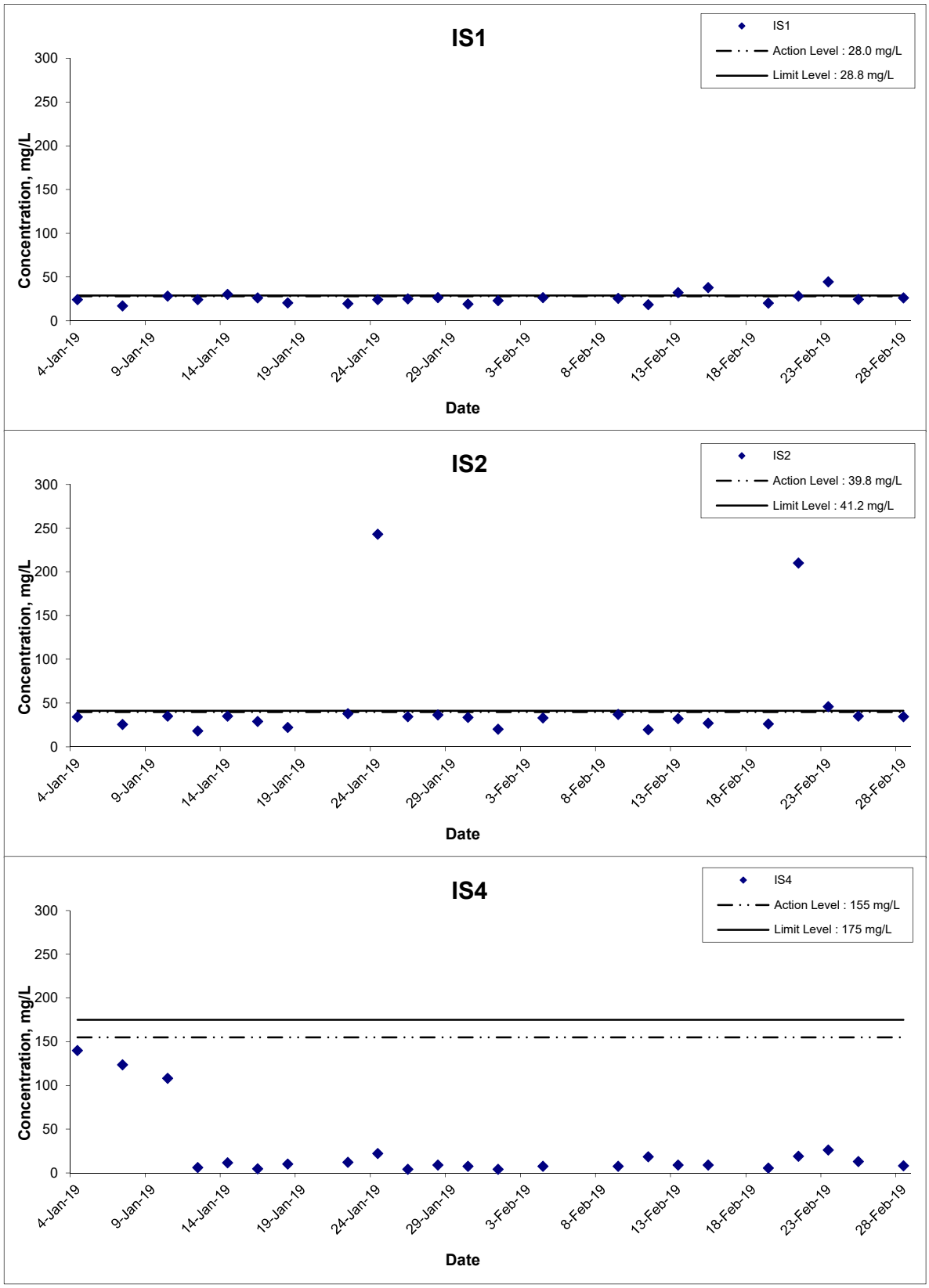
Suspended Solids



Remarks: The graphical point at zero concentration is presented as <2.5 mg/L

Title	Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: WMA18047	WELLAB 匯力 consulting . testing . research
		Date: Feb 19	Appendix: H	

Suspended Solids



Title	Environmental Team for Contract No. YL/2017/03 - Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Design and Construction Graphical Presentation of Water Quality Monitoring Results	Scale: N.T.S	Project No.: WMA18047	WELLAB 匯力 consulting . testing . research
		Date: Feb 19	Appendix: H	

APPENDIX I
QUALITY CONTROL REPORTS FOR LABORATORY ANALYSIS

WELLAB 滙力
consulting . testing . research

WELLAB LIMITED
Room 1701, Technology Park,
18 On Lai Street, Shatin,
N.T., Hong Kong.
Tel: 2898 7388 Fax: 2898 7076
Website: www.wellab.com.hk

TEST REPORT

APPLICANT: **Black & Veatch Hong Kong Limited**
43/F, AIA Kowloon Tower,
100 How Ming Street,
Kwun Tong, Hong Kong

ATTN: **Ms. Esther Tong**

Report No.:	QC30772
Date of Issue:	2019-02-04
Date Received:	2019-02-01
Date Tested:	2019-02-01
Date Completed:	2019-02-04
Page:	1 of 1

QC report:

Method Blank

Parameter	Method Blank 1	Acceptance
Total Suspended Solids (mg/L)	<0.5	<0.5

Method QC

Parameter	MQC1	Acceptance
Total Suspended Solids (%)	104	80-120

Sample Duplicate

Parameter	30772-7 chk	Acceptance
Total Suspended Solids (%)	4	RPD≤5

Remarks: 1) < = less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 30772

**********END OF REPORT**********

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

WELLAB 匯力
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WELLAB LIMITED
Room 1701, Technology Park,
18 On Lai Street, Shatin,
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TEST REPORT

APPLICANT: **Black & Veatch Hong Kong Limited**
43/F, AIA Kowloon Tower,
100 How Ming Street,
Kwun Tong, Hong Kong

ATTN: **Ms. Esther Tong**

Report No.:	QC30780
Date of Issue:	2019-02-13
Date Received:	2019-02-04
Date Tested:	2019-02-04
Date Completed:	2019-02-13
Page:	1 of 1

QC report:

Method Blank

Parameter	Method Blank 1	Acceptance
Total Suspended Solids (mg/L)	<0.5	<0.5

Method QC

Parameter	MQC1	Acceptance
Total Suspended Solids (%)	101	80-120

Sample Duplicate

Parameter	30780-7 chk	Acceptance
Total Suspended Solids (%)	3	RPD≤5

Remarks: 1) < = less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 30780

**********END OF REPORT**********

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB Ltd.**

PATRICK TSE
General Manager

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TEST REPORT

APPLICANT: **Black & Veatch Hong Kong Limited**
43/F, AIA Kowloon Tower,
100 How Ming Street,
Kwun Tong, Hong Kong

ATTN: **Ms. Esther Tong**

Report No.:	QC30791
Date of Issue:	2019-02-14
Date Received:	2019-02-09
Date Tested:	2019-02-09
Date Completed:	2019-02-14
Page:	1 of 1

QC report:

Method Blank

Parameter	Method Blank 1	Acceptance
Total Suspended Solids (mg/L)	<0.5	<0.5

Method QC

Parameter	MQC1	Acceptance
Total Suspended Solids (%)	96	80-120

Sample Duplicate

Parameter	30791-7 chk	Acceptance
Total Suspended Solids (%)	1	RPD≤5

Remarks: 1) < = less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 30791

**********END OF REPORT**********

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB L**

PATRICK TSE
General Manager

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TEST REPORT

APPLICANT: **Black & Veatch Hong Kong Limited**
43/F, AIA Kowloon Tower,
100 How Ming Street,
Kwun Tong, Hong Kong

ATTN: **Ms. Esther Tong**

Report No.:	QC30793
Date of Issue:	2019-02-14
Date Received:	2019-02-11
Date Tested:	2019-02-11
Date Completed:	2019-02-14
Page:	1 of 1

QC report:

Method Blank

Parameter	Method Blank 1	Acceptance
Total Suspended Solids (mg/L)	<0.5	<0.5

Method QC

Parameter	MQC1	Acceptance
Total Suspended Solids (%)	96	80-120

Sample Duplicate

Parameter	30793-7 chk	Acceptance
Total Suspended Solids (%)	5	RPD≤5

Remarks: 1) < = less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 30793

**********END OF REPORT**********

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB L**

PATRICK TSE
General Manager

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TEST REPORT

APPLICANT: **Black & Veatch Hong Kong Limited**
43/F, AIA Kowloon Tower,
100 How Ming Street,
Kwun Tong, Hong Kong

ATTN: **Ms. Esther Tong**

Report No.:	QC30808
Date of Issue:	2019-02-19
Date Received:	2019-02-13
Date Tested:	2019-02-13
Date Completed:	2019-02-19
Page:	1 of 1

QC report:

Method Blank

Parameter	Method Blank 1	Acceptance
Total Suspended Solids (mg/L)	<0.5	<0.5

Method QC

Parameter	MQC1	Acceptance
Total Suspended Solids (%)	98	80-120

Sample Duplicate

Parameter	30808-7 chk	Acceptance
Total Suspended Solids (%)	2	RPD≤5

Remarks: 1) < = less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 30808

**********END OF REPORT**********

PREPARED AND CHECKED BY:
For and On Behalf of **WELLAB L**

PATRICK TSE
General Manager

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TEST REPORT

APPLICANT: **Black & Veatch Hong Kong Limited**
43/F, AIA Kowloon Tower,
100 How Ming Street,
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ATTN: **Ms. Esther Tong**

Report No.:	QC30821
Date of Issue:	2019-02-21
Date Received:	2019-02-15
Date Tested:	2019-02-15
Date Completed:	2019-02-21
Page:	1 of 1

QC report:

Method Blank

Parameter	Method Blank 1	Acceptance
Total Suspended Solids (mg/L)	<0.5	<0.5

Method QC

Parameter	MQC1	Acceptance
Total Suspended Solids (%)	96	80-120

Sample Duplicate

Parameter	30821-7 chk	Acceptance
Total Suspended Solids (%)	0	RPD≤5

Remarks: 1) < = less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 30821

**********END OF REPORT**********

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TEST REPORT

APPLICANT: **Black & Veatch Hong Kong Limited**
43/F, AIA Kowloon Tower,
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ATTN: **Ms. Esther Tong**

Report No.:	QC30842
Date of Issue:	2019-02-20
Date Received:	2019-02-19
Date Tested:	2019-02-19
Date Completed:	2019-02-20
Page:	1 of 1

QC report:

Method Blank

Parameter	Method Blank 1	Acceptance
Total Suspended Solids (mg/L)	<0.5	<0.5

Method QC

Parameter	MQC1	Acceptance
Total Suspended Solids (%)	100	80-120

Sample Duplicate

Parameter	30842-7 chk	Acceptance
Total Suspended Solids (%)	2	RPD≤5

Remarks: 1) < = less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 30842

**********END OF REPORT**********

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TEST REPORT

APPLICANT: **Black & Veatch Hong Kong Limited**
43/F, AIA Kowloon Tower,
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ATTN: **Ms. Esther Tong**

Report No.:	QC30853
Date of Issue:	2019-02-27
Date Received:	2019-02-21
Date Tested:	2019-02-21
Date Completed:	2019-02-27
Page:	1 of 1

QC report:

Method Blank

Parameter	Method Blank 1	Acceptance
Total Suspended Solids (mg/L)	<0.5	<0.5

Method QC

Parameter	MQC1	Acceptance
Total Suspended Solids (%)	97	80-120

Sample Duplicate

Parameter	30853-7 chk	Acceptance
Total Suspended Solids (%)	1	RPD≤5

Remarks: 1) < = less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 30853

**********END OF REPORT**********

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TEST REPORT

APPLICANT: **Black & Veatch Hong Kong Limited**
43/F, AIA Kowloon Tower,
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ATTN: **Ms. Esther Tong**

Report No.:	QC30875
Date of Issue:	2019-03-01
Date Received:	2019-02-23
Date Tested:	2019-02-23
Date Completed:	2019-03-01
Page:	1 of 1

QC report:

Method Blank

Parameter	Method Blank 1	Acceptance
Total Suspended Solids (mg/L)	<0.5	<0.5

Method QC

Parameter	MQC1	Acceptance
Total Suspended Solids (%)	98	80-120

Sample Duplicate

Parameter	30875-7 chk	Acceptance
Total Suspended Solids (%)	4	RPD≤5

Remarks: 1) < = less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 30875

**********END OF REPORT**********

PREPARED AND CHECKED BY:
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TEST REPORT

APPLICANT: **Black & Veatch Hong Kong Limited**
43/F, AIA Kowloon Tower,
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ATTN: **Ms. Esther Tong**

Report No.:	QC30879
Date of Issue:	2019-03-01
Date Received:	2019-02-25
Date Tested:	2019-02-25
Date Completed:	2019-03-01
Page:	1 of 1

QC report:

Method Blank

Parameter	Method Blank 1	Acceptance
Total Suspended Solids (mg/L)	<0.5	<0.5

Method QC

Parameter	MQC1	Acceptance
Total Suspended Solids (%)	98	80-120

Sample Duplicate

Parameter	30879-7 chk	Acceptance
Total Suspended Solids (%)	4	RPD≤5

Remarks: 1) < = less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 30879

**********END OF REPORT**********

PREPARED AND CHECKED BY:
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TEST REPORT

APPLICANT: **Black & Veatch Hong Kong Limited**
43/F, AIA Kowloon Tower,
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ATTN: **Ms. Esther Tong**

Report No.:	QC30904
Date of Issue:	2019-03-06
Date Received:	2019-02-28
Date Tested:	2019-02-28
Date Completed:	2019-03-06
Page:	1 of 1

QC report:

Method Blank

Parameter	Method Blank 1	Acceptance
Total Suspended Solids (mg/L)	<0.5	<0.5

Method QC

Parameter	MQC1	Acceptance
Total Suspended Solids (%)	101	80-120

Sample Duplicate

Parameter	30904-7 chk	Acceptance
Total Suspended Solids (%)	4	RPD≤5

Remarks: 1) < = less than
2) N/A = Not applicable
3) This report is the summary of quality control data for report number 30904

**********END OF REPORT**********

PREPARED AND CHECKED BY:
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PATRICK TSE
General Manager

APPENDIX J
WEATHER CONDITION

APPENDIX J –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
1 February 2019	18.8	70	0.0
2 February 2019	18.6	80	Trace
3 February 2019	21.8	83	Trace
4 February 2019	21.7	83	0.0
5 February 2019	20.1	84	0.0
6 February 2019	22.1	85	0.0
7 February 2019	23.0	83	Trace
8 February 2019	21.7	87	Trace
9 February 2019	19.3	90	0.8
10 February 2019	18.0	90	0.8
11 February 2019	18.4	85	Trace
12 February 2019	19.0	82	0.2
13 February 2019	21.1	80	0.0
14 February 2019	20.4	83	Trace
15 February 2019	20.4	84	0.2
16 February 2019	22.4	81	0.0
17 February 2019	18.8	86	0.1
18 February 2019	17.9	90	18.1
19 February 2019	20.3	91	31.0
20 February 2019	22.6	92	0.2

APPENDIX J –
WEATHER CONDITIONS DURING THE MONITORING PERIOD

I. Mean Wind Speed and Wind Direction

Date	Mean Air Temperature (°C)	Mean Relative Humidity (%)	Precipitation (mm)
21 February 2019	21.4	93	Trace
22 February 2019	20.4	82	1.6
23 February 2019	18.1	87	12.3
24 February 2019	16.9	83	3.4
25 February 2019	18.0	85	Trace
26 February 2019	18.7	88	Trace
27 February 2019	20.7	85	Trace
28 February 2019	22.8	85	0.0

* The above information was extracted from the daily weather summary by Hong Kong Observatory.

