東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

China Harbour – Zhen Hua Joint Venture

Contract No.: CV/2015/07
Handling of Surplus Public Fill (2016-2018)

TUEN MUN AREA 38 FILL BANK

MONTHLY EM&A REPORT NO.32

(DECEMBER 2019)

Prepared by:

TANG, Chung Hang
Environmental Officer

Checked by:

LAU, Chi Leung
Environmental Team Leader

Issue Date: 06 January 2020 *Report No.: ENA00058*

RAMBOLL

Ref.: CEDPFRSFEM02_0_0817L.20

17 January 2020

By Email and Fax No.: 2695 3944

ETS-Testconsult Limited
8/F, Block B, Veristrong Industrial Centre
34-36 Au Pui Wan Street
Fo Tan, Hong Kong

Attention: Mr. C L Lau

Dear Mr. Lau,

Re: Contract No. CV/2015/07
Handling of Surplus Public Fill (2016 – 2018)

Monthly EM&A Report (No. 32) for December 2019 for the Tuen Mun Area 38 Fill Bank

Reference is made to your submission of the draft Monthly EM&A Report for December 2019 for the TM Area 38 Fill Bank received by email on 13 January 2020 and the final revision on 17 January 2020.

We are pleased to inform you that we have no further comment on the captioned report.

Thank you for your attention. Please do not hesitate to contact our Jason Lai or the undersigned should you have any queries.

Yours sincerely,
For and on behalf of
Ramboll Hong Kong Limited

F. C. Tsang
Independent Environmental Checker

c.c.	CEDD	Attn: Mr. T M Yeung	Fax No.: 2714 0113
	CHZHJV	Attn: Mr. S W Sung	By Email

Q:\Projects\CEDPFRSFEM02\02 Project Management\02 Corr\CEDPFRSFEM02_0_0817L.20.doc

Ramboll Hong Kong Limited 英環香港有限公司
21/F, BEA Harbour View Centre, 56 Gloucester Road, Wan Chai, Hong Kong Tel: 852.3465 2888 Fax: 852.3465 2899
www.ramboll.com

TABLE OF CONTENTS **Page**

APPENDIX

FIGURES

TABLES

EXECUTIVE SUMMARY

This monthly Environmental Monitoring and Audit (EM&A) report No.32 was prepared by Environmental Team (ET) of ETS-Testconsult Ltd (ETL) for the "Contract No. CV/2015/07 Handling of Surplus Public Fill (2016-2018) – Tuen Mun (TM) Area 38 Fill Bank" (The Project).

This report documented the findings of EM&A Works conducted during the operation phase of Fill Bank at TM Area 38 in December 2019.

Site Activities

As informed by the Contractor, the site activities in this reporting period were as below:

1. *Operation of the TM38 Fill Bank.*
2. *Delivery of public fill to Taishan;*
3. *Concrete block breaking work;*
4. *Operation of glass cullet storage compartment at TMFB;*
5. *Construction of Concrete Access Road at TMFB between Tipping Hall No.1 and No. 2 for Safety and Environmental Reason*
6. *Construction of Concrete Access Road Adjacent to ECO Park Near the Concrete Block Wall at TMFB for Safety and Environmental Reasons;*

Environmental Monitoring Progress

The summary of the monitoring activities in this monitoring month is listed below:

- *24-hour TSP Monitoring: 5 Occasions at 2 designated locations*
- *1-hour TSP Monitoring: 16 Occasions at 2 designated locations*
- *Noise, Daytime: 9 Occasions at 2 designated locations*
- *Marine Water Quality Monitoring: 12 Occasions at 4 designated locations*
- *Weekly-site inspection: 4 Occasions*

Air Monitoring

No exceedance of Action and Limit level was recorded for 1-hr and 24-hr TSP monitoring in the reporting period.

Noise Monitoring

No exceedance of Action and Limit level for noise monitoring was recorded in the reporting period.

Marine Water Quality Monitoring

No exceedance of action and limit level was recorded in the reporting period.

Weekly Site Inspection

In general, performance on environmental mitigation measures implemented was found to be satisfactory in this reporting period. The major findings observed during site inspections are presented in the Section 7.0.

Environmental Complaints, Notification of summons and successful prosecutions

No complaint, notification of summon and prosecution with respect to environmental issues was received in this reporting period.

Future Key Issues

Based on the site inspections and forecast of engineering works in the coming month, key issues to be considered are as follows:

- *Dust generation from activities on site, such as vehicular movements along unpaved area and rock crushing activities;*
- *Noise impact from operating equipment and machinery on site;*
- *Wastewater and surface runoff from the site discharged into nearby water body; and*
- *Storage and usage of chemicals / fuel and chemical waste / waste oil.*

1.0 INTRODUCTION

China Harbour – Zhen Hua Joint Venture (CHZH-JV) appointed Environmental Team (ET) of ETS-Testconsult Limited (ETL) to undertake the Environmental Monitoring and Audit (EM&A) for the "Contract No: CV/2015/07 –Handling of Surplus Public Fill (2016-2018) – Tuen Mun (TM) Area 38 Fill Bank" (The Project).

In accordance with the Condition 4 of Part C of Environmental Permit (No.: EP-210/2005/C) (the EP), an EM&A programme as set out in the Project Profile should be implemented.

The EM&A programme requires environmental monitoring for air quality, water quality and environmental site inspections for air quality, water quality, landscape and visual, and waste management. The EM&A requirements for each parameter described in the following sections include:

- All monitoring parameters;
- Monitoring schedules for the reporting month and forthcoming months;
- Action and Limit levels for all environmental parameters;
- Event/Action Plans;
- Environmental mitigation measures, as recommended in the Project Profile; and
- Environmental requirements in contract documents.

Baseline monitoring was completed in May 2003 by Stanger Asia Ltd. Action and Limit Levels were established for air and water quality parameters based on the baseline monitoring results.

This report documented the findings of EM&A Works conducted during the operation phase of Fill Bank at Tuen Mun Area 38 in December 2019.

2.0 PROJECT INFORMATION

2.1 Construction Programme

Details of construction programme are shown in Appendix G.

2.2 Project Organization and Management Structure

The organization chart and lines of communication with respect to the on-site environmental management and monitoring program are shown in Appendix A.

2.3 Contact Details of Key Personnel

The key personnel contact names and telephone numbers are shown in Table 2.1.

Table 2.1 Contact Details of Key Personnel

Organization	*Name of Key Staff*	*Project Role*	*Tel. No.*	*Fax No.*
CEDD	*T M Yeung, Norelle Li, May Lau, James Sze, Phoebe Tang*	*Engineer's Representative*	*2762 5555*	*2714 0113*
IEC (Ramboll)	*F C Tsang*	*IEC*	*3465 2888*	*3465 2899*
Contractor (CHZH-JV)	*Zhou Chang Ying*	*Project Director*	*96266299*	*22474108*
ET (ETL)	*C. L. Lau*	*ET Leader*	*2946 7791*	*2695 3944*

3.0 CONSTRUCTION PROGRESS IN THIS REPORTING MONTH

As informed by the Contractor, the activities in the reporting month include:

1. *Operation of the TM38 Fill Bank.*
2. *Delivery of public fill to Taishan;*
3. *Concrete block breaking work;*
4. *Operation of glass cullet storage compartment at TMFB;*
5. *Construction of Concrete Access Road at TMFB between Tipping Hall No.1 and No. 2 for Safety and Environmental Reason*
6. *Construction of Concrete Access Road Adjacent to ECO Park Near the Concrete Block Wall at TMFB for Safety and Environmental Reasons;*

4.0 AIR QUALITY MONITORING

4.1 Monitoring Requirement

1-hr and 24-hr TSP levels were monitored in the reporting month. Table 4.3 shows the Action and Limit Levels for the environmental monitoring works.

4.2 Monitoring Equipment

Both 1-hour and 24-hour TSP air quality monitoring was performed using a GMWS2310 High Volume Air Sampler (HVS) located at each of the designated monitoring station. Table 4.1 summarizes the equipment used in the air quality monitoring programme. Copies of the calibration certificates for the HVS and calibrator are attached in Appendix B1.

Table 4.1 Air Quality Monitoring Equipment

Equipment	*Model and Make*
HVS	*Greasby GMWS2310*
Calibrator	*Tisch TE-5025A*

4.3 Monitoring Parameters, Frequency and Duration

Table 4.2 summarizes the monitoring parameters, monitoring duration and frequencies of air quality monitoring.

Table 4.2 Monitoring parameters, duration, frequency of air quality monitoring

Parameter	*Duration*	*Frequency*
24-hr TSP	*24 hr*	*Once per six days*
1-hr TSP	*1 hr*	*Three times per six days*

4.4 Monitoring Locations and Schedule

In accordance with the Project Profile, two air-quality monitoring stations, namely TM-A1 and TM-A2, were selected for the 1-hr TSP and 24-hr TSP sampling.

Since the area for existing air monitoring station TM-A2 near Tipping Hall No.1 was handed over to EcoPark, air monitoring station TM-A2 was cancelled and the air monitoring was carried out at an alternative air monitoring station TM-RA2 (refer to Figure 1 attached) from 28 October 2008.

The locations of monitoring stations are shown in Figure 1.

During the reporting month, 1-hr and 24-hr TSP monitoring were carried out as the schedule. The details for 24-hr and 1-hr TSP monitoring carried out in this reporting month are summarized in Appendix B2.

4.5 Monitoring Methodology

Both 1-hr and 24-hr air quality monitoring (High Volume Sampler)

Instrumentation
High volume sampler, as HVS, (Greasby GMWS2310) complete with appropriate sampling inlets were employed for both 1-hour and 24-hour TSP monitoring. The sampler is 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).

Installation
The installation of HVS refers to the requirement stated in Appendix D2 "General Technical Requirements of Environmental Monitoring" in the Environmental Monitoring and Audit Guidelines for Development Projects in Hong Kong published by EPD.

Operation/Analytical Procedures
Operating/analytical procedures for the operation of HVS are as below:

- Prior to the commencement of the dust sampling, the flow rate of the high volume sampler was properly set (between 0.6m^3/min and 1.7m^3/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50. The flow rate is indicated on the flow rate chart.
- For TSP sampling, fiberglass filters (GA-55) were used.
- The power supply was checked to ensure the sampler worked properly.
- On sampling, the sampler was operated 5 minutes to establish thermal equilibrium before placing any filter media at designated air 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 air-tight seal on the outer edges of the filter. Then the filter holder frame was tightened to the filter holder with swing bolts. The applied pressure should be sufficient to avoid air leakage at the edges.
- The programmable timer will be set for a sampling period of 1 hour / 24 hours. 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 transferred from the filter holder of the HVS to a sealed plastic bag and sent to the laboratory for weighting. The elapsed time was also recoded.
- Before weighting, all filters were equilibrated in a 3esiccators for 24 hour with the temperature of 25^{o}C $\pm$ 3^{o}C and the relative humidity (RH) <50% $\pm$5%.

Maintenance & Calibration

- The HVS and their accessories should be maintained in good working condition, such as replacing motor brushes routinely and checking electrical wiring to ensure a continuous power supply.
- HVS should be calibrated at bi-monthly intervals.

Wind Data Monitoring

Wind data included wind speed and wind direction were directly extracted from Tuen Mun Station of Hong Kong Observatory during this reporting month. The wind data are presented in Appendix E.

4.6 Action and Limit Levels

Table 4.3 shows the Action and Limit levels for 24-hr TSP and 1-hr TSP monitoring.

Table 4.3 Action and Limit Levels for 24-hr TSP and 1-hr TSP

Monitoring Location	*24-hr TSP ($\mu g/m^3$)*		*1-hr TSP ($\mu g/m^3$)*	
	Action Level	*Limit Level*	*Action Level*	*Limit Level*
TM-A1	*192*	*260*	*344*	*500*
*TM-RA2 **	*192*	*260*	*344*	*500*

Remark (*): Since the area for existing air monitoring station TM-A2 near Tipping Hall No.1 was handed over to EcoPark, air monitoring station TM-A2 was cancelled and the air monitoring was carried out at an alternative air monitoring station TM-RA2 from 28 October 2008. Since dust monitoring stations TM-A2 and TM-RA2 are located close to the major dust emission sources and no significant difference between them on the prevailing meteorological conditions, the baseline data from TM-A2 can also be valid in the case of TM-RA2.

4.7 Event-Action Plans

Please refer to Appendix F for details.

4.8 Results and Observations

All monitoring data of both 1-hr and 24-hr TSP monitoring is provided in Appendix B2. Graphical presentation of 1-hr and 24-hr TSP monitoring results for the reporting period is shown in Appendix B3. Wind data, including wind speed and wind direction, are annexed in Appendix E.

No exceedance of Action and Limit level was recorded for 1-hr and 24-hr TSP monitoring in the reporting month.

Generally, the Contractor implemented sufficient dust mitigation measures, including operation of wheel washing facilities and road dampening by water bowsers on the main haul roads and unpaved areas.

5.0 MARINE WATER QUALITY MONITORING

5.1 Monitoring Requirements

In accordance with the Project Profile, impact marine water quality monitoring was conducted three days per week. Measurements were taken at both mid-flood and mid-ebb tides at three depths (i.e. 1m below surface, mid depth and 1m from seabed) at two control monitoring stations (TM-FC1 and TM-FC2) and two impact monitoring stations (TM-FM1and TM-FM2).

5.2 Monitoring Locations

As stipulated in the EM&A requirement, there were four monitoring stations undertaken during the impact monitoring. Figure 2 shows the locations of the marine water quality monitoring stations.

5.3 Monitoring Parameters and Frequency

Monitoring of the marine water quality parameters and frequency are listed in Table 5.1.

Table 5.1 Monitoring Parameters and Frequency of the marine water

Monitoring Station	*Parameter*	*Frequency*	*No. of Depths*
Control Stations: TM-FC1 (Mid-ebb) and TM-FC2 (Mid-flood) *Impact Stations: TM-FM1 and TM-FM2*	*Depth (m)*	*3 days/week, 2 tides/day*	*3 (Surface, mid-depth & bottom)*
	Temperature (℃)		
	Dissolved Oxygen (mg/L and % saturation)		
	Turbidity (NTU)		
	Salinity (ppt)		
	Suspended solids (mg/L)		

5.4 Monitoring Methodology and Equipment Used

For Location of the monitoring stations

Global Positing System (GPS)
A hand-held digital GPS was used to identify the designated monitoring stations prior to water sampling.

For Water Depth measurement

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

For In-situ Water Quality Measurement

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

Dissolved Oxygen, Salinity, Turbidity and Temperature Measuring Equipment

A portable, weatherproof multiparameter water quality meter (YSI Pro DSS) which complete with cable, sensor and DC power source were used for measuring DO, turbidity, salinity, pH and temperature:

- a dissolved oxygen level in the range of 0 to 50 mg/L and 0-500 % saturation;
- a turbidity in range 0-4000 NTU;
- a salinity in range 0-70 ppt;
- a temperature of -5-70 degree Celsius

A membrane electrode with automatic temperature compensation complete with a cable was installed.

For Water Sampling and Sample Analysis

In-situ monitoring was carried out at three depths: 1 meter below water surface, at mid-depth and 1 meter above the seabed. At each sampling depth, duplicate readings of dissolved oxygen content and turbidity were taken. The probes were drop into water, two consecutive measurements of dissolved oxygen (DO), dissolved oxygen saturation (DOS), turbidity and salinity were taken. The difference between the two readings of each set was more than 25% of the value of the first reading while a third measurement would be conducted to ensure data precision.

Water Sampler
A water sampler comprising a transparent PVC cylinder, with a capacity of not less than 2 liters, was lowered into the water body at the predetermined depth. The both opening ends of the sampler were then closed accordingly by dead weight and water samples were collected.

Water Container
The sample container, made by high-density polythene, was rinsed with a portion of the water sample. The water sample was then transferred to the container, labeled with a unique sample ID and sealed with a screw cap. The water samples were stored in a cool box maintained at 4^{o}C. The water samples were then delivered to a local HOKLAS-accredited laboratory (Environmental Laboratory, ETS-Testconsult Ltd, HOKLAS Registration No. 022) on the same day for analysis.

The summary of testing method of testing parameter as recommended by EIA or required by EPD, with the QA/QC results in accordance with the requirement of HOKLAS or international accredited scheme is shown in Table 5.2. For the QA/QC procedures, one QC sample, one duplicate sample and one sample spike of every batch of 20 samples were analysis. The QA/QC results are summarized in Appendix K.

Table 5.2 Summary of testing procedure

Laboratory Analysis	*Testing Procedure*	*Detection Limit*
Total suspended solids	*In house method based on APHA 19th ed 2540D*	*1.0 mg/L*

In-situ measurement

All in-situ monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or any other international accreditation scheme before use. Responses of sensors and electrodes were checked with certified standard solutions before each use. The DO sensor was calibrated by wet bulb method and a zero check in distilled water was performed with the turbidity and salinity sensor before the strat of measurement.

At each measurement/sampling depth, two consecutive measurements of dissolved oxygen (DO), dissolved oxygen saturation (DOS), turbidity and salinity were taken. For DO, DOS ,Turbidity and Salinity, measurements were conducted three days per week at both mid-ebb and mid-flood tides at three depths (i.e. 1m below surface, mid depth and 1m from seabed). The duplicate measurements were averaged if the difference was not greater than 25%. If the difference is greater than 25%, repeat measurement will be required to be carried out.

Table 5.3 shows the equipment used for in-situ monitoring of water quality. The calibration certificates are attached in Appendix C1.

Table 5.3 Details of Marine Water Quality Monitoring Equipment (In-site measurement)

Parameter	*Model*	*Date of Calibration*	*Due Date*	*Equipment No.*
Coordinate of Monitoring stations	*Garmin eTrex 10*	-----	-----	*ET/EW/005/09*
Dissolved Oxygen (Saturation), Temperature, Salinity, Turbidity	*YSI Pro DSS Multiparameter Water Quality Meter*	*04/10/19*	*03/01/20*	*ET/0510/013** *ET/EW/008/010**
Water Depth	*Speedtech SM-5*	-----	-----	*ET/EW/002/08*

Remark: Indicates the instrument should be calibrated on site.

5.5 Action and Limit Levels

The water quality criteria, namely Action and Limit (A/L) levels are presented in the table below.

Table 5.4 Water Quality Action and Limit Levels

Parameter	*Action Level*	*Limit Level*
DO (mg/L)	*Surface & Middle* *<4.78 mg/L (5%-ile of baseline data)* *Bottom* *<4.16 mg/L (5%-ile of baseline data)*	*Surface & Middle* *<4.00 mg/L (1%-ile of baseline data)* *Bottom* *<2.00 mg/L*
SS (mg/L) (Depth-averaged)	*>120% of the upstream control station's SS at the same tide on the same day*	*>130% of the upstream control station's SS at the same tide on the same day*
Turbidity (NTU) (Depth-averaged)	*>120% of the upstream control station's turbidity at the same tide on the same day*	*>130% of the upstream control station's turbidity at the same tide on the same day*

5.6 Event and Action Plan

Please refer to the Appendix F for details.

5.7 Monitoring Duration and Period in this reporting period

Table 5.5 is the time schedule for the marine water quality monitoring events that were conducted in this reporting period. Duration of marine water quality monitoring is detailed in Appendix C2.

Table 5.5 Time Schedule of Marine Water Quality Monitoring

December 2019						
Sunday	*Monday*	*Tuesday*	*Wednesday*	*Thursday*	*Friday*	*Saturday*
1	*2*	*3* ▼	*4*	*5* ▼	*6*	*7* ▼
8	*9*	*10* ▼	*11*	*12* ▼	*13*	*14* ▼
15	*16*	*17* ▼	*18*	*19* ▼	*20*	*21* ▼
22	*23*	*24* ▼	*25*	*26* #	*27*	*28* ▼
29	*30*	*31* ▼				

Remark (▼) : Marine water quality monitoring carried out by ET.
(#) : Due to the tidal period in holiday, 26 December 2019 water monitoring was cancelled.

5.8 Marine Water Quality Monitoring Results

The impact water quality measurement results are detailed in Appendix C2. Appendix C3 presents the water quality monitoring data and graphical presentations of monitoring results respectively. The summary of marine water quality exceedances is shown in Table 5.6.

Table 5.6 Summary of Marine Water Quality Exceedances in this reporting period

Tide	*Station*	*Exceedance Level*	*DO*		*Turbidity*	*SS*	*Total*
			Surface & Middle	*Bottom*			
Mid-Ebb	*TM-FM1*	*Action*	*0*	*0*	*0*	*0*	*0*
		Limit	*0*	*0*	*0*	*0*	*0*
	TM-FM2	*Action*	*0*	*0*	*0*	*0*	*0*
		Limit	*0*	*0*	*0*	*0*	*0*
Mid-Flood	*TM-FM1*	*Action*	*0*	*0*	*0*	*0*	*0*
		Limit	*0*	*0*	*0*	*0*	*0*
	TM-FM2	*Action*	*0*	*0*	*0*	*0*	*0*
		Limit	*0*	*0*	*0*	*0*	*0*
Total		*Action*	*0*	*0*	*0*	*0*	*0*
		Limit	*0*	*0*	*0*	*0*	*0*

According to the summary of marine water monitoring results, no exceedance of action and limit level was recorded in this reporting month.

6.0 Noise Monitoring

6.1 Monitoring Requirements

Noise monitoring was conducted at 2 designated monitoring stations as specified in the Sections 25.10A of the Particular Specification for good site practice.

The equipment, parameter, frequency, duration, methodology, calibration details, results and observations of the noise monitoring for the reporting month are presented in this section.

6.2 Monitoring Equipment

An Integrating Sound Level Meter was used for noise monitoring. It was a Type 1 sound level meter capable of giving a continuous readout of the noise level reading including equivalent continuous sound pressure level (L_{eq}) and percentile sound pressure level (Lx). It complies with International Electro Technical Commission Publications IEC 61672 Type 1 specification, and speed in m/s was used to monitor the wind speed.

Table 6.1 summarizes noise monitoring equipment model being used. A copy of the calibration certificate for noise meter and calibrator are attached in Appendix D1.

Table 6.1 Noise Monitoring Equipment

Equipment	*Model*
Sound Level Meter	*Rion NL-31 / Rion NL-52*
Calibrator	*Rion NC-73 / Castle GA607*

6.3 Monitoring Parameters, Duration and Frequency

Duration, frequencies and parameters of noise measurement are presented in Table 6.2.

Table 6.2 Duration, Frequencies and Parameters of Noise Monitoring

Time period	*Duration/min*	*Parameters*	*Frequency*
Day-time: 0700-1900 hrs on normal weekday	*30*	*L_{eq}, L_{10}, L_{90}*	*Twice per week*

6.4 Monitoring Locations and Period

Since Lands Dept did not approve to carry out noise monitoring at their own area where the noise monitoring stations TM-N1 and TM-N2 located due to the security, noise monitoring carried out at two noise monitoring stations TM-RN1 and TM-RN2 (refer to the figure 3 attached) from 18 December 2007.

The noise monitoring locations, TM-RN1 and TM-RN2 are shown in Figure 3. The noise measurement at TM-RN1 and TM-RN2 are façade measurement.

The noise-monitoring period of monitoring stations is summarized in Appendix D2.

6.5 Monitoring Procedures and Calibration Details

Operation/Analysis Procedures

- The Sound Level Meter was set on a tripod at a height of 1.2m above the ground.
- For free field measurement, the meter was positioned away from any nearby reflective surfaces.
- 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 : 30 min*
- Prior to and after each noise measurement, the meter was calibrated using a Calibrator for 94 dB at 1000HZ. If the difference in the calibration level before and after measurement was more than 1dB, the measurement would be considered invalid and repeat measurement would be required after re-calibration or repair of the equipment.

- The wind speed was frequently checked with a portable wind meter.
- During the monitoring period, the Leq, L10 and L90 were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- Free Field correction to the measurements should be made. Correction factor of +3dB(A) should be made to the free Field measurements. Noise monitoring would be cancelled in the presence of fog, rain, wind with a steady speed exceeding 5m/s, or wind gusts exceeding 10m/s.

Maintenance and Calibration

- The microphone head of the sound level meter and calibrator are cleaned with soft cloth in quarterly intervals.
- The meter is sent to the supplier or HOKLAS laboratory to check and calibrated in yearly intervals.

6.6 Action and Limit Levels

The Action and Limit levels for noise levels derived as illustrated in Table 6.3.

Table 6.3 Action and Limit Levels for noise monitoring

Time Period	*Action*	*Limit*
0700-1900 hrs on normal weekdays	*When one documented complaint is received*	*65 dB(A)*

6.7 Event-Action Plans

Please refer to the Appendix F for details.

6.8 Results and Observation

The detail of the noise monitoring is provided in Appendix D2. Graphical presentation of the monitoring result for the reporting period is shown in Appendix D3.

Since no documented complaint on noise issue was received in this reporting period, no Action Level exceedance was recorded. Besides, no exceedance in Limit Level was recorded according to the result from Day-time noise monitoring.

The major sources of noise pollution observed in this reporting month were noise from the traveling dump trucks and from the operation of site machines.

7.0 ENVIRONMENTAL AUDIT

7.1 Weekly ET Site Inspections and EPD's Site Inspection

7.1.1 Weekly ET Site Inspections

Weekly site inspections were carried out by ET to monitor the timely implementation of proper environmental pollution control and mitigation measures for the Project. In this reporting month, four weekly site inspections were conducted on 05, 12, 17 and 24 December 2019. Summaries of key findings of weekly ET site inspections in this month are described in Table 7.1.

Table 7.1 Key Findings of Weekly ET Site Inspections in this reporting month

Date	*Key Findings*	*Action(s) Taken recommended by ET*	*Action(s) Taken by the Contractor during the site audit*	*Rectification Status by ET*
05 December 2019	*No defective work or observation was recorded during the weekly ET site inspection.*			
12 December 2019	*No defective work or observation was recorded during the weekly ET site inspection.*			
17 December 2019	*No defective work or observation was recorded during the weekly ET site inspection.*			
24 December 2019	*General refuse were observed near CEDD office.*	*To clean the general refuse properly.*	---	*Follow-up*

7.1.2 EPD's Site Inspection

EPD's site inspection was carried out at TMFB on 30 December 2019.

7.2 Review of Environmental Monitoring Procedures

The monitoring works conducted by the ET were inspected internally on a regular basis. The following observations have been recorded for the monitoring works:

Air Quality Monitoring

- The monitoring team recorded the observations around the monitoring stations within and outside of the construction site.
- The monitoring team recorded the temperature, air pressure and general weather condition on the monitoring day.

Water Quality Monitoring

- The monitoring team recorded the observations around the monitoring stations, which might affect the results; and
- Major water pollution sources were identified and recorded.

Noise Monitoring

- The monitoring team recorded the observations around the monitoring station, which might affect the results.
- Major noise sources were identified and recorded.

7.3 Status of Environmental Licensing and Permitting

All permits/licenses valid in this reporting month are summarized in Table 7.2.

Table 7.2 Summary of environmental licensing and permit status

Description	*Permit No.*	*Valid Period*		*Section*
		From	*To*	
Environmental Permit	*EP-210/2005/C*	*06/09/18*	*---*	*Issued*
Marine Dumping Permit	*EP/MD/20-064*	*18/10/19*	*31/12/19*	*Approval for dumping 1,000,000 tons (approximately equal to 555,555 cu.m. bulked quantity) of Public Fill (Reclamation Materials) from Tseung Kwan O Area 137 Fill Bank and Tuen Mun Area 38 Fill Bank to designated dumping area at Guanghaiwan of Taishan*
Chemical Waste Producer	*5296-421-C4184-01*	*20/04/17*	*---*	*Spent battery containing heavy metals and spent lubricating oil*
Effluent Discharge License	*WT00028701-2017*	*25/09/17*	*30/09/22*	*Effluent arising from vehicle washing and dust suppression activities and contaminated surface runoff treated by screening facilities and sedimentation tanks (sedimentation and chemical precipitation).*
Billing Account for Waste Disposal	*7027643*	*22/05/17*	*---*	*---*
Notification Pursuant to Section 3(1) of the Air Pollution Control (Construction Dust)	*415661*	*12/04/17*	*---*	*---*

7.4 Implementation Status

7.4.1 Implementation Status of Environmental Mitigation Measures

An updated summary of the Environmental Mitigation Implementation Schedule (EMIS) is presented in Appendix I. Most of the necessary mitigation measures were implemented properly.

7.4.2 Implementation Status of Event and Action Plan

No exceedance of Action and Limit levels was recorded for 1-hr and 24-hr TSP monitoring in the reporting month. Apart from this, there was no exceedance on noise recorded in this month.

According to the marine water monitoring results, no action-level and limit-level exceedance was recorded in this reporting period.

Hence, no further action was required to be implemented.

7.4.3 Implementation Status of Environmental Complaint, Notification of Summon and Successful Prosecution Handling

No complaint, notification of summon and prosecution with respect to environmental issues was received in this monitoring month.

A summary of environmental complaints, notifications of summons and successful prosecutions was given in Table 7.3.

Table 7.3 Summary of Environmental Complaints and Prosecutions

Complaints logged		*Summons served*		*Successful Prosecution*	
December 2019	*Cumulative*	*December 2019*	*Cumulative*	*December 2019*	*Cumulative*
0	*3*	*0*	*0*	*0*	*0*

8.0 LANDSCAPE AND VISUAL

Landscape and visual site audit was carried out on a weekly basis to monitor environmental issues in order to ensure that all mitigation measures were implemented timely and properly. The findings in this reporting period were:

- The maximum stockpiling height at the Fill Bank was limited to a maximum of +40 mPD;
- The Contractor hydroseeded the outer slopes of the Fill Bank as far as practicable;
- The Contractor removed the stockpile of public fill in a sequence to allow the outer hydroseeded to be removed later than other portions as far as practicable; and
- Lighting was set to minimize night-time glare.