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
1-Feb-2019	0:00	0.4	N
1-Feb-2019	1:00	1.3	NNE
1-Feb-2019	2:00	1.3	NE
1-Feb-2019	3:00	1.3	N
1-Feb-2019	4:00	0.9	NE
1-Feb-2019	5:00	0.9	NNE
1-Feb-2019	6:00	1.3	NNE
1-Feb-2019	7:00	1.3	NNE
1-Feb-2019	8:00	0.9	NE
1-Feb-2019	9:00	0.9	N
1-Feb-2019	10:00	0.9	NE
1-Feb-2019	11:00	0.9	NE
1-Feb-2019	12:00	0.9	NNE
1-Feb-2019	13:00	0.9	N
1-Feb-2019	14:00	0.4	N
1-Feb-2019	15:00	0.4	NE
1-Feb-2019	16:00	0.4	NE
1-Feb-2019	17:00	0.0	N
1-Feb-2019	18:00	0.0	ENE
1-Feb-2019	19:00	0.4	NE
1-Feb-2019	20:00	0.4	ENE
1-Feb-2019	21:00	0.9	ENE
1-Feb-2019	22:00	0.4	NE
1-Feb-2019	23:00	0.4	ENE
2-Feb-2019	0:00	0.9	E
2-Feb-2019	1:00	0.9	ENE
2-Feb-2019	2:00	0.9	NE
2-Feb-2019	3:00	0.4	ENE
2-Feb-2019	4:00	0.4	E
2-Feb-2019	5:00	0.4	NE
2-Feb-2019	6:00	0.0	ENE
2-Feb-2019	7:00	0.4	NE
2-Feb-2019	8:00	0.4	NE
2-Feb-2019	9:00	0.4	ENE
2-Feb-2019	10:00	0.9	ENE
2-Feb-2019	11:00	0.4	N
2-Feb-2019	12:00	0.9	NE
2-Feb-2019	13:00	0.9	NE
2-Feb-2019	14:00	1.3	NE
2-Feb-2019	15:00	1.8	NE
2-Feb-2019	16:00	1.3	ENE
2-Feb-2019	17:00	0.4	E
2-Feb-2019	18:00	0.0	NE
2-Feb-2019	19:00	0.0	NE
2-Feb-2019	20:00	0.4	NE
2-Feb-2019	21:00	0.4	N
2-Feb-2019	22:00	0.4	NE
2-Feb-2019	23:00	0.4	N
3-Feb-2019	0:00	0.0	N
3-Feb-2019	1:00	0.4	E
3-Feb-2019	2:00	0.0	ENE
3-Feb-2019	3:00	0.4	ENE
3-Feb-2019	4:00	0.4	ENE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
3-Feb-2019	5:00	0.0	---
3-Feb-2019	6:00	0.4	ENE
3-Feb-2019	7:00	0.0	ENE
3-Feb-2019	8:00	0.0	ENE
3-Feb-2019	9:00	0.0	ENE
3-Feb-2019	10:00	0.0	ENE
3-Feb-2019	11:00	0.4	ENE
3-Feb-2019	12:00	0.4	SW
3-Feb-2019	13:00	0.9	WSW
3-Feb-2019	14:00	0.9	SW
3-Feb-2019	15:00	0.9	WSW
3-Feb-2019	16:00	0.4	WSW
3-Feb-2019	17:00	0.0	W
3-Feb-2019	18:00	0.4	SW
3-Feb-2019	19:00	0.0	SSW
3-Feb-2019	20:00	0.0	---
3-Feb-2019	21:00	0.0	---
3-Feb-2019	22:00	0.0	---
3-Feb-2019	23:00	0.0	ESE
4-Feb-2019	0:00	0.0	---
4-Feb-2019	1:00	0.0	---
4-Feb-2019	2:00	0.0	---
4-Feb-2019	3:00	0.0	---
4-Feb-2019	4:00	0.0	---
4-Feb-2019	5:00	0.0	---
4-Feb-2019	6:00	0.0	---
4-Feb-2019	7:00	0.0	---
4-Feb-2019	8:00	0.0	---
4-Feb-2019	9:00	0.0	---
4-Feb-2019	10:00	0.0	---
4-Feb-2019	11:00	0.0	N
4-Feb-2019	12:00	0.4	N
4-Feb-2019	13:00	0.9	N
4-Feb-2019	14:00	0.9	SE
4-Feb-2019	15:00	0.9	SE
4-Feb-2019	16:00	0.0	NE
4-Feb-2019	17:00	0.4	ENE
4-Feb-2019	18:00	0.9	NE
4-Feb-2019	19:00	2.7	E
4-Feb-2019	20:00	2.2	ENE
4-Feb-2019	21:00	1.8	ENE
4-Feb-2019	22:00	2.7	ENE
4-Feb-2019	23:00	1.3	ENE
5-Feb-2019	0:00	1.8	E
5-Feb-2019	1:00	1.8	ENE
5-Feb-2019	2:00	0.9	E
5-Feb-2019	3:00	0.9	E
5-Feb-2019	4:00	0.9	ENE
5-Feb-2019	5:00	0.9	ENE
5-Feb-2019	6:00	1.3	ENE
5-Feb-2019	7:00	1.3	ENE
5-Feb-2019	8:00	0.9	ENE
5-Feb-2019	9:00	0.4	ENE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
5-Feb-2019	10:00	0.9	NE
5-Feb-2019	11:00	1.3	E
5-Feb-2019	12:00	1.8	E
5-Feb-2019	13:00	0.9	E
5-Feb-2019	14:00	0.4	ESE
5-Feb-2019	15:00	0.4	SE
5-Feb-2019	16:00	0.4	NE
5-Feb-2019	17:00	0.4	ESE
5-Feb-2019	18:00	0.4	ENE
5-Feb-2019	19:00	0.4	SE
5-Feb-2019	20:00	0.4	SE
5-Feb-2019	21:00	0.4	E
5-Feb-2019	22:00	0.4	E
5-Feb-2019	23:00	0.4	E
6-Feb-2019	0:00	0.0	E
6-Feb-2019	1:00	0.4	E
6-Feb-2019	2:00	0.4	E
6-Feb-2019	3:00	0.9	E
6-Feb-2019	4:00	0.0	E
6-Feb-2019	5:00	0.0	E
6-Feb-2019	6:00	0.9	E
6-Feb-2019	7:00	0.4	E
6-Feb-2019	8:00	0.4	ESE
6-Feb-2019	9:00	0.0	E
6-Feb-2019	10:00	0.4	E
6-Feb-2019	11:00	0.4	NNE
6-Feb-2019	12:00	1.3	SW
6-Feb-2019	13:00	1.8	SW
6-Feb-2019	14:00	1.3	WSW
6-Feb-2019	15:00	1.8	WSW
6-Feb-2019	16:00	1.8	SSW
6-Feb-2019	17:00	1.8	SW
6-Feb-2019	18:00	0.4	SW
6-Feb-2019	19:00	0.0	SSW
6-Feb-2019	20:00	0.0	S
6-Feb-2019	21:00	0.0	---
6-Feb-2019	22:00	0.0	E
6-Feb-2019	23:00	0.0	---
7-Feb-2019	0:00	0.0	E
7-Feb-2019	1:00	0.0	SW
7-Feb-2019	2:00	0.0	SSW
7-Feb-2019	3:00	0.0	SE
7-Feb-2019	4:00	0.0	---
7-Feb-2019	5:00	0.0	SE
7-Feb-2019	6:00	0.9	ESE
7-Feb-2019	7:00	1.3	ESE
7-Feb-2019	8:00	0.4	E
7-Feb-2019	9:00	0.0	ESE
7-Feb-2019	10:00	0.4	ESE
7-Feb-2019	11:00	0.4	SE
7-Feb-2019	12:00	0.9	NE
7-Feb-2019	13:00	0.0	ENE
7-Feb-2019	14:00	0.9	ENE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
7-Feb-2019	15:00	0.4	ENE
7-Feb-2019	16:00	0.4	ENE
7-Feb-2019	17:00	0.9	WSW
7-Feb-2019	18:00	0.0	E
7-Feb-2019	19:00	0.0	E
7-Feb-2019	20:00	0.0	---
7-Feb-2019	21:00	0.4	SE
7-Feb-2019	22:00	0.0	SE
7-Feb-2019	23:00	0.0	SE
8-Feb-2019	0:00	0.0	SE
8-Feb-2019	1:00	0.0	---
8-Feb-2019	2:00	0.0	SE
8-Feb-2019	3:00	0.0	SE
8-Feb-2019	4:00	0.4	E
8-Feb-2019	5:00	0.0	E
8-Feb-2019	6:00	0.9	E
8-Feb-2019	7:00	0.9	ESE
8-Feb-2019	8:00	0.0	ESE
8-Feb-2019	9:00	0.0	ESE
8-Feb-2019	10:00	0.4	SE
8-Feb-2019	11:00	0.4	NE
8-Feb-2019	12:00	0.4	SE
8-Feb-2019	13:00	1.3	ENE
8-Feb-2019	14:00	1.3	ENE
8-Feb-2019	15:00	1.8	NE
8-Feb-2019	16:00	2.2	ENE
8-Feb-2019	17:00	1.8	ENE
8-Feb-2019	18:00	1.3	ENE
8-Feb-2019	19:00	1.3	ENE
8-Feb-2019	20:00	0.4	ENE
8-Feb-2019	21:00	0.9	ENE
8-Feb-2019	22:00	0.9	NE
8-Feb-2019	23:00	1.3	ENE
9-Feb-2019	0:00	1.8	ENE
9-Feb-2019	1:00	1.8	ENE
9-Feb-2019	2:00	1.8	NE
9-Feb-2019	3:00	1.8	NE
9-Feb-2019	4:00	0.9	NE
9-Feb-2019	5:00	1.3	NE
9-Feb-2019	6:00	0.4	ENE
9-Feb-2019	7:00	0.9	NE
9-Feb-2019	8:00	0.9	NE
9-Feb-2019	9:00	1.3	ENE
9-Feb-2019	10:00	1.3	ENE
9-Feb-2019	11:00	1.3	ENE
9-Feb-2019	12:00	0.9	ENE
9-Feb-2019	13:00	1.8	NE
9-Feb-2019	14:00	1.3	E
9-Feb-2019	15:00	1.3	ENE
9-Feb-2019	16:00	0.9	ENE
9-Feb-2019	17:00	0.4	ENE
9-Feb-2019	18:00	0.4	ENE
9-Feb-2019	19:00	0.9	NE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
9-Feb-2019	20:00	1.3	ESE
9-Feb-2019	21:00	1.8	ESE
9-Feb-2019	22:00	0.9	E
9-Feb-2019	23:00	1.8	NE
10-Feb-2019	0:00	1.8	ENE
10-Feb-2019	1:00	2.2	NE
10-Feb-2019	2:00	1.8	NE
10-Feb-2019	3:00	1.3	NE
10-Feb-2019	4:00	1.3	ENE
10-Feb-2019	5:00	1.8	ENE
10-Feb-2019	6:00	1.3	NE
10-Feb-2019	7:00	1.3	E
10-Feb-2019	8:00	1.3	ESE
10-Feb-2019	9:00	0.9	ENE
10-Feb-2019	10:00	0.9	NE
10-Feb-2019	11:00	1.3	E
10-Feb-2019	12:00	0.9	NE
10-Feb-2019	13:00	0.9	NE
10-Feb-2019	14:00	1.3	E
10-Feb-2019	15:00	0.9	ESE
10-Feb-2019	16:00	1.3	E
10-Feb-2019	17:00	0.9	E
10-Feb-2019	18:00	0.9	NE
10-Feb-2019	19:00	0.4	NE
10-Feb-2019	20:00	0.0	NE
10-Feb-2019	21:00	0.0	ENE
10-Feb-2019	22:00	0.9	ENE
10-Feb-2019	23:00	0.4	NE
11-Feb-2019	0:00	0.0	NE
11-Feb-2019	1:00	0.4	NE
11-Feb-2019	2:00	0.9	ENE
11-Feb-2019	3:00	0.0	ENE
11-Feb-2019	4:00	0.4	ENE
11-Feb-2019	5:00	0.4	N
11-Feb-2019	6:00	0.9	N
11-Feb-2019	7:00	0.4	NE
11-Feb-2019	8:00	0.4	NNE
11-Feb-2019	9:00	0.9	N
11-Feb-2019	10:00	0.4	NE
11-Feb-2019	11:00	0.9	N
11-Feb-2019	12:00	0.4	N
11-Feb-2019	13:00	0.4	N
11-Feb-2019	14:00	0.9	N
11-Feb-2019	15:00	0.4	NE
11-Feb-2019	16:00	0.4	N
11-Feb-2019	17:00	0.4	NE
11-Feb-2019	18:00	0.4	NE
11-Feb-2019	19:00	0.0	NE
11-Feb-2019	20:00	0.4	ENE
11-Feb-2019	21:00	0.9	ENE
11-Feb-2019	22:00	0.4	E
11-Feb-2019	23:00	0.0	E
12-Feb-2019	0:00	0.0	ENE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
12-Feb-2019	1:00	0.4	NNE
12-Feb-2019	2:00	0.0	NNE
12-Feb-2019	3:00	0.0	NNE
12-Feb-2019	4:00	0.0	NNE
12-Feb-2019	5:00	0.0	NNE
12-Feb-2019	6:00	0.0	NNE
12-Feb-2019	7:00	0.0	ENE
12-Feb-2019	8:00	0.4	NNE
12-Feb-2019	9:00	0.0	ENE
12-Feb-2019	10:00	0.4	ENE
12-Feb-2019	11:00	0.4	ENE
12-Feb-2019	12:00	0.9	ENE
12-Feb-2019	13:00	1.3	E
12-Feb-2019	14:00	0.9	E
12-Feb-2019	15:00	0.9	ESE
12-Feb-2019	16:00	0.9	SE
12-Feb-2019	17:00	0.4	E
12-Feb-2019	18:00	0.0	ENE
12-Feb-2019	19:00	0.4	SE
12-Feb-2019	20:00	0.0	E
12-Feb-2019	21:00	0.4	E
12-Feb-2019	22:00	0.0	E
12-Feb-2019	23:00	0.0	E
13-Feb-2019	0:00	0.0	E
13-Feb-2019	1:00	0.4	E
13-Feb-2019	2:00	0.9	ESE
13-Feb-2019	3:00	0.0	---
13-Feb-2019	4:00	0.0	---
13-Feb-2019	5:00	0.4	E
13-Feb-2019	6:00	0.4	E
13-Feb-2019	7:00	0.0	E
13-Feb-2019	8:00	0.4	ESE
13-Feb-2019	9:00	0.0	E
13-Feb-2019	10:00	0.4	ENE
13-Feb-2019	11:00	0.4	NE
13-Feb-2019	12:00	0.4	ENE
13-Feb-2019	13:00	0.4	N
13-Feb-2019	14:00	0.4	N
13-Feb-2019	15:00	0.4	ENE
13-Feb-2019	16:00	0.0	N
13-Feb-2019	17:00	0.0	E
13-Feb-2019	18:00	0.9	ESE
13-Feb-2019	19:00	0.0	ESE
13-Feb-2019	20:00	0.0	E
13-Feb-2019	21:00	0.4	NE
13-Feb-2019	22:00	0.4	ESE
13-Feb-2019	23:00	1.3	ENE
14-Feb-2019	0:00	1.8	ENE
14-Feb-2019	1:00	0.9	ENE
14-Feb-2019	2:00	1.3	ENE
14-Feb-2019	3:00	0.9	NE
14-Feb-2019	4:00	0.4	ENE
14-Feb-2019	5:00	0.9	NE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
14-Feb-2019	6:00	0.0	NE
14-Feb-2019	7:00	0.4	ENE
14-Feb-2019	8:00	0.9	NE
14-Feb-2019	9:00	0.9	ENE
14-Feb-2019	10:00	0.9	ENE
14-Feb-2019	11:00	0.9	NE
14-Feb-2019	12:00	0.9	ENE
14-Feb-2019	13:00	1.3	E
14-Feb-2019	14:00	1.3	SE
14-Feb-2019	15:00	1.3	SE
14-Feb-2019	16:00	2.2	SE
14-Feb-2019	17:00	1.3	SE
14-Feb-2019	18:00	1.3	SE
14-Feb-2019	19:00	0.9	SE
14-Feb-2019	20:00	0.4	ENE
14-Feb-2019	21:00	0.9	NE
14-Feb-2019	22:00	0.9	NE
14-Feb-2019	23:00	0.9	NE
15-Feb-2019	0:00	1.3	ENE
15-Feb-2019	1:00	0.9	ENE
15-Feb-2019	2:00	0.4	ENE
15-Feb-2019	3:00	0.9	ENE
15-Feb-2019	4:00	0.4	NE
15-Feb-2019	5:00	0.9	NE
15-Feb-2019	6:00	0.9	ENE
15-Feb-2019	7:00	1.8	ENE
15-Feb-2019	8:00	0.9	NE
15-Feb-2019	9:00	0.4	NE
15-Feb-2019	10:00	0.9	ENE
15-Feb-2019	11:00	0.9	NE
15-Feb-2019	12:00	0.9	ENE
15-Feb-2019	13:00	0.9	NE
15-Feb-2019	14:00	0.9	ENE
15-Feb-2019	15:00	0.4	E
15-Feb-2019	16:00	0.9	ENE
15-Feb-2019	17:00	0.9	SE
15-Feb-2019	18:00	0.9	SE
15-Feb-2019	19:00	0.4	ESE
15-Feb-2019	20:00	0.0	E
15-Feb-2019	21:00	0.0	E
15-Feb-2019	22:00	0.0	E
15-Feb-2019	23:00	0.4	E
16-Feb-2019	0:00	0.0	E
16-Feb-2019	1:00	0.0	E
16-Feb-2019	2:00	0.0	E
16-Feb-2019	3:00	0.0	E
16-Feb-2019	4:00	0.0	E
16-Feb-2019	5:00	0.4	E
16-Feb-2019	6:00	0.0	E
16-Feb-2019	7:00	1.3	ESE
16-Feb-2019	8:00	0.4	ESE
16-Feb-2019	9:00	0.4	ESE
16-Feb-2019	10:00	0.4	ENE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
16-Feb-2019	11:00	0.4	E
16-Feb-2019	12:00	0.9	ENE
16-Feb-2019	13:00	0.9	E
16-Feb-2019	14:00	0.9	SE
16-Feb-2019	15:00	0.9	SE
16-Feb-2019	16:00	1.8	ESE
16-Feb-2019	17:00	1.3	SE
16-Feb-2019	18:00	0.9	NE
16-Feb-2019	19:00	1.3	ENE
16-Feb-2019	20:00	0.4	ENE
16-Feb-2019	21:00	0.9	NE
16-Feb-2019	22:00	0.9	ENE
16-Feb-2019	23:00	0.9	ENE
17-Feb-2019	0:00	0.4	NE
17-Feb-2019	1:00	0.4	NE
17-Feb-2019	2:00	0.4	NE
17-Feb-2019	3:00	0.4	NE
17-Feb-2019	4:00	0.4	NE
17-Feb-2019	5:00	0.9	E
17-Feb-2019	6:00	0.4	ENE
17-Feb-2019	7:00	0.4	ENE
17-Feb-2019	8:00	0.9	ENE
17-Feb-2019	9:00	1.3	ENE
17-Feb-2019	10:00	1.3	ESE
17-Feb-2019	11:00	1.3	ENE
17-Feb-2019	12:00	1.3	ESE
17-Feb-2019	13:00	1.3	E
17-Feb-2019	14:00	1.3	ENE
17-Feb-2019	15:00	1.3	ENE
17-Feb-2019	16:00	1.3	ESE
17-Feb-2019	17:00	0.9	NE
17-Feb-2019	18:00	0.9	ENE
17-Feb-2019	19:00	1.3	NE
17-Feb-2019	20:00	1.8	ENE
17-Feb-2019	21:00	2.2	E
17-Feb-2019	22:00	1.3	ENE
17-Feb-2019	23:00	1.3	ENE
18-Feb-2019	0:00	1.8	ENE
18-Feb-2019	1:00	1.3	NE
18-Feb-2019	2:00	0.9	NNE
18-Feb-2019	3:00	0.9	NE
18-Feb-2019	4:00	0.9	ENE
18-Feb-2019	5:00	0.9	ENE
18-Feb-2019	6:00	1.8	NE
18-Feb-2019	7:00	2.2	NNE
18-Feb-2019	8:00	2.7	NE
18-Feb-2019	9:00	1.8	NE
18-Feb-2019	10:00	1.8	ENE
18-Feb-2019	11:00	1.8	ENE
18-Feb-2019	12:00	0.4	NE
18-Feb-2019	13:00	0.4	ENE
18-Feb-2019	14:00	0.0	NE
18-Feb-2019	15:00	0.0	NE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
18-Feb-2019	16:00	0.0	NE
18-Feb-2019	17:00	1.3	E
18-Feb-2019	18:00	0.4	E
18-Feb-2019	19:00	0.0	E
18-Feb-2019	20:00	0.4	E
18-Feb-2019	21:00	0.4	ESE
18-Feb-2019	22:00	0.9	E
18-Feb-2019	23:00	0.0	ENE
19-Feb-2019	0:00	0.4	ENE
19-Feb-2019	1:00	0.9	E
19-Feb-2019	2:00	0.0	ENE
19-Feb-2019	3:00	0.9	ENE
19-Feb-2019	4:00	0.4	ENE
19-Feb-2019	5:00	0.4	NE
19-Feb-2019	6:00	0.4	NE
19-Feb-2019	7:00	0.4	NE
19-Feb-2019	8:00	0.4	ENE
19-Feb-2019	9:00	0.4	NNE
19-Feb-2019	10:00	0.4	NNE
19-Feb-2019	11:00	0.4	E
19-Feb-2019	12:00	0.4	E
19-Feb-2019	13:00	0.4	ENE
19-Feb-2019	14:00	0.9	E
19-Feb-2019	15:00	0.4	E
19-Feb-2019	16:00	0.4	ESE
19-Feb-2019	17:00	0.4	ENE
19-Feb-2019	18:00	0.4	ENE
19-Feb-2019	19:00	1.3	E
19-Feb-2019	20:00	0.9	E
19-Feb-2019	21:00	0.9	ESE
19-Feb-2019	22:00	0.4	NE
19-Feb-2019	23:00	0.4	NE
20-Feb-2019	0:00	1.3	E
20-Feb-2019	1:00	0.4	ENE
20-Feb-2019	2:00	0.0	ENE
20-Feb-2019	3:00	0.4	ENE
20-Feb-2019	4:00	0.4	ENE
20-Feb-2019	5:00	0.4	NE
20-Feb-2019	6:00	0.0	ENE
20-Feb-2019	7:00	0.0	E
20-Feb-2019	8:00	0.0	ENE
20-Feb-2019	9:00	0.4	ENE
20-Feb-2019	10:00	0.9	ENE
20-Feb-2019	11:00	0.9	NE
20-Feb-2019	12:00	1.3	ESE
20-Feb-2019	13:00	1.3	ESE
20-Feb-2019	14:00	1.3	E
20-Feb-2019	15:00	0.9	E
20-Feb-2019	16:00	0.9	ESE
20-Feb-2019	17:00	0.4	ENE
20-Feb-2019	18:00	0.4	SE
20-Feb-2019	19:00	0.9	ESE
20-Feb-2019	20:00	0.4	SE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
20-Feb-2019	21:00	0.0	SE
20-Feb-2019	22:00	0.4	ESE
20-Feb-2019	23:00	0.4	ESE
21-Feb-2019	0:00	0.4	E
21-Feb-2019	1:00	0.0	ENE
21-Feb-2019	2:00	0.4	ENE
21-Feb-2019	3:00	0.0	ENE
21-Feb-2019	4:00	0.0	ENE
21-Feb-2019	5:00	0.0	ENE
21-Feb-2019	6:00	0.0	ENE
21-Feb-2019	7:00	0.4	ENE
21-Feb-2019	8:00	0.4	ENE
21-Feb-2019	9:00	0.0	ENE
21-Feb-2019	10:00	0.4	ENE
21-Feb-2019	11:00	0.9	E
21-Feb-2019	12:00	0.9	ESE
21-Feb-2019	13:00	1.3	ENE
21-Feb-2019	14:00	0.9	ENE
21-Feb-2019	15:00	0.9	ENE
21-Feb-2019	16:00	1.3	ESE
21-Feb-2019	17:00	1.3	SE
21-Feb-2019	18:00	1.8	SE
21-Feb-2019	19:00	0.4	ENE
21-Feb-2019	20:00	0.0	ESE
21-Feb-2019	21:00	0.4	ENE
21-Feb-2019	22:00	0.9	ESE
21-Feb-2019	23:00	0.9	ESE
22-Feb-2019	0:00	0.0	ESE
22-Feb-2019	1:00	1.8	SW
22-Feb-2019	2:00	1.3	SW
22-Feb-2019	3:00	1.3	SW
22-Feb-2019	4:00	1.3	SW
22-Feb-2019	5:00	0.4	SSW
22-Feb-2019	6:00	0.0	N
22-Feb-2019	7:00	0.0	WNW
22-Feb-2019	8:00	0.9	N
22-Feb-2019	9:00	0.0	N
22-Feb-2019	10:00	0.4	N
22-Feb-2019	11:00	0.0	NW
22-Feb-2019	12:00	0.9	NE
22-Feb-2019	13:00	0.9	N
22-Feb-2019	14:00	0.4	NNE
22-Feb-2019	15:00	0.4	N
22-Feb-2019	16:00	0.9	N
22-Feb-2019	17:00	0.0	NNE
22-Feb-2019	18:00	0.0	ENE
22-Feb-2019	19:00	0.9	E
22-Feb-2019	20:00	0.0	ENE
22-Feb-2019	21:00	0.4	NE
22-Feb-2019	22:00	0.0	ENE
22-Feb-2019	23:00	0.4	NE
23-Feb-2019	0:00	0.4	NE
23-Feb-2019	1:00	0.4	NE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
23-Feb-2019	2:00	0.4	NNE
23-Feb-2019	3:00	0.4	NNE
23-Feb-2019	4:00	1.3	NNE
23-Feb-2019	5:00	1.3	ENE
23-Feb-2019	6:00	1.3	ENE
23-Feb-2019	7:00	0.9	NNE
23-Feb-2019	8:00	2.2	ENE
23-Feb-2019	9:00	0.4	NE
23-Feb-2019	10:00	0.9	ENE
23-Feb-2019	11:00	0.9	E
23-Feb-2019	12:00	1.8	ENE
23-Feb-2019	13:00	0.9	E
23-Feb-2019	14:00	0.4	E
23-Feb-2019	15:00	0.9	ENE
23-Feb-2019	16:00	0.0	NE
23-Feb-2019	17:00	0.4	NNE
23-Feb-2019	18:00	1.3	N
23-Feb-2019	19:00	0.4	N
23-Feb-2019	20:00	0.9	N
23-Feb-2019	21:00	0.4	N
23-Feb-2019	22:00	0.4	NE
23-Feb-2019	23:00	0.9	NE
24-Feb-2019	0:00	0.9	N
24-Feb-2019	1:00	0.4	NE
24-Feb-2019	2:00	0.4	N
24-Feb-2019	3:00	0.9	N
24-Feb-2019	4:00	0.9	N
24-Feb-2019	5:00	0.0	N
24-Feb-2019	6:00	0.9	N
24-Feb-2019	7:00	0.0	N
24-Feb-2019	8:00	0.4	N
24-Feb-2019	9:00	0.4	NNE
24-Feb-2019	10:00	0.0	N
24-Feb-2019	11:00	0.4	NE
24-Feb-2019	12:00	0.0	N
24-Feb-2019	13:00	0.4	N
24-Feb-2019	14:00	0.4	N
24-Feb-2019	15:00	0.4	NNE
24-Feb-2019	16:00	0.4	N
24-Feb-2019	17:00	0.9	N
24-Feb-2019	18:00	0.4	NNW
24-Feb-2019	19:00	0.4	N
24-Feb-2019	20:00	0.0	N
24-Feb-2019	21:00	0.0	N
24-Feb-2019	22:00	0.0	NNE
24-Feb-2019	23:00	0.0	NNE
25-Feb-2019	0:00	0.9	N
25-Feb-2019	1:00	0.0	NNE
25-Feb-2019	2:00	0.4	N
25-Feb-2019	3:00	0.4	NNE
25-Feb-2019	4:00	0.4	NNE
25-Feb-2019	5:00	0.4	NNE
25-Feb-2019	6:00	0.4	N

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
25-Feb-2019	7:00	0.4	NE
25-Feb-2019	8:00	0.0	NE
25-Feb-2019	9:00	0.4	N
25-Feb-2019	10:00	0.0	N
25-Feb-2019	11:00	0.4	N
25-Feb-2019	12:00	0.4	N
25-Feb-2019	13:00	0.4	N
25-Feb-2019	14:00	0.4	N
25-Feb-2019	15:00	0.0	NNE
25-Feb-2019	16:00	0.4	N
25-Feb-2019	17:00	0.0	N
25-Feb-2019	18:00	0.0	---
25-Feb-2019	19:00	0.4	N
25-Feb-2019	20:00	0.4	NNW
25-Feb-2019	21:00	0.0	NNE
25-Feb-2019	22:00	0.0	N
25-Feb-2019	23:00	0.0	N
26-Feb-2019	0:00	0.0	NNW
26-Feb-2019	1:00	0.0	N
26-Feb-2019	2:00	0.0	NNE
26-Feb-2019	3:00	0.4	N
26-Feb-2019	4:00	0.0	ENE
26-Feb-2019	5:00	0.4	ENE
26-Feb-2019	6:00	0.9	ENE
26-Feb-2019	7:00	1.3	NE
26-Feb-2019	8:00	1.3	ENE
26-Feb-2019	9:00	0.9	ENE
26-Feb-2019	10:00	1.3	NE
26-Feb-2019	11:00	1.3	ENE
26-Feb-2019	12:00	0.0	NE
26-Feb-2019	13:00	0.4	NE
26-Feb-2019	14:00	0.9	E
26-Feb-2019	15:00	2.2	E
26-Feb-2019	16:00	1.3	ESE
26-Feb-2019	17:00	1.3	NE
26-Feb-2019	18:00	0.9	E
26-Feb-2019	19:00	0.4	ENE
26-Feb-2019	20:00	0.4	E
26-Feb-2019	21:00	0.4	ENE
26-Feb-2019	22:00	0.4	ENE
26-Feb-2019	23:00	0.4	E
27-Feb-2019	0:00	0.4	ENE
27-Feb-2019	1:00	0.4	NNE
27-Feb-2019	2:00	0.4	NE
27-Feb-2019	3:00	0.4	ENE
27-Feb-2019	4:00	0.4	NE
27-Feb-2019	5:00	0.4	ENE
27-Feb-2019	6:00	0.4	N
27-Feb-2019	7:00	0.4	E
27-Feb-2019	8:00	0.9	SSE
27-Feb-2019	9:00	0.4	ENE
27-Feb-2019	10:00	1.3	ESE
27-Feb-2019	11:00	1.3	ENE