9.0 WASTE MANAGEMENT

9.1 Summary of Waste disposed of in this period

The actual amounts of different types of waste disposed of by the activities of the Project in the period are shown in Table 9.1

Table 9.1 Actual amounts of Waste generated in this reporting month

Waste Type	*Actual Amount*	*Disposal Locations*
Public Fill ('000m^3)	*0*	*Tuen Mun 38 Fill Bank*
C&D Waste ('000kg)	*7.15*	*WENT Landfill*
Chemical Waste (kg)/(L)	*0*	*Collected by licensed collector*

9.2 Advice on the Solid and Liquid Waste Management Status

The Contractor should provide sufficient preventive measures during equipment maintenance works so as to avoid oil leakage on the ground. In the event of any oil leakage, the Contractor should clean up the polluted soil and handle all the materials used for this cleaning works as chemical waste.

The drain outlet of all the bunded areas should be plugged properly. Besides, pre-cast drip trays were provided for oil drums at several areas, such as workshop and chemical storage area. The Contractor should collect and dispose of any stagnant water accumulated in the concrete bunding and drip trays and handle them as chemical waste.

The Contractor should use suitable containers with proper labels to store chemical wastes in accordance with Code of Practice on the Packaging, Labeling and Storage of Chemical Waste.
The Contractor should also advise their workers of the proper procedures in handling the chemical waste. All the trip tickets for chemical waste disposal should be properly kept in the site office.

The Contractor was reminded to increase the frequency of inspection and cleaning of the site drainage system, including permanent desilting chambers, desilting facilities, oil interceptor bypass tank and all the trapezoidal channels. Moreover, the Contractor should apply approved pesticides in the stagnant water ponds.

All the runoff from the parking area should be pumped to the desilting facilities and oil interceptors to remove suspended solids and oil & grease prior to discharge.

10.0 ENVIRONMENTAL NON-CONFORMANCE

10.1 Summary of air quality, noise and marine water quality

No exceedance of Action and Limit level was recorded for 1-hr and 24-hr TSP monitoring in the reporting period.
According to the marine water monitoring results, no action-level and limit-level exceedance was recorded in the reporting period.

The noise level measured at the monitoring station complied with the Limit Level of 65dB(A). No complaint was received regarding noise issue in this reporting period.

10.2 Summary of Environmental Complaints

No complaint was received in this reporting period.

10.3 Summary of Notification of Summons and Prosecution

There was no notification of summon and prosecution respect to environmental issues registered in this reporting period.

11.0 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Impact monitoring of air quality, noise and water quality were carried out at designated locations in this reporting period.

According to the summary of air monitoring results, no exceedance of Action and Limit levels was recorded for 1-hr and 24-hr TSP monitoring in the reporting period.

According to the marine water monitoring results, no action-level and limit-level exceedance was recorded in the reporting period.

The noise level measured at the monitoring station complied with the Limit Level of 65dB(A). No complaint was received regarding noise issue in this reporting period.

According to the weekly site inspections carried out in this reporting period, the Contractor generally implemented sufficient dust mitigation measures, including operation of the mist spraying systems and automatic wheel washing facilities, dampening of haul roads and stockpiling areas.

No complaint, prosecution or notification of summons was received in this reporting period.

Recommendations

According to the environmental site inspections performed in the reporting period, the following recommendations were provided:

Air Quality

- Ensure the frequency of water spraying on haul roads, unloading areas and stockpiles to be sufficient to suppress the dust sources;
- Provide proper maintenance for the powered mechanical equipment and barges to avoid emission of dark smoke;
- Provide water spraying onto the truckloads during inspection of fill material;
- Conduct road sweeping on all paved haul roads and public roads especially outside and near the site egress by the road sweeper. Undertake water spraying on stockpiling area by water bowser;
- Erect adequate speed limit signs to advise the truck drivers of the speed limit;
- Operate mist spraying systems and automatic water sprinklers in the Fill Bank;
- Implement the dust mitigation measures for the construction activities;
- Designate proper haul roads to ensure effective water spraying; and

- Ensure all vehicles to be washed before leaving the site egress by provision, operation and maintenance of automatic wheel washing facilities.

Noise

- Conduct noisy activities at a farther location from the NSRs.

Water Quality

- Maintain the drainage system, including the trapezoidal channels and permanent desilting chambers regularly; and
- Remove the stagnant water or provide approved pesticides for the stagnant water in the permanent desilting chambers, if any.

Chemical and Waste Management

- Remove waste materials from the site to avoid accumulation regularly;
- Handle and store chemical wastes properly;
- Remove unwanted material in the existing stockpiles and avoid further dumping of such material;
- Provide and maintain sufficient drip trays for diesel drums, chemical containers, chemical waste storage drums and diesel operated generator set;
- Maintain good housekeeping at the workshop area;
- Ensure sufficient tarpaulin sheets are provided to cover drip trays; and
- Avoid soil being polluted during oil filling and equipment maintenance; hence, properly remove and store the contaminated soil, if any.

Landscape and Visual

- Provide hydroseeding on the exposed slopes, on which the final profile has been formed;
- Erect all the site hoarding/chaining fences in accordance with agreed design at proper location; and
- Maintain the hydroseeded slopes properly.

12.0 FUTURE KEY ISSUES

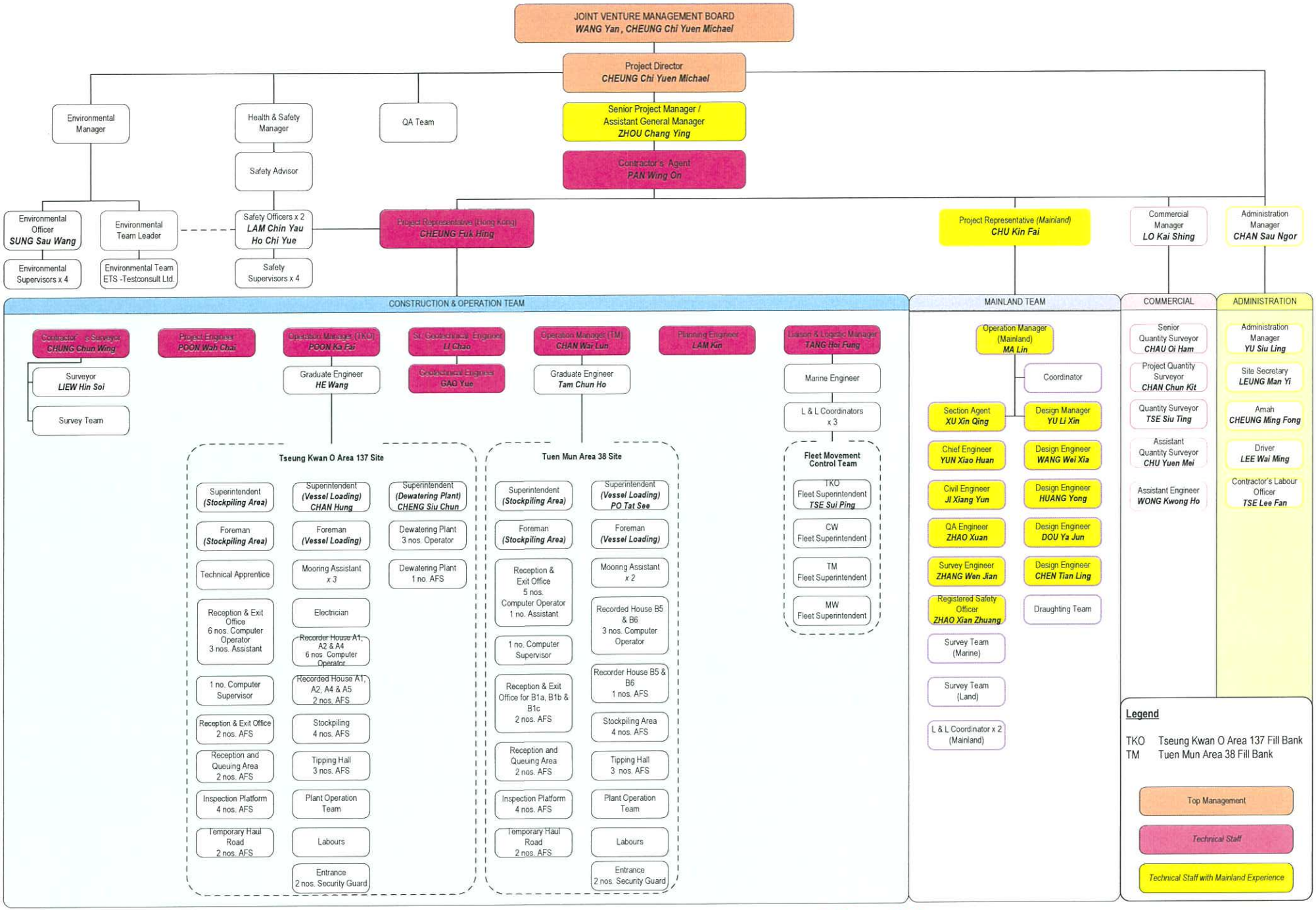
Based on the site inspections and forecast of engineering works in the coming month, key issues to be considered are as follows:

- Dust generation from activities on site, such as vehicular movements along unpaved area and rock crushing activities;
- Noise impact from operating equipment and machinery on site and
- Wastewater and surface runoff from the site discharged into nearby water body.

- END OF REPORT -

Appendix A

Project Organization Chart


JOINT VENTURE MANAGEMENT BOARD
WANG Yan , CHEUNG Chi Yuen Michael
Project Director
CHEUNG Chi Yuen Michael
Senior Project Manager / Assistant General Manager
ZHOU Chang Ying
Contractor's Agent
PAN Wing On
Environmental Manager
Health & Safety Manager
QA Team
Safety Advisor
Environmental Officer
SUNG Sau Wang
Environmental Team Leader
Safety Officers x 2
LAM Chin Yau
Ho Chi Yue
Project Representative (Hong Kong)
CHEUNG Fuk Hing
Project Representative (Mainland)
CHU Kin Fai
Commercial Manager
LO Kai Shing
Administration Manager
CHAN Sau Ngor
Environmental Supervisors x 4
Environmental Team ETS -Testconsult Ltd.
Safety Supervisors x 4
CONSTRUCTION & OPERATION TEAM
MAINLAND TEAM
COMMERCIAL
ADMINISTRATION
Contractor's Surveyor
CHUNG Chun Wing
Project Engineer
POON Wah Chai
Operation Manager (TKO)
POON Ka Fai
Sr. Geotechnical Engineer
LI Chao
Operation Manager (TM)
CHAN War Lun
Planning Engineer
LAM Kin
Liaison & Logistic Manager
TANG Hoi Fung
Surveyor
LIEW Hin Soi
Survey Team
Graduate Engineer
HE Wang
Geotechnical Engineer
GAO Yue
Graduate Engineer
Tam Chun Ho
Marine Engineer
L & L Coordinators x 3
Tseung Kwan O Area 137 Site
Superintendent (Stockpiling Area)
Foreman (Stockpiling Area)
Technical Apprentice
Reception & Exit Office 6 nos. Computer Operator 3 nos. Assistant
1 no. Computer Supervisor
Reception & Exit Office 2 nos. AFS
Reception and Queuing Area 2 nos. AFS
Inspection Platform 4 nos. AFS
Temporary Haul Road 2 nos. AFS
Superintendent (Vessel Loading) CHAN Hung
Foreman (Vessel Loading)
Mooring Assistant x 3
Electrician
Recorder House A1, A2 & A4 6 nos. Computer Operator
Recorded House A1, A2, A4 & A5 2 nos. AFS
Stockpiling 4 nos. AFS
Tipping Hall 3 nos. AFS
Plant Operation Team
Labours
Entrance 2 nos. Security Guard
Superintendent (Dewatering Plant) CHENG Siu Chun
Dewatering Plant 3 nos. Operator
Dewatering Plant 1 no. AFS
Tuen Mun Area 38 Site
Superintendent (Stockpiling Area)
Foreman (Stockpiling Area)
Reception & Exit Office 5 nos. Computer Operator 1 no. Assistant
1 no. Computer Supervisor
Reception & Exit Office for B1a, B1b & B1c 2 nos. AFS
Reception and Queuing Area 2 nos. AFS
Inspection Platform 4 nos. AFS
Temporary Haul Road 2 nos. AFS
Superintendent (Vessel Loading) PO Tat See
Foreman (Vessel Loading)
Mooring Assistant x 2
Recorded House B5 & B6 3 nos. Computer Operator
Recorder House B5 & B6 1 nos. AFS
Stockpiling Area 4 nos. AFS
Tipping Hall 3 nos. AFS
Plant Operation Team
Labours
Entrance 2 nos. Security Guard
Fleet Movement Control Team
TKO Fleet Superintendent TSE Sui Ping
CW Fleet Superintendent
TM Fleet Superintendent
MW Fleet Superintendent
Operation Manager (Mainland) MA Lin
Coordinator
Section Agent XU Xin Qing
Design Manager YU Li Xin
Chief Engineer YUN Xiao Huan
Design Engineer WANG Wei Xia
Civil Engineer JI Xiang Yun
Design Engineer HUANG Yong
QA Engineer ZHAO Xuan
Design Engineer DOU Ya Jun
Survey Engineer ZHANG Wen Jian
Design Engineer CHEN Tian Ling
Registered Safety Officer ZHAO Xian Zhuang
Draughting Team
Survey Team (Marine)
Survey Team (Land)
L & L Coordinator x 2 (Mainland)
Senior Quantity Surveyor CHAU Oi Ham
Project Quantity Surveyor CHAN Chun Kit
Quantity Surveyor TSE Siu Ting
Assistant Quantity Surveyor CHU Yuen Mei
Assistant Engineer WONG Kwong Ho
Administration Manager YU Siu Ling
Site Secretary LEUNG Man Yi
Amah CHEUNG Ming Fong
Driver LEE Wai Ming
Contractor's Labour Officer TSE Lee Fan
Legend
TKO Tseung Kwan O Area 137 Fill Bank
TM Tuen Mun Area 38 Fill Bank
Top Management
Technical Staff
Technical Staff with Mainland Experience

Appendix B1

Calibration Certificates for Impact Air Quality Monitoring Equipments

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW

Date of Calibration : 14 November 2019

Serial No. : 2484 (ET / EA / 003 / 27)

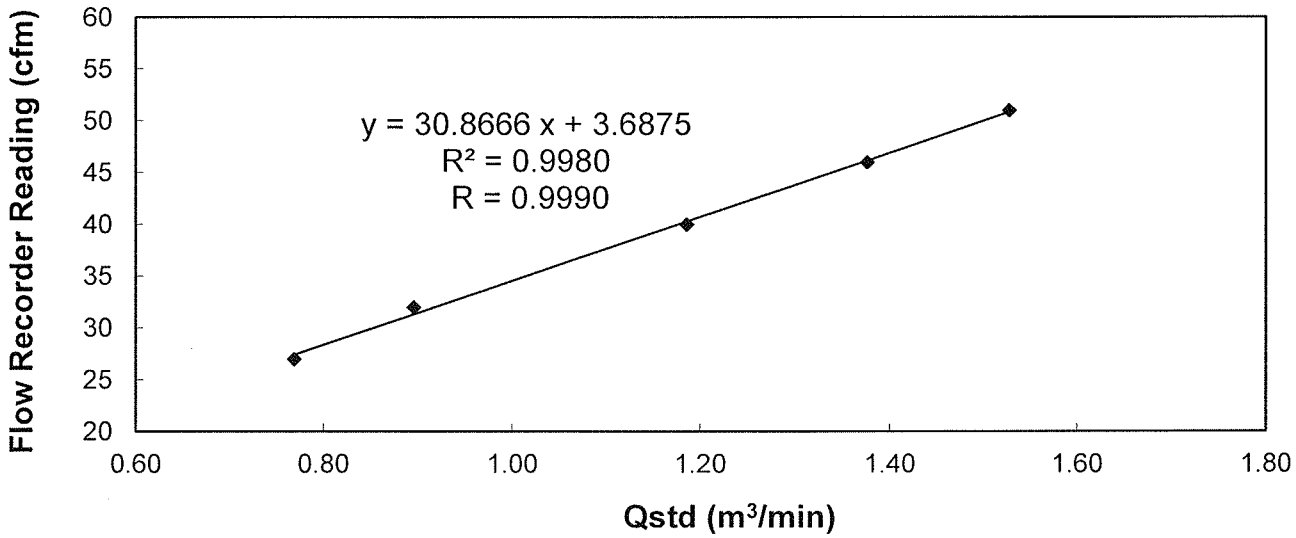
Calibration Due Date : 13 January 2020

Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	51	46	40	32	27
Qstd (Actual flow rate, m^3/min)	1.53	1.38	1.19	0.89	0.77
Pressure : 760.56 mm Hg		Temp. : 300 K			

Sampler 2484 Calibration Curve
Site: Tuen Mun 38 (TM-A1)



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies* / ~~does not comply~~* with the specified requirements and is deemed acceptable*/ ~~unacceptable~~* for use.

Calibrated by : Mak Kei Wai
MAK, Kei Wai
(Assistant Supervisor)

Checked by :
LAU, Chi Leung
(Environmental Team Leader)

- END OF REPORT -

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.™

8/F Block B,
Veristrong Industrial Centre,
34-36 Au Pui Wan Street,
Fo Tan, Hong Kong

T: +852 2695 8318
F: +852 2695 3944
E: etl@ets-testconsult.com
W: www.ets-testconsult.com

Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW

Date of Calibration : 14 November 2019

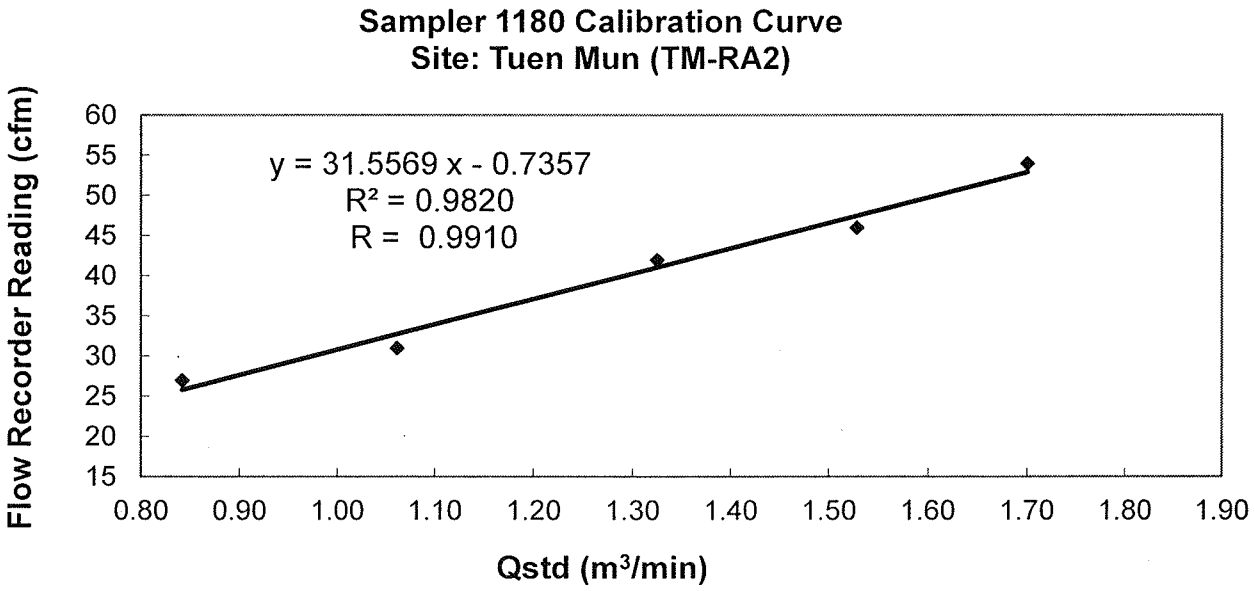
Serial No. : 1180 (ET / EA / 003 / 04)

Calibration Due Date : 13 January 2020

Method : Based on Operations Manual for the 5-point calibration using standard calibration kit manufactured by Tisch TE-5025 A

Results :

Flow recorder reading (cfm)	54	46	42	31	27
Qstd (Actual flow rate, m^3/min)	1.70	1.53	1.32	1.06	0.84
Pressure : 760.56 mm Hg		Temp. : 300 K			



Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

The high volume sampler complies* / ~~does not comply~~* with the specified requirements and is deemed acceptable* / ~~unacceptable~~ * for use.

Calibrated by : Mak Kei Wai
MAK, Kei Wai
(Assistant Supervisor)

Checked by :
LAU, Chi Leung
(Environmental Team Leader)

- END OF REPORT -

TISCH Environmental

RECALIBRATION DUE DATE:
March 15, 2020

Certificate of Calibration

Calibration Certification Information				
Cal. Date:	March 15, 2019	**Rootsmeter S/N:** 438320	**Ta:** 293	°K
Operator:	Jim Tisch		**Pa:** 760.7	mm Hg
Calibration Model #:	TE-5025A	**Calibrator S/N:** **3612**		

Run	Vol. Init (m3)	Vol. Final (m3)	ΔVol. (m3)	ΔTime (min)	ΔP (mm Hg)	ΔH (in H2O)
1	1	2	1	1.4500	3.2	2.00
2	3	4	1	1.0300	6.3	4.00
3	5	6	1	0.9220	7.8	5.00
4	7	8	1	0.8780	8.7	5.50
5	9	10	1	0.7220	12.6	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)
1.0138	0.6991	1.4269	0.9958	0.6868	0.8777
1.0096	0.9802	2.0180	0.9917	0.9628	1.2412
1.0076	1.0928	2.2561	0.9897	1.0735	1.3877
1.0064	1.1462	2.3663	0.9886	1.1259	1.4555
1.0012	1.3867	2.8538	0.9834	1.3621	1.7553
QSTD	**m=**	**2.07834**	**QA**	**m=**	**1.30142**
	b=	**-0.02094**		**b=**	**-0.01288**
	r=	**0.99994**		**r=**	**0.99994**

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

www.tisch-env.com
TOLL FREE: (877)263-7610
FAX: (513)467-9009

Appendix B2

Impact Air Quality Monitoring Results

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.

Summary of 24-hr TSP Monitoring Results

Monitoring Station : TM-A1

Start		Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m^3/min.)		Average (m^3/min.)	Filter Weight (g)		Conc. ($\mu g/m^3$)
Date	Time	Date	Time	Initial	Final		Initial	Final		Initial	Final	
06/12/2019	08:30	07/12/2019	08:30	10600.31	10624.31	24.00	1.0144	1.0144	1.0144	2.7382	2.8793	97
12/12/2019	09:08	13/12/2019	09:08	10627.31	10651.31	24.00	1.0792	1.0792	1.0792	2.7205	2.8987	115
18/12/2019	08:30	19/12/2019	08:30	10654.31	10678.31	24.00	1.0468	1.0468	1.0468	2.6394	2.8072	111
24/12/2019	09:30	25/12/2019	09:30	10681.31	10705.31	24.00	1.0468	1.0468	1.0468	2.6594	2.7956	90
30/12/2019	08:30	31/12/2019	08:30	10708.31	10732.31	24.00	1.0468	1.0468	1.0468	2.6869	2.8284	94

Monitoring Station : TM-RA2

Start		Finish		Elapse Time		Sampling Time (hrs)	Flow Rate (m^3/min.)		Average (m^3/min.)	Filter Weight (g)		Conc. ($\mu g/m^3$)
Date	Time	Date	Time	Initial	Final		Initial	Final		Initial	Final	
06/12/2019	08:30	07/12/2019	08:30	25863.53	25887.53	24.00	1.1007	1.1007	1.1007	2.6348	2.7981	103
12/12/2019	09:15	13/12/2019	09:15	25890.53	25914.53	24.00	1.1007	1.1007	1.1007	2.6849	2.8487	103
18/12/2019	08:30	19/12/2019	08:30	25917.53	25941.53	24.00	1.1324	1.1324	1.1324	2.6326	2.8219	116
24/12/2019	09:25	25/12/2019	09:25	25944.53	25968.53	24.00	1.1007	1.1007	1.1007	2.6913	2.8277	86
30/12/2019	08:30	31/12/2019	08:30	25971.53	25995.53	24.00	1.1007	1.1007	1.1007	2.6211	2.7813	101

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.

Summary of 1-hr TSP Monitoring Results

Monitoring Station : TM-A1

Date	Time		Elapse Time		Sampling Time (hrs)	Flow Rate (m^3/min.)		Average (m^3/min.)	Filter Weight (g)		Conc. ($\mu g/m^3$)
	Start	Finish	Initial	Final		Initial	Final		Initial	Final	
03/12/2019	10:45	11:45	10597.31	10598.31	1.00	1.0468	1.0468	1.0468	2.7597	2.7761	261
03/12/2019	13:25	14:25	10598.31	10599.31	1.00	1.0468	1.0468	1.0468	2.7575	2.7745	271
05/12/2019	08:44	09:44	10599.31	10600.31	1.00	1.0468	1.0468	1.0468	2.7611	2.7774	260
07/12/2019	13:00	14:00	10624.31	10625.31	1.00	1.0792	1.0792	1.0792	2.7795	2.7925	201
10/12/2019	10:38	11:38	10625.31	10626.31	1.00	1.0468	1.0468	1.0468	2.7822	2.7928	169
10/12/2019	13:00	14:00	10626.31	10627.31	1.00	1.0468	1.0468	1.0468	2.7898	2.8016	188
14/12/2019	10:24	11:24	10651.31	10652.31	1.00	1.0468	1.0468	1.0468	2.8065	2.8248	291
17/12/2019	09:22	10:22	10652.31	10653.31	1.00	1.0144	1.0144	1.0144	2.7846	2.7918	118
17/12/2019	10:25	11:25	10653.31	10654.31	1.00	1.0144	1.0144	1.0144	2.7535	2.7633	161
19/12/2019	09:30	10:30	10678.31	10679.31	1.00	1.0144	1.0144	1.0144	2.7340	2.7419	130
19/12/2019	10:40	11:40	10679.31	10680.31	1.00	1.0144	1.0144	1.0144	2.7495	2.7598	169
21/12/2019	10:40	11:40	10680.31	10681.31	1.00	1.0792	1.0792	1.0792	2.7163	2.7249	133
28/12/2019	10:41	11:41	10705.31	10706.31	1.00	1.0144	1.0144	1.0144	2.7794	2.7909	189
28/12/2019	13:10	14:10	10706.31	10707.31	1.00	1.0144	1.0144	1.0144	2.7744	2.7848	171
28/12/2019	16:32	17:32	10707.31	10708.31	1.00	1.0144	1.0144	1.0144	2.7644	2.7735	150
31/12/2019	10:27	11:27	10732.31	10733.31	1.00	1.0144	1.0144	1.0144	2.7744	2.7886	233

Summary of 1-hr TSP Monitoring Results

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.