Appendix J - Wind Data

Date	Time	Wind Speed m/s	Direction
27-Feb-2019	12:00	1.8	E
27-Feb-2019	13:00	1.3	E
27-Feb-2019	14:00	1.3	E
27-Feb-2019	15:00	1.3	ENE
27-Feb-2019	16:00	1.3	ESE
27-Feb-2019	17:00	0.9	ENE
27-Feb-2019	18:00	0.4	ENE
27-Feb-2019	19:00	0.4	E
27-Feb-2019	20:00	1.3	ESE
27-Feb-2019	21:00	0.0	ESE
27-Feb-2019	22:00	0.0	E
27-Feb-2019	23:00	0.4	E
28-Feb-2019	0:00	0.0	E
28-Feb-2019	1:00	0.0	E
28-Feb-2019	2:00	0.0	E
28-Feb-2019	3:00	0.4	E
28-Feb-2019	4:00	0.4	E
28-Feb-2019	5:00	0.4	E
28-Feb-2019	6:00	0.0	E
28-Feb-2019	7:00	0.0	E
28-Feb-2019	8:00	0.0	E
28-Feb-2019	9:00	0.0	E
28-Feb-2019	10:00	0.0	E
28-Feb-2019	11:00	0.4	E
28-Feb-2019	12:00	0.0	NNW
28-Feb-2019	13:00	0.4	SW
28-Feb-2019	14:00	1.3	SW
28-Feb-2019	15:00	1.3	SW
28-Feb-2019	16:00	1.3	SW
28-Feb-2019	17:00	0.4	SW
28-Feb-2019	18:00	0.4	E
28-Feb-2019	19:00	0.0	E
28-Feb-2019	20:00	0.4	E
28-Feb-2019	21:00	0.4	E
28-Feb-2019	22:00	0.4	ENE
28-Feb-2019	23:00	0.0	ENE

APPENDIX K
EVENT ACTION PLANS

Event / Action Plan for Air Quality

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC,ER and Contractor; 3. Repeat measurement to confirm finding; and 4. Increase monitoring frequency to daily.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; and 3. Review and advise the ET and ER on the effectiveness of the proposed remedial measures.	1. Notify Contractor.	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Rectify any unacceptable practice and implement remedial measures; and 3. Amend working methods agreed with ER if appropriate.
2. Exceedance for two or more consecutive samples	Identify source, investigate the causes of exceedance and propose remedial measures; 2. Inform IEC,ER and Contractor; 3. Advise the ER and Contractor on the effectiveness of the proposed remedial measures; 4. Repeat measurements to confirm findings; 5. Increase monitoring frequency to daily;	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET and Contractor on possible remedial measures; 4. Advise the ET and ER on the effectiveness of the proposed remedial measures; and 5. Supervise	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; and 3. Supervise and ensure remedial measures properly implemented.	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Submit proposals for remedial actions to ER with a copy to ET and IEC within 3 working days of notification; 3. Implement the agreed proposals; and

	6. Discuss with IEC, ER and Contractor on remedial actions required; 7. If exceedancecontinues, arrange meeting with IEC and ER;and 8. If exceedancestops, cease additional monitoring.	Implementation of remedial measures.		4. Amend proposal if appropriate.
LIMIT LEVEL				
1.Exceedance for one sample	Identify source, investigate the causes of exceedanceand propose remedial measures; 2. Inform ER, Contractor, IEC and EPD; 3. Repeat measurement to confirm finding; 4. Increase monitoring frequency to daily; 5. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results.	1. Check monitoring data submitted by ET; 2. Check Contractor's working method; 3. Discuss with ET, ER and Contractor on possible remedial measures; 4. Advise the ER and ET on the effectiveness of the proposed remedial measures; 5. Supervise implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor;and 3. Supervise and ensure remedial measures properly implemented.	1. Identify source, investigate the causes of exceedanceand propose remedial measures; 2. Take immediate action to avoid further exceedance; 3. Submit proposals for remedial actions to ER with a copy to ET and IEC within 3 working days of notification; 4. Implement the agreed proposals;and 5. Amend proposal if appropriate.
2.Exceedance for two or more consecutive samples	Notify IEC, ER, Contractor and EPD; 2. Identify source; 3. Repeat measurement to confirm findings; 4. Increase monitoring	1. Check monitoring data submitted by ET; 2. Check Contractor's working method;	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. In consultation with the ET and IEC,	1. Identify source, investigate the causes of exceedanceand propose remedial measures; 2. Take immediate action

	frequency to daily; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Arrange meeting with IEC, Contractorand ER to discuss the remedial actions to be taken; 7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedancestops, cease additional monitoring.	3. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 4. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly;and 5. Supervise the implementation of remedial measures.	agree with the Contractor on the remedial measures to be implemented; 4. Supervise and ensure remedial measures properly implemented;and 5. If exceedancecontinues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedanceis abated.	to avoid further exceedance; 3. Submit proposals for remedial actions to ER with a copy to ET and IEC within 3 working days of notification; 4. Implement the agreed proposals; 5. Resubmit proposals if problem still not under control; 6. Stop the relevant portion of works as determined by the ER until the exceedanceis abated.

Abbreviations: ET – Environmental Team, IEC – Independent Environmental Checker, ER – Engineer's Representative

Each step of actions required shall be implemented within 1 working day unless otherwise specified or agreed with EPD.

Event / Action Plan for Construction Noise

EVENT	ACTION			
	ET	**IEC**	**ER**	**CONTRACTOR**
Action Level	Notify IEC, ER and Contractor; 2. Carry out investigation; 3. Report the results of investigation to the IEC, ER and Contractor; 4. Discuss with the Contractor and formulate remedial measures; 5. Increase monitoring frequency to check mitigation effectiveness.	1. Review the analysed results submitted by the ET; 2. Review the proposed remedial measures by the Contractor and advise the ER accordingly; 3. Supervise the implementat-ion of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial measures are properly implemented	1. Submit noise mitigation proposals to IEC and ER; 2. Implement noise mitigation proposals.
Limit Level	. Identify source; 2. Inform IEC, ER, EPD and Contractor; 3. Repeat measurements to confirm findings; 4. Increase monitoring frequency; 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented; 6. Inform IEC, ER and EPD the causes and actions taken for the exceedances;	1. Discuss amongst ER, ET, and Contractor on the potential remedial actions; 2. Review Contractors remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly; 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing; 2. Notify Contractor; 3. Require Contractor to propose remedial measures for the analysed noise problem; 4. Ensure remedial	1. Take immediate action to avoid further exceedance; 2. Submit proposals for remedial actions to IEC within 3 working days of notification; 3. Implement the agreed proposals; 4. Resubmit proposals if problem still not under control; 5. Stop the relevant portion of works as

EVENT	ACTION			
	ET	IEC	ER	CONTRACTOR
	7. Assess effectiveness of Contractor's remedial actions and keep IEC, EPD and ER informed of the results; 8. If exceedance stops, cease additional monitoring.		measures properly implemented; 5. If exceedance continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated.	determined by the ER until the exceedance is abated.

Abbreviations: ET – Environmental Team, IEC – Independent Environmental Checker, ER – Engineer's Representative

Each step of actions required shall be implemented within 1 working day unless otherwise specified or agreed with EPD.

Event and Action Plan for Water Quality

	Action			
Event	**ET**	**IEC**	**ER**	**Contractor**
Action level being exceeded by one sampling day	. Inform IEC, Contractor and ER; 2. Check monitoring data, all plant, equipment and Contractor's working methods; and 3. Discuss remedial measures with IEC and Contractor and ER.	1. Discuss with ET, ER and Contractor on the implemented mitigation measures; 2. Review proposals on remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with IEC, ET and Contractor on the implemented mitigation measures; 2. Make agreement on the remedial measures to be implemented; 3. Supervise the implementation of agreed remedial measures.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4.Check all plant and equipment; 5. Consider changes of working methods; 6. Discuss with ER, ET and IEC and purpose remedial measures to IEC and ER; and 7. Implement the agreed mitigation measures.
Action level being exceeded by two or more consecutive sampling days	Repeat in-situ measurement on next day of exceedance to confirm findings; 2. Inform IEC, contractor and ER; 3. Check monitoring data, all plant, equipment and Contractor's working methods; 4. Discuss remedial measures with IEC, contractor and ER	1. Discuss with ET, Contractor and ER on the implemented mitigation measures; 2. Review the proposed remedial measures submitted by Contractor and	1. Discuss with ET, IEC and Contractor on the proposed mitigation measures; 2. Make agreement on the remedial measures to be implemented ; and 3. Discuss with ET, IEC and Contractor on the effectiveness	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of

	Action			
Event	**ET**	**IEC**	**ER**	**Contractor**
	5. Ensure remedial measures are implemented	advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	of the implemented remedial measures.	working methods; 5. Discuss with ET, IEC and ER and submit proposal of remedial measures to ER and IEC within 3 working days of notification; and 6. Implement the agreed mitigation measures.
Limit level being exceeded by one sampling day	Repeat measurement on next day of exceedance to confirm findings; 2. Inform IEC, contractor and ER; 3. Rectify unacceptable practice; 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Consider changes of working methods; 6. Discuss mitigation measures with IEC, ER and Contractor; and 7. Ensure the agreed remedial measures are implemented	1. Discuss with ET, Contractor and ER on the implemented mitigation measures; 2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with ET, IEC and Contractor on the implemented remedial measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the remedial measures to be implemented; and 4. Discuss with ET, IEC and Contractor on the effectiveness of the implemented remedial measures.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Discuss with ET, IEC and ER and submit proposal of additional mitigation measures to ER and IEC within 3 working days of notification; and

	Action			
Event	**ET**	**IEC**	**ER**	**Contractor**
				6. Implement the agreed remedial measures.
Limit level being exceeded by two or more consecutive sampling days	Inform IEC, contractor and ER; 2. Check monitoring data, all plant, equipment and Contractor's working methods; 3. Discuss mitigation measures with IEC, ER and Contractor; and 4. Ensure mitigation measures are implemented; and 5. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days	1. Discuss with ET, Contractor and ER on the implemented mitigation measures; 2. Review the proposed remedial measures submitted by Contractor and advise the ER accordingly; and 3. Review and advise the ET and ER on the effectiveness of the implemented mitigation measures.	1. Discuss with ET, IEC and Contractor on the implemented remedial measures; 2. Request Contractor to critically review the working methods; 3. Make agreement on the remedial measures to be implemented; 4. Discuss with ET and IEC on the effectiveness of the implemented mitigation measures; and 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the dredging activities until no exceedance of Limit level.	1. Identify source(s) of impact; 2. Inform the ER and confirm notification of the non-compliance in writing; 3. Rectify unacceptable practice; 4. Check all plant and equipment and consider changes of working methods; 5. Discuss with ET, IEC and ER and submit proposal of additional mitigation measures to ER and IEC within 3 working days of notification; and 6. Implement the agreed remedial measures. 7. As directed by the ER, to slow down or stop all or part of the dredging activities until no exceedance of Limit level.

Abbreviations: ET – Environmental Team, IEC – Independent Environmental Checker, ER – Engineer's Representative

Each step of actions required shall be implemented within 1 working day unless otherwise specified or agreed with EPD.

APPENDIX L
SUMMARY OF EXCEEDANCE

Development of Lok Ma Chau Loop: Land Decontamination and Advance Engineering Works – Environmental Team

Exceedance Report

(A) Exceedance Report for Air Quality

Environmental Monitoring	Parameter	No. of non-project related Exceedance		No. of Exceedance related to the Construction Activities of this Contract	
		Action Level	Limit Level	Action Level	Limit Level
Air Quality	1-hr TSP	0	0	0	0
	24-hr TSP	0	0	0	0

(B) Exceedance Report for Construction Noise (NIL in the reporting period)

(C) Exceedance Report for Water Quality

Environmental Monitoring	Parameter	No. of non-project related Exceedance		No. of Exceedance related to the Construction Activities of this Contract	
		Action Level	Limit Level	Action Level	Limit Level
Water Quality	Dissolved Oxygen (DO)	0	2	0	0
	Turbidity	2	5	0	0
	Suspended Solids (SS)	0	7	0	0

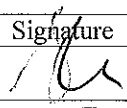
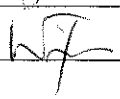
APPENDIX M
SITE AUDIT SUMMARY

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	190201
Date	01 February 2019 (Friday)
Time	15:00 – 16:30

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
	• No environmental deficiency was identified during site inspection.	
	B. Ecology	
190201-R02	• The 3m high olive green fence shall be erected around the construction area.	B3
190201-R03	• Indicator near the decontamination zone 2 is yet to be set up. Contractor should ensure there is a clear indicator within 100m of meander.	B4
	C. Land Contamination	
	• No environmental deficiency was identified during site inspection.	
	D. Landscape & Visual	
	• No environmental deficiency was identified during site inspection.	
	E. Air Quality	
190201-O01	• Dust generation due to the construction vehicles movement and unloading of material was observed. The Contractor should continue to implement a proper watering system for haul road and site area.	E5
190201-R05	• Stockpile shall be covered properly with impervious material to avoid dust generation.	E6
	F. Construction Noise Impact	
	• No environmental deficiency was identified during site inspection.	
	G. Waste / Chemical Management	
190201-R04	• Chemical containers near the wetsep shall be stored properly.	G3i
	H. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	I. Others	
	• Follow-up on previous audit section (Ref. No.:190125), follow up action is required for items 190125-O01, 190125-R03, 190125-R04 and 190125-R05 which are renamed as 190201-O01, 190201-R02, 190201-R03 and 190201-R04 respectively.	

	Name	Signature	Date
Recorded by	Jonathan Lee		04 February 2019
Checked by	Dr. Priscilla Choy		04 February 2019

Environmental Observations Identified during the Environmental Site Inspection (01 February 2019)

Ref No: 190201-O01

Impact:
Air Quality (E5)

Details:

- Dust generation due to the construction vehicles movement and unloading of material was observed. The Contractor should continue to implement a proper watering system for haul road and site area.

	**Ref No:** 190201-R02 **Impact:** Ecology (B3) **Details:** • The 3m high olive green fence shall be erected around the construction area.
	**Ref No:** 190201-R03 **Impact:** Ecology (B3) **Details:** • Indicator near the decontamination zone 2 is yet to be set up. Contractor should ensure there is a clear indicator for PMEs within 100m of meander.
	**Ref No:** 190201-R04 **Impact:** Waste/ Chemical Management (G3i) **Details:** • Chemical containers at near the wetsep shall be stored properly.

	**Ref No:** 190201-R05 **Impact:** Air Quality (E 6) **Details:** • Stockpile shall be covered properly with impervious material to avoid dust generation.

Rectification Actions taken by the Contractor for Environmental Deficiencies Identified during Previous Audit Session

	**Ref No:** 190125-O01 **Impact:** Air Quality (E5) **Details:** • Dust generation due to the construction vehicles movement was observed. The Contractor was reminded all haul roads should be watered at least once per hour to maintain the surface of haul road wet. **Follow up:** Item remarked as 190201-O01.
	**Ref No:** 190125-O02 **Impact:** Air Quality (E18) **Details:** • The PVD installation equipment was observed without NRMM label. The contractor was reminded to display it conspicuously on equipment during operation. **Follow up:** NRMM label was displayed on equipment.
	**Ref No:** 190125-R03 **Impact:** Ecology (B3) **Details:** • The 3m high olive green fence shall be erected around the construction area. **Follow up:** Item remarked as 190201-R02.

	**Ref No:** 190125-R04 **Impact:** Ecology (B4) **Details:** • The Contractor was reminded to establish an effective system to control the PMEs only operating between 0900 and 1700 within 100m of Meander. **Follow up:** Item remarked as 180201-R03.
	**Ref No:** 190125-R05 **Impact:** Waste/ Chemical Management (G3i) **Details:** • Chemical containers at near the wetsep shall be stored properly **Follow up:** Item remarked as 180201-R04.

Weekly Site Inspection Record Summary
Inspection Information

Checklist Reference Number	190208
Date	08 February 2019 (Friday)
Time	15:45 – 17:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality • No environmental deficiency was identified during site inspection.	
	B. Ecology	
190208-R04	• Provide drip tray for the chemical container near the wetsep	G3i
190208-R05	• A system to ensure the PMEs only operating between 0900 to 1700 hours should be implemented for all site area within 100 m of Meander	B4
	C. Land Contamination • No environmental deficiency was identified during site inspection.	
	D. Landscape & Visual • No environmental deficiency was identified during site inspection.	
	E. Air Quality	
190208-O01	• Stockpile of dusty materials were observed without cover/partially covered. The Contractor was reminded to fully cover all stockpiles to avoid dust emission.	E6
190208-O02	• Part of the exposed site areas and haul road were observed dry. The Contractor was reminded to ensure the implementation of watering should cover all site areas and haul road	E5
	F. Construction Noise Impact • No environmental deficiency was identified during site inspection.	
	G. Waste / Chemical Management	
190208-O03	• The setup of chemical waste storage area was observed not complying with the EPD requirement. The Contractor was reminded to review the relevant requirement to modify it.	G2i, G2ii
	H. Permits/Licences • No environmental deficiency was identified during site inspection.	
	I. Others • Follow-up on previous audit section (Ref. No.:190201), follow up action is required for items 190201-O01, 190201-R03, 190201-R04 and 190201-R05 which are renamed as 190208-O02, 190208-R05, 190208-R04 and 190208-O01 respectively.	

	Name	Signature	Date
Recorded by	Jonathan Lee		13 February 2019
Checked by	Dr. Priscilla Choy		13 February 2019

Environmental Observations Identified during the Environmental Site Inspection (08 February 2019)

Ref No: 190208-O01

Impact:
Air Quality (E6)

Details:
- Stockpile of dusty materials were observed without cover/partially covered. The Contractor was reminded to fully cover all stockpiles to avoid dust emission.

Ref No: 190208-O02

Impact:
Air Quality (E5)

Details:
- Part of the exposed site areas and haul road were observed dry. The Contractor was reminded to ensure the implementation of watering should cover all site areas and haul road

Ref No: 190208-O03

Impact:
Waste/Chemical Management (G2i, G2ii)

Details:
- The setup of chemical waste storage area was observed not complying with the EPD requirement. The Contractor was reminded to review the relevant requirement to modify it.

Ref No: 190208-R04

Impact:
Waste/ Chemical Management (G3i)

Details:
- Chemical containers at near the wetsep shall be stored properly.

	**Ref No:** 190208-R05 **Impact:** Ecology (B4) **Details:** • A system to ensure the PMEs only operating between 0900 to 1700 hours should be implemented for all site area within 100 m of Meander

Rectification Actions taken by the Contractor for Environmental Deficiencies Identified during Previous Audit Session

	**Ref No:** 190201-O01 **Impact:** Air Quality (E5) **Details:** • Dust generation due to the construction vehicles movement and unloading of material was observed. The Contractor should continue to implement a proper watering system for haul road and site area. **Follow up:** Item remarked as 190208-O02.
	**Ref No:** 190201-R02 **Impact:** Ecology (B3) **Details:** The 3m high olive green fence shall be erected around the construction area. **Follow up:** The erection of fence is in undergoing.
	**Ref No:** 190201-R03 **Impact:** Ecology (B3) **Details:** Indicator near the decontamination zone 2 is yet to be set up. Contractor should ensure there is a clear indicator for PMEs within 100m of meander. **Follow up:** Item remarked as 190208-R05.

	**Ref No:** 190201-R04 **Impact:** Waste/ Chemical Management (G3i) **Details:** • Chemical containers at near the wetsep shall be stored properly. **Follow up:** Item remarked as 180208-R04.
	**Ref No:** 190201-R05 **Impact:** Air Quality (E 6) **Details:** Stockpile shall be covered properly with impervious material to avoid dust generation. **Follow up:** Item remarked as 180201-O01.

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	190213
Date	13 February 2019 (Wednesday)
Time	09:30 – 11:00

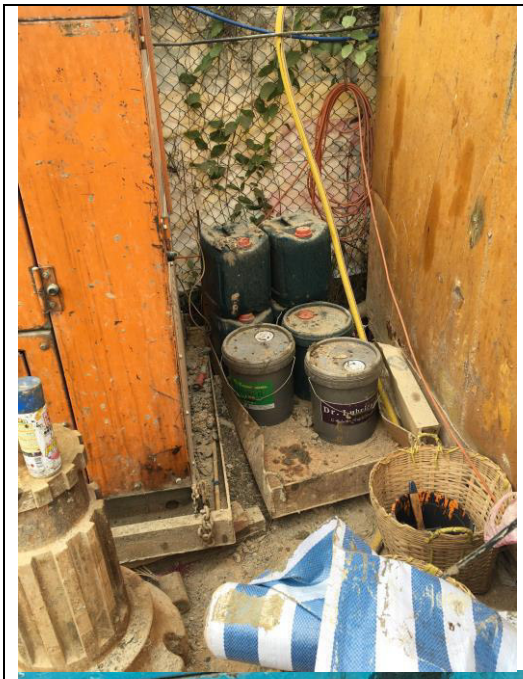
Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
190213-O05	• The soak away method from the wetsep tank is not recommended, Contractor should implement an alternate system to discharge water according to discharge license.	A6iii
190213-R09	• Cut-off drain near the temporary bridge should be enhanced.	A2
190213-O06	• The tires of dump trucks after using the wheel wash facility were observed muddy, Contractor should improve the wheel washing facility.	E3
	B. Ecology	
190213-R08	• A system to ensure the PMEs only operating between 0900 to 1700 hours should be implemented for all site area within 100 m of Meander	B4
	C. Land Contamination	
	• No environmental deficiency was identified during site inspection.	
	D. Landscape & Visual	
	• No environmental deficiency was identified during site inspection.	
	E. Air Quality	
190213-O01	• Stockpile of dusty materials were observed without cover/partially covered. The Contractor was reminded to fully cover all stockpiles to avoid dust emission.	E6
190213-O02	• Part of the exposed site areas were observed dry. The Contractor was reminded to ensure the implementation of watering should cover all site areas.	E5
190213-R10	• Cement mixing machine should be carried out in an enclosed system.	E17ii
190213-R11	• Hoarding should be provided along the site area near the temp. bridge.	E10
	F. Construction Noise Impact	
	• No environmental deficiency was identified during site inspection.	
	G. Waste / Chemical Management	
190213-O03	• The setup of chemical waste storage area was observed not complying with the EPD requirement. The Contractor was reminded to review the relevant requirement to modify it.	G2i, G2ii
190213-O04	• A number of drip trays were observed filled with sediments and should be sealed.	G8
190213-R07	• Drip tray should be provided for chemical containers near wetsep.	G3i
	H. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	I. Others	
	• Follow-up on previous audit section (Ref. No.:190208), follow up action is required for items 190208-O01, 190208-O02, 190208-O03, 190208-R04 and 190213-R05 which are renamed as 190213-O01, 190213-O02, 190213-O03, 190213-R07 and 190213-R08 respectively.	

	Name	Signature	Date
Recorded by	Jonathan Lee		15 February 2019
Checked by	Dr. Priscilla Choy		15 February 2019

Environmental Observations Identified during the Environmental Site Inspection (13 February 2019)

	**Ref No:** 190213-O01 **Impact:** Air Quality (E6) **Details:** • Stockpile of dusty materials were observed without cover/partially covered. The Contractor was reminded to fully cover all stockpiles to avoid dust emission.
	**Ref No:** 190213-O02 **Impact:** Air Quality (E5) **Details:** • Part of the exposed site areas were observed dry. The Contractor was reminded to ensure the implementation of watering should cover all site areas.
	**Ref No:** 190213-O03 **Impact:** Waste/Chemical Management (G2i, G2ii) **Details:** • The setup of chemical waste storage area was observed not complying with the EPD requirement. The Contractor was reminded to review the relevant requirement to modify it.



Ref No: 190213-O04

Impact:
Waste/ Chemical Management (G8)

Details:
- A number of drip trays were observed filled with sediments and should be sealed.

Ref No: 190213-O05

Impact:
Water Quality (A6iii)

Details:
- The soak away method from the wetsep tank is not recommended, Contractor should implement an alternate system to discharge water according to discharge license.

	**Ref No:** 190213-O06 **Impact:** Water Quality (A14i) **Details:** • The tires of dump trucks after using the wheel wash facility were observed muddy, Contractor should improve the wheel washing facility.
	**Ref No:** 190213-R07 **Impact:** Waste/ Chemical Management (G3i) **Details:** • Drip tray should be provided for chemical containers near wetsep.
	**Ref No:** 190213-R08 **Impact:** Ecology (B4) **Details:** • A system to ensure the PMEs only operating between 0900 to 1700 hours should be implemented for all site area within 100 m of Meander

	**Ref No:** 190213-R09 **Impact:** Water Quality (A2) **Details:** • Cut-off drain near the temporary bridge should be enhanced.
	**Ref No:** 190213-R10 **Impact:** Air Quality (E17ii) **Details:** • Cement mixing machine should be carried out in an enclosed system.
	**Ref No:** 190213-R11 **Impact:** Air Quality (E10) **Details:** • Hoarding should be provided along the site area near the temp. bridge.

Rectification Actions taken by the Contractor for Environmental Deficiencies Identified during Previous Audit Session

	**Ref No:** 190208-O01 **Impact:** Air Quality (E6) **Details:** • Stockpile of dusty materials were observed without cover/partially covered. The Contractor was reminded to fully cover all stockpiles to avoid dust emission. **Follow up:** Item remarked as 190213-O01
	**Ref No:** 190208-O02 **Impact:** Air Quality (E5) **Details:** • Part of the exposed site areas and haul road were observed dry. The Contractor was reminded to ensure the implementation of watering should cover all site areas and haul road **Follow up:** Item remarked as 190213-O02
	**Ref No:** 190208-O03 **Impact:** Waste/Chemical Management (G2i, G2ii) **Details:** • The setup of chemical waste storage area was observed not complying with the EPD requirement. The Contractor was reminded to review the relevant requirement to modify it. **Follow up:** Item remarked as 190213-O03

	**Ref No:** 190208-R04 **Impact:** Waste/ Chemical Management (G3i) **Details:** • Chemical containers at near the wetsep shall be stored properly. **Follow up:** Item remarked as 190213-R07
	**Ref No:** 190208-R05 **Impact:** Ecology (B4) **Details:** • A system to ensure the PMEs only operating between 0900 to 1700 hours should be implemented for all site area within 100 m of Meander **Follow up:** Item remarked as 190213-R08

Weekly Site Inspection Record Summary

Inspection Information

Checklist Reference Number	190222
Date	22 February 2019 (Friday)
Time	14:30 – 16:00

Ref. No.	Non-Compliance	Related Item No.
-	None identified	-

Ref. No.	Remarks/Observations	Related Item No.
	A. Water Quality	
190222-O02	• The soak away method from the wetsep tank is not recommended, Contractor should implement an alternate system to discharge water according to discharge license.	A6iii
190222-R05	• Cut-off drain near the temporary bridge should be enhanced to avoid any construction runoff from entering the meander.	A2
190222-O03	• The tires of dump trucks after using the wheel washing facility were observed muddy, Contractor should improve the wheel washing facility.	A14i
	B. Ecology	
	• No environmental deficiency was identified during site inspection.	
	C. Land Contamination	
	• No environmental deficiency was identified during site inspection.	
	D. Landscape & Visual	
	• No environmental deficiency was identified during site inspection.	
	E. Air Quality	
190222-O01	• Part of the exposed site areas were observed dry. The Contractor was reminded to ensure the implementation of watering should cover all site areas.	E5
190222-R04	• Hoarding should be erected along the site area near the temporary bridge.	E10
	F. Construction Noise Impact	
	• No environmental deficiency was identified during site inspection.	
	G. Waste / Chemical Management	
190222-R06	• Chemical containers should be stored properly with drip tray to avoid any on site contamination.	G8
190222-R07	• A number of drip trays were observed filled with sediments	G8
	H. Permits/Licences	
	• No environmental deficiency was identified during site inspection.	
	I. Others	
	• Follow-up on previous audit section (Ref. No.:190213), follow up action is required for items 190213-O02, 190213-O04, 190213-O05, 190213-O06, 190213-R09 and 190213-R11 which are renamed as 190222-O01, 190222-R07, 190222-O02, 190222-O03, 190222-O04 and 190222-R05 respectively.	