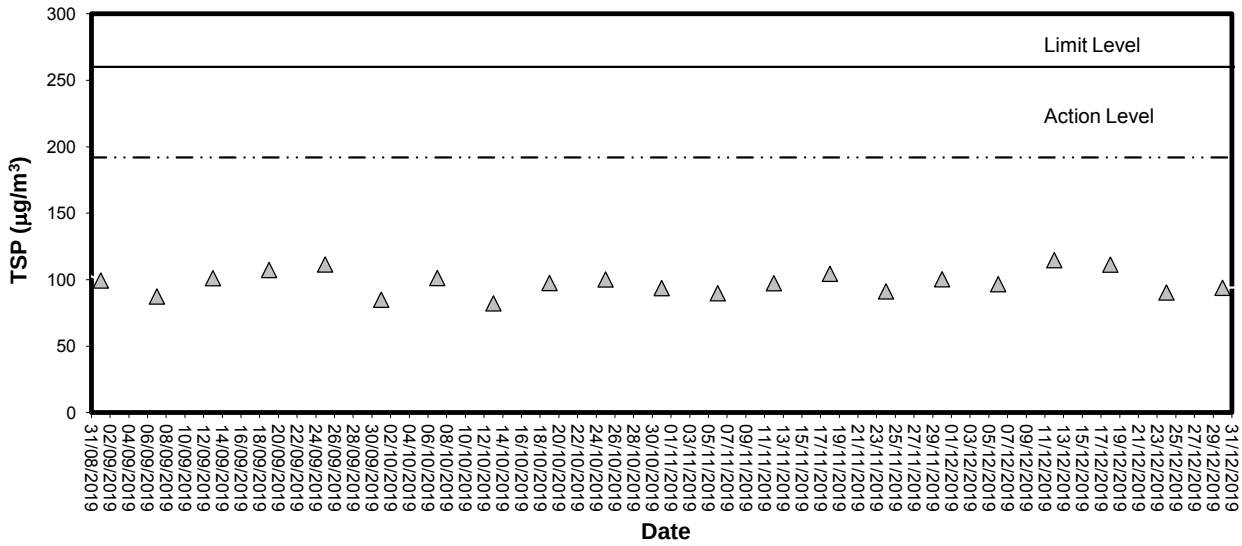
Monitoring Station : TM-RA2

Date	Time		Elapse Time		Sampling Time (hrs)	Flow Rate (m^3/min.)		Average (m^3/min.)	Filter Weight (g)		Conc. ($\mu g/m^3$)
	Start	Finish	Initial	Final		Initial	Final		Initial	Final	
03/12/2019	11:00	12:00	25860.53	25861.53	1.00	1.1007	1.1007	1.1007	2.8223	2.8426	307
03/12/2019	13:32	14:32	25861.53	25862.53	1.00	1.1007	1.1007	1.1007	2.7418	2.7616	300
05/12/2019	08:50	09:50	25862.53	25863.53	1.00	1.1324	1.1324	1.1324	2.7514	2.7689	258
07/12/2019	13:00	14:00	25887.53	25888.53	1.00	1.1324	1.1324	1.1324	2.7786	2.7938	224
10/12/2019	10:44	11:44	25888.53	25889.53	1.00	1.0690	1.0690	1.0690	2.7766	2.7900	209
10/12/2019	13:00	14:00	25889.53	25890.53	1.00	1.0690	1.0690	1.0690	2.7982	2.8120	215
14/12/2019	10:29	11:29	25914.53	25915.53	1.00	1.1324	1.1324	1.1324	2.8058	2.8259	296
17/12/2019	09:38	10:38	25915.53	25916.53	1.00	1.1007	1.1007	1.1007	2.7715	2.7816	153
17/12/2019	10:45	11:45	25916.53	25917.53	1.00	1.1007	1.1007	1.1007	2.7797	2.7923	191
19/12/2019	09:40	10:40	25941.53	25942.53	1.00	1.1007	1.1007	1.1007	2.8086	2.8195	165
19/12/2019	10:56	11:56	25942.53	25943.53	1.00	1.1007	1.1007	1.1007	2.7224	2.7350	191
21/12/2019	10:30	11:30	25943.53	25944.53	1.00	1.1324	1.1324	1.1324	2.8047	2.8164	172
28/12/2019	10:48	11:48	25968.53	25969.53	1.00	1.0690	1.0690	1.0690	2.7319	2.7449	203
28/12/2019	13:13	14:13	25969.53	25970.53	1.00	1.0690	1.0690	1.0690	2.7539	2.7658	186
28/12/2019	16:44	17:44	25970.53	25971.53	1.00	1.0690	1.0690	1.0690	2.7592	2.7698	165
31/12/2019	10:35	11:35	25995.53	25996.53	1.00	1.0690	1.0690	1.0690	2.7834	2.7995	251

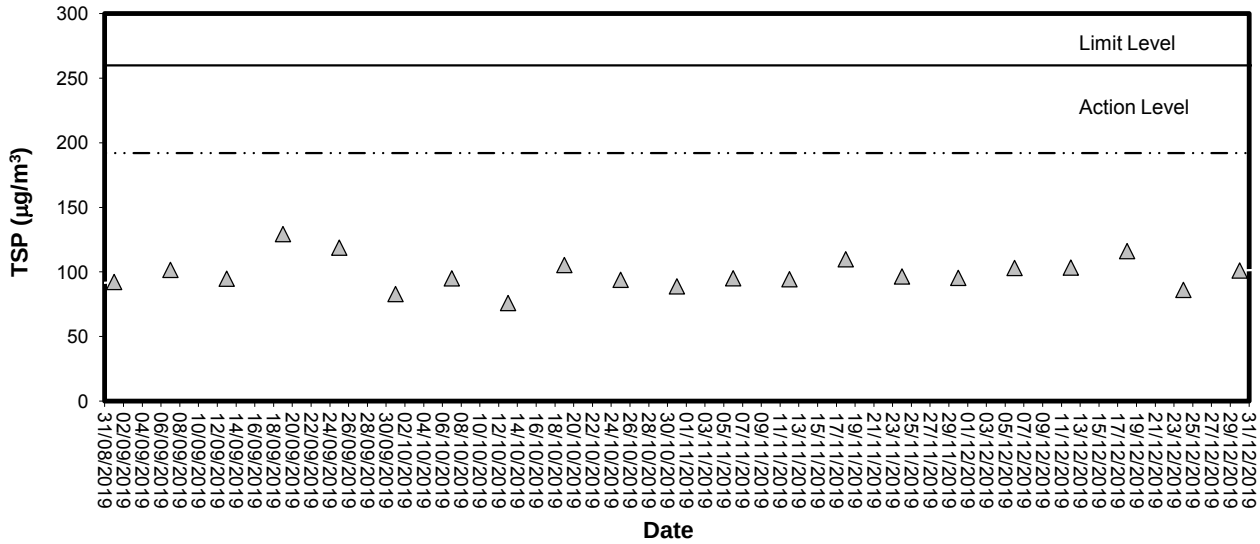
Appendix B3

Graphical Plots of Impact Air Quality Monitoring Data

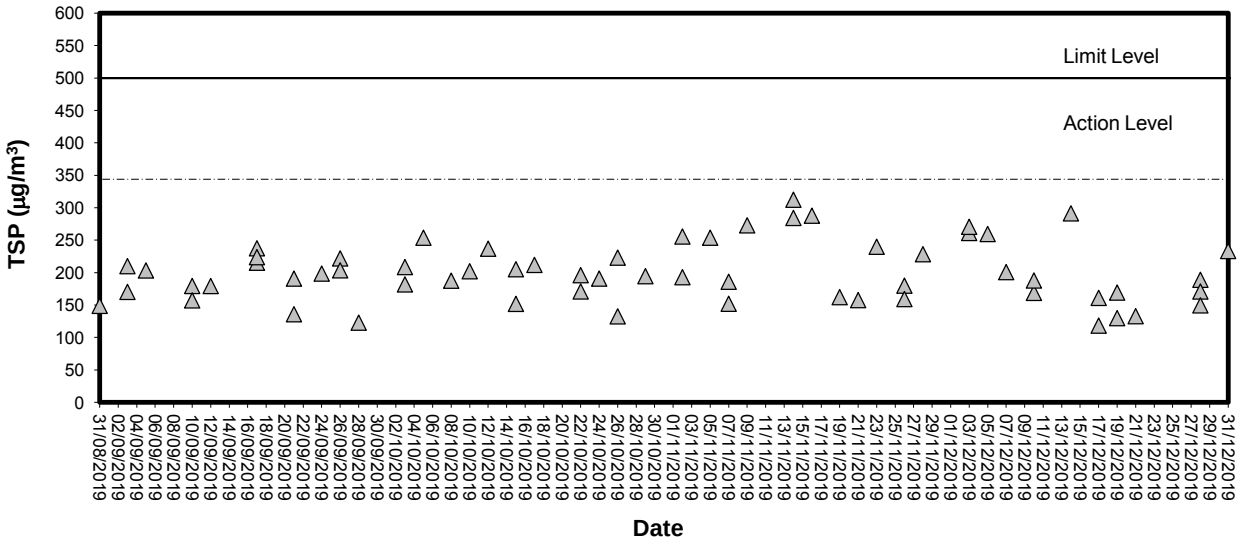
24-hour TSP level at TM-A1



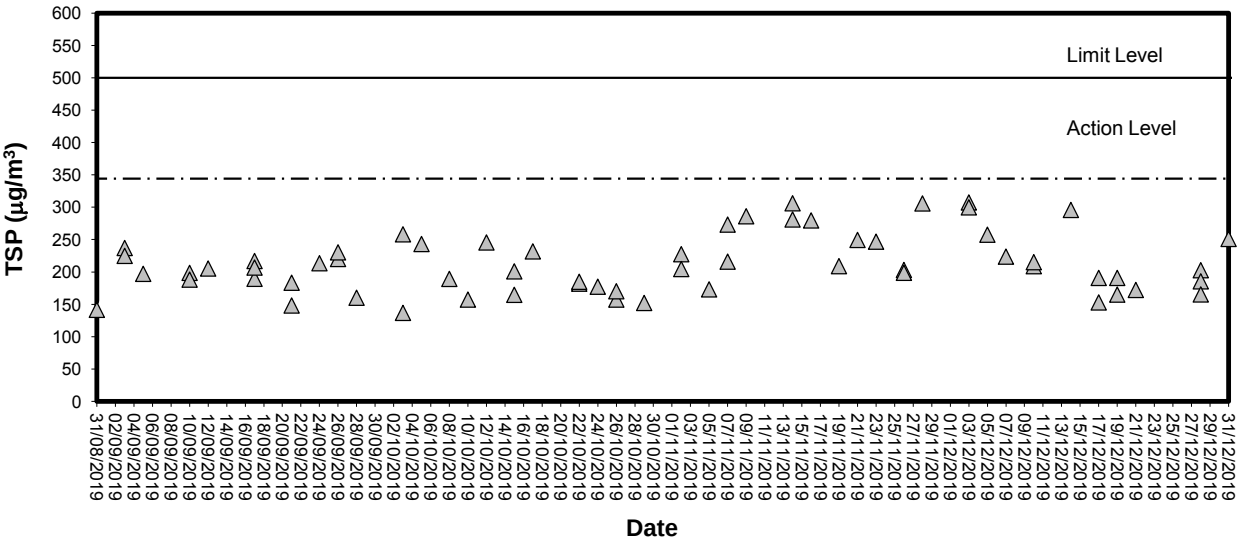
24-hour TSP level at TM-RA2



1-hour TSP level at TM-A1



1-hour TSP level at TM-RA2



Appendix C1

Calibration Certificates for Impact Marine Water Quality Monitoring Equipments

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Performance Check / Calibration of Multiparameter Water Quality Meter

Equipment Ref. No.	:	ET/EW/008/010	Manufacturer	:	YSI
Model No.	:	Pro DSS	Serial No.	:	18E105421
Date of Calibration	:	4/10/2019	Calibration Due Date	:	3/1/2020

Results

1. Temperature

(Method Reference: Section 6 of internation Accreditation New Zealand Technical Guide no. 3 Second edition March 2008: Working Thermometer Calibration Procedure)

Reading of Reference Thermometer (°C)	Displayed Reading (°C)	Tolerance (°C)
20.5	20.8	+0.3
25.0	25.3	+0.3
28.8	29.0	+0.2

Tolerance Limit (°C): ± 2.0

2. pH

(Method Reference: APHA 19ed 4500-H^+ B)

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.00		
6.86		
9.18		

Tolerance Limit (pH unit): ± 0.10

3. Conductivity

(Method Reference: APHA 19ed 2510 B)

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)
146.9	150.8	+2.7
1412	1482	+5.0
12890	13382	+3.8
58760	59429	+1.1

Tolerance Limit (µS/cm): ± 10.0%

4. Salinity

(Method Reference: APHA 19ed 2520 B)

Expected Reading (g/L)	Displayed Reading (g/L)	Tolerance (%)
10.0	9.80	-2.0
20.0	19.52	-2.4
30.0	28.33	-5.6

Tolerance Limit (g/L): ± 10.0%

Performance Check / Calibration of Multiparameter Water Quality Meter

Equipment Ref. No.	:	ET/EW/008/010	Manufacturer	:	YSI
Model No.	:	Pro DSS	Serial No.	:	18E105421
Date of Calibration	:	4/10/2019	Calibration Due Date	:	3/1/2020

5. Dissolved Oxygen
(Method Reference: APHA 19ed 4500-O G)

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.08	2.20	+0.12
4.46	4.54	+0.08
5.82	5.91	+0.09

Tolerance Limit (mg/L): ± 0.20

6. Turbidity
(Method Reference: APHA 19ed 2130 B)

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
10	9.55	-4.5
40	38.43	-3.9
100	97.74	-2.3
400	395.26	-1.2

Tolerance Limit (NTU): ± 10.0%

The equipment complies # / ~~does not comply~~ # with the specified requirements and is deemed acceptable # / ~~unacceptable~~ # for use.

Delete as appropriate

Calibrated by : _____ Approved by : _____

Appendix C2

Impact Marine Water Quality Monitoring Results

Mid-Ebb Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FC1

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
05/12/19	8:32:50	24/Fine	Surface	1.0	21.8	34.7	34.7	6.84	6.82	6.65	95.4	95.1	5.14	5.11	4.64	9.1	8.8	8.9
						34.7		6.80			94.8		5.08			8.5		
			Middle	11.8	22.0	34.8	34.8	6.49	6.48		90.9	90.8	4.57	4.48		6.8	6.8	
						34.9		6.47			90.7		4.39			6.8		
			Bottom	22.5	22.2	35.0	35.0	6.37	6.37	6.37	89.6	89.6	4.35	4.33		11.3	11.1	
						35.0		6.36			89.6		4.31			10.9		
07/12/19	9:10:22	24/Fine	Surface	1.0	21.1	35.1	35.1	6.50	6.50	6.48	89.7	89.7	3.85	3.83	4.17	7.5	7.2	7.1
						35.1		6.50			89.7		3.80			6.8		
			Middle	11.0	21.1	35.1	35.1	6.47	6.47		89.3	89.3	3.94	3.91		7.2	7.3	
						35.1		6.46			89.2		3.87			7.4		
			Bottom	21.0	21.0	35.1	35.1	6.44	6.44	6.44	88.7	88.7	4.65	4.78		6.8	6.8	
						35.1		6.44			88.7		4.91			6.7		
10/12/19	10:41:33	24/Fine	Surface	1.0	20.0	35.1	35.1	6.84	6.83	6.80	92.6	92.5	6.31	7.23	10.32	14.4	14.3	13.5
						35.1		6.82			92.3		8.15			14.2		
			Middle	11.1	20.0	35.1	35.1	6.78	6.78		91.7	91.7	9.19	9.46		12.7	12.6	
						35.1		6.77			91.6		9.72			12.5		
			Bottom	21.3	19.9	35.1	35.1	6.78	6.78	6.78	91.5	91.5	14.19	14.26		13.9	13.6	
						35.1		6.77			91.4		14.33			13.2		
12/12/19	12:30:30	24/Fine	Surface	1.0	19.8	34.7	34.7	6.97	6.94	6.90	93.7	93.3	7.80	7.82	11.42	6.7	7.2	7.9
						34.8		6.91			92.9		7.83			7.7		
			Middle	11.9	19.8	34.8	34.8	6.90	6.86		92.8	92.4	11.61	12.26		7.9	7.9	
						34.9		6.82			91.9		12.90			7.8		
			Bottom	22.9	19.9	34.9	34.9	6.81	6.81	6.81	91.8	91.8	13.52	14.19		8.9	8.8	
						34.9		6.81			91.8		14.86			8.6		
14/12/19	13:30:25	24/Fine	Surface	1.0	20.0	34.2	34.2	6.99	6.96	6.91	94.0	93.6	7.39	7.40	10.02	7.3	7.7	8.8
						34.2		6.93			93.2		7.41			8.0		
			Middle	10.6	19.8	34.2	34.2	6.87	6.87		92.1	92.0	10.18	10.21		10.3	10.6	
						34.2		6.86			91.9		10.23			10.8		
			Bottom	20.2	20.0	34.4	34.4	6.78	6.78	6.78	91.2	91.2	12.67	12.45		8.6	8.2	
						34.4		6.78			91.2		12.22			7.8		
17/12/19	16:00:43	24/Fine	Surface	1.0	20.2	32.0	32.0	6.85	6.83	6.83	91.2	91.1	7.64	7.27	8.30	6.1	6.2	6.3
						32.0		6.81			90.9		6.90			6.3		
			Middle	11.6	20.7	33.3	33.3	6.82	6.83		92.6	92.7	7.28	7.26		6.5	6.6	
						33.3		6.84			92.7		7.24			6.7		
			Bottom	22.2	20.1	33.4	33.4	6.59	6.58	6.58	88.4	88.3	11.33	10.36		6.1	6.1	
						33.4		6.57			88.2		9.38			6.0		
19/12/19	8:48:53	24/Fine	Surface	1.0	20.3	33.5	33.5	6.34	6.32	6.28	85.4	85.2	11.10	11.11	11.29	6.4	6.1	9.6
						33.5		6.30			85.0		11.12			5.7		
			Middle	10.6	20.4	33.6	33.6	6.24	6.23		84.2	84.1	12.40	12.55		10.5	10.4	
						33.6		6.22			83.9		12.70			10.3		
			Bottom	20.2	20.4	33.6	33.6	6.21	6.21	6.21	83.8	83.7	10.30	10.20		12.9	12.5	
						33.6		6.20			83.6		10.10			12.0		

Mid-Ebb Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FC1

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
21/12/19	8:30:39	24/Fine	Surface	1.0	21.4	33.3	33.3	6.79	6.77	6.50	93.1	92.8	7.77	7.61	6.32	6.3	6.8	8.1
						33.3		6.74			92.5		7.44			7.3		
			Middle	10.8	20.4	33.5	33.5	6.27	6.24		84.7	84.3	5.72	5.76		6.8	6.8	
						33.4		6.21			83.9		5.79			6.8		
			Bottom	20.6	20.4	33.6	33.6	6.11	6.11	6.11	82.5	82.5	5.72	5.59		11.0	10.7	
						33.6		6.11			82.5		5.46			10.4		
24/12/19	11:17:28	24/Fine	Surface	1.0	20.9	32.4	32.4	6.74	6.74	6.65	91.3	91.2	5.85	5.83	6.57	4.9	5.3	7.8
						32.4		6.73			91.1		5.81			5.6		
			Middle	10.9	20.9	32.5	32.9	6.68	6.57		90.4	88.8	5.97	6.39		9.4	9.6	
						33.3		6.45			87.1		6.80			9.7		
			Bottom	20.9	20.5	33.3	33.3	6.41	6.38	6.38	86.5	86.2	6.80	7.50		8.2	8.6	
						33.4		6.35			85.8		8.20			8.9		
28/12/19	14:00:50	24/Fine	Surface	1.0	20.6	32.3	32.3	6.78	6.78	6.71	91.3	91.3	7.18	7.08	8.48	14.9	15.0	8.8
						32.3		6.78			91.2		6.97			15.1		
			Middle	11.3	20.7	32.5	32.5	6.65	6.64		89.8	89.6	11.98	11.68		5.3	5.4	
						32.6		6.63			89.4		11.37			5.4		
			Bottom	21.6	20.5	32.9	32.9	6.50	6.49	6.49	87.5	87.4	6.53	6.68		6.3	6.2	
						32.9		6.48			87.3		6.82			6.0		
31/12/19	15:30:17	24/Fine	Surface	1.0	20.3	31.8	31.6	7.34	7.06	6.82	97.8	94.3	5.42	5.41	8.80	14.7	14.5	9.9
						31.5		6.78			90.8		5.39			14.2		
			Middle	11.2	20.5	32.1	32.1	6.59	6.59		88.3	88.3	5.74	5.79		4.4	4.8	
						32.1		6.58			88.3		5.83			5.2		
			Bottom	21.3	20.4	32.5	32.5	6.48	6.48	6.48	87.0	87.0	15.28	15.21		10.5	10.4	
						32.5		6.48			86.9		15.13			10.2		

Remark: Due to the tidal period not in working hour, 03 December(Mid-Ebb) 2019 water monitoring was cancelled.

Mid-Ebb Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FM1

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
05/12/19	8:57:24	24/Fine	Surface	1.0	21.8	34.8	34.8	6.51	6.51	6.47	90.9	90.9	4.64	4.67	4.25	5.5	4.9	4.6
						34.8		6.51			90.9		4.69			4.3		
			Middle	9.4	22.0	34.9	34.8	6.43	6.44		90.1	90.1	4.20	4.20		4.7	4.9	
						34.8		6.44			90.1		4.20			5.1		
			Bottom	17.8	22.2	35.0	35.0	6.37	6.37	6.37	89.6	89.6	3.90	3.87		4.5	4.1	
						35.0		6.37			89.5		3.84			3.6		
07/12/19	9:56:19	24/Fine	Surface	1.0	21.1	35.1	35.1	6.53	6.53	6.52	90.0	90.0	4.78	4.79	4.89	5.4	5.0	7.1
						35.1		6.53			90.0		4.79			4.6		
			Middle	8.6	21.1	35.1	35.1	6.50	6.50		89.7	89.7	4.82	4.85		7.9	7.7	
						35.1		6.50			89.7		4.88			7.4		
			Bottom	16.2	21.0	35.1	35.1	6.45	6.45	6.45	89.0	89.0	5.01	5.02		8.4	8.7	
						35.1		6.45			89.0		5.03			8.9		
10/12/19	10:59:44	24/Fine	Surface	1.0	20.0	35.1	35.1	6.82	6.84	6.81	92.3	92.5	6.77	6.62	7.66	13.8	13.4	13.3
						35.0		6.86			92.7		6.47			13.0		
			Middle	8.8	20.0	35.1	35.1	6.79	6.78		92.0	91.9	7.55	7.64		14.6	14.4	
						35.1		6.77			91.7		7.73			14.2		
			Bottom	16.6	20.0	35.1	35.1	6.74	6.74	6.74	91.2	91.2	8.02	8.72		11.9	12.0	
						35.1		6.74			91.1		9.42			12.0		
12/12/19	12:55:28	24/Fine	Surface	1.0	20.1	34.8	34.8	7.00	7.00	6.98	94.6	94.6	7.54	7.67	9.11	6.9	6.9	9.3
						34.8		7.00			94.6		7.79			6.8		
			Middle	8.8	20.0	34.8	34.8	6.99	6.96		94.4	93.7	8.37	8.24		11.9	11.6	
						34.7		6.92			93.0		8.10			11.2		
			Bottom	16.6	19.8	34.7	34.7	6.92	6.94	6.94	93.0	93.2	11.54	11.44		9.5	9.4	
						34.7		6.95			93.3		11.34			9.3		
14/12/19	13:48:23	24/Fine	Surface	1.0	20.0	34.1	34.1	7.07	7.03	6.96	95.1	94.5	7.41	7.48	9.46	6.2	5.6	9.5
						34.1		6.98			93.8		7.54			5.0		
			Middle	8.6	19.8	34.2	34.2	6.88	6.89		92.2	92.3	9.42	9.40		9.1	9.7	
						34.2		6.90			92.4		9.37			10.2		
			Bottom	16.1	20.0	34.4	34.4	6.80	6.80	6.80	91.5	91.5	11.68	11.51		13.5	13.2	
						34.4		6.79			91.4		11.33			12.9		
17/12/19	16:20:40	24/Fine	Surface	1.0	20.9	31.6	31.6	6.90	6.89	6.88	93.0	92.8	5.73	5.81	6.82	6.8	6.6	6.6
						31.6		6.88			92.6		5.89			6.3		
			Middle	9.0	20.7	33.0	33.0	6.86	6.86		92.8	92.8	6.96	6.95		7.8	7.7	
						33.0		6.86			92.8		6.94			7.6		
			Bottom	17.1	20.4	33.4	33.4	6.66	6.68	6.68	89.8	90.1	7.74	7.70		5.8	5.6	
						33.4		6.69			90.3		7.66			5.3		
19/12/19	9:10:07	24/Fine	Surface	1.0	20.4	33.4	33.5	6.34	6.31	6.25	85.5	85.1	8.32	8.23	12.02	5.2	5.1	7.0
						33.6		6.27			84.6		8.14			5.0		
			Middle	8.9	20.4	33.6	33.6	6.20	6.20		83.7	83.7	14.61	14.71		6.3	6.5	
						33.6		6.20			83.6		14.80			6.6		
			Bottom	16.7	20.4	33.6	33.6	6.19	6.20	6.20	83.6	83.7	14.63	13.13		9.6	9.5	
						33.6		6.20			83.7		11.63			9.3		

Mid-Ebb Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FM1

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
21/12/19	8:49:23	24/Fine	Surface	1.0	21.3	33.4	33.4	6.75	6.67	6.52	92.5	91.5	6.22	6.34	6.33	6.6	6.4	4.9
						33.5		6.59			90.4		6.45			6.1		
			Middle	8.5	20.8	33.4	33.4	6.38	6.37		86.7	86.5	7.06	6.81		4.2	4.3	
						33.4		6.36			86.2		6.55			4.3		
			Bottom	16.0	20.4	33.5	33.5	6.16	6.15	6.15	83.1	82.9	5.82	5.86		4.0	4.2	
						33.5		6.13			82.7		5.89			4.3		
24/12/19	11:38:56	24/Fine	Surface	1.0	21.0	32.4	32.8	6.70	6.66	6.57	90.8	90.3	5.63	6.03	6.54	5.5	5.5	7.5
						33.1		6.61			89.7		6.43			5.5		
			Middle	9.0	20.9	33.2	33.3	6.53	6.49		88.8	88.1	6.70	6.76		6.0	5.8	
						33.3		6.45			87.3		6.81			5.5		
			Bottom	17.0	20.5	33.3	33.1	6.39	6.47	6.47	86.3	88.0	6.64	6.82		10.9	11.3	
						32.8		6.55			89.7		7.00			11.6		
28/12/19	14:22:25	24/Fine	Surface	1.0	20.6	32.2	32.2	6.79	6.80	6.73	91.4	91.4	6.73	6.81	8.56	5.8	5.7	6.2
						32.2		6.80			91.4		6.88			5.6		
			Middle	8.6	20.7	32.6	32.5	6.65	6.66		89.8	89.9	11.13	10.21		6.3	6.4	
						32.5		6.67			89.9		9.29			6.4		
			Bottom	16.1	20.7	32.5	32.5	6.69	6.79	6.79	90.1	91.9	9.17	8.67		6.3	6.7	
						32.4		6.89			93.7		8.16			7.0		
31/12/19	15:51:18	24/Fine	Surface	1.0	20.4	32.2	32.0	7.38	7.04	6.83	98.8	94.5	8.89	7.39	7.39	5.8	5.5	7.0
						31.7		6.70			90.1		5.89			5.2		
			Middle	9.2	20.7	32.0	32.0	6.62	6.62		89.0	89.0	6.69	6.57		4.9	5.1	
						31.9		6.62			88.9		6.45			5.2		
			Bottom	17.4	20.5	32.1	32.1	6.56	6.56	6.56	88.0	88.1	8.45	8.21		10.8	10.6	
						32.1		6.56			88.1		7.96			10.3		

Remark: Due to the tidal period not in working hour, 03 December(Mid-Ebb) 2019 water monitoring was cancelled.

Mid-Ebb Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FM2

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
05/12/19	9:16:17	24/Fine	Surface	1.0	21.8	34.7	34.7	6.50	6.50	6.49	90.7	90.7	4.55	4.58	4.26	4.9	5.3	4.6
						34.7		6.50			90.7		4.61			5.6		
			Middle	8.7	21.9	34.7	34.8	6.50	6.49		90.7	90.6	4.56	4.34		4.5	4.3	
						34.8		6.47			90.5		4.11			4.1		
			Bottom	16.4	22.2	35.0	35.0	6.37	6.37	6.37	89.5	89.5	3.86	3.86		3.7	4.2	
						35.0		6.37			89.5		3.86			4.7		
07/12/19	9:37:28	24/Fine	Surface	1.0	21.1	35.1	35.1	6.51	6.51	6.50	89.8	89.8	4.77	4.79	4.91	4.7	4.9	6.8
						35.1		6.51			89.8		4.80			5.1		
			Middle	8.2	21.1	35.1	35.1	6.49	6.49		89.5	89.5	4.94	4.95		6.9	7.3	
						35.1		6.49			89.5		4.96			7.6		
			Bottom	15.4	21.1	35.1	35.1	6.45	6.45	6.45	89.0	89.0	4.99	5.01		8.1	8.2	
						35.1		6.45			89.0		5.02			8.3		
10/12/19	11:17:25	24/Fine	Surface	1.0	20.2	35.1	35.1	6.87	6.87	6.82	93.3	93.2	6.30	6.46	9.17	7.2	7.4	8.3
						35.1		6.86			93.0		6.62			7.5		
			Middle	8.7	20.0	35.1	35.1	6.79	6.77		91.9	91.6	7.78	8.48		8.4	8.4	
						35.1		6.75			91.3		9.18			8.4		
			Bottom	16.5	19.9	35.1	35.1	6.75	6.75	6.75	91.2	91.2	12.62	12.57		9.2	9.1	
						35.1		6.74			91.1		12.51			9.0		
12/12/19	13:12:32	24/Fine	Surface	1.0	20.2	34.8	34.8	7.00	7.01	6.98	94.8	95.1	7.60	8.04	9.95	10.9	10.8	9.0
						34.8		7.02			95.4		8.48			10.6		
			Middle	8.7	19.8	34.7	34.7	6.94	6.94		93.3	93.3	9.07	8.95		8.5	9.0	
						34.7		6.94			93.3		8.82			9.4		
			Bottom	16.3	19.8	34.8	34.8	6.89	6.89	6.89	92.7	92.7	12.70	12.86		7.0	7.3	
						34.8		6.89			92.6		13.01			7.6		
14/12/19	14:04:14	24/Fine	Surface	1.0	20.1	34.2	34.2	7.06	7.02	6.94	95.3	94.8	6.54	6.48	8.76	8.1	8.0	9.3
						34.2		6.98			94.2		6.42			7.8		
			Middle	8.4	19.8	34.2	34.2	6.85	6.85		91.9	91.9	9.87	9.35		9.2	9.2	
						34.2		6.85			91.9		8.82			9.1		
			Bottom	15.9	20.0	34.4	34.4	6.80	6.80	6.80	91.6	91.6	10.57	10.47		10.5	10.7	
						34.4		6.79			91.5		10.36			10.8		
17/12/19	16:38:17	24/Fine	Surface	1.0	20.9	31.4	31.7	7.79	7.36	7.13	91.0	91.9	7.11	7.09	7.50	5.2	5.1	6.4
						31.9		6.93			92.7		7.07			5.0		
			Middle	9.4	21.0	33.3	33.3	6.90	6.91		94.1	94.1	7.82	7.75		6.0	6.4	
						33.3		6.91			94.1		7.68			6.8		
			Bottom	17.8	20.2	33.4	33.4	6.68	6.66	6.66	89.8	89.5	7.56	7.66		7.5	7.8	
						33.4		6.63			89.1		7.75			8.0		
19/12/19	9:27:59	24/Fine	Surface	1.0	20.6	32.9	32.9	6.55	6.55	6.48	88.4	88.4	4.95	4.95	7.75	7.2	7.3	9.2
						32.9		6.55			88.4		4.95			7.4		
			Middle	8.6	20.4	33.2	33.2	6.46	6.41		87.1	86.4	7.61	8.24		7.8	7.8	
						33.3		6.36			85.7		8.86			7.8		
			Bottom	16.3	20.4	33.5	33.6	6.30	6.25	6.25	85.0	84.4	10.03	10.07		12.6	12.6	
						33.6		6.20			83.7		10.11			12.6		

Mid-Ebb Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FM2

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
21/12/19	9:04:24	24/Fine	Surface	1.0	21.2	33.5	33.5	6.63	6.59	6.46	90.8	90.3	5.90	5.88	5.55	5.5	5.3	5.0
						33.5		6.55			89.7		5.86			5.1		
			Middle	8.6	20.6	33.4	33.4	6.36	6.34		86.0	85.7	5.61	5.65		4.2	4.2	
						33.4		6.31			85.4		5.69			4.2		
			Bottom	16.3	20.4	33.5	33.5	6.15	6.14	6.14	83.0	82.9	5.26	5.11		5.4	5.4	
						33.5		6.13			82.7		4.95			5.3		
24/12/19	11:58:35	24/Fine	Surface	1.0	20.9	32.5	32.7	6.69	6.65	6.58	90.6	90.2	5.63	6.02	6.66	7.1	7.5	8.9
						33.0		6.61			89.7		6.41			7.8		
			Middle	9.2	21.0	33.3	33.3	6.56	6.51		89.4	88.4	7.14	7.08		7.3	7.4	
						33.3		6.46			87.4		7.02			7.5		
			Bottom	17.4	20.5	33.4	33.4	6.37	6.50	6.50	86.0	87.8	6.85	6.89		11.8	11.8	
						33.4		6.62			89.5		6.93			11.8		
28/12/19	14:43:56	24/Fine	Surface	1.0	22.1	32.6	32.6	7.25	7.23	7.16	100.3	99.8	8.18	8.14	8.16	10.5	10.5	7.2
						32.5		7.20			99.3		8.10			10.5		
			Middle	8.7	21.7	32.5	32.5	7.13	7.10		98.0	97.4	7.98	7.81		6.3	5.8	
						32.5		7.07			96.7		7.63			5.3		
			Bottom	16.3	20.7	32.6	32.6	6.73	6.70	6.70	90.8	90.4	9.01	8.53		5.3	5.3	
						32.7		6.66			89.9		8.04			5.3		
31/12/19	16:08:33	24/Fine	Surface	1.0	20.5	31.6	31.6	6.84	6.78	6.68	91.5	90.6	5.79	6.02	6.91	6.1	6.3	7.5
						31.7		6.71			89.7		6.25			6.4		
			Middle	9.2	20.5	31.9	31.9	6.58	6.58		88.1	88.1	5.93	5.83		6.8	6.9	
						31.9		6.58			88.1		5.72			6.9		
			Bottom	17.4	20.5	32.1	32.1	6.56	6.56	6.56	88.1	88.0	7.95	8.89		9.2	9.3	
						32.2		6.55			87.9		9.83			9.3		

Remark: Due to the tidal period not in working hour, 03 December(Mid-Ebb) 2019 water monitoring was cancelled.