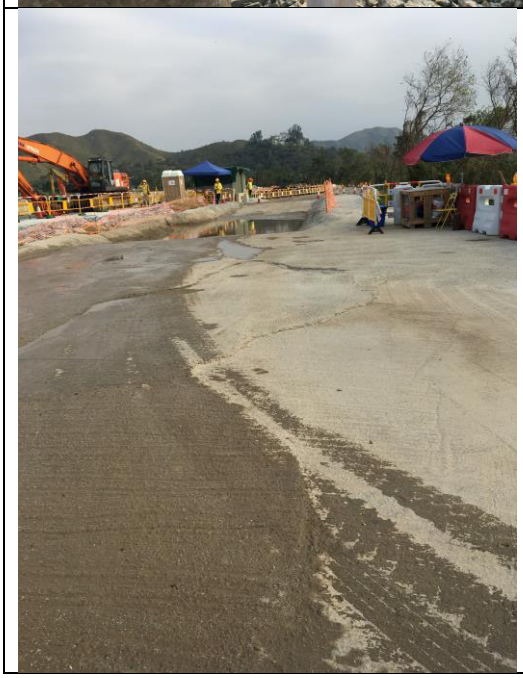
	Name	Signature	Date
Recorded by	Jonathan Lee		26 February 2019
Checked by	Dr. Priscilla Choy		26 February 2019

Contract No. YL/2017/03

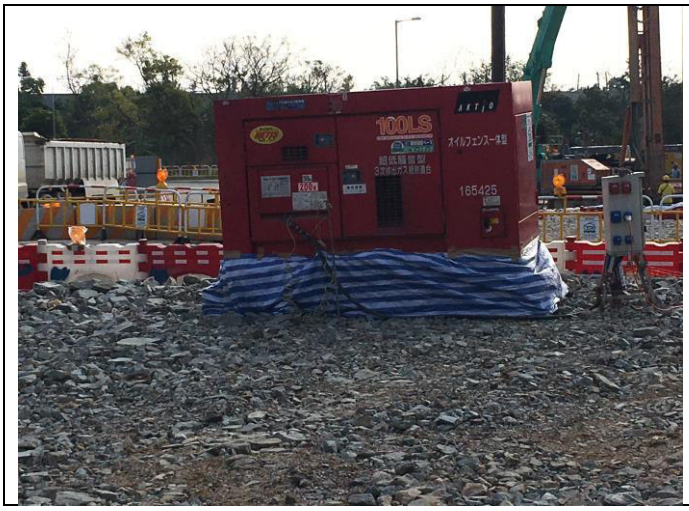
Environmental Team for Development of Lok Ma Chau Loop

Land Decontamination and Advance Engineering Works – Design and Construction

Environmental Observations Identified during the Environmental Site Inspection (22 February 2019)

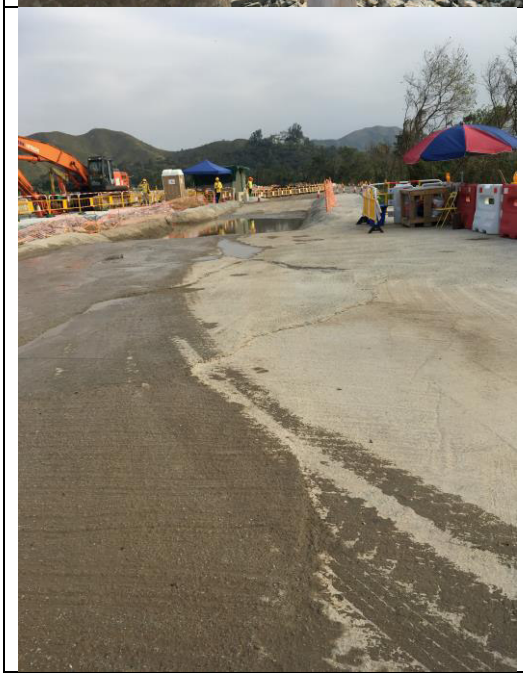
	**Ref No:** 190222-O01 **Impact:** Air Quality (E5) **Details:** • Part of the exposed site areas were observed dry. The Contractor was reminded to ensure the implementation of watering should cover all site areas.
	**Ref No:** 190222-O02 **Impact:** Water Quality (A6iii) **Details:** • The soak away method from the wetsep tank is not recommended, Contractor should implement an alternate system to discharge water according to discharge license.
	**Ref No:** 190222-O03 **Impact:** Water Quality (A14i) **Details:** • The tires of dump trucks after using the wheel washing facility were observed muddy, Contractor should improve the wheel washing facility.

	**Ref No:** 190222-R04 **Impact:** Air Quality (E 10) **Details:** • Hoarding should be erected along the site area near the temporary bridge.
	**Ref No:** 190222-R05 **Impact:** Water Quality (A2) **Details:** • The Cut-off drain near the temporary bridge should be enhanced to avoid any construction runoff from entering the meander.
	**Ref No:** 190222-R06 **Impact:** Waste/Chemical Management (G8) **Details:** • Chemical containers should be stored properly with drip tray to avoid any on site contamination.

	**Ref No:** 190222-R07 **Impact:** Waste/ Chemical Management (G8) **Details:** • A number of drip trays were observed filled with sediments

Rectification Actions taken by the Contractor for Environmental Deficiencies Identified during Previous Audit Session

	**Ref No:** 190213-O01 **Impact:** Air Quality (E6) **Details:** • Stockpile of dusty materials were observed without cover/partially covered. The Contractor was reminded to fully cover all stockpiles to avoid dust emission. **Follow up:** • Stockpile was cleared.
	**Ref No:** 190213-O02 **Impact:** Air Quality (E5) **Details:** • Part of the exposed site areas were observed dry. The Contractor was reminded to ensure the implementation of watering should cover all site areas. **Follow up:** • Item remarked as 190222-O01
	**Ref No:** 190213-O03 **Impact:** Waste/Chemical Management (G2i, G2ii) **Details:** • The setup of chemical waste storage area was observed not complying with the EPD requirement. The Contractor was reminded to review the relevant requirement to modify it. **Follow up:** • The setup of chemical storage has improved and complied with requirement.

	**Ref No:** 190213-O04 **Impact:** Waste/ Chemical Management (G8) **Details:** • A number of drip trays were observed filled with sediments and should be sealed. **Follow up:** • Item remarked as 190222-R07
	**Ref No:** 190213-O05 **Impact:** Water Quality (A6iii) **Details:** • The soak away method from the wetsep tank is not recommended, Contractor should implement an alternate system to discharge water according to discharge license. **Follow up:** • Item remarked as 190222-O02
	**Ref No:** 190213-O06 **Impact:** Water Quality (A14i) **Details:** • The tires of dump trucks after using the wheel wash facility were observed muddy, Contractor should improve the wheel washing facility. **Follow up:** • Item remarked as 190222-O03

	**Ref No:** 190213-R07 **Impact:** Waste/ Chemical Management (G3i) **Details:** • Drip tray should be provided for chemical containers near wetsep. **Follow up:** • Chemical containers were cleared and relocated to the chemical waste container.
	**Ref No:** 190213-R08 **Impact:** Ecology (B4) **Details:** • A system to ensure the PMEs only operating between 0900 to 1700 hours should be implemented for all site area within 100 m of Meander **Follow up:** • A flag of yellow and red to indicate the operation time was erected.
	**Ref No:** 190213-R09 **Impact:** Water Quality (A2) **Details:** • Cut-off drain near the temporary bridge should be enhanced. **Follow up:** • Item remarked as 192222-R05

	**Ref No:** 190213-R10 **Impact:** Air Quality (E17ii) **Details:** • Cement mixing machine should be carried out in an enclosed system. **Follow up:** • An enclosed system has been provided.
	**Ref No:** 190213-R11 **Impact:** Air Quality (E10) **Details:** • Hoarding should be provided along the site area near the temp. bridge. **Follow up:** • Item remarked as 190222-R04

APPENDIX N
ENVIRONMENTAL MITIGATION
IMPLEMENTATION SCHEDULE (EMIS)

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
Construction Dust Impact							
S3.8	D1-DP1/DP2	Mitigation measures in form of regular watering under a good site practice should be adopted. Watering once per hour on exposed worksites and haul road is proposed to achieve dust removal efficiency of 92.1%. While the above watering frequencies are to be followed, the extent of watering may vary depending on actual site conditions but should be sufficient to maintain an equivalent intensity of no less than 1.6 L/m2 to achieve the respective dust removal efficiencies	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	#
S3.8	D2-DP1/DP2	The contractor shall follow the procedures and requirements given in the Air Pollution Control (Construction Dust) Regulation • All vehicles shall be shut down in intermittent use • Only well-maintained plant should be operated on-site to avoid emission of dark smoke • Valid No-Road Mobile Machinery (NRMM) labels should be provided to regulated machines	Reduce air pollution emission from construction vehicles and plants	Contractor	All construction sites	Construction stage	^ ^ *
S3.8	D2-DP1/DP2	• Following dust suppression measures should also be incorporated by the Contractor to control the dust nuisance throughout the construction Phase • Any excavated or stockpile of dusty material should be covered entirely by impervious sheeting or sprayed with water to maintain the entire surface wet and then removed or backfilled or reinstated where practicable within 24 hours of the excavation or unloading; • Any dusty materials remaining after a stockpile is removed should be wetted with water and cleared from the surface of roads; • A stockpile of dusty material should not be extend beyond the pedestrian barriers, fencing or traffic cones; • The load of dusty materials on a vehicle leaving a construction site should be covered entirely by impervious	Minimize dust impact at the nearby sensitive receivers	Contractor	All construction sites	Construction stage	# ^ ^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		sheeting to ensure that the dusty material do not leak from the vehicle; • Where practicable, vehicle washing facilities with high pressure water jet should be provided at every discernible or designated vehicle exit point. The area where vehicle washing takes place and the road section between the washing facilities and the exit point should be paved with concrete, bituminous materials or hardcores; • When there are open excavation and reinstatement works, hoarding of not less than 2.4m high should be provided as far as practicable along the site boundary with provision for public crossing. Good site practice shall also be adopted by the Contractor to ensure the conditions of the hoardings are properly maintained throughout the construction period. • The portion of any road leading only to construction site that is within 30m of a vehicle entrance or exit should be kept clear of dusty materials; Surfaces where any pneumatic or power-driven drilling, cutting, polishing or other mechanical breaking operation takes place should be sprayed with water or a dust suppression chemical continuously; • Any area that involves demolition activities should be sprayed with water or a dust suppression chemical immediately prior to, during and immediately after the activities so as to maintain the entire surface wet; • Where a scaffolding is erected around the perimeter of a building under construction, effective dust screens, sheeting or netting should be provided to enclose the scaffolding from the ground floor level of the building, or a canopy should be provided from the first floor level up to the highest level of the scaffolding; Any skip hoist for material transport should be totally enclosed by impervious sheeting; • Every stock of more than 20 bags of cement or dry pulverised fuel ash (PFA) should be covered entirely by					# # ^ ^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		impervious sheeting or placed in an area sheltered on the top and the 3 sides; • Cement or dry PFA delivered in bulk should be stored in a closed silo fitted with an audible high level alarm which is interlocked with the material filling line and no overfilling is allowed; • Loading, unloading, transfer, handling or storage of bulk cement or dry PFA should be carried out in a totally enclosed system or facility, and any vent or exhaust should be fitted with an effective fabric filter or equivalent air pollution control system; and • Exposed earth should be properly treated by compaction, turfing, hydroseeding, vegetation planting or sealing with latex, vinyl, bitumen, shortcrete or other suitable surface stabiliser within six months after the last construction activity on the construction site or part of the construction site where the exposed earth lies.					^ * ^
S3.8	D4-DP1/DP2	Implement regular dust monitoring under EM&A programme during the construction stage.	Monitoring of dust impact	Contractor	Selected representative dust monitoring station	Construction stage	^
Construction Noise Impact							
S4.8	N-CP1-DP1/DP2	Implement the following good site management practices: • Only well-maintained plant should be operated on-site and plant should be serviced regularly during the construction programme; • Machines and plant (such as trucks, cranes) that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum; • Plant known to emit noise strongly in one direction, where possible, be orientated so that the noise is directed away from nearby NSRs; silencers or mufflers on construction equipment should be properly fitted and maintained during the construction works;	Control construction airborne noise	Contractor	All construction sites	Construction stage	^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		• Mobile plant should be sited as far away from NSRs as possible and practicable; • Material stockpiles, mobile container site office and other structures should be effectively utilised, where practicable, to screen noise from on-site construction activities.					^ ^
S4.8	N-CP2-DP1/DP2	Install temporary site hoarding (approx 2.4m high) located on the site boundaries between noisy construction activities and NSRs. The conditions of the hoardings shall be properly maintained throughout the construction period.	Reduce the construction noise levels at low-level zone of NSRs through partial screening.	Contractor	All construction sites where practicable	Construction phase	^
S4.8	N-CP3-DP1/DP2	Install movable noise barriers and full enclosure, screen the noisy plants including air compressor and generator.	Screen the noisy plant items to be used at all construction sites	Contractor	All construction sites where practicable	Construction phase	^
S4.8	N-CP4-DP1/DP2	Use of “Quiet” Plant and Working Methods	Reduce the noise levels of plant items	Contractor	All construction sites where practicable	Construction phase	^
S4.8	N-CP5-DP1/DP2	Sequencing operation of construction plants where practicable.	Operate sequentially within the same work site to reduce the construction airborne noise	Contractor	All construction sites where practicable	Construction phase	^
S4.8	N-CP6-DP2	Setting the concrete lorry mixer at around 25m away from the existing NSRs along Ha Wan Tsuen Road and Lok Ma Chau Road	Reduce the noise levels from concrete lorry mixer	Contractor	Sections with NSRs along Ha Wan Tsuen Road and Lok Ma Chau Road	Construction phase	^
S4.8	N-CP8-DP2	Provide temporary noise barrier during construction phase.	Control airborne noise from construction access road	Contractor	Refer to Figure 4-8 of the EIA report	Construction phase	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
			traffic				
S4.8	N-CP7-DP2/N-CP6-DP1	Implement a noise monitoring under EM&A programme.	Monitor the construction noise levels at the selected representative locations	Contractor	Selected representative noise monitoring station	Construction phase	^
Water Quality Impact (Construction Phase)							
S5.7	W1-CP-DP1/DP2	Construction Runoff and Site Drainage In accordance with the Practice Note for Professional Persons on Construction Site Drainage, Environmental Protection Department, 1994 (ProPECC PN 1/94), construction phase mitigation measures, where appropriate, should include the following: • Update and implementation of Stormwater Pollution Control Plan • At the start of site establishment, perimeter cut-off drains to direct off-site water around the site should be constructed with internal drainage works and erosion and sedimentation control facilities implemented. Channels (both temporary and permanent drainage pipes and culverts), earth bunds or sand bag barriers should be provided on site to direct stormwater to silt removal facilities. The design of the temporary on-site drainage system will be undertaken by the contractor prior to the commencement of construction. • Diversion of natural stormwater should be provided as far as possible. The design of temporary on-site drainage should prevent runoff going through site surface, construction machinery and equipments in order to avoid or minimize polluted runoff. Sedimentation tanks with	Minimize water quality impact from construction site runoff and general construction activities	Contractor	All construction sites where practicable	Construction phase	^ # ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		sufficient capacity, constructed from pre-formed individual cells of approximately 6 to 8 m3 capacities, are recommended as a general mitigation measure which can be used for settling surface runoff prior to disposal. The system capacity shall be flexible and able to handle multiple inputs from a variety of sources and suited to applications where the influent is pumped. • The dikes or embankments for flood protection should be implemented around the boundaries of earthwork areas. Temporary ditches should be provided to facilitate the runoff discharge into an appropriate watercourse, through a silt/sediment trap. The silt/sediment traps should be incorporated in the permanent drainage channels to enhance deposition rates. • The design of efficient silt removal facilities should be based on the guidelines in Appendix A1 of ProPECC PN 1/94. The detailed design of the sand/silt traps should be undertaken by the contractor prior to the commencement of construction. • Construction works should be programmed to minimize surface excavation works during the rainy seasons (April to September). All exposed earth areas should be completed and vegetated as soon as possible after earthworks have been completed. If excavation of soil cannot be avoided during the rainy season, or at any time of year when rainstorms are likely, exposed slope surfaces should be covered by tarpaulin or other means. • All drainage facilities and erosion and sediment control structures should be regularly inspected and maintained to ensure proper and efficient operation at all times and particularly following rainstorms. Deposited silt and grit					^ ^ ^ #

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		should be removed regularly and disposed of by spreading evenly over stable, vegetated areas. • Measures should be taken to minimise the ingress of site drainage into excavations. If the excavation of trenches in wet periods is necessary, it should be dug and backfilled in short sections wherever practicable. Water pumped out from trenches or foundation excavations should be discharged into storm drains via silt removal facilities. • All open stockpiles of construction materials (for example, aggregates, sand and fill material) of should be covered with tarpaulin or similar fabric during rainstorms. Measures should be taken to prevent the washing away of construction materials, soil, silt or debris into any drainage system. • Manholes (including newly constructed ones) should always be adequately covered and temporarily sealed so as to prevent silt, construction materials or debris being washed into the drainage system and storm runoff being directed into foul sewers. • Precautions to be taken at any time of year when rainstorms are likely, actions to be taken when a rainstorm is imminent or forecasted, and actions to be taken during or after rainstorms are summarized in Appendix A2 of ProPECC PN 1/94. Particular attention should be paid to the control of silty surface runoff during storm events. • All vehicles and plant should be cleaned before leaving a construction site to ensure no earth, mud, debris and the like is deposited by them on roads. An adequately designed and sited wheel washing facilities should be provided at every construction site exit where practicable. Wash-water should have sand and silt settled out and					^ * ^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		removed at least on a weekly basis to ensure the continued efficiency of the process. The section of access road leading to, and exiting from, the wheel-wash bay to the public road should be paved with sufficient backfall toward the wheelwash bay to prevent vehicle tracking of soil and silty water to public roads and drains. • Oil interceptors should be provided in the drainage system downstream of any oil/fuel pollution sources. The oil interceptors should be emptied and cleaned regularly to prevent the release of oil and grease into the storm water drainage system after accidental spillage. A bypass should be provided for the oil interceptors to prevent flushing during heavy rain. • Construction solid waste, debris and rubbish on site should be collected, handled and disposed of properly to avoid water quality impacts. • All fuel tanks and storage areas should be provided with locks and sited on sealed areas, within bunds of a capacity equal to 110% of the storage capacity of the largest tank to prevent spilled fuel oils from reaching water sensitive receivers nearby. • Regular environmental audit on the construction site should be carried out in order to prevent any malpractices. Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the meander, wetlands and fish ponds.					^ ^ ^ ^
S5.7	W3-CP-DP1/DP2	*Groundwater from Contaminated Area* • No mitigation measure is required for groundwater treatment in LMC Loop.	Minimize groundwater quality impact from contaminated area	Contractor	Areas where contamination is found.	Construction phase	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		• Additional investigation is required to identify if contaminated groundwater is found • If the investigation results indicated that the groundwater to be generated from construction works would be contaminated, the contaminated groundwater should be either discharged into recharged wells, or properly treated in compliance with the requirements of Technical Memorandum on Standards for Effluents Discharged into Drainage on Sewerage Systems, Inland and Coastal Waters. • If recharged well method were used, the groundwater quality in the recharged well should not be affected by recharging operation, i.e. the pollution levels of the recharged groundwater should not be higher than that in the recharging wells. • If treatment and discharge method were used, the design of wastewater treatment facilities, such as active carbon and petrol interceptor, should be submitted to the EPD and a discharge license should be obtained under the WPCO through the Regional Offices of EPD.					^ ^ ^ ^
S5.7	W3-CP-DP1/DP2	*Sewage from Workforce* • Portable chemical toilets and sewage holding tanks should be provided for handling the construction sewage generated by the workforce. A licensed contractor should be employed to provide appropriate and adequate portable toilets to cater 0.15m3/day/employed populations and be responsible for appropriate disposal and maintenance. • Notices should be posted at conspicuous locations to remind the workers not to discharge any sewage or wastewater into the nearby environment during the construction phase of the Project. Regular environmental audit on the construction site should be	Minimize water quality from sewage effluent	Contractor	All construction sites where practicable	Construction phase	^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		conducted in order to provide an effective control of any malpractices and achieve continual improvement of environmental performance on site.					
S5.7	W4-CP-DP1	*Riverbanks Formation* • In order to prevent sediment transport during riverbank works, deployment of silt curtain should be implemented, especially when construction works encroach or occur in close distance to water body. It is recommended to carry out all the riverbank works within a cofferdam or diaphragm wall. • Water quality of the Shenzhen River and the meander would be monitored to ensure effectiveness of the implemented mitigation measures.	Minimize water quality impact from riverbank works	Contractor	Riverbank works	Construction Phase	^ ^
S5.7	W1-CP-BR	*Bio-remediation in Shenzhen River* • Water quality monitoring and audit is recommended to ensure that the proposed bio-remediation operation would not result in adverse water quality impact. Details of the water quality monitoring programme are presented in the EM&A Manual. If unacceptable water quality impact in the receiving water is recorded, additional measures such as slowing down, or rescheduling of works should be implemented as necessary.	Minimize water quality impact from bio-remediation of Shenzhen River	Contractor	Shenzhen River where practicable	Construction phase	^
S5.7	W5-CP-DP2	*Construction of Bridge Crossing* • Good site management as stipulated in ProPECC PN1/94 should be fully implemented to avoid polluted liquid or solid wastes from falling into the WSRs. • All the fishponds will be drained and no fishpond will be affected	Minimize water quality impact from construction of bridge crossing	Contractor	Construction sites for bridge crossing where practicable	Construction phase	^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		by bridge crossing. • In the meander, cofferdam or diaphragm walls should be deployed for protecting fish ponds or nearby rivers during bridge pier construction and or road widening work at fishponds. • For the low level viaducts crossing the small streams at Ma Tso Lung, Ping Hang and channel near Lung Hau Road, precast structures will be used such that there will be no construction work in the water streams, and thus, to avoid direct water quality impacts.					^ ^
Waste Management (Construction Waste)							
S7.6	WM1-DP1/DP2	*Waste Reduction Measures* Waste reduction is best achieved at the planning and design phase, as well as by ensuring the implementation of good site practices. The following recommendations are proposed to achieve reduction: • Segregate and store different types of waste in different containers, skip or stockpiles to enhance reuse or recycling of materials and their proper disposal; • proper storage and site practices to minimize the potential for damage and contamination of construction materials; • plan and stock construction materials carefully to minimize amount of waste generated and avoid unnecessary generation of waste; • sort out demolition debris and excavated materials from demolition works to recover reusable/recyclable portions (i.e. soil, broken concrete, metal etc.);	Reduce waste generation	Contractor	All construction sites where practicable	Construction phase	^ * ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		• provide training to workers on the importance of appropriate waste management procedures, including waste reduction, reuse and recycling.					^
S7.6	WM2-DP1/DP2	Prepare Waste Management Plan and submit to the Engineer for approval	Minimize waste generation during construction	Contractor	All construction sites	Construction phase	N/A
S7.6	WM2-DP1/DP2	*Good Site Practice* The following good site practices are recommended throughout the construction activities: • Nomination of an approved personnel, such as a site manager, to be responsible for the implementation of good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site; • Training of site personnel in site cleanliness, appropriate waste management procedures and concepts of waste reduction, reuse and recycling; • Provision of sufficient waste disposal points and regular collection for disposal; • Appropriate measures to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers; • Regular cleaning and maintenance programme for drainage systems, sumps and oil interceptors;	Minimize waste generation during construction	Contractor	All construction sites	Construction phase	^ ^ ^ ^ ^
S7.6	WM4-DP1/DP	*Storage of Waste* The following recommendation should be implemented to minimize the	Minimize waste generation during construction	Contractor	All construction sites	Construction phase	

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
	2	impacts: • Waste such as soil should be handled and stored well to ensure secure containment; • Stockpiling area should be provided with covers and water spraying system to prevent materials from wind-blown or being washed away; • Different locations should be designated to stockpile each material to enhance reuse;					^ ^ ^
S7.6	WM5-DP1/DP2	*Collection and Transportation of Waste* The following recommendation should be implemented to minimize the impacts: • Remove waste in timely manner; • Employ the trucks with cover or enclosed containers for waste transportation; • Obtain relevant waste disposal permits from the appropriate authorities; and • Disposal of waste should be done at licensed waste disposal facilities.	Minimize waste impact from storage	Contractor	All construction sites	Construction phase	^ ^ ^ ^
S7.6	WM6-DP1/DP2	*Excavated and C&D Material* Wherever practicable, C&D materials should be segregated from other wastes to avoid contamination and ensure acceptability at Public Fill Reception Facilities areas or reclamation sites. The following mitigation measures should be implemented in handling the excavated and C&D materials: • Maintain temporary stockpiles and reuse excavated fill material for backfilling; • Carry out on-site sorting;	Minimize waste impacts from excavated and C&D material	Contractor	All construction sites	Construction phase	^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		• Make provisions in the Contract documents to allow and promote the use of recycled aggregates where appropriate; and • Implement a trip-ticket system for each works contract to ensure that the disposal of C&D materials are properly documented and verified. The recommended C&D materials handling should include: • On-site Sorting of C&D Materials • Reuse of C&D Materials • Use of Standard Formwork and Planning of Construction Materials Purchasing • Provision of Wheel Wash Facilities Details refer to Section 7.6.1.4 of the EIA report.					^ ^ ^ ^ ^ ^
S7.6	WM7-DP1/DP2	*Contaminated Soil* As a precaution, it is recommended that standard good site practice should be implemented during the construction phase to minimize any potential exposure to contaminated soils or groundwater. The details of mitigation measures to minimize the potential environmental implications arising from the handling of contaminated materials refer to Land Contamination Section.	Remediate contaminated soil	Contractor	All construction sites where applicable	Construction phase	N/A
S7.6	WM8-DP1/DP2	*Chemical Waste* • If chemical wastes are produced at the construction site, the Contractors should register with EPD as chemical waste producers. Chemical wastes should be stored in appropriate containers and collected by a licensed chemical waste contractor. Chemical wastes (e.g. spent lubricant oil) should be recycled at an appropriate facility as far as possible, while the chemical waste that cannot be recycled should be disposed of at either the	Control the chemical waste and ensure proper storage, handling and disposal	Contractor	All construction sites	Construction phase	*

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		Chemical Waste Treatment Centre, or another licensed facility, in accordance with the Waste Disposal (Chemical Waste) (General) Regulation.					
S7.6	WM9-DP1/DP2	*General Waste* • General refuse should be stored in enclosed bins separately from construction and chemical wastes. Recycling bins should also be placed to encourage recycling. • Preferably enclosed and covered areas should be provided for general refuse collection and routine cleaning for these areas should also be implemented to keep areas clean. • A reputable waste collector should be employed to remove general refuse on a daily basis.	Minimize production of the general refuse and avoid odour, pest and litter impacts	Contractor	All construction sites	Construction phase	^ ^ ^
S7.6	WM10-DP1/DP2	*Sewage* • The WMP should document the locations and number of portable chemical toilets depending on the number of workers, land availability, site condition and activities. • Regularly collection by licensed collectors should be arranged to minimize potential environmental impacts.	Minimize production of sewage impacts	Contractor	All construction sites	Construction phase	^ ^
S7.6	WM11-DP2	*Sediment* The following mitigation measures are recommended during transportation and stockpiling: • stockpiling area(s) must be properly designed and closed to the dredging locations as far as possible; • Stockpiling area(s) should be lined with impermeable sheeting and bunded;	Minimize waste impacts from sediment	Contractor	All construction sites	Construction phase	^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		• stockpiles should be properly covered by impermeable sheeting; • vehicles delivering the sediments should be covered, and truck bodies and tailgates should be sealed to prevent any discharge during transportation; • bulk earth moving equipments should be utilized as much as possible to minimize workers' handling and contact of the excavated materials; and • personal protective clothing should be provided to site workers. In case contamination of excavated materials is confirmed after testing, the mitigation measures described in Land Contamination Impacts section should also be implemented to minimize potential environmental impacts.					^ ^ ^ ^
Land Contamination							
S8.7	LC1-DP2	*Remediation of arsenic-contaminated soil* • "Solidification/Stabilization" (S/S) treatment method was proposed for the remediation of arsenic-contaminated soil. Toxicity Characteristic Leaching Procedure (TCLP) test should be undertaken after S/S in order to ensure that the contaminant will not leach to the environment. Unconfined Compressive Strength (UCS) test should be conducted, and not less than 1MPa should be met prior to the backfilling or stockpiled for future reuse within the study area. Off-site disposal or reuse of the solidified material is not allowed.	To remediate arsenic-contaminated soil	Project Proponent/ Contractor	LMC Loop, contaminated area	Prior to commencement of construction works within the contaminated area	^
S8.7	LC1-DP1/DP	*Excavation and Transportation* • Excavation profiles must be properly designed and executed with	To minimise the potential environmental impacts	Contractor	Contaminated area		^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
	2	• attention to the relevant requirements for environment, health and safety; • In case the soil to be excavated is situated beneath the groundwater table, it may be necessary to lower the groundwater table by installing well points or similar means; • Excavation should be carried out during dry season as far as possible to minimise contaminated runoff from contaminated soils; • Stockpiling site(s) should be lined with impermeable sheeting and bunded. Stockpiles should be properly covered by impermeable sheeting to reduce dust emission during dry season or contaminated run-off during rainy season. Watering should be avoided on stockpiles of contaminated soil to minimise contaminated runoff; • Supply of suitable clean backfill material after excavation, if required; • Vehicles containing any excavated materials should be suitably covered to limit potential dust emissions or contaminated run-off, and truck bodies and tailgates should be sealed to prevent any discharge during transport or during wet season; • Speed control for the trucks carrying contaminated materials should be enforced; and • Vehicle wheel washing facilities at the site's exit points should be established and used.	arising from the handling of contaminated materials				^ ^ ^ ^ ^ ^ ^
S8.7	LC3-DP1/DP	*Solidification/Stabilization* • The loading, unloading, handling, transfer or storage of cement	To minimize the potential environmental impacts	Contractor	Contaminated area	The course of remediation	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
	2	should be carried out in an enclosed system; • Mixing process and other associated material handling activities should be properly scheduled to minimise potential noise impact and dust emission; • The mixing facilities should be sited as far apart as practicable from the nearby noise sensitive receivers; • Mixing of contaminated soil and cement / water / other additive(s) should be undertaken at a solidification plant to minimise the potential for leaching; • Runoff from the solidification / stabilization area should be prevented by constructing a concrete bund along the perimeter of the solidification / stabilization area; • The run-off contained in the concrete bund area along the perimeter of the paved solidification / stabilization area, if any, will be collected, stored and used for the mixing process of cement / contaminated soil; • If stockpile of treated soil is required, the stockpiling site(s) should be lined with impermeable sheeting and bunded. Stockpiles should be properly covered by impermeable sheeting to reduce dust emission during dry season or site run-off during rainy season; and • If necessary, there should be clear and separated areas for stockpiling of untreated and treated materials.	arising from the handling of contaminated materials				^ ^ ^ ^ ^ ^ ^
Landscape and Visual Impact (Construction Phase)							
S11.5.4	L-CP1-	*Preservation and Protection of Existing Trees (Good Site*	Avoid disturbance and	Detailed design	Within project site	Detailed design	