Mid-Ebb Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FC2

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
05/12/19	9:39:06	24/Fine	Surface	1.0	21.8	34.7	34.7	6.50	6.50	6.48	90.7	90.8	4.28	4.32	4.03	3.7	4.2	4.8
						34.7		6.50			90.8		4.36			4.6		
			Middle	8.6	22.0	34.8	34.8	6.45	6.45		90.3	90.3	3.90	3.95		5.3	5.0	
						34.8		6.45			90.3		3.99			4.7		
			Bottom	16.2	22.1	34.9	34.9	6.39	6.39	6.39	89.7	89.7	3.80	3.83		5.0	5.1	
						34.9		6.38			89.7		3.86			5.2		
07/12/19	10:18:33	24/Fine	Surface	1.0	20.9	35.1	35.1	7.04	6.87	6.70	96.8	94.6	4.81	4.91	5.06	14.8	14.6	10.9
						35.1		6.70			92.4		5.01			14.3		
			Middle	8.7	21.1	35.1	35.1	6.52	6.52		89.9	89.9	5.11	5.11		9.1	9.3	
						35.1		6.52			89.9		5.11			9.4		
			Bottom	16.5	21.0	35.1	35.1	6.48	6.48	6.48	89.4	89.4	5.11	5.15		8.8	9.0	
						35.1		6.48			89.3		5.18			9.1		
10/12/19	11:38:39	24/Fine	Surface	1.0	20.1	35.1	35.1	6.83	6.83	6.79	92.7	92.7	6.72	6.64	9.37	15.4	15.4	15.9
						35.1		6.83			92.7		6.56			15.4		
			Middle	9.1	20.0	35.1	35.1	6.75	6.75		91.3	91.3	8.78	9.19		18.9	18.7	
						35.1		6.74			91.2		9.60			18.4		
			Bottom	17.3	20.0	35.1	35.1	6.73	6.73	6.73	90.9	91.0	12.13	12.28		13.8	13.6	
						35.1		6.73			91.0		12.43			13.3		
12/12/19	13:35:39	24/Fine	Surface	1.0	19.8	34.7	34.7	6.95	6.95	6.95	93.5	93.5	7.75	7.80	9.39	9.5	9.6	8.1
						34.7		6.95			93.4		7.84			9.6		
			Middle	9.7	19.8	34.7	34.7	6.95	6.95		93.4	93.4	7.70	7.89		6.9	7.0	
						34.7		6.95			93.4		8.07			7.1		
			Bottom	18.5	19.8	34.7	34.7	6.92	6.92	6.92	93.0	93.0	12.08	12.48		7.5	7.8	
						34.8		6.92			93.0		12.88			8.1		
14/12/19	14:20:24	24/Fine	Surface	1.0	20.1	34.2	34.2	7.04	7.01	6.94	94.8	94.4	6.29	6.21	8.36	14.2	14.3	15.2
						34.2		6.97			93.9		6.12			14.4		
			Middle	8.3	19.8	34.2	34.2	6.88	6.87		92.3	92.2	8.66	8.68		11.2	11.3	
						34.2		6.86			92.0		8.69			11.4		
			Bottom	15.6	19.9	34.4	34.4	6.81	6.81	6.81	91.6	91.6	10.05	10.20		19.3	19.9	
						34.4		6.81			91.5		10.34			20.5		
17/12/19	16:56:16	24/Fine	Surface	1.0	20.5	31.3	31.6	6.90	6.87	6.75	92.1	91.8	7.24	7.06	7.30	5.8	6.2	5.7
						31.9		6.84			91.5		6.88			6.5		
			Middle	9.1	20.1	33.4	33.4	6.63	6.62		89.0	88.9	7.38	7.49		6.4	6.6	
						33.4		6.61			88.8		7.59			6.8		
			Bottom	17.1	20.1	33.4	33.4	6.59	6.60	6.60	88.5	88.6	7.41	7.34		4.1	4.4	
						33.4		6.60			88.7		7.27			4.6		
19/12/19	9:49:04	24/Fine	Surface	1.0	20.6	32.9	32.9	6.55	6.56	6.50	88.4	88.5	5.08	5.09	8.26	11.1	11.1	7.9
						32.9		6.57			88.6		5.10			11.1		
			Middle	9.0	20.5	33.0	33.2	6.51	6.45		87.8	86.9	6.27	6.31		6.8	7.3	
						33.3		6.38			85.9		6.34			7.7		
			Bottom	17.1	20.4	33.6	33.6	6.18	6.20	6.20	83.5	83.6	14.80	13.38		5.4	5.4	
						33.5		6.21			83.7		11.96			5.3		

Mid-Ebb Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FC2

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
21/12/19	9:21:26	24/Fine	Surface	1.0	21.3	33.5	33.5	6.66	6.64	6.56	91.3	91.1	5.54	5.54	5.49	5.3	5.3	5.9
						33.5		6.62			90.8		5.53			5.3		
			Middle	8.1	21.3	33.5	33.4	6.57	6.47		90.0	88.2	5.84	5.72		6.0	5.9	
						33.4		6.37			86.3		5.59			5.8		
			Bottom	15.3	20.4	33.4	33.5	6.16	6.15	6.15	83.1	83.0	5.00	5.21		6.1	6.4	
						33.5		6.13			82.8		5.41			6.6		
24/12/19	12:16:53	24/Fine	Surface	1.0	21.4	33.1	33.1	6.73	6.73	6.65	92.1	92.4	6.89	7.07	7.21	8.0	8.1	8.3
						33.2		6.73			92.6		7.25			8.1		
			Middle	9.6	21.5	33.2	33.3	6.73	6.57		92.5	89.7	7.50	7.54		9.5	9.6	
						33.3		6.41			86.9		7.58			9.6		
			Bottom	18.1	20.5	33.4	33.3	6.38	6.51	6.51	86.2	88.0	7.14	7.03		7.5	7.3	
						33.3		6.63			89.7		6.91			7.0		
28/12/19	15:06:05	24/Fine	Surface	1.0	21.4	32.5	32.5	6.98	7.00	6.91	95.4	95.7	7.75	7.86	7.82	16.7	16.8	10.4
						32.5		7.01			95.9		7.96			16.8		
			Middle	8.3	21.1	32.6	32.6	6.85	6.82		93.1	92.6	7.81	7.86		10.7	10.8	
						32.6		6.79			92.0		7.91			10.9		
			Bottom	15.6	20.7	32.8	32.8	6.63	6.62	6.62	89.6	89.5	7.76	7.73		3.8	3.6	
						32.8		6.61			89.3		7.70			3.4		
31/12/19	16:28:39	24/Fine	Surface	1.0	20.5	31.6	31.6	6.76	6.75	6.68	90.3	90.2	6.43	6.45	6.74	5.8	6.0	6.6
						31.6		6.73			90.0		6.46			6.1		
			Middle	9.2	20.5	31.8	31.8	6.63	6.62		88.6	88.6	6.09	6.05		9.7	9.6	
						31.8		6.61			88.5		6.00			9.5		
			Bottom	17.3	20.5	32.1	32.1	6.53	6.53	6.53	87.6	87.6	8.04	7.73		4.0	4.3	
						32.1		6.53			87.6		7.41			4.5		

Remark: Due to the tidal period not in working hour, 03 December(Mid-Ebb) 2019 water monitoring was cancelled.

Mid-Flood Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FC1

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
3/12/19	15:34:06	24/Fine	Surface	1.0	20.0	35.1	35.1	6.84	6.84	6.82	92.6	92.5	7.17	7.22	7.90	9.5	9.4	9.2
						35.1		6.83			92.4		7.27			9.2		
			Middle	11.5	19.9	35.1	35.1	6.81	6.81		92.0	91.8	7.89	7.93		9.1	9.4	
						35.1		6.80			91.6		7.96			9.7		
			Bottom	22.0	19.7	35.1	35.1	6.80	6.81	6.81	91.4	91.7	8.95	8.57		8.9	8.9	
						35.1		6.82			91.9		8.18			8.9		
5/12/19	15:05:33	24/Fine	Surface	1.0	21.9	34.7	34.7	6.51	6.50	6.46	90.9	90.8	5.18	5.00	4.48	11.1	11.1	11.9
						34.7		6.49			90.6		4.82			11.0		
			Middle	11.8	22.1	34.9	34.9	6.41	6.41		90.0	90.0	3.86	3.87		9.7	9.3	
						34.9		6.41			89.9		3.87			8.9		
			Bottom	22.6	22.2	35.0	35.0	6.33	6.33	6.33	89.0	89.0	4.53	4.58		15.3	15.4	
						35.0		6.33			89.0		4.62			15.5		
7/12/19	15:12:38	24/Fine	Surface	1.0	21.1	35.1	35.1	6.53	6.52	6.51	90.1	90.0	4.30	4.14	4.27	4.1	4.4	5.3
						35.1		6.51			89.9		3.98			4.6		
			Middle	11.8	21.1	35.1	35.1	6.49	6.49		89.5	89.5	4.18	4.17		5.9	6.0	
						35.1		6.49			89.5		4.15			6.0		
			Bottom	22.7	21.1	35.1	35.1	6.46	6.46	6.46	89.1	89.1	4.50	4.51		5.7	5.5	
						35.1		6.45			89.0		4.52			5.2		
10/12/19	17:07:38	24/Fine	Surface	1.0	20.2	35.1	35.1	6.84	6.82	6.80	92.8	92.4	7.43	7.28	8.81	15.2	15.4	16.1
						35.1		6.80			92.0		7.13			15.6		
			Middle	11.4	19.9	35.1	35.1	6.78	6.78		91.6	91.6	10.94	10.00		19.6	19.5	
						35.1		6.78			91.5		9.06			19.3		
			Bottom	21.8	19.7	35.1	35.1	6.79	6.81	6.81	91.4	91.7	9.03	9.16		13.3	13.4	
						35.1		6.82			92.0		9.29			13.4		
12/12/19	9:43:25	24/Fine	Surface	1.0	19.7	34.7	34.7	6.93	6.93	6.91	93.0	93.0	10.06	10.01	11.15	13.7	13.7	10.1
						34.7		6.93			93.0		9.96			13.7		
			Middle	12.0	19.8	34.8	34.8	6.88	6.88		92.5	92.5	10.60	10.51		8.3	8.3	
						34.8		6.88			92.5		10.42			8.2		
			Bottom	23.1	19.9	34.9	34.9	6.79	6.79	6.79	91.5	91.5	12.89	12.92		8.6	8.3	
						34.9		6.78			91.5		12.94			8.0		
14/12/19	9:20:30	24/Fine	Surface	1.0	20.1	34.2	34.2	6.95	6.94	6.90	93.6	93.4	8.48	8.42	9.42	2.3	2.2	3.7
						34.2		6.93			93.2		8.36			2.1		
			Middle	10.7	19.9	34.2	34.2	6.87	6.87		92.3	92.2	9.76	9.79		4.2	4.4	
						34.2		6.86			92.1		9.81			4.5		
			Bottom	20.5	19.9	34.3	34.4	6.81	6.81	6.81	91.6	91.6	10.01	10.05		4.7	4.6	
						34.4		6.80			91.6		10.09			4.4		
17/12/19	12:10:04	24/Fine	Surface	1.0	20.3	32.1	32.1	6.86	6.85	6.74	91.7	91.6	7.27	7.21	9.63	4.5	4.4	6.3
						32.1		6.84			91.5		7.14			4.3		
			Middle	10.8	20.2	33.4	33.4	6.64	6.64		89.4	89.3	9.18	9.21		8.1	8.3	
						33.4		6.63			89.2		9.23			8.4		
			Bottom	20.6	20.1	33.5	33.5	6.53	6.53	6.53	87.7	87.7	12.21	12.48		6.1	6.2	
						33.5		6.53			87.6		12.75			6.3		

Mid-Flood Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FC1

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
19/12/19	14:09:40	24/Fine	Surface	1.0	20.4	33.3	33.4	6.45	6.37	6.28	86.9	85.8	7.50	8.25	11.25	8.4	8.4	7.0
						33.5		6.28			84.7		8.99			8.4		
			Middle	11.6	20.4	33.6	33.6	6.23	6.19		84.1	83.6	13.04	13.03		6.3	6.3	
						33.6		6.15			83.0		13.02			6.2		
			Bottom	22.3	20.4	33.6	33.5	6.34	6.31	6.31	85.5	85.1	13.07	12.49		6.0	6.4	
						33.5		6.28			84.7		11.90			6.7		
21/12/19	15:20:20	24/Fine	Surface	1.0	21.4	33.5	33.5	6.77	6.69	6.50	93.0	91.8	6.05	6.23	5.88	7.8	7.7	6.2
						33.5		6.61			90.5		6.40			7.5		
			Middle	11.0	20.5	33.4	33.4	6.31	6.30		85.3	85.2	5.51	5.57		4.8	4.5	
						33.4		6.29			85.0		5.63			4.2		
			Bottom	21.0	20.4	33.6	33.6	6.10	6.10	6.10	82.4	82.3	5.89	5.84		6.2	6.6	
						33.6		6.09			82.2		5.78			6.9		
24/12/19	15:51:06	24/Fine	Surface	1.0	21.1	32.6	32.9	6.72	6.57	6.48	91.4	89.3	5.83	6.85	9.57	13.9	14.2	10.5
						33.2		6.42			87.2		7.86			14.4		
			Middle	7.5	20.4	33.4	33.4	6.41	6.39		86.6	86.3	8.67	10.12		8.3	8.6	
						33.4		6.36			85.9		11.56			8.9		
			Bottom	14.1	20.4	33.4	33.4	6.34	6.36	6.36	85.6	85.8	12.24	11.74		8.6	8.8	
						33.4		6.37			85.9		11.24			8.9		
28/12/19	9:37:19	24/Fine	Surface	1.0	20.7	32.3	32.3	6.77	6.77	6.74	91.1	91.1	7.32	7.10	8.65	5.6	5.8	6.4
						32.3		6.77			91.1		6.88			5.9		
			Middle	11.0	20.7	32.4	32.4	6.71	6.71		90.5	90.4	12.80	12.24		8.0	8.0	
						32.4		6.70			90.3		11.68			8.0		
			Bottom	21.1	20.5	32.8	32.9	6.54	6.53	6.53	88.1	87.9	6.57	6.60		5.7	5.4	
						32.9		6.51			87.7		6.62			5.0		
31/12/19	11:32:24	24/Fine	Surface	1.0	20.1	31.9	31.8	8.31	7.46	7.01	91.5	89.9	5.61	5.60	5.94	5.5	5.4	7.6
						31.7		6.60			88.3		5.59			5.2		
			Middle	11.3	20.5	32.1	32.1	6.57	6.57		88.1	88.1	6.03	5.97		8.1	8.1	
						32.1		6.57			88.1		5.90			8.1		
			Bottom	21.5	20.4	32.5	32.5	6.47	6.47	6.47	86.9	86.9	6.22	6.25		9.0	9.4	
						32.5		6.46			86.8		6.27			9.8		

Mid-Flood Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FM1

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
03/12/19	15:11:31	24/Fine	Surface	1.0	20.0	35.1	35.1	6.84	6.83	6.82	92.7	92.5	7.36	7.43	7.65	7.3	7.3	9.7
						35.1		6.82			92.3		7.49			7.3		
			Middle	8.6	20.0	35.1	35.1	6.82	6.82		92.2	92.1	7.78	7.87		9.7	9.4	
						35.1		6.81			91.9		7.95			9.1		
			Bottom	16.2	19.8	35.1	35.1	6.84	6.85	6.85	92.2	92.3	7.54	7.67		12.3	12.5	
						35.1		6.85			92.4		7.79			12.7		
05/12/19	14:42:19	24/Fine	Surface	1.0	21.9	34.7	34.7	6.47	6.47	6.45	90.3	90.3	4.99	4.97	4.34	6.4	6.5	7.8
						34.7		6.47			90.2		4.95			6.6		
			Middle	9.2	22.0	34.8	34.8	6.43	6.43		90.1	90.1	4.09	4.07		8.2	8.2	
						34.8		6.43			90.1		4.05			8.2		
			Bottom	17.3	22.2	35.0	35.0	6.36	6.36	6.36	89.3	89.3	3.95	3.97		8.5	8.7	
						35.0		6.35			89.3		3.98			8.8		
07/12/19	14:44:19	24/Fine	Surface	1.0	21.1	35.1	35.1	6.52	6.52	6.52	89.9	89.9	4.57	4.54	4.61	5.7	6.0	8.6
						35.1		6.52			89.8		4.51			6.3		
			Middle	9.0	21.0	35.1	35.1	6.52	6.52		89.8	89.8	4.53	4.56		11.0	11.4	
						35.1		6.51			89.7		4.58			11.8		
			Bottom	16.9	21.1	35.1	35.1	6.48	6.48	6.48	89.3	89.3	4.69	4.73		8.4	8.5	
						35.1		6.48			89.3		4.76			8.6		
10/12/19	16:44:29	24/Fine	Surface	1.0	20.1	35.1	35.1	6.82	6.82	6.79	92.5	92.4	6.72	6.72	9.04	6.7	6.8	8.1
						35.1		6.81			92.3		6.71			6.9		
			Middle	8.8	20.0	35.1	35.1	6.77	6.77		91.5	91.5	10.38	10.47		8.2	8.4	
						35.1		6.77			91.4		10.56			8.5		
			Bottom	16.5	19.9	35.1	35.1	6.77	6.78	6.78	91.5	91.6	9.77	9.94		9.2	9.1	
						35.1		6.79			91.6		10.10			9.0		
12/12/19	9:20:22	24/Fine	Surface	1.0	20.8	34.8	34.8	7.07	7.07	7.01	96.8	96.7	9.75	9.79	10.28	7.2	7.4	7.6
						34.8		7.07			96.6		9.83			7.5		
			Middle	9.6	19.8	34.7	34.7	6.95	6.95		93.4	93.4	10.30	10.32		8.1	8.3	
						34.7		6.94			93.3		10.33			8.4		
			Bottom	18.2	19.8	34.8	34.8	6.87	6.87	6.87	92.4	92.4	10.67	10.75		7.0	7.2	
						34.8		6.87			92.4		10.82			7.3		
14/12/19	9:02:24	24/Fine	Surface	1.0	20.0	34.1	34.1	7.02	6.99	6.93	94.4	94.0	7.62	7.51	9.40	8.0	7.9	7.4
						34.1		6.95			93.5		7.39			7.7		
			Middle	8.7	19.8	34.2	34.2	6.87	6.87		92.1	92.1	9.97	10.04		9.0	9.2	
						34.2		6.86			92.0		10.10			9.4		
			Bottom	16.4	20.0	34.4	34.4	6.79	6.79	6.79	91.4	91.4	10.56	10.66		5.2	5.1	
						34.4		6.79			91.4		10.76			5.0		
17/12/19	11:47:17	24/Fine	Surface	1.0	21.9	4.5	18.2	7.40	7.12	6.99	89.4	90.4	6.92	6.89	7.18	6.4	6.3	7.8
						31.9		6.84			91.4		6.86			6.2		
			Middle	9.1	20.7	33.1	33.0	6.85	6.85		92.6	92.6	6.84	6.82		8.6	8.7	
						33.0		6.85			92.6		6.79			8.7		
			Bottom	17.1	20.2	33.4	33.4	6.65	6.63	6.63	89.3	89.0	7.46	7.84		8.6	8.6	
						33.4		6.60			88.6		8.22			8.5		

Mid-Flood Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FM1

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
19/12/19	13:47:59	24/Fine	Surface	1.0	20.6	32.8	33.0	6.58	6.52	6.41	88.7	88.0	4.88	4.90	7.64	5.8	5.7	6.5
						33.2		6.46			87.2		4.91			5.6		
			Middle	9.0	20.4	33.3	33.5	6.34	6.30		85.4	84.9	8.98	9.00		6.6	6.8	
						33.6		6.26			84.4		9.02			7.0		
			Bottom	16.9	20.4	33.6	33.5	6.28	6.27	6.27	84.8	84.6	9.13	9.04		6.4	6.9	
						33.5		6.25			84.3		8.94			7.3		
21/12/19	15:02:22	24/Fine	Surface	1.0	21.3	33.5	33.5	6.66	6.64	6.53	91.2	91.0	6.18	6.16	5.74	7.8	7.6	7.2
						33.5		6.62			90.7		6.14			7.4		
			Middle	8.7	20.8	33.4	33.4	6.42	6.43		87.3	87.4	6.18	6.21		7.3	7.2	
						33.4		6.43			87.5		6.24			7.1		
			Bottom	16.4	20.4	33.5	33.5	6.16	6.16	6.16	83.1	83.1	4.83	4.86		6.6	6.9	
						33.5		6.15			83.0		4.89			7.2		
24/12/19	15:33:48	24/Fine	Surface	1.0	21.0	32.5	32.8	6.72	6.73	6.65	91.3	91.7	5.62	6.13	7.39	9.3	9.3	10.4
						33.1		6.73			92.0		6.64			9.3		
			Middle	8.5	21.4	33.3	33.3	6.72	6.57		92.3	89.6	6.91	7.54		10.6	10.5	
						33.4		6.42			86.9		8.17			10.3		
			Bottom	16.1	20.4	33.4	33.4	6.38	6.55	6.55	86.1	88.5	9.16	8.49		11.3	11.5	
						33.4		6.71			90.8		7.82			11.6		
28/12/19	9:15:05	24/Fine	Surface	1.0	20.6	32.3	32.3	6.77	6.77	6.76	91.0	91.0	6.98	6.95	9.09	13.7	13.5	8.1
						32.3		6.77			91.0		6.92			13.2		
			Middle	8.8	20.7	32.4	32.4	6.74	6.74		90.8	90.8	7.71	7.65		4.9	5.2	
						32.4		6.74			90.8		7.58			5.4		
			Bottom	16.5	20.6	32.6	32.6	6.64	6.64	6.64	89.5	89.5	12.70	12.68		5.1	5.6	
						32.6		6.63			89.4		12.65			6.0		
31/12/19	11:11:41	24/Fine	Surface	1.0	20.5	31.7	31.6	6.72	6.70	6.68	90.0	89.7	5.68	5.61	7.17	7.2	7.2	6.1
						31.6		6.67			89.3		5.53			7.2		
			Middle	9.2	20.8	32.0	32.0	6.66	6.67		89.9	89.9	6.75	6.90		7.1	7.0	
						32.0		6.67			89.9		7.05			6.8		
			Bottom	17.4	20.6	32.2	32.2	6.56	6.58	6.58	88.2	88.5	9.65	9.00		3.9	4.1	
						32.2		6.59			88.7		8.35			4.3		

Mid-Flood Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FM2

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
03/12/19	14:51:22	24/Fine	Surface	1.0	20.2	35.1	35.1	6.86	6.84	6.82	93.1	92.7	6.87	7.41	7.93	9.5	9.1	8.5
						35.1		6.82			92.3		7.94			8.6		
			Middle	9.3	20.0	35.1	35.1	6.81	6.80		92.1	92.0	7.87	8.10		8.6	8.5	
						35.1		6.79			91.8		8.32			8.4		
			Bottom	17.5	19.9	35.1	35.1	6.80	6.81	6.81	91.8	91.9	8.36	8.28		7.9	7.8	
						35.1		6.81			91.9		8.19			7.7		
05/12/19	14:22:24	24/Fine	Surface	1.0	21.9	34.7	34.7	6.49	6.49	6.47	90.6	90.7	4.82	4.92	4.35	6.3	6.4	6.1
						34.7		6.49			90.7		5.01			6.4		
			Middle	8.8	21.9	34.8	34.8	6.45	6.45		90.2	90.2	4.25	4.25		5.0	5.3	
						34.8		6.45			90.2		4.25			5.6		
			Bottom	16.6	22.1	34.9	34.9	6.40	6.40	6.40	89.8	89.8	3.89	3.87		6.8	6.8	
						34.9		6.39			89.7		3.85			6.7		
07/12/19	14:23:45	24/Fine	Surface	1.0	21.0	35.1	35.1	6.58	6.56	6.53	90.7	90.4	4.79	4.84	4.99	8.8	8.9	8.5
						35.1		6.53			90.1		4.89			9.0		
			Middle	9.1	21.1	35.1	35.1	6.52	6.51		90.0	89.8	4.90	5.12		7.0	7.3	
						35.1		6.50			89.6		5.33			7.6		
			Bottom	17.1	21.0	35.1	35.1	6.50	6.50	6.50	89.6	89.6	5.04	5.02		9.3	9.4	
						35.1		6.50			89.6		5.00			9.5		
10/12/19	16:24:55	24/Fine	Surface	1.0	20.2	35.1	35.1	6.83	6.81	6.78	92.6	92.2	6.70	7.81	9.51	12.9	13.4	12.7
						35.1		6.78			91.8		8.92			13.8		
			Middle	9.0	20.0	35.1	35.1	6.76	6.76		91.4	91.3	12.34	12.20		12.3	12.3	
						35.1		6.75			91.2		12.06			12.2		
			Bottom	16.9	19.8	35.1	35.1	6.79	6.80	6.80	91.6	91.7	8.58	8.52		13.0	12.6	
						35.1		6.80			91.8		8.45			12.2		
12/12/19	9:02:55	24/Fine	Surface	1.0	20.7	34.8	34.8	7.06	7.06	7.01	96.7	96.6	10.13	10.06	9.89	19.6	19.7	12.6
						34.8		7.05			96.5		9.98			19.8		
			Middle	9.4	19.8	34.7	34.7	6.95	6.96		93.5	93.5	9.06	9.27		8.4	8.6	
						34.7		6.96			93.5		9.47			8.8		
			Bottom	17.8	19.8	34.8	34.8	6.90	6.90	6.90	92.8	92.8	10.59	10.35		9.4	9.6	
						34.8		6.89			92.7		10.10			9.7		
14/12/19	8:47:29	24/Fine	Surface	1.0	19.8	34.1	34.1	6.92	6.93	6.89	93.0	93.1	7.22	7.20	8.82	7.5	7.3	6.9
						34.1		6.94			93.2		7.18			7.0		
			Middle	8.6	19.8	34.2	34.2	6.86	6.86		92.0	91.9	9.38	9.32		5.9	5.8	
						34.2		6.85			91.8		9.25			5.7		
			Bottom	16.2	19.9	34.4	34.4	6.80	6.80	6.80	91.5	91.5	10.59	9.95		7.6	7.7	
						34.4		6.80			91.4		9.30			7.7		
17/12/19	11:27:39	24/Fine	Surface	1.0	20.5	31.7	31.7	6.87	6.87	6.85	91.9	91.8	6.67	6.68	7.17	5.0	5.3	5.4
						31.8		6.86			91.7		6.69			5.5		
			Middle	9.2	20.7	33.3	33.3	6.83	6.84		92.7	92.8	7.15	7.10		4.1	4.2	
						33.3		6.84			92.8		7.05			4.2		
			Bottom	17.4	20.7	33.3	33.3	6.82	6.80	6.80	92.5	92.1	7.67	7.72		6.6	6.7	
						33.3		6.78			91.7		7.76			6.8		