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
Table11.5.9	DP1	*Practice)* • The proposed works should avoid disturbance to the existing trees within and close to the works areas. The tree preservation proposals shall be coordinated with the layout and design of the engineering and architectural works at detailed design phase for further retention of individual trees. • It is recommended that a full detailed tree survey and felling application will be undertaken and submitted for approval by the relevant government departments in accordance with ETWB TCW No. 3/2006, 'Tree Preservation'. This will be conducted during the detailed design phase of the project and submitted to DLO for approval. The methodology and scope including the programme for the tree survey and felling application are also subject to the approval of the relevant authorities. • Trees which are not in conflict with the proposals would be retained and shall be protected by means of fencing during construction phase to prevent damage to tree canopies and root zones from vehicles and storage of materials. • Specifications for the protection of existing trees will be provided during the preparation of the detailed tree survey by Detailed Design consultants at detailed design and construction phase.	protection of existing trees	consultant/ Contractor		and construction phase	^ ^ ^ ^
S11.5.4 Table	L-CP2-DP1/DP	*Works Area and Temporary Works Areas (Good Site Practice)* • The construction sequence and construction programme shall	Minimize landscape impacts	Contractor	The whole project area where	Construction phase	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
11.5.9	2	be optimized in order to minimize the duration of impact. • Construction site controls shall be enforced including the storage of materials, the location and appearance of site accommodation and site storage; and the careful design of site lighting to prevent light spillage. • The temporary works areas shall be restored to its original condition or enhanced through the introduction of new amenity areas or planting areas following the completion of the construction phase.			applicable		^
	L-CP3-DP1/DP2	*Advance Implementation of Mitigation Planting* • Replanting of existing / disturbed vegetation shall be undertaken at the earliest possible stage of the construction phase of the project using predominantly native plant species although ornamental species may be used for roadside planting and amenity areas.	Minimize landscape impacts	Contractor	The whole project area where applicable	Construction phase	^
	L-CP4-DP1/DP2	*Transplantation of Existing Trees* • Some specimens have relatively higher amenity value which are in conflict with the proposals shall be considered for transplantation. For trees affected by the proposed infrastructure works the final receptor sites shall be preferably adjacent to their current locations alongside of the alignment to retain their contribution to the local landscape context. For the LMC Loop the receptor locations will be selected to allow the trees to be moved directly to their final locations in accordance with the detailed landscape proposals.	Minimize landscape impacts	Contractor	The whole project area where applicable	Construction phase	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		• The transplanting proposals are subject to review at the detailed design phase and to agreement-in-principle with the relevant management and maintenance agents and/or government departments. The implementation programme for the proposed works shall reserve sufficient time for the advanced tree transplanting preparation works to enhance the survival of the transplanted trees. • The transplanting proposals will be subject to the findings of the detailed tree survey and felling application to be undertaken by the detailed design consultants and following approval by the relevant departments.					^
	L-CP6-DP1/DP2	*Creation of Wetland and Landscape Buffer* • The existing reedbed acquired for development areas for the project will be reinstated as part of the Ecological Area. The reinstatement shall be undertaken at the earliest possible stage during the construction phase of the project. • Creation of 12.78ha of Ecological Area (EA) containing reed marsh and marsh will be created at the southern portion of the LMC Loop, and a 50m width landscape buffer area will be set up in between the EA and the development area. Wetland creation concepts please refer to Figure 11.9zf and Chapter 12 Ecology Impact Assessment of this EIA. • Native tree and shrub mix will be utilised for the creation of landscape buffer along northern edge of EA to support the creation of avifauna habitat from ecologist perspectives as	Compensation of the loss of landscape resources	Project Proponent/ Detailed design consultant/ Contractor/ Operator	The whole project area where applicable	Detailed design, construction and operational phases	^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		well as enhance the aesthetic and landscape diversity within the LMC Loop Development. • Creation of minimum 11.72 Ha. of permanent compensatory off-site wetland areas at Sam Po Shue and Hoo Hok Wai. For the potential locations for off-site wetlands please refer to Figure 11.9zf and 11.9zh, Chapter 2 Project Description and Chapter 12 Ecology Impact Assessment of this EIA.					^
	V-CP5-DP1/DP2	*Coordination with Concurrent Projects* • Coordinated implementation programme with concurrent projects to minimise impacts and where possible reduce the period of disturbance.	Minimize landscape impacts	Contractor	The whole project area where applicable	Construction phase	N/A
Ecology (Construction Phase)							
S12.7	E1-DP1	*Disturbance to Fish Ponds at HHW* • Development set back a minimum of 23m from the edge Meander. • Management of fish pond habitat to enhance ecological value to twice existing value, in order to compensate for disturbance to large waterbirds. • Creation and establishment will occur prior to commencement of substantive works associated with any element of the project for which fish pond compensation is required. *Construction phase* • Erection of a 3m high, dull green site boundary fence to minimise disturbance to wetland habitats caused by human activity in LMC Loop.	On the disturbance to fish ponds at HHW	Detailed design consultant/ Contractor	Fish ponds at HHW and LMC	Detailed design, construction phase	N/A N/A N/A *

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
S12.7	E2-DP1	*Construction run-off* • Temporary sewerage and drainage will be designed and installed to collect wastewater and prevent it from entering nearby water bodies; • Proper locations well away from nearby water bodies will be used for temporary storage of materials (i.e. equipment, filling materials, chemicals and fuel) and temporary stockpile of construction debris and spoil, and these will be identified before commencement of works; • To prevent muddy water entering nearby water bodies, work sites close to nearby water bodies will be isolated, using such items as sandbags or silt curtains with lead edge at bottom and properly supported props. Other protective measures will also be taken to ensure that no pollution or siltation occurs to the water gathering grounds of the work site; • If temporary access along a riverbed is unavoidable, this will be kept to the minimum in width and length. Temporary river crossings will be supported on stilts above the river bed; • Stockpiling of construction materials, if necessary, will be properly covered and located away from nearby water bodies; • Construction debris and spoil will be covered and/or properly disposed of as soon as possible to avoid being washed into nearby water bodies; • Construction effluent, site run-off and sewage will be	Minimise the indirect impact from the increasing suspended solids and pollutants in LMC Meander	Contractor	Seawall,	During construction	^ ^ # ^ ^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		properly collected and/or treated. Wastewater from any construction site will be minimised via the following in descending order: reuse, recycling and treatment; • Proper locations for discharge outlets of wastewater treatment facilities well away from sensitive receivers will be identified (i.e. treated wastewater will not be discharged into LMC Meander, natural streams, marsh, reedbed, active or abandoned fish ponds); • Adequate lateral support will be erected where necessary in order to prevent soil/mud from slipping into the Ecological Area or LMC Meander; • Site boundary will be clearly marked and any works beyond the boundary strictly prohibited; • Regular water monitoring and site audit will be carried out at adequate points along LMC Meander, and at the outfalls of the natural streams around LMC Loop. If the monitoring and audit results show that pollution occurs, adequate measures including temporarily cessation of works will be considered.					^ ^ ^ ^
S12.7	E3-DP1/DP2	*Pollutant Runoff to Downstream areas from Accidental Spillage* • Prepare an emergency contingency plan • The plan will include, but not be limited to, the following: - Potential emergency situations; - Chemicals or hazardous materials used on-site (and their location); - Emergency response team;	Minimize indirect impact from pollutant runoff to downstream areas from accidental spillage	Contractor/ Operator	Area within project site near streams	Construction phase and operation phase	N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		- Emergency response procedures; - List of emergency telephone hotlines; - Locations and types of emergency response equipment; - Training plan and testing for effectiveness.					
S12.7	E4-DP1/DP2	• Use opaque, non-transparent, non-reflective noise barriers for all developments associated with the Project. • Design of buildings should not incorporate use of night-time lighting at or near top of buildings, highly reflective materials should not be used where vegetation is adjacent and glass surfaces should not be angled upwards in a way that reflects the sky. Unnecessary lighting should be eliminated. Appropriate glass and façade treatments should be used where required to minimise impact. Unnecessary lighting should be avoided. These include the following: • Fritting, or the placement of ceramic lines or dots on glass, has little effect on the human-perceived transparency of the window but creates a visual barrier to birds outside. This treatment also has the advantage of reducing air conditioning loads by lowering heat gain, while still allowing light transmission for interior spaces. It is most successful when the frits are applied on the outside surface. Frosted glass has similar effects. • Angled glass may be used only for smaller panes in buildings with a limited amount of glass.	Minimize the mortality impacts on birds	Developer / Detailed design consultant/ contractor/ operator	Area within project site	Detailed design, construction and operation phases	^ ^ ^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		• The use of glass that reflects UV light (primarily visible to birds, but not to humans) acts to reduce collision. • Film and art treatment allow glass surfaces to be used a medium of expression, often related to the nature and use of the building, as well indicating to birds their impenetrability. • Lightweight external screens can be added to windows or become a façade element of larger buildings, and are suitable where non-operable windows are prevalent, which is often the case in modern buildings in HK. In terms of reducing night-time mortality impacts, eliminating unnecessary lighting is one of the easiest methods, and has the added advantage of saving energy and expense. Potential impacts of nocturnal avian collision with buildings should be minimised by not creating sky glow from the use of night-time lighting at or near the top of buildings or other structures. In addition to avoiding uplighting, light spillage should be minimised, while green and blue lights should be used where possible. As far as possible, lights should be controlled by motion sensors, and building operations should be managed in such a way as reduce or eliminate night lighting near windows. The potential advantages of removing unnecessary lighting in terms of reducing the carbon footprint of the LMC Loop development are obvious.					^ ^ ^
S12.7	E5-DP1/DP2	• Minimize loss of natural vegetation along LMC Meander, and suitable replacement planting with possible installation of otter holts and the provision of potential feeding area and spraint locations for otters in the stabilized bank subject to detailed design. • No significant change to velocity of water flow, water level	Minimize impacts on Eurasian Otter	Detailed design consultant/ Contractor	Construction site within the project	Detailed design, construction phase	^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		or water quality. • No direct lighting on Meander. • 3m high, dull green site boundary fence for all developments associated with the project. • Pre-construction surveys for otter holts or natal dens will be conducted in LMC Loop before the commencement of construction works. Work in the area of any otter holt found to cease pending examination by experienced Ecologist. If in use for breeding, works in the area will temporarily stop until end of breeding activity. • No construction activities within 100m of LMC Meander between one hour prior to sunset and one hour after sunrise. • Provision of compensatory reed marsh in the Ecological Area in LMC Loop, including open water channels and islands within the reed marsh, both of which features are considered to be used by the species.					^ * N/A * N/A
S12.7	E8-DP2	• Refer to E2 and E3	Prevent impacts on Rose Bitterling, small snakehead and *Somanniathelphus zanklon*	Contractor	Within project site	Construction phase	N/A
S12.7	E10-DP1	• Preserve undisturbed, semi-natural habitat conditions of LMC Meander and adjacent areas of LMC Loop up to approximately 150m in width in order to avoid disturbance to core part of flight line corridor. • This area to comprise an Ecological Area largely constituting	Minimize impacts on flight line corridor from LMC Loop development	Developer / Detailed design consultant/ Contractor/ Operator	Within project site	Detailed design, construction and operation phases	^ N/A

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
		reed marsh and a 50m wide buffer zone densely planted with shrubs and trees. Small number of low buildings (max 14mPD high, except the building height of on-site STW is 15mPD high) allowed in inner 25m of this area at a plot ratio of 0.1. • At Ha Wan Tsuen entry point for many birds to LMC Loop area provide a wider Ecological Area to minimise disturbance from nearby buildings. • Further minimisation of impact by maintaining a lower building height in areas adjacent to the buffer zone for the EA. In addition, the sewage treatment works, which is located near the point where many birds cross from the Meander to HHW, should not exceed 15mPD.					N/A N/A
S12.7	E11-DP1	• Employ site boundary fence as long as possible. Use of movable barrier for more intense site formation activity. Provision of fencing with 30cm gap between the existing reed marsh and LMC Meander during the establishment period of Ecological Area and the gap will be closed once established. • Restrict work to period from 0900h to 1700h. All major works along the edge of LMC Meander and in the Ecological Area will be conducted in the wet season.	Minimize disturbance impacts of mitigation provisions	Contractor	Within project site	Construction phase	^ *
S12.7	E12-DP1/DP2	• Minimal night-time lighting • No direct light on Meander	Minimize impacts on LMC Meander	Contractor/ Operator	All	Construction and operation phases	^ ^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
S12.7	E13-DP2	• Construction limited to wet season between the hours of 9am and 5pm. • Use of opaque visual/noise barriers and planting of trees shrubs along length of road adjacent to fish ponds. • Compensatory habitat management elsewhere to mitigate wetland loss.	Minimize impacts from the construction and operation disturbance impacts	Contractor/ Operator	Pond habitat along alignment (mainly Ha Wan Tsuen Road)	Construction and operation phases	^ ^ ^
S12.7	E16-DP1	• Provision of compensatory reed marsh in the Ecological Area will provide habitat suitable for Common Evening Hawker. • Measures designed to protect other fauna and water quality will generally benefit odonata.	Protect Odonata	Project Proponent/ Detailed design consultant/ Contractor Operator	Ecological area	EA established prior to construction and manage at all phases	^ ^
S12.7	E14-DP2	• Replacement planting of native tree species relevant to Deep Bay area and the area impacted. Planting to occur in tandem with that required for woodland loss arising	Minimize the ecological impacts	Contractor	Woodland and shrubland habitat along Ha Wan Tsuen Road	Construction phase	^
S12.7	E15-DP2	• Use noise/visual barriers to minimise disturbance. • Construction activities should not be carried out before 0900h or after 1700h in order to minimise disturbance to the flight line corridor (and to mammals).	Minimize impacts on flight line corridor from Western Connection Road	Contractor	Construction site from Western Connection Road	Construction phase	^ *
S12.7	E16-DP2	• Use of opaque visual/noise barriers and roadside planting of trees and shrubs to minimize disturbance impacts.	Minimize impacts on flight line corridor from Western Connection Road	Project Proponent/ Detailed design consultant/	Construction site from Western Connection Road	Detailed design, construction and operation phases	^

EIA Ref.	EM&A Log Ref	Recommended Mitigation Measures	Objectives of the recommended Measures & Main Concerns to address	Who to implement the measures?	Location of the measures	When to Implement the measures?	Implementation Status
				Contractor Operator			
Fisheries (Construction Phase)							
S13.7	F4-	• Reprovision of replacement Artificial Reefs(of the same volume as the existing ARs inside Marine Exclusion Zone)	Mitigate water quality impacts on the existing ARs	Project proponent	To be determined	Construction phase or operation phase	N/A
S11.7	F2	• Reduce re-suspension of sediments • Limit dredging and works fronts. • Good site practices • Strict enforcement of no marine dumping • Spill response plan	Minimise marine water quality impacts	Contractor	Seawall	During construction	N/A N/A N/A N/A N/A

Remarks: ^ Compliance of mitigation measure

* Recommendation was made during site audit but improved/rectified by the contractor

N/A Not Applicable at this stage as no such site activities were conducted in the reporting period (e.g. concrete batching plan, barging point, seawall dredging and filling, bored piling, landscaping works etc)

APPENDIX O
WASTE GENERATION IN THE REPORTING MONTH

生興 － 豐利聯營
Sang Hing – Kuly Joint Venture

Monthly Summary Waste Flow Table for 2019 Year

Contract No.: YL/2017/03

Month	Actual Quantities of Inert C&D Materials Generated Monthly						Actual Quantities of C&D Wastes Generated Monthly				
	Total Quantity Generated	Hard Rock and Large Borken Concrete	Reused in the Contract	Reused in other Projects	Disposal as Public Fill	Imported Fill	Metals	Paper / Cardboard Packaging	Plastics (See note 3)	Chemical Waste	Other, e.g. general refuse
	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000m^3]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000kg]	[in '000m^3]
Jan	0.0	0.0	15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Feb	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SUB-TOTAL	0.0	0.0	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	0.0	0.0	17.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Note: Conversion to 1000m^3 for general refuse is weight in 1000kg multiply by 0.002

Conversion to 1000m^3 for Inert C&D is weight in 1000kg multiply by 0.0005

Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

Plastics refer to plastic bottles / containers, plastic sheets / foam from packaging material

APPENDIX P
COMPLAINT LOG

Appendix P - Complaint Log

Log Ref.	Location	Received Date	Details of Complaint	Investigation/ Mitigation Action	Status
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APPENDIX Q
SUMMARY OF SUCCESSFUL PROSECUTION

Appendix Q - Summary of Successful Prosecution

Date of Successful Prosecution	Details of the Successful Prosecution	Status	Follow Up
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