Mid-Flood Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FM2

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
19/12/19	13:26:45	24/Fine	Surface	1.0	20.6	32.8	32.8	6.58	6.60	6.52	88.8	89.0	4.97	4.90	8.35	7.5	7.5	7.7
						32.8		6.61			89.1		4.83			7.5		
			Middle	9.2	20.4	33.1	33.2	6.49	6.44		87.5	86.8	6.83	7.81		7.6	7.9	
						33.2		6.39			86.0		8.78			8.1		
			Bottom	17.4	20.4	33.6	33.6	6.18	6.18	6.18	83.4	83.4	12.31	12.33		7.9	7.7	
						33.6		6.18			83.4		12.35			7.5		
21/12/19	14:47:22	24/Fine	Surface	1.0	21.3	33.5	33.4	6.63	6.59	6.44	91.0	90.3	5.54	5.80	5.63	7.1	7.1	6.0
						33.4		6.55			89.5		6.05			7.0		
			Middle	8.8	20.5	33.4	33.4	6.29	6.29		85.0	84.9	5.73	5.76		3.9	4.0	
						33.4		6.28			84.8		5.79			4.1		
			Bottom	16.5	20.4	33.5	33.5	6.14	6.13	6.13	82.8	82.7	5.35	5.33		7.2	7.1	
						33.5		6.12			82.6		5.30			6.9		
24/12/19	15:18:30	24/Fine	Surface	1.0	21.1	32.6	32.6	6.70	6.71	6.66	91.1	91.2	6.05	5.91	7.26	11.1	11.2	8.7
						32.5		6.72			91.2		5.77			11.3		
			Middle	9.1	21.4	33.3	33.3	6.73	6.61		92.3	90.0	7.10	7.20		7.1	6.7	
						33.4		6.48			87.6		7.29			6.3		
			Bottom	17.2	20.5	33.4	33.4	6.44	6.41	6.41	86.9	86.5	7.75	8.68		7.9	8.1	
						33.4		6.38			86.1		9.60			8.2		
28/12/19	8:54:08	24/Fine	Surface	1.0	20.6	32.1	32.2	6.81	6.81	6.78	91.5	91.5	6.50	6.58	7.32	13.9	13.5	10.8
						32.2		6.81			91.4		6.65			13.1		
			Middle	9.4	20.7	32.4	32.4	6.75	6.75		90.9	90.9	8.27	8.23		7.5	7.5	
						32.4		6.74			90.9		8.19			7.5		
			Bottom	17.8	20.6	32.6	32.7	6.63	6.61	6.61	89.4	89.1	7.12	7.14		11.3	11.5	
						32.7		6.58			88.7		7.16			11.7		
31/12/19	10:52:20	24/Fine	Surface	1.0	20.5	31.6	31.6	6.85	6.78	6.68	91.6	90.6	5.50	5.54	6.27	7.1	7.3	7.0
						31.6		6.70			89.6		5.57			7.4		
			Middle	9.4	20.5	31.8	31.8	6.59	6.59		88.2	88.2	5.23	5.30		5.4	5.5	
						31.8		6.59			88.2		5.36			5.6		
			Bottom	17.9	20.6	32.1	32.1	6.56	6.56	6.56	88.1	88.1	7.75	7.98		8.3	8.3	
						32.1		6.56			88.1		8.21			8.3		

Mid-Flood Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TM-FC2

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
03/12/19	14:33:46	24/Fine	Surface	1.0	20.2	35.1	35.1	6.85	6.87	6.83	93.0	93.2	6.89	6.82	7.89	12.6	12.5	13.0
						35.0		6.88			93.3		6.74			12.4		
			Middle	9.2	20.0	35.1	35.1	6.81	6.80		92.2	92.0	8.27	8.44		9.3	9.3	
						35.1		6.79			91.8		8.60			9.2		
			Bottom	17.5	19.9	35.1	35.1	6.78	6.78	6.78	91.6	91.6	8.35	8.41		17.2	17.1	
						35.1		6.78			91.6		8.46			17.0		
05/12/19	14:01:54	24/Fine	Surface	1.0	21.8	34.7	34.7	6.79	6.69	6.61	94.7	93.3	4.32	4.38	4.06	5.1	4.7	5.9
						34.7		6.59			91.9		4.44			4.2		
			Middle	8.9	21.8	34.8	34.8	6.52	6.52		91.0	91.0	4.18	4.18		8.0	7.8	
						34.8		6.52			91.0		4.18			7.5		
			Bottom	16.8	22.2	34.9	34.9	6.38	6.38	6.38	89.7	89.7	3.68	3.63		4.9	5.2	
						34.9		6.38			89.6		3.57			5.5		
07/12/19	14:00:35	24/Fine	Surface	1.0	21.1	35.1	35.1	6.53	6.53	6.52	90.1	90.1	5.08	5.10	5.12	12.1	12.4	9.3
						35.1		6.53			90.1		5.12			12.6		
			Middle	7.6	21.1	35.1	35.1	6.52	6.51		90.0	89.8	5.13	5.16		6.6	6.9	
						35.1		6.49			89.5		5.18			7.1		
			Bottom	14.1	20.9	35.1	35.1	6.47	6.48	6.48	89.1	89.2	5.45	5.09		8.9	8.7	
						35.1		6.48			89.2		4.73			8.5		
10/12/19	16:03:42	24/Fine	Surface	1.0	20.2	35.1	35.1	6.83	6.82	6.78	92.7	92.5	6.50	6.88	8.75	9.7	9.4	11.8
						35.1		6.80			92.2		7.25			9.1		
			Middle	9.2	20.0	35.1	35.1	6.75	6.75		91.4	91.3	7.37	8.48		12.7	12.5	
						35.1		6.74			91.2		9.59			12.3		
			Bottom	17.4	20.0	35.1	35.1	6.74	6.74	6.74	91.1	91.2	11.00	10.89		14.0	13.6	
						35.1		6.74			91.2		10.77			13.2		
12/12/19	8:39:38	24/Fine	Surface	1.0	19.9	34.7	34.8	7.00	7.00	6.97	94.4	94.4	8.24	8.14	9.35	10.2	10.6	11.8
						34.8		7.00			94.3		8.04			10.9		
			Middle	8.8	19.8	34.7	34.7	6.94	6.94		93.3	93.3	10.21	10.31		9.3	9.2	
						34.7		6.94			93.2		10.41			9.1		
			Bottom	16.7	19.8	34.8	34.8	6.90	6.90	6.90	92.8	92.8	9.49	9.61		15.8	15.8	
						34.8		6.89			92.7		9.72			15.7		
14/12/19	8:30:21	24/Fine	Surface	1.0	20.0	34.2	34.2	7.05	7.04	6.96	94.9	94.7	6.26	6.29	7.86	7.5	7.4	7.5
						34.2		7.02			94.4		6.32			7.2		
			Middle	8.4	19.8	34.2	34.2	6.88	6.88		92.3	92.3	7.76	7.68		8.3	8.4	
						34.2		6.87			92.2		7.59			8.5		
			Bottom	15.8	19.9	34.4	34.4	6.81	6.81	6.81	91.7	91.7	9.90	9.63		6.9	6.9	
						34.4		6.81			91.6		9.35			6.8		
17/12/19	11:08:37	24/Fine	Surface	1.0	20.3	32.0	32.0	6.89	6.87	6.88	92.0	91.7	6.94	6.94	7.39	7.7	7.6	6.6
						32.0		6.84			91.4		6.93			7.5		
			Middle	9.3	20.9	33.3	33.3	6.87	6.89		93.5	93.7	7.63	7.59		6.9	6.8	
						33.3		6.90			93.9		7.55			6.7		
			Bottom	17.6	20.2	33.4	33.4	6.64	6.63	6.63	89.2	89.0	7.82	7.65		5.2	5.5	
						33.4		6.61			88.7		7.47			5.8		

Mid-Flood Tide

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

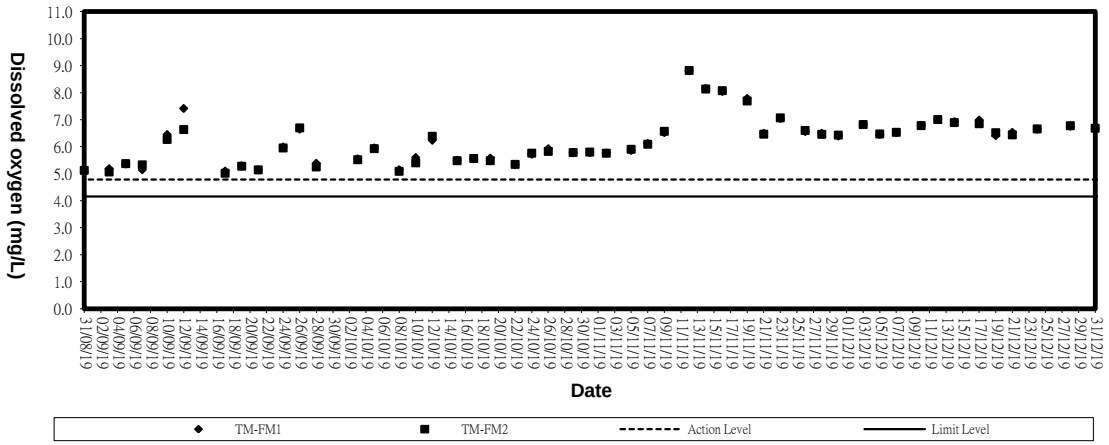
Monitoring Station : TM-FC2

Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)		Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)			Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
						Value	Average	Value	Average	Depth-average	Value	Average	Value	Average	Depth-average	Value	Average	Depth-average
19/12/19	13:08:25	24/Fine	Surface	1.0	20.6	32.8	33.0	6.59	6.54	6.45	88.9	88.2	4.89	4.95	7.84	10.3	10.4	12.7
						33.1		6.49			87.4		5.01			10.5		
			Middle	9.6	20.4	33.3	33.3	6.37	6.37		85.8	85.8	9.01	9.17		14.1	14.3	
						33.3		6.36			85.7		9.32			14.5		
			Bottom	18.1	20.4	33.3	33.3	6.35	6.35	6.35	85.6	85.5	9.38	9.40		13.6	13.4	
						33.3		6.34			85.4		9.42			13.2		
21/12/19	14:30:21	24/Fine	Surface	1.0	21.3	33.5	33.5	6.65	6.62	6.49	91.3	90.9	5.37	5.47	5.46	5.2	5.2	6.3
						33.5		6.59			90.5		5.57			5.2		
			Middle	8.4	20.7	33.4	33.4	6.38	6.36		86.5	86.3	5.59	5.57		6.3	6.4	
						33.4		6.34			86.0		5.55			6.5		
			Bottom	15.9	20.4	33.5	33.5	6.14	6.14	6.14	82.9	82.9	5.31	5.34		7.3	7.2	
						33.5		6.14			82.8		5.36			7.0		
24/12/19	15:00:44	24/Fine	Surface	1.0	21.0	32.6	32.5	6.73	6.72	6.68	90.9	90.9	5.90	5.87	6.56	8.0	8.3	9.6
						32.5		6.70			90.8		5.83			8.5		
			Middle	8.5	21.1	33.1	33.2	6.68	6.65		91.2	90.9	6.60	6.65		12.0	12.0	
						33.3		6.62			90.5		6.70			12.0		
			Bottom	16.0	20.6	33.3	33.3	6.48	6.57	6.57	87.7	88.9	7.41	7.15		8.9	8.5	
						33.4		6.65			90.1		6.89			8.0		
28/12/19	8:31:15	24/Fine	Surface	1.0	20.6	32.1	32.1	6.84	6.84	6.80	91.9	91.9	6.49	6.48	8.19	15.2	15.3	16.2
						32.1		6.84			91.8		6.46			15.4		
			Middle	8.8	20.7	32.4	32.4	6.76	6.76		91.1	91.0	7.13	7.89		16.2	16.5	
						32.4		6.75			90.9		8.64			16.7		
			Bottom	16.5	20.7	32.5	32.5	6.70	6.70	6.70	90.3	90.3	10.23	10.21		17.0	16.8	
						32.5		6.69			90.2		10.19			16.5		
31/12/19	10:30:17	24/Fine	Surface	1.0	20.3	31.8	31.7	7.37	7.08	6.84	98.3	94.6	5.36	5.59	6.94	13.0	13.2	8.7
						31.6		6.79			90.9		5.82			13.4		
			Middle	9.2	20.5	31.8	31.8	6.59	6.59		88.3	88.3	5.85	5.79		8.7	8.4	
						31.8		6.59			88.2		5.72			8.1		
			Bottom	17.3	20.6	32.1	32.1	6.57	6.57	6.57	88.2	88.2	9.50	9.46		4.2	4.5	
						32.1		6.57			88.2		9.41			4.8		

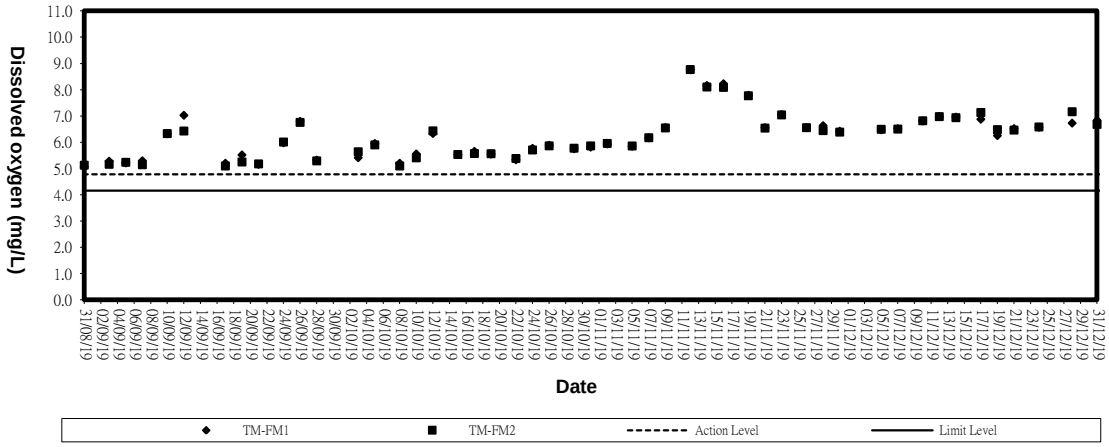
Appendix C3

Graphical Plots of Impact Marine Water Quality Monitoring Data

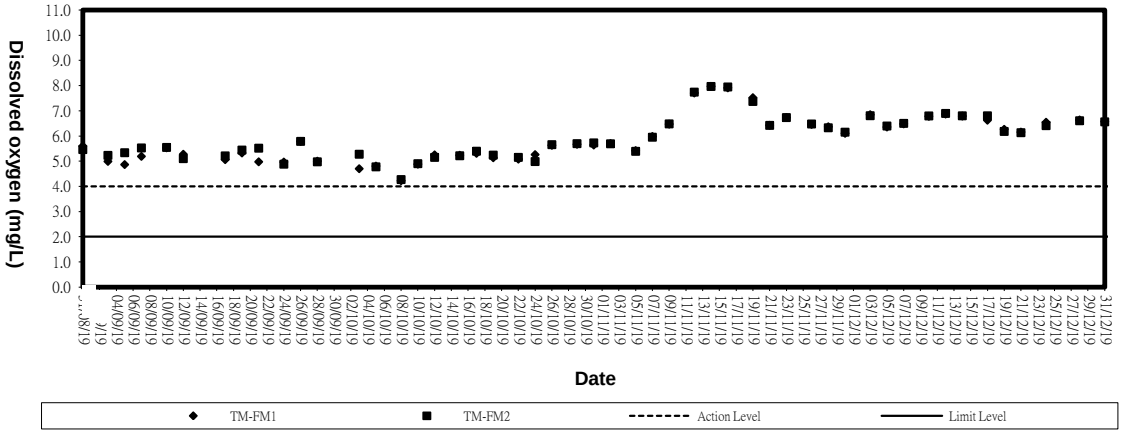
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



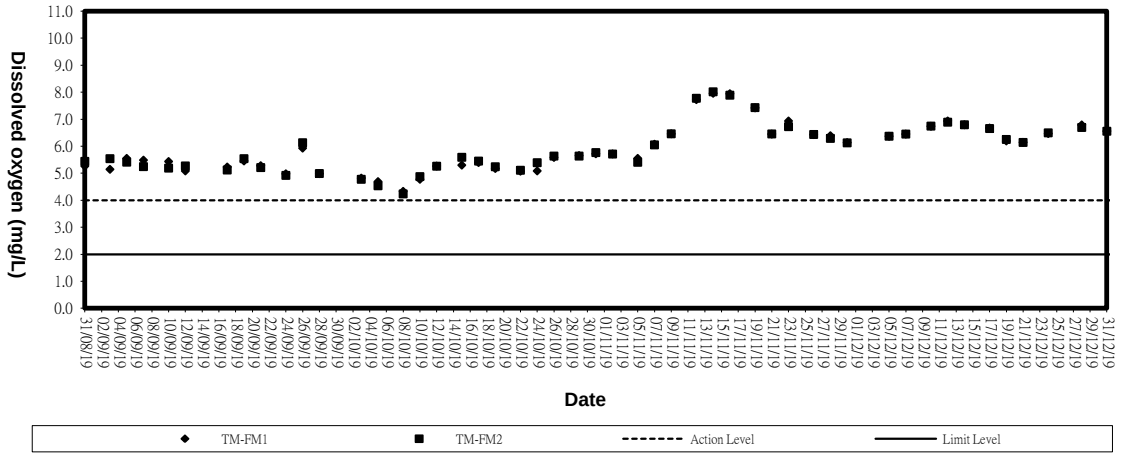
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



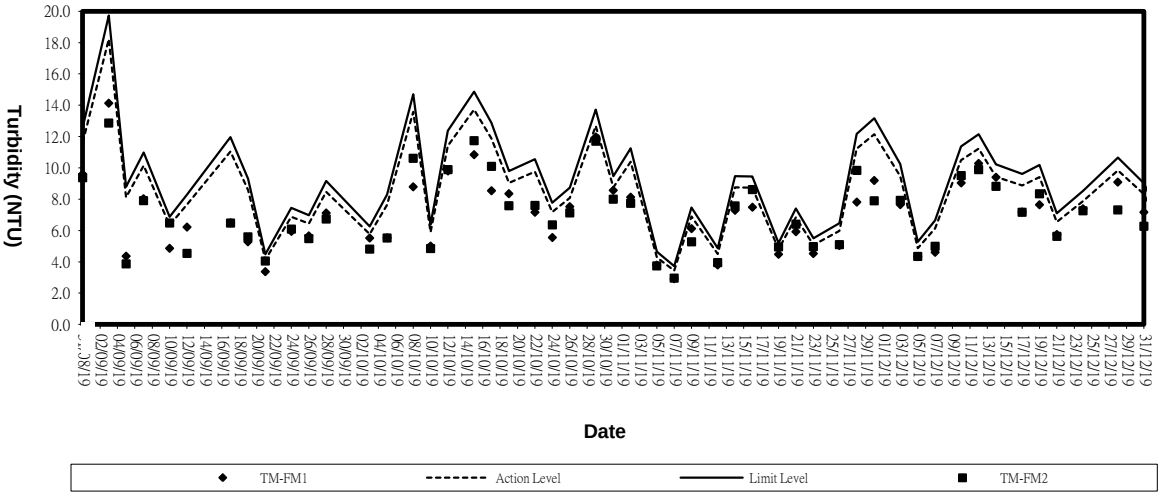
Dissolved Oxygen (Bottom) at Mid-Flood Tide



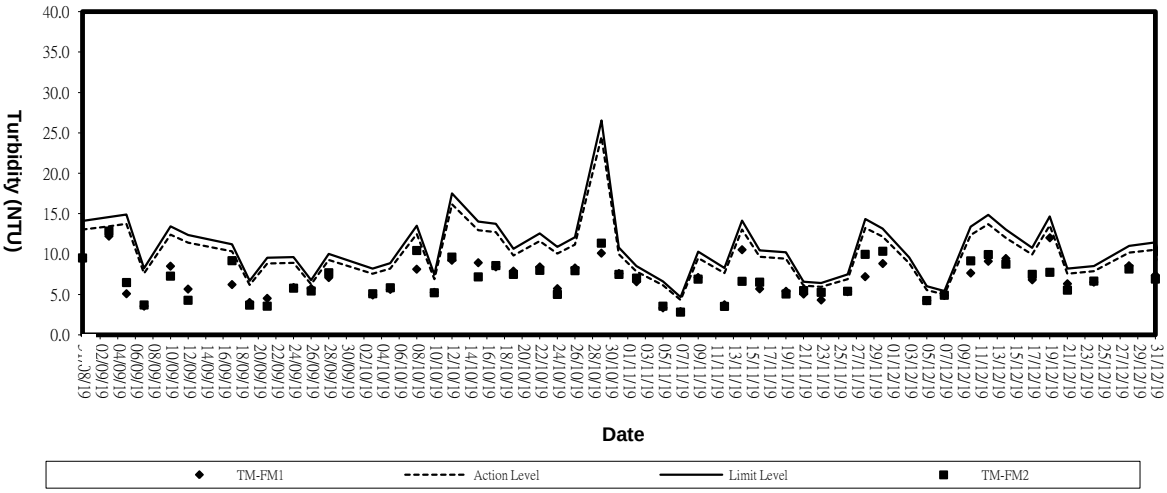
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



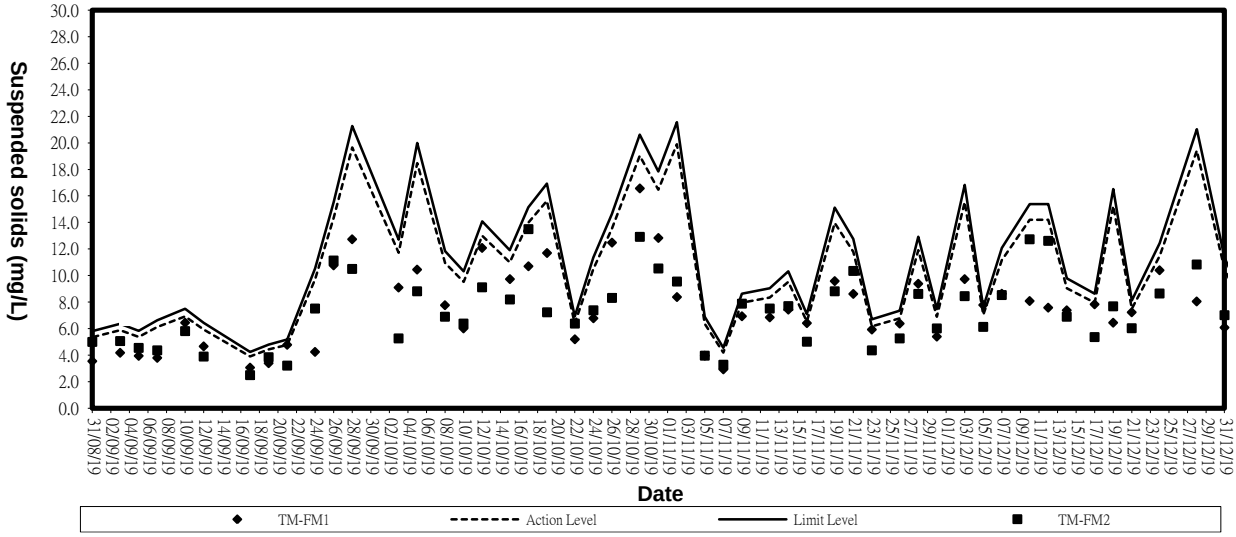
Turbidity (Depth-average) at Mid-Flood Tide



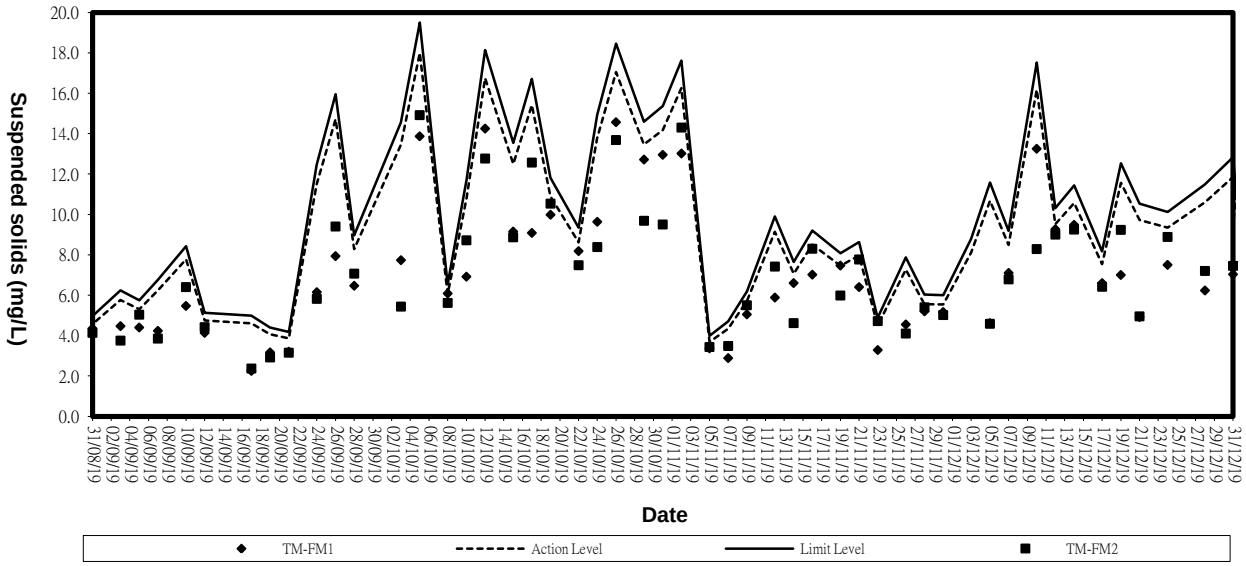
Turbidity (Depth-average) at Mid-Ebb Tide



Suspended solids (Depth-average) at Mid-Flood Tide



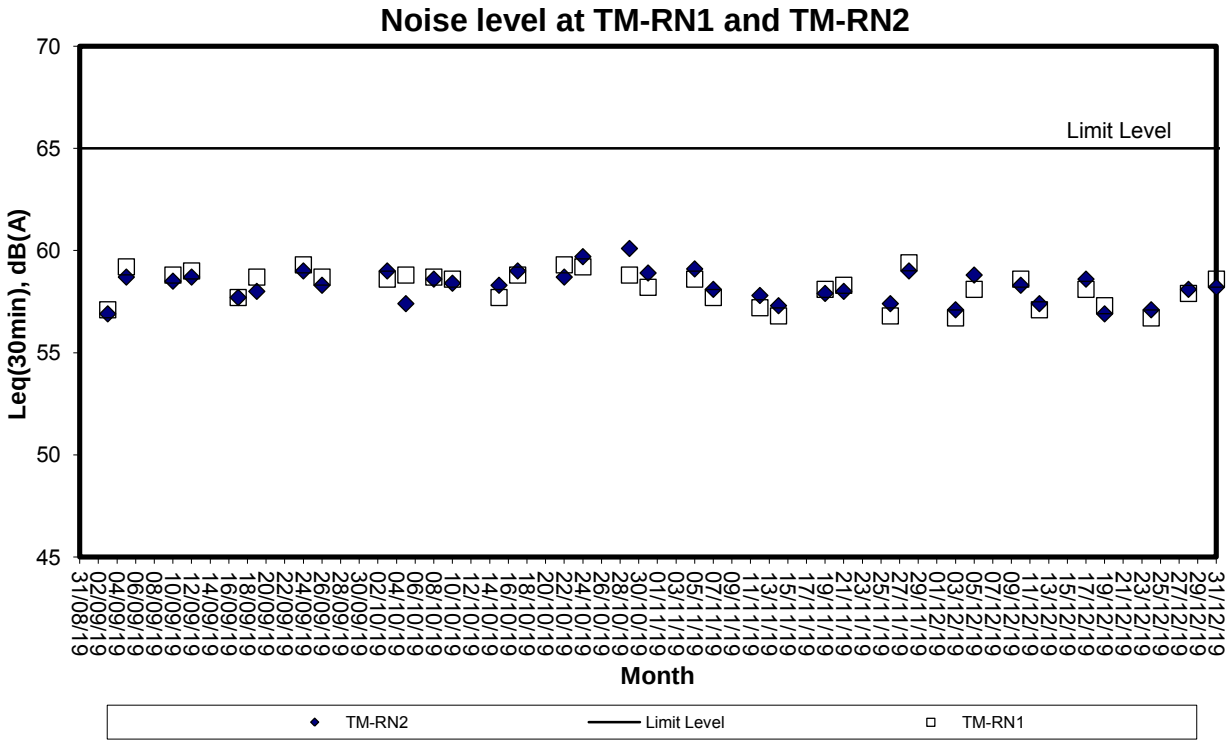
Suspended Solids (Depth-average) at Mid-Ebb Tide



Appendix D1

Calibration Certificates for Impact Noise Monitoring Equipments

Noise Monitoring (Day-time)



Appendix D2

Impact Noise Monitoring Results

Day-time Noise Monitoring`

Monitoring Location: TM-RN1 *

Date	Start Sampling Time (hh:mm)	Noise Level dB (A)			Wind Speed (m/s)	Weather Condition
		$L_{eq(30min)}$	L_{10}	L_{90}		
03/12/2019	11:10	56.7	58.5	52.0	0.2	Fine
05/12/2019	08:30	58.1	61.0	54.7	0.2	Cloudy
10/12/2019	10:25	58.6	61.3	54.4	0.1	Fine
12/12/2019	09:00	57.1	58.6	53.1	0.2	Fine
17/12/2019	11:01	58.1	60.5	55.2	0.1	Cloudy
19/12/2019	09:55	57.3	59.1	52.8	0.2	Cloudy
24/12/2019	09:15	56.7	58.0	52.4	0.2	Fine
28/12/2019	17:04	57.9	60.2	54.1	0.1	Cloudy
31/12/2019	11:06	58.6	60.9	54.7	0.1	Cloudy

Remark: Since Lands Department did not approve us to enter their own area where the noise monitoring stations TM-N1 located due to the security, noise monitoring was carried out at noise monitoring stations TM-RN1 (refer to the figure 3 attached) in this reporting month.

Monitoring Location: TM-RN2 *

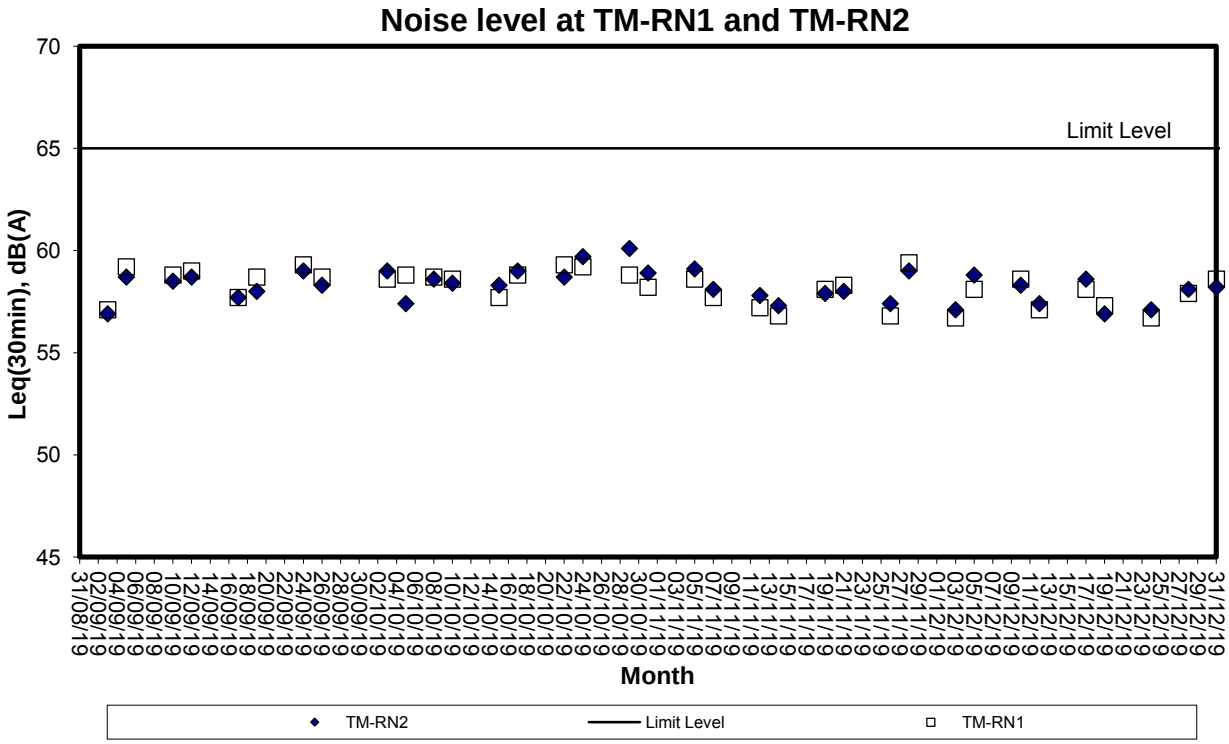
Date	Start Sampling Time (hh:mm)	Noise Level dB (A)			Wind Speed (m/s)	Weather Condition
		$L_{eq(30min)}$	L_{10}	L_{90}		
03/12/2019	11:15	57.1	59.0	53.4	0.2	Fine
05/12/2019	09:03	58.8	61.3	55.1	0.1	Cloudy
10/12/2019	10:59	58.3	61.6	55.0	0.1	Fine
12/12/2019	09:05	57.4	59.0	53.7	0.3	Fine
17/12/2019	10:10	58.6	61.4	54.7	0.1	Cloudy
19/12/2019	10:00	56.9	58.8	53.2	0.2	Cloudy
24/12/2019	10:25	57.1	58.8	52.9	0.3	Fine
28/12/2019	16:32	58.1	60.3	55.7	0.1	Cloudy
31/12/2019	10:33	58.2	61.1	54.4	0.1	Cloudy

Remark: Since Lands Department did not approve us to enter their own area where the noise monitoring stations TM-N2 located due to the security, noise monitoring was carried out at noise monitoring stations TM-RN2 (refer to the figure 3 attached) in this reporting month.

Appendix D3

Graphical Plots of Impact Noise Monitoring Data

Noise Monitoring (Day-time)



Appendix E

Weather Condition

Daily Extract of Meteorological Observations , December 2019 - Tuen Mun

Day	Mean Pressure (hPa)	Air Temperature			Mean Dew Point (deg. C)	Mean Relative Humidity (%)	Total Rainfall (mm)	Prevailing Wind Direction (degrees)	Mean Wind Speed (km/h)
		Absolute Daily Max (deg. C)	Mean (deg. C)	Absolute Daily Min (deg. C)					
1	***	26.3#	21.1	17.0#	14.1	66	0	350	6.8
2	***	19.5#	17	14.4#	6.8	52	0	360	12.3
3	***	20.1#	15.4	12.8#	1.2	39	0	020#	9.3#
4	***	21.9#	17.1	13.1#	0.3	33	0	20	8.7
5	***	18.2#	15.8	14.1#	1.1	38	0	20	10.9
6	***	20.4#	16.6	14.3#	-0.3	32	0	10	8.6
7	***	20.6	15.7	12.2	-1.6	31	0	20	11.5
8	***	20.8	15.5	12.3	0.8	39	0	20	8.9
9	***	22	16.7	12.9	6.2	52	0	350	5.3
10	***	22.8#	17.3	13.4#	10.1	64	0	350	4.3
11	***	25.2#	18.4	13.9#	9.5	58	0	330	5.9
12	***	23.5#	19	14.8#	11	61	0	150	10.1
13	***	23.5#	19.5	17.3#	13.7	70	0	150	4.7
14	***	24.8#	19.5	15.7#	13.5	70	0	160	6.4
15	***	21.4#	19.6	16.9#	15.9	79	0	160	5.6
16	***	24.3#	21.8	20.1#	16.5	72	0	210	6.8
17	***	27.5	23.2	20.2	18	73	0	200	3.4
18	***	28.5#	23	20.1#	18.9	79	0	160	5.8
19	***	23.6	19.6	18	16.4	82	0	150	8.6
20	***	23.2#	18.8	16.5#	12.7	68	0	20	9.1
21	***	23.1#	19.2	16.0#	14.6	75	0	20	7.3
22	***	24.0#	20.4	18.2#	16.9	81	0	20	4.4
23	***	22.8#	20	17.1#	16.8	82	0	150	8.9
24	***	25.8#	21	18.6#	16.5	76	0	160	5.7
25	***	24.2#	20.4	18.1#	16.2	78	0	160	5.5
26	***	26.3#	21.3	17.1#	15	68	0	10	8.9
27	***	21.9#	17.2	14.5#	9	59	0	20	11.8
28	***	22.0#	18.2	15.2#	10.8	63	0	20	5
29	***	19.4#	18.2	17.1#	15.6	86	9	10	4.1
30	***	23.1#	20.5	18.9#	18.9	91	0.5	360	4.6
31	***	21.2#	19.5	18.3#	17.1	86	0	20	4.2

*** unavailable
# data incomplete
Rainfall measured in increment of 0.5 mm. Amount of < 0.5 mm cannot be detected

Appendix F

Event-Action Plans

EVENT/ACTION PLAN FOR AIR QUALITY EXCEEDANCE

EVENT	ACTION			
	ET Leader	IC(E)	ER	Contractor
ACTION LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Inform ER, IC(E) and Contractor 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily	1. Check monitoring data submitted by the ET 2. Check contractor's working method	1. Notify Contractor	1. Rectify any unacceptable practise 2. Amend working methods if appropriate
2. Exceedance for two or more consecutive samples	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Inform IC(E) and Contractor 3. Repeat measurements to confirm finding 4. Increase monitoring frequency to daily 5. Discuss with IC(E) and Contractor on remedial actions 6. If exceedance continues, arrange meeting with IC(E) and ER. 7. If exceedance stops, cease additional monitoring	1. Check monitoring data submitted by the ET Leader 2. Check the Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify the Contractor 3. Ensure remedial measures properly implemented	1. Submit proposals for remedial actions to IC(E) within 3 working days of notification 2. Implement the agreed proposals 3. Amend proposal if appropriate
LIMIT LEVEL				
1. Exceedance for one sample	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Inform ER, Contractor and EPD 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily 5. Assess the effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results	1. Check monitoring data submitted by the ET Leader 2. Check Contractor's working method 3. Discuss with ET and Contractor on possible remedial measures 4. Advise the ER on the effectiveness of the proposed remedial measures 5. Supervise implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify the Contractor 3. Ensure remedial measures properly implemented	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification 3. Implement the agreed proposals 4. Amend proposal if appropriate.

EVENT	EVENT/ACTION PLAN FOR AIR QUALITY EXCEEDANCE			
	ACTION			
	ET Leader	IC(E)	ER	Contractor
2. Exceedance for two or more consecutive samples	1. Identify source, investigate the causes of exceedance and propose remedial measures 2. Notify IC(E), ER, EPD and Contractor 3. Repeat measurement to confirm finding 4. Increase monitoring frequency to daily 5. Carry out analysis of contractor's working procedures to determine possible mitigation to be implemented 6. Arrange meeting with IC(E) and ER to discuss the remedial actions to be taken 7. Assess effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results 8. If exceedance stops, cease additional monitoring	1. Discuss amongst ER, ET and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Supervise the implementation of remedial measures	1. Confirm receipt of notification of failure in writing 2. Notify Contractor 3. In consultation with the IC(E), agree with the Contractor on the remedial measures to be implemented 4. Ensure remedial measures are properly implemented 5. If exceedances continues, consider what portion of the work is responsible and instruct the Contractor to stop that portion of work until the exceedance is abated	1. Take immediate action to avoid further exceedances 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification 3. Implement the agreed proposals 4. Resubmit proposals if problem still not under control 5. Stop the relevant activity of works as determined by the ER until the exceedance is abated

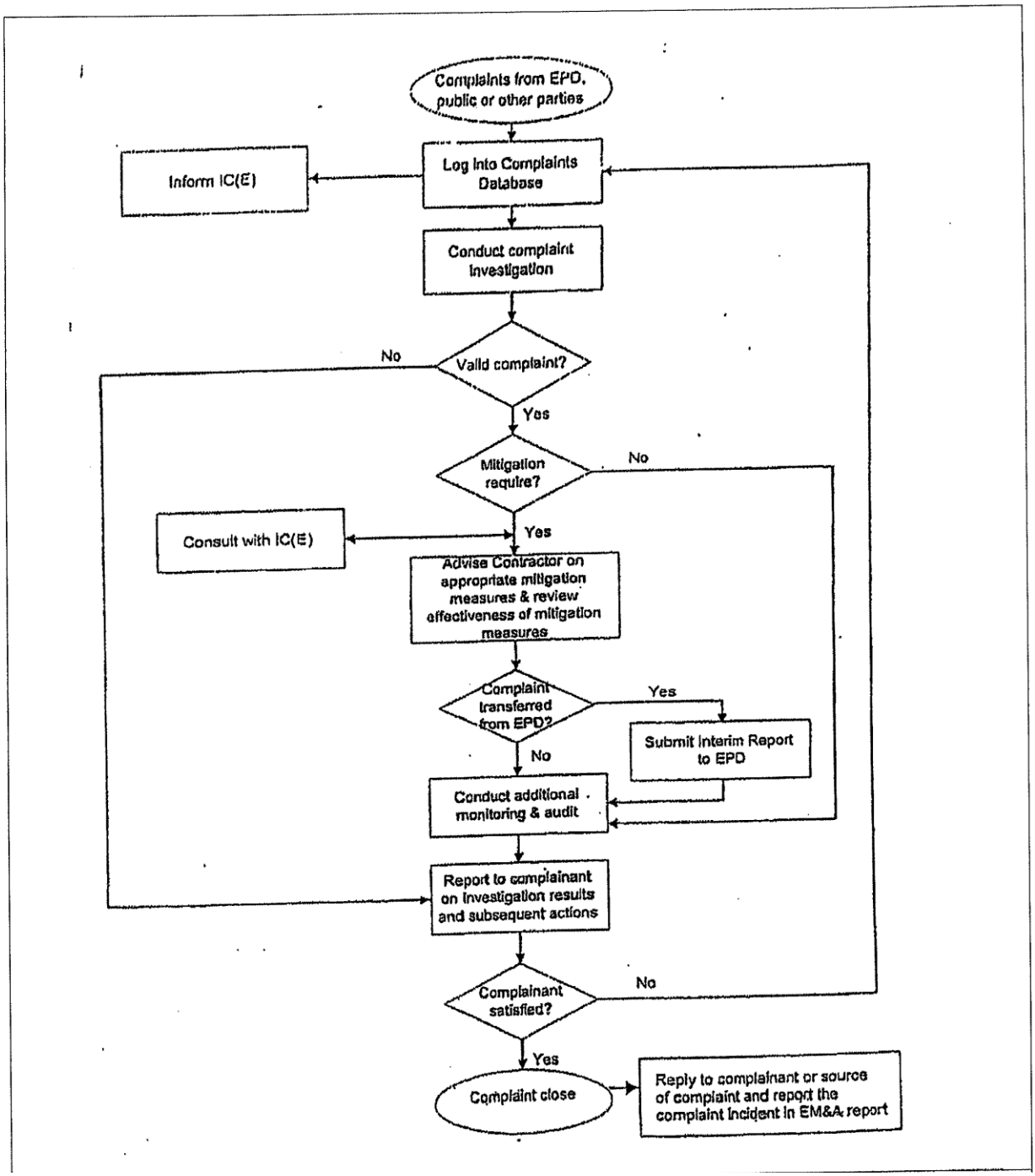
EVENT	EVENT/ACTION PLAN FOR NOISE EXCEEDANCE			
	ACTION			
	ET Leader	IC(E)	ER	Contractor
Action Level	1. Notify the IC(E) and the Contractor. 2. Carry out investigation. 3. Report the results of investigation to the IC(E) and the Contractor. 4. Discuss with the Contractor and formulate remedial measures. 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 implementation of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented.	1. Submit noise mitigation proposals to IC(E). 2. Implement noise mitigation proposals.
Limit Level	1. Notify the IC(E), the ER, the EPD and the Contractor. 2. Identify source. 3. Repeat measurement to confirm findings. 4. Increase monitoring frequency. 5. Carry out analysis of Contractor's working procedures to determine possible mitigation to be implemented. 6. Inform the IC(E), the ER and the EPD the causes & actions taken for the exceedances. 7. Assess effectiveness of Contractor's remedial actions and keep the IC(E), the EPD and the ER informed of the results 8. If exceedance due to the construction works stops, cease additional monitoring	1. Discuss amongst the ER, the ET Leader and the Contractor on the potential remedial actions. 2. Review the Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly. 3. Supervise the implementation of remedial measures.	1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If exceedances continue, consider what activity of the work is responsible and instruct the Contractor to stop that activity of work until the exceedances is abated.	1. Take immediate action to avoid further exceedance 2. Submit proposals for remedial actions to IC(E) within 3 working days of notification. 3. Implement the agreed proposals. 4. Resubmit proposals if problem still not under control. 5. Stop the relevant activity of works as determined by the ER until the exceedances is abated.

Event	EVENT AND ACTION PLAN FOR WATER QUALITY EXCEEDANCE			
	ACTION			
	ET Leader	Contractor	ER	IEC
Action level being exceeded by one sampling day	1. Identify source(s) of impact; 2. Repeat in-situ measurement to confirm findings; 3. Notify Contractor in writing within 24 hours of identification of the exceedance 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Carry out investigation 6. Report the results of investigation to the Contractor within 3 working days of identification of exceedance and advise contractor if exceedance is due to contractor's construction works 7. Discuss mitigation measures with Contractor if exceedance is due to the construction works within 4 working days 8. Repeat measurement on next day of exceedance if exceedance is due to the construction works	1. Notify the ER and IEC in writing within 24 hours of identification of exceedance 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Submit investigation report to IEC and ER within 3 working days of the identification of an exceedance 5. Consider changes of working method if exceedance is due to the construction works 6. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER if exceedance is due to the construction works within 4 working days of identification of an exceedance 7. Implement the agreed mitigation measures within reasonable time scale	1. Notify EPD and other relevant governmental agencies in writing within 24 hours of the identification of the exceedance 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Require contractor to propose remedial measures for the analysed problem if related to the construction works 4. Ensure remedial measures are properly implemented 5. Assess the effectiveness of the mitigation measure	1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due / not due to the works 3. Discuss with ET, ER and Contractor on the mitigation measures 4. Review contractor's mitigation measures whenever necessary to ensure their effectiveness and advise the ER accordingly 5. Supervise the implementation of mitigation measures

Event	EVENT AND ACTION PLAN FOR WATER QUALITY			
	ACTION			
	ET Leader	Contractor	ER	IEC
Action level being exceeded by more than one consecutive sampling days	1. Identify source(s) of impact; 2. Repeat in-situ measurement to confirm findings 3. Notify Contractor in writing within 24 hours of identification 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Carry out investigation 6. Report the results of investigation to the Contractor within 3 working days of identification of exceedance and advise contractor if exceedance is due to contractor's construction works 7. Discuss mitigation measures with IEC and Contractor within 4 working of identification of an exceedance 8. Ensure mitigation measures are implemented; 9. Prepare to increase the monitoring frequency to daily; 10. Repeat measurement on next day of exceedance.	1. Notify IEC and ER in writing within 24 hours of identification of exceedance 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Submit the results of the investigation to IEC and ER within 3 working days of the identification of an exceedance 6. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 4 working days of identification of an exceedance 7. Implement the agreed mitigation measures within reasonable time scale	1. Notify EPD and other relevant governmental agencies in writing within 24 hours of the identification of the exceedance 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Require contractor to propose remedial measures for the analysed problem if related to the construction works 4. Ensure remedial measures are properly implemented 5. Assess the effectiveness of the mitigation measure	1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due / not due to the works 3. Discuss with ET, ER and Contractor on the mitigation measures. 4. Review contractor's mitigation measures whenever necessary to ensure their effectiveness and advise the ER accordingly 5. Assess the effectiveness of the implemented mitigation measures.

Event	EVENT AND ACTION PLAN FOR WATER QUALITY EXCEEDANCE			
	ACTION			
	ET Leader	Contractor	ER	IEC
Limit level being exceeded by one sampling day	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Notify Contractor in writing within 24 hours of identification of the exceedance 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Carry out investigation 6. Report the results of investigation to the Contractor within 3 working days of identification of exceedance and advise contractor if exceedance is due to contractor's construction works 7. Discuss mitigation measures with IEC, ER and Contractor within 4 working of identification of an exceedance 8. Ensure mitigation measures are implemented; 9. Increase the monitoring frequency to daily until no exceedance of Limit Level.	1. Notify IEC and ER in writing; within 24 hours of the identification of the exceedance 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 5. Submit the results of the investigation to IEC and ER within 3 working days of the identification of an exceedance 6. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 4 working days of the identification of an exceedance 7. Implement the agreed mitigation measures within reasonable time scale	1. Notify EPD and other relevant governmental agencies in writing within 24 hours of identification of exceedance 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 4. Ensure remedial measures are properly implemented 5. Assess the effectiveness of the implemented mitigation measures.	1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due / not due to the works 3. Discuss with ET, ER and Contractor on the mitigation measures. 4. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 5. Assess the effectiveness of the implemented mitigation measures

Event	EVENT AND ACTION PLAN FOR WATER QUALITY EXCEEDANCE			
	ACTION			
	ET Leader	Contractor	ER	IEC
Limit Level being exceeded by more than one consecutive sampling days	1. Repeat in-situ measurement to confirm findings; 2. Identify source(s) of impact; 3. Notify Contractor in writing within 24 hours of identification of the exceedance 4. Check monitoring data, all plant, equipment and Contractor's working methods; 5. Carry out investigation 6. Report the results of investigation to the Contractor within 3 working days of identification of exceedance and advise contractor if exceedance is due to contractor's construction works 7. Discuss mitigation measures with IEC, ER and Contractor; 8. Ensure mitigation measures are implemented; 9. Increase the monitoring frequency to daily until no exceedance of Limit Level for two consecutive days.	1. Notify ER and IEC in writing within 24 hours of the identification of the exceedance and 2. Rectify unacceptable practice; 3. Check all plant and equipment; 4. Consider changes of working methods; 8. Submit the results of the investigation to IEC and ER within 3 working days of the identification of an exceedance 5. Discuss with ET, IEC and ER and propose mitigation measures to IEC and ER within 4 working days; 6. Implement the agreed mitigation measures within reasonable time scale 7. As directed by the Engineer, to slow down or to stop all or part of the marine work or construction actives.	1. Notify EPD and other relevant governmental agencies in writing within 24 hours of identification of exceedance 2. Discuss with IEC, ET and Contractor on the proposed mitigation measures; 3. Request Contractor to critically review the working methods; 6. Ensure remedial measures are properly implemented 4. Assess the effectiveness of the implemented mitigation measures; 5. Consider and instruct, if necessary, the Contractor to slow down or to stop all or part of the marine work until no exceedance of Limit Level.	1. Check monitoring data submitted by ET 2. Confirm ET assessment if exceedance is due / not due to the works 3. Discuss with ER, ET and Contractor on the mitigation measures. 4. Review proposals on mitigation measures submitted by Contractor and advise the ER accordingly. 5. Assess the effectiveness of the implemented mitigation measures.


Complaints from EPD, public or other parties
Log into Complaints Database
Inform IC(E)
Conduct complaint investigation
Valid complaint?
No
Yes
Mitigation require?
No
Yes
Consult with IC(E)
Advise Contractor on appropriate mitigation measures & review effectiveness of mitigation measures
Complaint transferred from EPD?
Yes
Submit Interim Report to EPD
No
Conduct additional monitoring & audit
Report to complainant on investigation results and subsequent actions
Complainant satisfied?
No
Yes
Complaint close
Reply to complainant or source of complaint and report the complaint incident in EM&A report

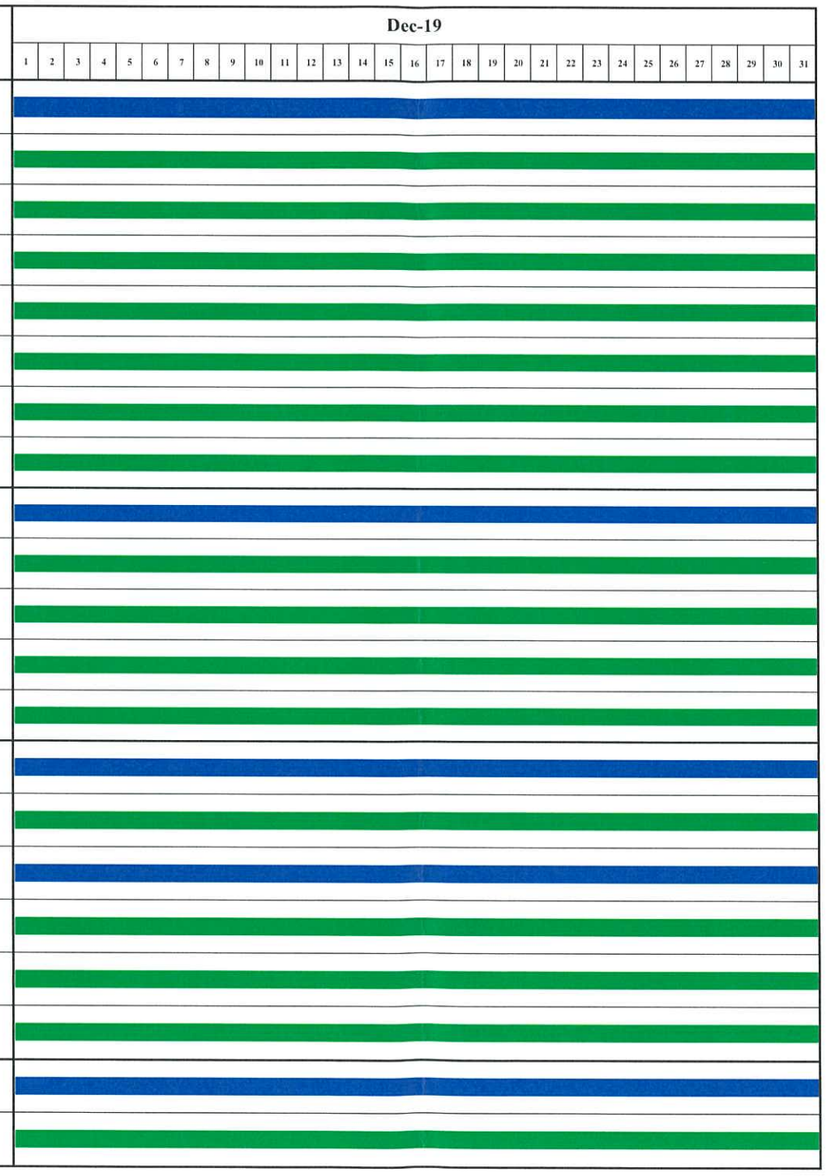
Appendix G

Construction Programme

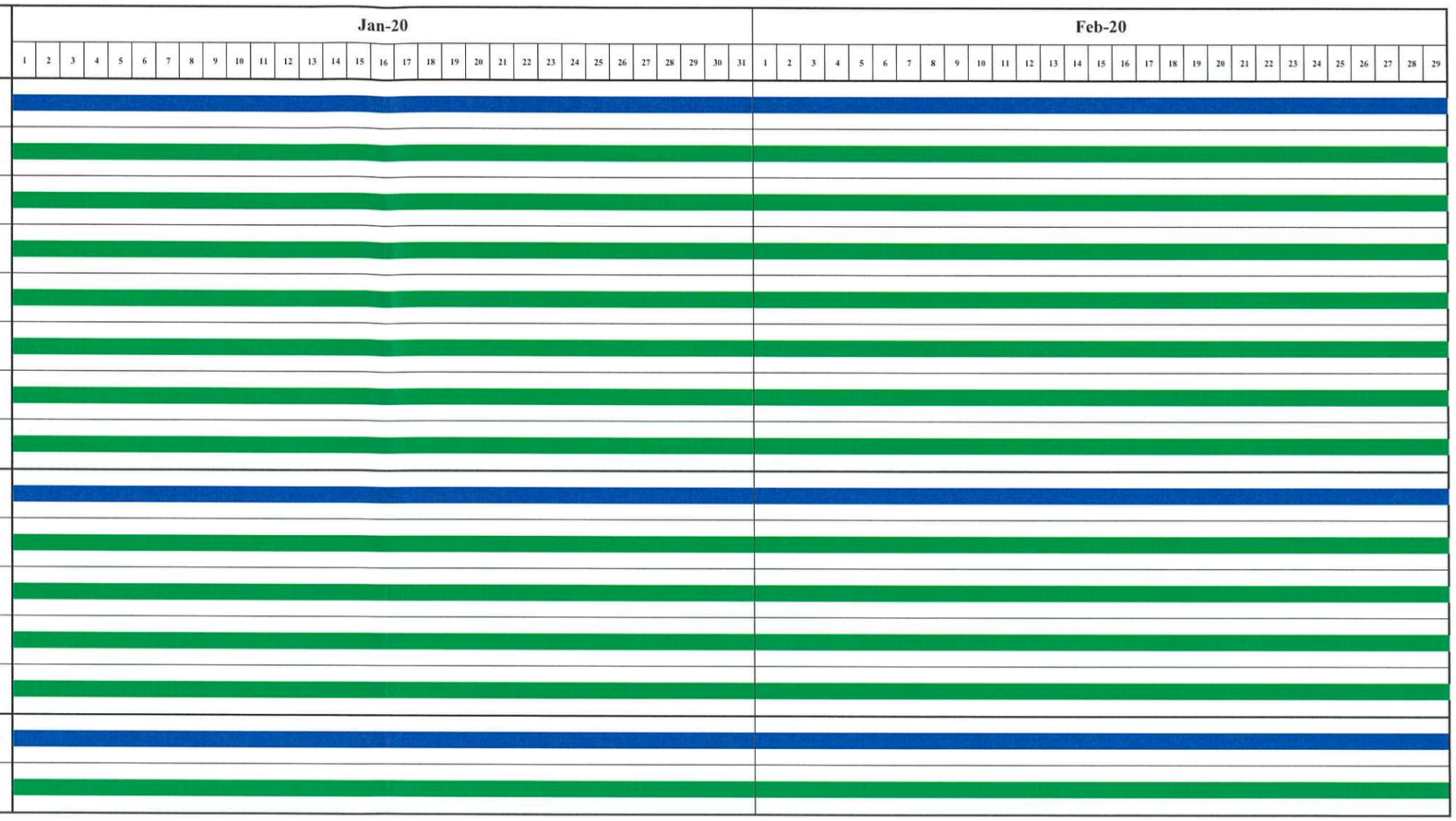
China Harbour - Zhen Hua Joint Venture
Contract No. CV/2015/07
Handling of Surplus Public Fill (2016 -2018)

Three Months Rolling Programme for the Period from 1-December-2019 to 29-February-2020
(From 1-December-2019 to 31-December-2019 for Main Contract CV/2015/07 and From 1-January-2020 to 29-February-2020 for Supplementary Agreement No.1 of Main Contract CV/2015/07)

Item	Description	From	To
1	Section 1A	1-Dec-19	31-Dec-19
1.1	Operation of Fill Bank, surveillance system and tipping halls	1-Dec-19	31-Dec-19
1.2	Operation of crushing plants	1-Dec-19	31-Dec-19
1.3	Operation of the existing and expanded dewatering plants	1-Dec-19	31-Dec-19
1.4	Collection and delivery of Public Fill from CWPFBP and MWPFRF to TKOFB	1-Dec-19	31-Dec-19
1.5	Breaking up the incoming precast concrete units	1-Dec-19	31-Dec-19
1.6	Carry out repair works for damages caused by Super Typhoon	1-Dec-19	31-Dec-19
1.7	Carry out preliminary sorting on Public Fill for Three Runway System (3RS) project	1-Dec-19	31-Dec-19
2	Section 2A	1-Dec-19	31-Dec-19
2.1	Operation of Fill Bank, surveillance system and tipping halls	1-Dec-19	31-Dec-19
2.2	Breaking up the incoming precast concrete units	1-Dec-19	31-Dec-19
2.3	Operation of glass cullet storage compartment at Portion B7	1-Dec-19	31-Dec-19
2.4	Carry out preliminary sorting on Public Fill for Three Runway System (3RS) project	1-Dec-19	31-Dec-19
3	Section 3	1-Dec-19	31-Dec-19
3.1	Design and construction of of seawalls at Zone B (approx. 900m)	1-Dec-19	31-Dec-19
4	Section 3A	1-Dec-19	31-Dec-19
4.1	Design, construction and operation of new berthing facilities at Zone B	1-Dec-19	31-Dec-19
4.2	Design, construction and operation of new navigation channel and turning basin inassociated with the berthing facilities at Zone B	1-Dec-19	31-Dec-19
4.3	Design and construction of seawalls at Zone B (approx. 1500m)	1-Dec-19	31-Dec-19
5	Section 4	1-Dec-19	31-Dec-19
5.1	Collection and delivery of Public Fill to the Designated Reclamation Sites in the Mainland	1-Dec-19	31-Dec-19



Item	Description	From	To
1	Section 1B	1-Sep-19	1-Oct-19
1.1	Operation of Fill Bank, surveillance system and tipping halls	1-Sep-19	1-Oct-19
1.2	Operation of crushing plants	1-Sep-19	1-Oct-19
1.3	Operation of the existing and expanded dewatering plants	1-Sep-19	1-Oct-19
1.4	Collection and delivery of Public Fill from CWPFBP and MWPFRF to TKOFB	1-Sep-19	1-Oct-19
1.5	Breaking up the incoming precast concrete units	1-Sep-19	1-Oct-19
1.6	Carry out repair works for damages caused by Super Typhoon	1-Sep-19	1-Oct-19
1.7	Carry out preliminary sorting on Public Fill for Three Runway System (3RS) project	1-Sep-19	1-Oct-19
2	Section 2B	1-Sep-19	1-Oct-19
2.1	Operation of Fill Bank, surveillance system and tipping halls	1-Sep-19	1-Oct-19
2.2	Breaking up the incoming precast concrete units	1-Sep-19	1-Oct-19
2.3	Operation of glass cullet storage compartment at Portion B7	1-Sep-19	1-Oct-19
2.4	Carry out preliminary sorting on Public Fill for Three Runway System (3RS) project	1-Sep-19	1-Oct-19
5	Section 4A	1-Sep-19	30-Nov-19
5.1	Collection and delivery of Public Fill to the Designated Reclamation Sites in the Mainland	1-Sep-19	30-Nov-19



Appendix H

Weekly ET's Site Inspection Record

Inspection Date : 05/12/2019

Time : 15:00

Weather : Sunny / Fine / Cloudy / Overcast / Drizzle / Rain / Storm / Hazy

Wind : Calm / Light / Breeze / Strong

Temperature : 16°C

Humidity : High / Moderate / Low

Inspected by	CEDD	Contractor / Sub-Contactor	ET
Signature:			
Name:			
Title			

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Fugitive Dust Emission				
▪ Dust control / mitigation measures shall be provided to prevent dust nuisance.	√			
▪ Water sprays shall be provided and used to dampen materials.	√			
▪ All stockpile of aggregate or spoil should be enclosed or covered and water applied in dry or windy condition.	√			
▪ Any vehicle with open load carrying area used for moving materials which has the potential to create dust shall have properly fitting side and tail boards. Material having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin.	√			
▪ Unpaved areas should be watered regularly to avoid dust generation.	√			
▪ The designated site main haul road shall be paved or regular watering.	√			
▪ The haul road inside the site and public road around the site entrance should be kept clean and free from dust.	√			
▪ Wheel washing facilities including high-pressure water jet shall be provided at the entrance of work site.	√			
▪ Every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the fill bank.	√			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	√			
▪ Vehicle and equipment should be switched off while not in use.	√			
▪ All plant and equipment should be well maintained e.g. without black smoke emission.	√			
▪ Open burning should be prohibited.	√			
▪ Approval or exemption Non-road Mobile Machinery (NRMM) labels should be painted or securely fixed on regulated machines and non-road vehicles at a conspicuous position according to the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation (APCO Cap.311).	√			
Noise Impact				
▪ The approved method of working, equipment and sound-reducing measures (e.g. use of silenced type of equipment, etc.) shall be adapted.	√			
▪ The constructions works should be scheduled to minimize noise nuisance.	√			
▪ Only well maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	√			
▪ Powered mechanical equipment (PME) should be covered or shielded by appropriate acoustic materials.	√			
▪ Air compressors and hand held breakers should have noise labels.	√			
▪ Compressors and generators should operate with door closed.	√			
▪ Machines and plants that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	√			
▪ Noisy equipment and mobile plant shall always be site away from NSRs.	√			

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Water Quality				
▪ Drainage system and the sand / silt removal facilities should be adequate and well maintained to prevent flooding and overflow, especially after rain storms.	√			
▪ The storm water intercepting system shall be effective to collect of runoff and remove suspended solids before discharge.	√			
▪ Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	√			
▪ The material shall be properly covered to prevent washed away especially before rainstorm.	√			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	√			
▪ Final slope surfaces, especially those facing to the north of the site shall be treated by compaction, followed by hydroseeding, vegetation planting or sealing with shotconcrete, latex, vinyl, bitumen, or other suitable surface stabilizer approved by CEDD.	√			
▪ Existing and newly constructed Catchpits, sand and silt removal facilities and intercepting channels shall be maintained, and the deposited silt and grit shall be removed weekly and on a need basis especially at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	√			
▪ A wheel washing bay shall be provided at the site exit and wash-water shall have sand and silt settled out or removed before being discharged into storm drains.	√			
▪ The section of construction road between wheel washing bay and the public road shall be paved with concrete, bituminous materials or hardcores to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	√			
▪ Sewage from toilets shall be discharged in to a foul sewer, or chemical toilets shall be provided.	√			
▪ The chemical toilets (if use) shall be provided by a licensed contractor, who will be responsible for disposal and maintenance of these facilities.	√			
▪ Tipping halls enclosed with top and 3-side to prevent spillage of material into marine water.	√			
▪ The barges shall be in right size such that adequate clearance in maintained between the vessels and the seabed at all states of the tide to ensure the undue turbidity is not generated by turbulence from vessel movement or propeller wash.	√			
▪ All vessels used for transportation of fill material shall have tight fitting seals to their bottom openings to prevent leakage of material during transport.	√			
▪ Barges shall not be filled to a level which may cause the overflow of material during loading or transportation. Barge effluents shall be properly collected and treated before disposal.	√			
▪ Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	√			
▪ The work activities shall not cause any visible foam, oil, grease, scum, litter or other objectionable matters to be present on the water in the vicinity of the barging facilities.	√			
▪ A waste collection vessel shall be deployed to remove floating debris.	√			
Landscape and Visual				
▪ The maximum stockpiling height at the fill bank shall be limited to a maximum of +40mPD.	√			
▪ Surface of outer slopes of the Fill Bank shall preferably be hydroseeded.	√			
▪ Stockpile of public fill shall be removed in a sequence to allow the outer hydrseeded to be removed later than other portions as far as practicable.	√			
▪ Casuarina equisetifolia were planted as buffer tree along the northern perimeter of the Site. The height of Casuarina equisetifolia was maintained at bleast 3m above soil level.	√			
▪ Lighting shall be set to minimise night-time glare.	√			

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Waste Management				
Construction Waste Management				
▪ Relevant licence / permits for disposal of construction waste or excavated materials available for inspection.	√			
▪ Excavated material to be generated from construction works to be re-used on-site as far as practicable to reduce off-site disposal.	√			
▪ Mud and debris should be removed from waterworks access roads and associated drainage systems.	√			
▪ Provision of sufficient waste disposal points and regular collection for disposal. Appropriate measures should be employed to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.	√			
▪ Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.	√			
▪ Prior to disposal of C&D waste, recyclable materials should be salvaged for reuse (such as wood and metal) and inert waste utilised as public fill to minimise the quantity of waste to be disposed of to landfill.	√			
▪ In order to monitor the disposal of C&D material and solid wastes at public filling areas and landfills, and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements.	√			
▪ Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials.	√			
Chemical Waste Management				
▪ It is required to register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	√			
▪ After use, chemical wastes (e.g. cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.	√			
▪ Spent chemicals should be stored and collected by an approved operator for disposal at the Chemical Waste Treatment Facility or other licensed facility in accordance with the Chemical Waste (General) Regulation.	√			
▪ Chemical wastes should be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facility.	√			
▪ Chemical wastes including waste oil should be stored properly in designated areas, e.g. chemical waste storage area.	√			
▪ The designated chemical waste storage area should only be used for storing chemical wastes.	√			
▪ The set-up of chemical waste storage area should				
▪ Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition.	√			
▪ Be enclosed on at least 3 sides and securely closed.	√			
▪ Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest.	√			
▪ Have adequate ventilation.	√			
▪ Be covered to prevent rainfall entering (water collected within the bund must be tested and disposal as chemical waste if necessary).	√			
▪ Be arranged so that incompatible materials are adequately separated.	√			

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
▪ Warning panels should be displayed at the waste storage area.	√			
▪ Waste storage area should be cleaned and maintained regularly.	√			
▪ Chemical waste should be transported regularly by a registered chemical waste collector to a facility licensed to receive chemical waste.	√			
▪ All generators, fuel and oil storage should be within bundle areas.	√			
▪ Oil leakage from machinery, vehicle and plant should be prevented.	√			
▪ In the event of chemical waste / dangerous goods / chemicals spillage or leakage, the procedures as outlined in the Spillage Response Plan should be followed.	√			
▪ The dangerous goods / chemical spillage or leakage procedures (including equipments) should be in place.	√			
Good Site Practices				
▪ Nomination of approved personnel, such as site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.	√			
▪ Training of site personnel in proper waste management and chemical handling procedures should be provided.	√			
• Good site practices should be adopted to clean the rubbish and litter on a regular basis so as to prevent the rubbish and litter from dropping into the nearby environment.	√			
• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	√			
• The Environmental Permit should be displaced conspicuously on site.	√			
• Construction noise permits should be posted at site entrance or available for site inspection.	√			
▪ Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	√			
▪ Chemical storage area provided with lock and located on sealed areas.	√			
▪ All chemicals should be placed at the banded area with adequate band capacity (>110% of largest tank).	√			
▪ Any unused chemicals or those with remaining functional capacity should be recycled.	√			
▪ Regular cleaning and maintenance programme for waste storage area, drainage systems, silt traps, sumps and oil interceptors.	√			
▪ To encourage collection of aluminium cans by individual collectors.	√			
▪ Separate labelled bins should be provided to segregate this waste from other general refuse generated by the workforce.	√			
▪ A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be used, e.g. trip ticket system for chemical waste disposal. Quantities could be determined by weighing each load or other suitable methods.	√			
▪ A collection area should be provided where waste can be stored and loaded prior to removal from site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. If an open area is unavoidable for the storage or loading/unloading of wastes, then the area should be bunded and all the polluted surface run-off collected within this area should be diverted into wastewater treatment system.	√			

Summary of the Weekly Site Inspection:

Item	Details of defective works or observations	Proposed Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Target Completion Date
---	---	---	---	---	---

Remark

	Name	Title	Signature	Date
Checked by	Frankie Tang	ET Representative		05 December 2019

Inspection Date : 12/12/19

Time : 15:00

Weather : Sunny / (Fine) / Cloudy / Overcast / Drizzle / Rain / Storm / Hazy

Wind : Calm / (Light) / Breeze / Strong

Temperature : 20°C

Humidity : High / Moderate / (Low)

Inspected by	CEDD	Contractor / Sub-Contactor	ET
Signature:			
Name:	C.H. Chan		Mak Kei Wai
Title	Asow/PS		E.T

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Fugitive Dust Emission				
▪ Dust control / mitigation measures shall be provided to prevent dust nuisance.	√			
▪ Water sprays shall be provided and used to dampen materials.	√			
▪ All stockpile of aggregate or spoil should be enclosed or covered and water applied in dry or windy condition.	√			
▪ Any vehicle with open load carrying area used for moving materials which has the potential to create dust shall have properly fitting side and tail boards. Material having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin.	√			
▪ Unpaved areas should be watered regularly to avoid dust generation.	√			
▪ The designated site main haul road shall be paved or regular watering.	√			
▪ The haul road inside the site and public road around the site entrance should be kept clean and free from dust.	√			
▪ Wheel washing facilities including high-pressure water jet shall be provided at the entrance of work site.	√			
▪ Every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the fill bank.	√			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	√			
▪ Vehicle and equipment should be switched off while not in use.	√			
▪ All plant and equipment should be well maintained e.g. without black smoke emission.	√			
▪ Open burning should be prohibited.	√			
▪ Approval or exemption Non-road Mobile Machinery (NRMM) labels should be painted or securely fixed on regulated machines and non-road vehicles at a conspicuous position according to the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation (APCO Cap.311).	√			
Noise Impact				
▪ The approved method of working, equipment and sound-reducing measures (e.g. use of silenced type of equipment, etc.) shall be adapted.	√			
▪ The constructions works should be scheduled to minimize noise nuisance.	√			
▪ Only well maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	√			
▪ Powered mechanical equipment (PME) should be covered or shielded by appropriate acoustic materials.	√			
▪ Air compressors and hand held breakers should have noise labels.	√			
▪ Compressors and generators should operate with door closed.	√			
▪ Machines and plants that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	√			
▪ Noisy equipment and mobile plant shall always be site away from NSRs.	√			

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Water Quality				
▪ Drainage system and the sand / silt removal facilities should be adequate and well maintained to prevent flooding and overflow, especially after rain storms.	√			
▪ The storm water intercepting system shall be effective to collect of runoff and remove suspended solids before discharge.	√			
▪ Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	√			
▪ The material shall be properly covered to prevent washed away especially before rainstorm.	√			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	√			
▪ Final slope surfaces, especially those facing to the north of the site shall be treated by compaction, followed by hydroseeding, vegetation planting or sealing with shotconcrete, latex, vinyl, bitumen, or other suitable surface stabilizer approved by CEDD.	√			
▪ Existing and newly constructed Catchpits, sand and silt removal facilities and intercepting channels shall be maintained, and the deposited silt and grit shall be removed weekly and on a need basis especially at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	√			
▪ A wheel washing bay shall be provided at the site exit and wash-water shall have sand and silt settled out or removed before being discharged into storm drains.	√			
▪ The section of construction road between wheel washing bay and the public road shall be paved with concrete, bituminous materials or hardcores to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	√			
▪ Sewage from toilets shall be discharged in to a foul sewer, or chemical toilets shall be provided.	√			
▪ The chemical toilets (if use) shall be provided by a licensed contractor, who will be responsible for disposal and maintenance of these facilities.	√			
▪ Tipping halls enclosed with top and 3-side to prevent spillage of material into marine water.	√			
▪ The barges shall be in right size such that adequate clearance in maintained between the vessels and the seabed at all states of the tide to ensure the undue turbidity is not generated by turbulence from vessel movement or propeller wash.	√			
▪ All vessels used for transportation of fill material shall have tight fitting seals to their bottom openings to prevent leakage of material during transport.	√			
▪ Barges shall not be filled to a level which may cause the overflow of material during loading or transportation. Barge effluents shall be properly collected and treated before disposal.	√			
▪ Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	√			
▪ The work activities shall not cause any visible foam, oil, grease, scum, litter or other objectionable matters to be present on the water in the vicinity of the barging facilities.	√			
▪ A waste collection vessel shall be deployed to remove floating debris.	√			
Landscape and Visual				
▪ The maximum stockpiling height at the fill bank shall be limited to a maximum of +40mPD.	√			
▪ Surface of outer slopes of the Fill Bank shall preferably be hydroseeded.	√			
▪ Stockpile of public fill shall be removed in a sequence to allow the outer hydrseeded to be removed later than other portions as far as practicable.	√			
▪ Casuarina equisetifolia were planted as buffer tree along the northern perimeter of the Site. The height of Casuarina equisetifolia was maintained at bleast 3m above soil level.	√			
▪ Lighting shall be set to minimise night-time glare.	√			

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Waste Management				
Construction Waste Management				
▪ Relevant licence / permits for disposal of construction waste or excavated materials available for inspection.	√			
▪ Excavated material to be generated from construction works to be re-used on-site as far as practicable to reduce off-site disposal.	√			
▪ Mud and debris should be removed from waterworks access roads and associated drainage systems.	√			
▪ Provision of sufficient waste disposal points and regular collection for disposal. Appropriate measures should be employed to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.	√			
▪ Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.	√			
▪ Prior to disposal of C&D waste, recyclable materials should be salvaged for reuse (such as wood and metal) and inert waste utilised as public fill to minimise the quantity of waste to be disposed of to landfill.	√			
▪ In order to monitor the disposal of C&D material and solid wastes at public filling areas and landfills, and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements.	√			
▪ Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials.	√			
Chemical Waste Management				
▪ It is required to register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	√			
▪ After use, chemical wastes (e.g. cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.	√			
▪ Spent chemicals should be stored and collected by an approved operator for disposal at the Chemical Waste Treatment Facility or other licensed facility in accordance with the Chemical Waste (General) Regulation.	√			
▪ Chemical wastes should be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facility.	√			
▪ Chemical wastes including waste oil should be stored properly in designated areas, e.g. chemical waste storage area.	√			
▪ The designated chemical waste storage area should only be used for storing chemical wastes.	√			
▪ The set-up of chemical waste storage area should				
▪ Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition.	√			
▪ Be enclosed on at least 3 sides and securely closed.	√			
▪ Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest.	√			
▪ Have adequate ventilation.	√			
▪ Be covered to prevent rainfall entering (water collected within the bund must be tested and disposal as chemical waste if necessary).	√			
▪ Be arranged so that incompatible materials are adequately separated.	√			

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
▪ Warning panels should be displayed at the waste storage area.	√			
▪ Waste storage area should be cleaned and maintained regularly.	√			
▪ Chemical waste should be transported regularly by a registered chemical waste collector to a facility licensed to receive chemical waste.	√			
▪ All generators, fuel and oil storage should be within bundle areas.	√			
▪ Oil leakage from machinery, vehicle and plant should be prevented.	√			
▪ In the event of chemical waste / dangerous goods / chemicals spillage or leakage, the procedures as outlined in the Spillage Response Plan should be followed.	√			
▪ The dangerous goods / chemical spillage or leakage procedures (including equipments) should be in place.	√			
Good Site Practices				
▪ Nomination of approved personnel, such as site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.	√			
▪ Training of site personnel in proper waste management and chemical handling procedures should be provided.	√			
• Good site practices should be adopted to clean the rubbish and litter on a regular basis so as to prevent the rubbish and litter from dropping into the nearby environment.	√			
• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	√			
• The Environmental Permit should be displaced conspicuously on site.	√			
• Construction noise permits should be posted at site entrance or available for site inspection.	√			
▪ Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	√			
▪ Chemical storage area provided with lock and located on sealed areas.	√			
▪ All chemicals should be placed at the banded area with adequate band capacity (>110% of largest tank).	√			
▪ Any unused chemicals or those with remaining functional capacity should be recycled.	√			
▪ Regular cleaning and maintenance programme for waste storage area, drainage systems, silt traps, sumps and oil interceptors.	√			
▪ To encourage collection of aluminium cans by individual collectors.	√			
▪ Separate labelled bins should be provided to segregate this waste from other general refuse generated by the workforce.	√			
▪ A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be used, e.g. trip ticket system for chemical waste disposal. Quantities could be determined by weighing each load or other suitable methods.	√			
▪ A collection area should be provided where waste can be stored and loaded prior to removal from site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. If an open area is unavoidable for the storage or loading/unloading of wastes, then the area should be bunded and all the polluted surface run-off collected within this area should be diverted into wastewater treatment system.	√			

Summary of the Weekly Site Inspection:

Item	Details of defective works or observations	Proposed Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Target Completion Date
---	---	---	---	---	---

Remark

	Name	Title	Signature	Date
Checked by	Frankie Tang	ET Representative		12 December 2019

Inspection Date : 17/12/2019

Time : 15:00

Weather : Sunny / Fine / Cloudy / Overcast / Drizzle / Rain / Storm / Hazy (Cloudy circled)

Wind : Calm / Light / Breeze / Strong (Light circled)

Temperature : 27

Humidity : High / Moderate / Low (Moderate circled)

Inspected by	CEDD	Contractor / Sub-Contactor	ET
Signature:	[signature]	[signature]	[signature]
Name:	O. W. CHAN	[illegible]	[illegible]
Title	IOW [illegible]	[illegible]	E.T

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Fugitive Dust Emission				
▪ Dust control / mitigation measures shall be provided to prevent dust nuisance.	√			
▪ Water sprays shall be provided and used to dampen materials.	√			
▪ All stockpile of aggregate or spoil should be enclosed or covered and water applied in dry or windy condition.	√			
▪ Any vehicle with open load carrying area used for moving materials which has the potential to create dust shall have properly fitting side and tail boards. Material having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin.	√			
▪ Unpaved areas should be watered regularly to avoid dust generation.	√			
▪ The designated site main haul road shall be paved or regular watering.	√			
▪ The haul road inside the site and public road around the site entrance should be kept clean and free from dust.	√			
▪ Wheel washing facilities including high-pressure water jet shall be provided at the entrance of work site.	√			
▪ Every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the fill bank.	√			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	√			
▪ Vehicle and equipment should be switched off while not in use.	√			
▪ All plant and equipment should be well maintained e.g. without black smoke emission.	√			
▪ Open burning should be prohibited.	√			
▪ Approval or exemption Non-road Mobile Machinery (NRMM) labels should be painted or securely fixed on regulated machines and non-road vehicles at a conspicuous position according to the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation (APCO Cap.311).	√			
Noise Impact				
▪ The approved method of working, equipment and sound-reducing measures (e.g. use of silenced type of equipment, etc.) shall be adapted.	√			
▪ The constructions works should be scheduled to minimize noise nuisance.	√			
▪ Only well maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	√			
▪ Powered mechanical equipment (PME) should be covered or shielded by appropriate acoustic materials.	√			
▪ Air compressors and hand held breakers should have noise labels.	√			
▪ Compressors and generators should operate with door closed.	√			
▪ Machines and plants that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	√			
▪ Noisy equipment and mobile plant shall always be site away from NSRs.	√			

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Water Quality				
▪ Drainage system and the sand / silt removal facilities should be adequate and well maintained to prevent flooding and overflow, especially after rain storms.	√			
▪ The storm water intercepting system shall be effective to collect of runoff and remove suspended solids before discharge.	√			
▪ Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	√			
▪ The material shall be properly covered to prevent washed away especially before rainstorm.	√			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	√			
▪ Final slope surfaces, especially those facing to the north of the site shall be treated by compaction, followed by hydroseeding, vegetation planting or sealing with shotconcrete, latex, vinyl, bitumen, or other suitable surface stabilizer approved by CEDD.	√			
▪ Existing and newly constructed Catchpits, sand and silt removal facilities and intercepting channels shall be maintained, and the deposited silt and grit shall be removed weekly and on a need basis especially at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	√			
▪ A wheel washing bay shall be provided at the site exit and wash-water shall have sand and silt settled out or removed before being discharged into storm drains.	√			
▪ The section of construction road between wheel washing bay and the public road shall be paved with concrete, bituminous materials or hardcores to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	√			
▪ Sewage from toilets shall be discharged in to a foul sewer, or chemical toilets shall be provided.	√			
▪ The chemical toilets (if use) shall be provided by a licensed contractor, who will be responsible for disposal and maintenance of these facilities.	√			
▪ Tipping halls enclosed with top and 3-side to prevent spillage of material into marine water.	√			
▪ The barges shall be in right size such that adequate clearance in maintained between the vessels and the seabed at all states of the tide to ensure the undue turbidity is not generated by turbulence from vessel movement or propeller wash.	√			
▪ All vessels used for transportation of fill material shall have tight fitting seals to their bottom openings to prevent leakage of material during transport.	√			
▪ Barges shall not be filled to a level which may cause the overflow of material during loading or transportation. Barge effluents shall be properly collected and treated before disposal.	√			
▪ Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	√			
▪ The work activities shall not cause any visible foam, oil, grease, scum, litter or other objectionable matters to be present on the water in the vicinity of the barging facilities.	√			
▪ A waste collection vessel shall be deployed to remove floating debris.	√			
Landscape and Visual				
▪ The maximum stockpiling height at the fill bank shall be limited to a maximum of +40mPD.	√			
▪ Surface of outer slopes of the Fill Bank shall preferably be hydroseeded.	√			
▪ Stockpile of public fill shall be removed in a sequence to allow the outer hydrseeded to be removed later than other portions as far as practicable.	√			
▪ Casuarina equisetifolia were planted as buffer tree along the northern perimeter of the Site. The height of Casuarina equisetifolia was maintained at bleast 3m above soil level.	√			
▪ Lighting shall be set to minimise night-time glare.	√			

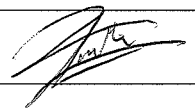
Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Waste Management				
Construction Waste Management				
▪ Relevant licence / permits for disposal of construction waste or excavated materials available for inspection.	√			
▪ Excavated material to be generated from construction works to be re-used on-site as far as practicable to reduce off-site disposal.	√			
▪ Mud and debris should be removed from waterworks access roads and associated drainage systems.	√			
▪ Provision of sufficient waste disposal points and regular collection for disposal. Appropriate measures should be employed to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.	√			
▪ Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.	√			
▪ Prior to disposal of C&D waste, recyclable materials should be salvaged for reuse (such as wood and metal) and inert waste utilised as public fill to minimise the quantity of waste to be disposed of to landfill.	√			
▪ In order to monitor the disposal of C&D material and solid wastes at public filling areas and landfills, and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements.	√			
▪ Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials.	√			
Chemical Waste Management				
▪ It is required to register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	√			
▪ After use, chemical wastes (e.g. cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.	√			
▪ Spent chemicals should be stored and collected by an approved operator for disposal at the Chemical Waste Treatment Facility or other licensed facility in accordance with the Chemical Waste (General) Regulation.	√			
▪ Chemical wastes should be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facility.	√			
▪ Chemical wastes including waste oil should be stored properly in designated areas, e.g. chemical waste storage area.	√			
▪ The designated chemical waste storage area should only be used for storing chemical wastes.	√			
▪ The set-up of chemical waste storage area should				
▪ Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition.	√			
▪ Be enclosed on at least 3 sides and securely closed.	√			
▪ Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest.	√			
▪ Have adequate ventilation.	√			
▪ Be covered to prevent rainfall entering (water collected within the bund must be tested and disposal as chemical waste if necessary).	√			
▪ Be arranged so that incompatible materials are adequately separated.	√			

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
▪ Warning panels should be displayed at the waste storage area.	√			
▪ Waste storage area should be cleaned and maintained regularly.	√			
▪ Chemical waste should be transported regularly by a registered chemical waste collector to a facility licensed to receive chemical waste.	√			
▪ All generators, fuel and oil storage should be within bundle areas.	√			
▪ Oil leakage from machinery, vehicle and plant should be prevented.	√			
▪ In the event of chemical waste / dangerous goods / chemicals spillage or leakage, the procedures as outlined in the Spillage Response Plan should be followed.	√			
▪ The dangerous goods / chemical spillage or leakage procedures (including equipments) should be in place.	√			
Good Site Practices				
▪ Nomination of approved personnel, such as site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.	√			
▪ Training of site personnel in proper waste management and chemical handling procedures should be provided.	√			
• Good site practices should be adopted to clean the rubbish and litter on a regular basis so as to prevent the rubbish and litter from dropping into the nearby environment.	√			
• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	√			
• The Environmental Permit should be displaced conspicuously on site.	√			
• Construction noise permits should be posted at site entrance or available for site inspection.	√			
▪ Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	√			
▪ Chemical storage area provided with lock and located on sealed areas.	√			
▪ All chemicals should be placed at the banded area with adequate band capacity (>110% of largest tank).	√			
▪ Any unused chemicals or those with remaining functional capacity should be recycled.	√			
▪ Regular cleaning and maintenance programme for waste storage area, drainage systems, silt traps, sumps and oil interceptors.	√			
▪ To encourage collection of aluminium cans by individual collectors.	√			
▪ Separate labelled bins should be provided to segregate this waste from other general refuse generated by the workforce.	√			
▪ A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be used, e.g. trip ticket system for chemical waste disposal. Quantities could be determined by weighing each load or other suitable methods.	√			
▪ A collection area should be provided where waste can be stored and loaded prior to removal from site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. If an open area is unavoidable for the storage or loading/unloading of wastes, then the area should be bunded and all the polluted surface run-off collected within this area should be diverted into wastewater treatment system.	√			

Summary of the Weekly Site Inspection:

Item	Details of defective works or observations	Proposed Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Target Completion Date
---	---	---	---	---	---

Remark

	Name	Title	Signature	Date
Checked by	Frankie Tang	ET Representative		17 December 2019

Inspection Date : 24/12/19

Time : 15:00

Weather : Sunny / Fine (circled) / Cloudy / Overcast / Drizzle / Rain / Storm / Hazy

Wind : Calm / Light (circled) / Breeze / Strong

Temperature : 20°C

Humidity : High / Moderate / Low (circled)

Inspected by	CEDD	Contractor / Sub-Contactor	ET
Signature:	[signature]	[signature]	Mak
Name:	O.W. CHAN	[signature]	Mak Kei Wai
Title	COW/TM	~~[signature]~~ EO	E.T

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Fugitive Dust Emission				
▪ Dust control / mitigation measures shall be provided to prevent dust nuisance.	√			
▪ Water sprays shall be provided and used to dampen materials.	√			
▪ All stockpile of aggregate or spoil should be enclosed or covered and water applied in dry or windy condition.	√			
▪ Any vehicle with open load carrying area used for moving materials which has the potential to create dust shall have properly fitting side and tail boards. Material having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin.	√			
▪ Unpaved areas should be watered regularly to avoid dust generation.	√			
▪ The designated site main haul road shall be paved or regular watering.	√			
▪ The haul road inside the site and public road around the site entrance should be kept clean and free from dust.	√			
▪ Wheel washing facilities including high-pressure water jet shall be provided at the entrance of work site.	√			
▪ Every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the fill bank.	√			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	√			
▪ Vehicle and equipment should be switched off while not in use.	√			
▪ All plant and equipment should be well maintained e.g. without black smoke emission.	√			
▪ Open burning should be prohibited.	√			
▪ Approval or exemption Non-road Mobile Machinery (NRMM) labels should be painted or securely fixed on regulated machines and non-road vehicles at a conspicuous position according to the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation (APCO Cap.311).	√			
Noise Impact				
▪ The approved method of working, equipment and sound-reducing measures (e.g. use of silenced type of equipment, etc.) shall be adapted.	√			
▪ The constructions works should be scheduled to minimize noise nuisance.	√			
▪ Only well maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	√			
▪ Powered mechanical equipment (PME) should be covered or shielded by appropriate acoustic materials.	√			
▪ Air compressors and hand held breakers should have noise labels.	√			
▪ Compressors and generators should operate with door closed.	√			
▪ Machines and plants that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	√			
▪ Noisy equipment and mobile plant shall always be site away from NSRs.	√			

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Water Quality				
▪ Drainage system and the sand / silt removal facilities should be adequate and well maintained to prevent flooding and overflow, especially after rain storms.	√			
▪ The storm water intercepting system shall be effective to collect of runoff and remove suspended solids before discharge.	√			
▪ Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	√			
▪ The material shall be properly covered to prevent washed away especially before rainstorm.	√			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	√			
▪ Final slope surfaces, especially those facing to the north of the site shall be treated by compaction, followed by hydroseeding, vegetation planting or sealing with shotconcrete, latex, vinyl, bitumen, or other suitable surface stabilizer approved by CEDD.	√			
▪ Existing and newly constructed Catchpits, sand and silt removal facilities and intercepting channels shall be maintained, and the deposited silt and grit shall be removed weekly and on a need basis especially at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	√			
▪ A wheel washing bay shall be provided at the site exit and wash-water shall have sand and silt settled out or removed before being discharged into storm drains.	√			
▪ The section of construction road between wheel washing bay and the public road shall be paved with concrete, bituminous materials or hardcores to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	√			
▪ Sewage from toilets shall be discharged in to a foul sewer, or chemical toilets shall be provided.	√			
▪ The chemical toilets (if use) shall be provided by a licensed contractor, who will be responsible for disposal and maintenance of these facilities.	√			
▪ Tipping halls enclosed with top and 3-side to prevent spillage of material into marine water.	√			
▪ The barges shall be in right size such that adequate clearance in maintained between the vessels and the seabed at all states of the tide to ensure the undue turbidity is not generated by turbulence from vessel movement or propeller wash.	√			
▪ All vessels used for transportation of fill material shall have tight fitting seals to their bottom openings to prevent leakage of material during transport.	√			
▪ Barges shall not be filled to a level which may cause the overflow of material during loading or transportation. Barge effluents shall be properly collected and treated before disposal.	√			
▪ Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	√			
▪ The work activities shall not cause any visible foam, oil, grease, scum, litter or other objectionable matters to be present on the water in the vicinity of the barging facilities.	√			
▪ A waste collection vessel shall be deployed to remove floating debris.	√			
Landscape and Visual				
▪ The maximum stockpiling height at the fill bank shall be limited to a maximum of +40mPD.	√			
▪ Surface of outer slopes of the Fill Bank shall preferably be hydroseeded.	√			
▪ Stockpile of public fill shall be removed in a sequence to allow the outer hydrseeded to be removed later than other portions as far as practicable.	√			
▪ Casuarina equisetifolia were planted as buffer tree along the northern perimeter of the Site. The height of Casuarina equisetifolia was maintained at bleast 3m above soil level.	√			
▪ Lighting shall be set to minimise night-time glare.	√			

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Waste Management				
Construction Waste Management				
▪ Relevant licence / permits for disposal of construction waste or excavated materials available for inspection.	√			
▪ Excavated material to be generated from construction works to be re-used on-site as far as practicable to reduce off-site disposal.	√			
▪ Mud and debris should be removed from waterworks access roads and associated drainage systems.	√			
▪ Provision of sufficient waste disposal points and regular collection for disposal. Appropriate measures should be employed to minimise windblown litter and dust during transportation of waste by either covering trucks or by transporting wastes in enclosed containers.	√			
▪ Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.	√			
▪ Prior to disposal of C&D waste, recyclable materials should be salvaged for reuse (such as wood and metal) and inert waste utilised as public fill to minimise the quantity of waste to be disposed of to landfill.	√			
▪ In order to monitor the disposal of C&D material and solid wastes at public filling areas and landfills, and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements.	√			
▪ Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials.	√			
Chemical Waste Management				
▪ It is required to register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	√			
▪ After use, chemical wastes (e.g. cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.	√			
▪ Spent chemicals should be stored and collected by an approved operator for disposal at the Chemical Waste Treatment Facility or other licensed facility in accordance with the Chemical Waste (General) Regulation.	√			
▪ Chemical wastes should be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facility.	√			
▪ Chemical wastes including waste oil should be stored properly in designated areas, e.g. chemical waste storage area.	√			
▪ The designated chemical waste storage area should only be used for storing chemical wastes.	√			
▪ The set-up of chemical waste storage area should				
▪ Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition.	√			
▪ Be enclosed on at least 3 sides and securely closed.	√			
▪ Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest.	√			
▪ Have adequate ventilation.	√			
▪ Be covered to prevent rainfall entering (water collected within the bund must be tested and disposal as chemical waste if necessary).	√			
▪ Be arranged so that incompatible materials are adequately separated.	√			

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
▪ Warning panels should be displayed at the waste storage area.	√			
▪ Waste storage area should be cleaned and maintained regularly.	√			
▪ Chemical waste should be transported regularly by a registered chemical waste collector to a facility licensed to receive chemical waste.	√			
▪ All generators, fuel and oil storage should be within bundle areas.	√			
▪ Oil leakage from machinery, vehicle and plant should be prevented.	√			
▪ In the event of chemical waste / dangerous goods / chemicals spillage or leakage, the procedures as outlined in the Spillage Response Plan should be followed.	√			
▪ The dangerous goods / chemical spillage or leakage procedures (including equipments) should be in place.	√			
Good Site Practices				
▪ Nomination of approved personnel, such as site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.	√			
▪ Training of site personnel in proper waste management and chemical handling procedures should be provided.	√			
• Good site practices should be adopted to clean the rubbish and litter on a regular basis so as to prevent the rubbish and litter from dropping into the nearby environment.		√		Item 1
• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	√			
• The Environmental Permit should be displaced conspicuously on site.	√			
• Construction noise permits should be posted at site entrance or available for site inspection.	√			
▪ Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	√			
▪ Chemical storage area provided with lock and located on sealed areas.	√			
▪ All chemicals should be placed at the banded area with adequate band capacity (>110% of largest tank).	√			
▪ Any unused chemicals or those with remaining functional capacity should be recycled.	√			
▪ Regular cleaning and maintenance programme for waste storage area, drainage systems, silt traps, sumps and oil interceptors.	√			
▪ To encourage collection of aluminium cans by individual collectors.	√			
▪ Separate labelled bins should be provided to segregate this waste from other general refuse generated by the workforce.	√			
▪ A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be used, e.g. trip ticket system for chemical waste disposal. Quantities could be determined by weighing each load or other suitable methods.	√			
▪ A collection area should be provided where waste can be stored and loaded prior to removal from site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. If an open area is unavoidable for the storage or loading/unloading of wastes, then the area should be bunded and all the polluted surface run-off collected within this area should be diverted into wastewater treatment system.	√			

Summary of the Weekly Site Inspection:

Item	Details of defective works or observations	Proposed Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Target Completion Date
1	General refuse were observed near CEDD office.	To clean the general refuse properly.	191224_001	Yes	31/12/19

Remark

	Name	Title	Signature	Date
Checked by	Frankie Tang	ET Representative		24 December 2019

Photo

Photo 191224_001 (Near CEDD Office)

Appendix I

Implementation Schedule of Mitigation Measures

Environmental Mitigation Implementation Schedule

Environmental Protection Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
Air Quality					
▪ Dust control / mitigation measures shall be provided to prevent dust nuisance.	All areas	√			
▪ Water sprays shall be provided and used to dampen materials.	All areas	√			
▪ All stockpile of aggregate or soil should be enclosed or covered and water applied in dry or windy condition.	All areas	√			
▪ Any vehicle with open load carrying area used for moving materials which has the potential to create dust shall have properly fitting side and tail boards. Material having the potential to create dust shall not be loaded to a level higher than the side and tail boards, and shall be covered by a clean tarpaulin.	All areas	√			
▪ Unpaved areas should be watered regularly to avoid dust generation.	Site Egress	√			
▪ The designated site main haul road shall be paved or regular watering.	All haul roads	√			
▪ The public road around the site entrance should be kept clean and free from dust.	All areas	√			
▪ Wheel washing facilities including high-pressure water jet shall be provided at the entrance of work site and wash-water shall have sand and silt settled out or removed before being discharged into storm drains.	Site Egress	√			
▪ Every vehicle shall be washed to remove any dusty materials from its body and wheels before leaving the fill bank.	Site Egress	√			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	All areas	√			
▪ Vehicle and equipment should be switched off while not in use.	All areas	√			
▪ All plant and equipment should be well maintained e.g. without black smoke emission.	All areas	√			
▪ Open burning should be prohibited.	All areas	√			
▪ Approval or exemption Non-road Mobile Machinery (NRMM) labels should be painted or securely fixed on regulated machines and non-road vehicles at a conspicuous position according to the Air Pollution Control (Non-road Mobile Machinery) (Emission) Regulation (APCO Cap.311).	All areas	√			
Noise Impact					
▪ The approved method of working, equipment and sound-reducing measures (e.g. use of silenced type of equipment, etc.) shall be adapted.	All areas	√			
▪ Only well maintained plant should be operated on-site and plant should be serviced regularly during the construction works.	All areas	√			
▪ Powered mechanical equipment (PME) should be covered or shielded by appropriate acoustic materials.	All areas	√			
▪ Air compressors and hand held breakers should have noise labels.	All areas	√			
▪ Machines and plants that may be in intermittent use should be shut down between work periods or should be throttled down to a minimum.	All areas	√			
▪ Noisy equipment and mobile plant shall always be site away from NSRs.	All areas	√			

Environmental Protection Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
Water Quality					
▪ The existing / realigned intercepting channels and the sand / silt removal facilities shall be used and maintained.	All areas	√			
▪ Temporary intercepting drains should be used at the stockpiling area to divert polluted stormwater to the intercepting channels. Earth bunds and sand bay barriers shall be used to assist the diversion of polluted stormwater to the intercepting channels.	All areas	√			
▪ The storm water intercepting system shall be effective to collect of runoff and remove suspended solids before discharge.	All areas	√			
▪ The material shall be properly covered to prevent washed away especially before rainstorm.	All areas	√			
▪ Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	All areas	√			
▪ The temporary slope surfaces shall be covered with impermeable sheet or sprayed with water.	Temporary Slopes	√			
▪ Existing and newly constructed Catchpits, sand and silt removal facilities and intercepting channels shall be maintained, and the deposited silt and grit shall be removed weekly and on a need basis especially at the onset of and after each rainstorm to ensure that these facilities are functioning properly at all times.	All areas	√			
▪ A wheel washing bay shall be provided at the site exit and wash-water shall have sand and silt settled out or removed before being discharged into storm drains.	Wheel Washing facility	√			
▪ The section of construction road between wheel washing bay and the public road shall be paved with concrete, bituminous materials or hardcores to reduce vehicle tracking of soil and to prevent site run-off from entering public road drains.	Site Egress	√			
▪ Sewage from toilets shall be discharged in to a foul sewer, or chemical toilets shall be provided.	Site Office	√			
▪ The chemical toilets (if use) shall be provided by a licensed contractor, who will be responsible for disposal and maintenance of these facilities.	All areas	√			
▪ Tipping halls enclosed with top and 3-side to prevent spillage of material into marine water.	All areas	√			
▪ Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	Along the seafront	√			
▪ A waste collection vessel shall be deployed to remove floating debris.	Along the seafront	√			
Landscape and Visual					
• The maximum stockpiling height at the fill bank shall be limited to a maximum of +40mPD.	All areas	√			
• Surface of outer slopes of the Fill Bank shall preferably be hydroseeded.	Completed slopes	√			
• Stockpile of public fill shall be removed in a sequence to allow the outer hydrseeded to be removed later than other portions as far as practicable.	Completed slopes	√			
• *Casuarina equisetifolia* were planted as buffer tree along the northern perimeter of the Site. The height of *Casuarina equisetifolia* was maintained at least 3m above soil level.	Site boundary	√			
• Lighting shall be set to minimise night-time glare.	All areas	√			
Waste Management					
Construction Waste Management					
• Relevant licence / permits for disposal of construction waste or excavated materials available for inspection.	All areas	√			

Environmental Protection Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
• Excavated material to be generated from construction works to be re-used on-site as far as practicable to reduce off-site disposal.	All areas	√			
• Mud and debris should be removed from waterworks access roads and associated drainage systems.	All areas	√			
• Segregation and storage of different types of waste in different containers, skips or stockpiles to enhance reuse or recycling of materials and their proper disposal.	All areas	√			
• Prior to disposal of C&D waste, recyclable materials should be salvaged for reuse (such as wood and metal) and inert waste utilised as public fill to minimise the quantity of waste to be disposed of to landfill.	All areas	√			
• In order to monitor the disposal of C&D material and solid wastes at public filling areas and landfills, and to control fly-tipping, a trip-ticket system should be included as one of the contractual requirements.	All areas	√			
▪ Any soil contaminated with chemicals/oils shall be removed from site and the void created shall be filled with suitable materials.	All areas	√			
Chemical Waste Management					
• It is required to register as a chemical waste producer if chemical wastes would be produced from the construction activities. The Waste Disposal Ordinance (Cap 354) and its subsidiary regulations in particular the Waste Disposal (Chemical Waste) (General) Regulation should be observed and complied with for control of chemical wastes.	Waste Storage Area	√			
• After use, chemical wastes (e.g. cleaning fluids, solvents, lubrication oil and fuel) should be handled according to the Code of Practice on the Packaging, Labelling and Storage of Chemical Wastes.	Waste Storage Area	√			
• Spent chemicals should be stored and collected by an approved operator for disposal at the Chemical Waste Treatment Facility or other licensed facility in accordance with the Chemical Waste (General) Regulation.	Waste Storage Area	√			
• Chemical wastes should be separated for special handling and appropriate treatment at the Chemical Waste Treatment Facility.	Waste Storage Area	√			
• Chemical wastes including waste oil should be stored properly in designated areas, e.g. chemical waste storage area.	Waste Storage Area	√			
• The designated chemical waste storage area should only be used for storing chemical wastes.	Waste Storage Area	√			
The set-up of chemical waste storage area should					
• Be suitable for the substance they are holding, resistant to corrosion, maintained in a good condition.	Waste Storage Area	√			
• Be enclosed on at least 3 sides and securely closed.	Waste Storage Area	√			
• Have an impermeable floor and bunding, of capacity to accommodate 110% of the volume of the largest container or 20% by volume of the chemical waste stored in that area, whichever is the greatest.	Waste Storage Area	√			
• Have adequate ventilation.	Waste Storage Area	√			
• Be covered to prevent rainfall entering (water collected within the bund must be tested and disposal as chemical waste if necessary).	Waste Storage Area	√			
• Be arranged so that incompatible materials are adequately separated.	Waste Storage Area	√			
• Warning panels should be displayed at the waste storage area.	Waste Storage Area	√			

Environmental Protection Measures	Location	Implementation Status			
		Implemented	Partially implemented	Not implemented	Not Applicable
• Waste storage area should be cleaned and maintained regularly.	Waste Storage Area	√			
• Chemical waste should be transported by a registered chemical waste collector to a facility licensed to receive chemical waste.	All areas	√			
• All generators, fuel and oil storage should be within bundle areas.	All areas	√			
• Oil leakage from machinery, vehicle and plant should be prevented.	All areas	√			
• In the event of chemical waste / dangerous goods / chemicals spillage or leakage, the procedures as outlined in the Spillage Response Plan should be followed.	All areas	√			
• The dangerous goods / chemical spillage or leakage procedures (including equipments) should be in place.	All areas	√			
Good Site Practices					
• Nomination of approved personnel, such as site manager, to be responsible for good site practices, arrangements for collection and effective disposal to an appropriate facility, of all wastes generated at the site.	All areas	√			
• Training of site personnel in proper waste management and chemical handling procedures should be provided.	All areas	√			
• Good site practices should be adopted to clean the rubbish and litter on a regular basis so as to prevent the rubbish and litter from dropping into the nearby environment.	All areas		√		
• Proper storage and site practices to minimise the potential for damage or contamination of construction materials.	All areas	√			
• The Environmental Permit should be displaced conspicuously on site.	Site Entrance	√			
• Construction noise permits should be posted at site entrance or available for site inspection.	Site Entrance				√
• Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	All areas	√			
• Chemical storage area provided with lock and located on sealed areas.	Chemical Storage Area	√			
• All chemicals should be placed at the banded area with adequate band capacity (>110% of largest tank).	Chemical Storage Area	√			
• Any unused chemicals or those with remaining functional capacity should be recycled.	All areas	√			
• Regular cleaning and maintenance programme for waste storage area, drainage systems, silt traps, sumps and oil interceptors.	All areas	√			
• To encourage collection of aluminium cans by individual collectors, separate labelled bins should be provided to segregate this waste from other general refuse generated by the workforce.	All areas	√			
• A recording system for the amount of wastes generated, recycled and disposed (including the disposal sites) should be used, e.g. trip ticket system for chemical waste disposal. Quantities could be determined by weighing each load or other suitable methods.	All areas	√			
• A collection area should be provided where waste can be stored and loaded prior to removal from site. An enclosed and covered area is preferred to reduce the occurrence of 'wind blown' light material. If an open area is unavoidable for the storage or loading/unloading of wastes, then the area should be bunded and all the polluted surface run-off collected within this area should be diverted into wastewater treatment system.	All areas	√			
• Remove wastes in a timely manner.	All areas	√			

Appendix J

Site General Layout plan

LOCATION PLAN
LOCATION OF PORTION 8 OF THE SITE
SETTING-OUT DETAILS
RIVER TRADE TERMINAL
EXISTING ACCESS ROAD PO
EXISTING ACCESS ROAD PO
EXISTING PORTION OF SITE OF OTHERS
EDGE PARK PHASE (1)
HANDLING OF SURPLUS PUBLIC FILL (2016-2018)
PORTION 8 - TUEN MUN AREA 38 FILL BANK
FM10077-3
FILL MANAGEMENT DIVISION
CIVIL ENGINEERING OFFICE
CEDD
CIVIL ENGINEERING AND DEVELOPMENT DEPARTMENT

Appendix K

QA/QC Results of Laboratory Analysis

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.

QA/QC Results of Laboratory Analysis of Total Suspended Solids

	QC Sample Analysis	Sample Duplicate		Sample Spike	
Sampling Date	% Recovery *	Sample ID	% Error #	Sample ID	% Recovery @
	98.8	FC1-S	0.0	FM2-M	107.5
2019/12/3	99.9	FM2-B	9.3	FC2BD	94.2
	102.1	FC1-S	8.6	FM2-M	101.0
	101.6	FM2-B	2.9	EM1-S	113.4
2019/12/5	94.1	EM1-M	4.4	EC2-B	108.0
	105.4	FC1-S	5.0	FM2-M	90.0
	102.0	FM2-B	0.0	EM1-S	106.5
2019/12/7	102.5	EM1-M	2.6	EC2-B	104.2
	100.4	FC1-S	3.2	FM2-M	100.5
	104.7	FM2-B	6.0	EM1-S	84.8
2019/12/10	102.3	EM1-M	2.0	EC2-B	92.2
	104.3	FC1-S	5.2	FM2-M	91.0
	102.2	FM2-B	1.1	EM1-S	100.1
2019/12/12	98.1	EM1-M	1.7	EC2-B	108.1
	99.2	FC1-S	4.3	FM2-M	101.0
	99.6	FM2-B	4.0	EM1-S	83.8
2019/12/14	99.1	EM1-M	6.4	EC2-B	104.3
	100.3	FC1-S	2.3	FM2-M	102.5
	102.2	FM2-B	7.3	EM1-S	108.5
2019/12/17	99.7	EM1-M	2.5	EC2-B	95.3
	104.5	FC1-S	3.5	FM2-M	94.5
	103.8	FM2-B	9.3	EM1-S	100.7
2019/12/19	106.1	EM1-M	3.2	EC2-B	112.6
	98.3	FC1-S	2.5	FM2-M	104.2
	101.9	FM2-B	7.2	EM1-S	95.9
2019/12/21	99.5	EM1-M	4.7	EC2-B	97.1
	102.0	FC1-S	1.4	FM2-M	95.8
	104.6	FM2-B	0.0	EM1-S	101.1
2019/12/24	104.8	EM1-M	3.4	EC2-B	100.9
	101.2	FC1-S	1.8	FM2-M	92.5
	103.4	FM2-B	5.2	EM1-S	91.2
2019/12/28	103.7	EM1-M	0.0	EC2-B	110.0
	104.4	FC1-S	5.6	FM2-M	112.5
	104.5	FM2-B	1.2	EM1-S	107.2
2019/12/31	101.6	EM1-M	8.5	EC2-B	89.1

Note:(*)% Recovery of QC sample should be between 80% to 120%.
(#)% Error of Sample Duplicate should be between –10% to 10%.
(@)% Recovery of Sample Spike should be between 80% to 120%.

Appendix L

Complaint Log

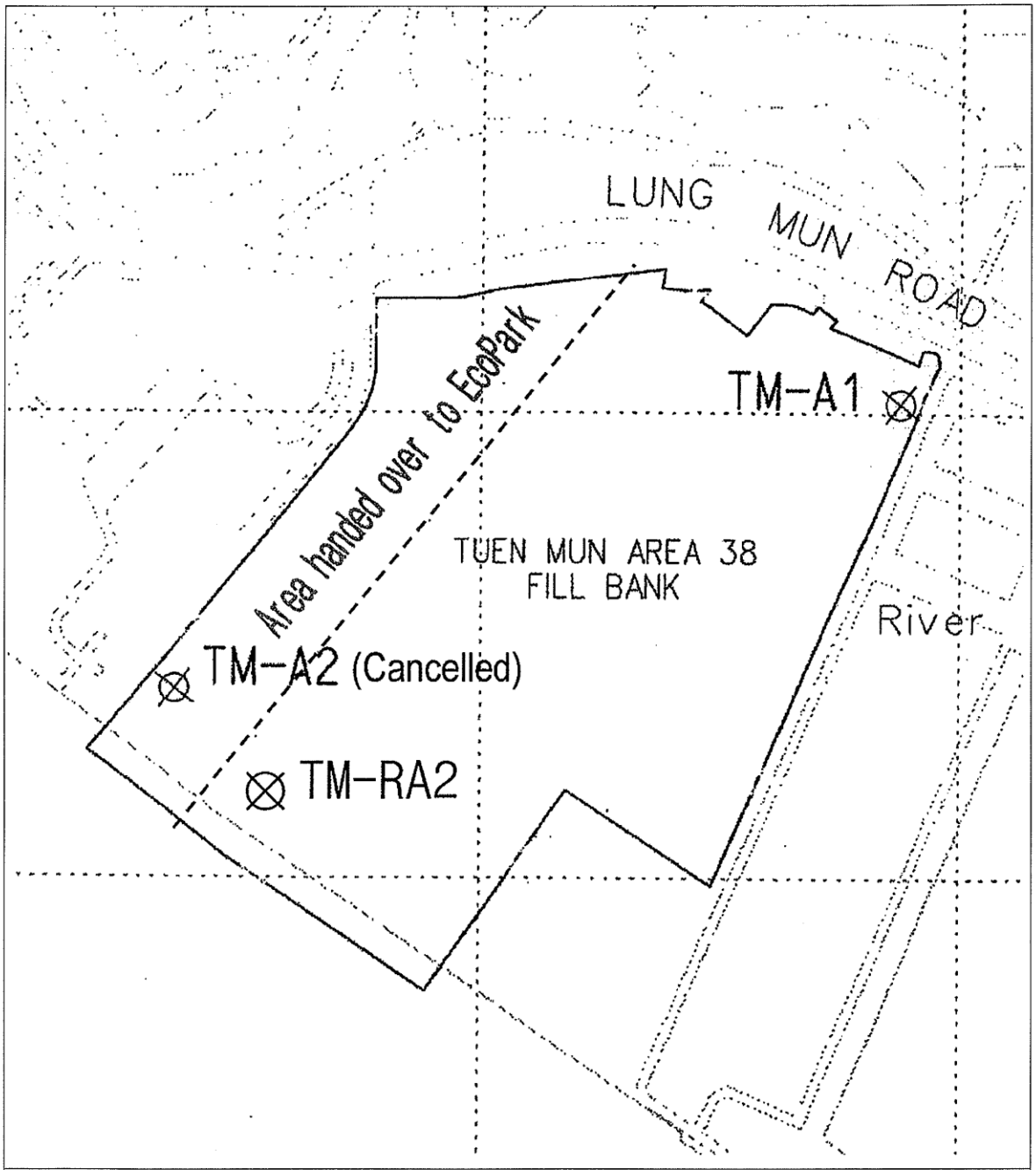
東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.

Complaint Log

Log Ref.	Location	Received Date	Details of Complaint	Investigation / Mitigation Action	Status
001	Lung Mun Road near Tuen Mun Area 38 Fill Bank	24 May 2017	One complaint received on 24 May 2017, which was forwarded to ET on 03 June 2017, from public against the rocks and debris deposited on the road surface along Lung Mun Road near Tuen Mun Area 38 Fill Bank. The complainant complained that waste generated caused an environmental nuisance.	Refer to the ET site investigation on 06 June 2017, the condition of Lung Mun Road near Tuen Mun Area 38 Fill Bank was found satisfactory. Details of Action(s) Taken by the Contactor: 1. Regular water spraying by water lorries is provided for road cleaning at Lung Mun Road; 2. Regular cleaning on Lung Mun Road and the access road at the site exit by road sweeper to remove mud and gravel is arranged four times on each working day; 3. Site vehicles are washed to remove any dusty materials from their bodies and wheels by using high pressure water jet manually at the entrance of work site before leaving; 4. Site vehicle for transporting materials are covered properly by using clean tarpaulin sheets; 5. Regular cleaning at the site haul road is provided to minimize the fugitive dust emission.	Closed

002	Lung Mun Road near Tuen Mun Area 38 Fill Bank	16 April 2018	One complaint received on 16 April 2018 from public and forwarded to ET by email at 10:51 on 25 May 2018. The complaint detail was”來往屯門第 38 區填料庫的龍門路沿路有很多泥頭車出入，泥頭會從車上掉至路面上，要求部門跟進及回覆。”	Refer to the ET site investigation on 26 May 2018, the condition of Lung Mun Road near Tuen Mun Area 38 Fill Bank was found satisfactory. Details of Action(s) Taken by the Contactor: 1. Regular cleaning on Lung Mun Road and the access road at the site exit by road sweeper to remove mud and gravel is arranged four times on each working day; 2. Regular water spraying by water lorries is provided for road cleaning at Lung Mun Road; 3. Site vehicles are washed to remove any dusty materials from their bodies and wheels by using high pressure water jet manually at the entrance of work site before leaving; 4. Site vehicles for transporting materials are covered properly by using clean tarpaulin sheets; 5. Regular cleaning at the site haul road is provided.	Closed
003	Lung Mun Road near Tuen Mun Area 38 Fill Bank	26 June 2018	One complaint received on 26 June 2018 from public and forwarded to ET by email at 13:58 on 03 July 2018. The complaint detail was” 當天水車於 6 時出動洗街,導致交通阻塞.”	Refer to the ET site investigation on 07 July 2018, the condition of Lung Mun Road near Tuen Mun Area 38 Fill Bank was found satisfactory. Details of Action(s) Taken by the Contactor: 1. Improve the road washing plan to avoid washing in traffic peak peroid 2. Revised the road washing schedule as soon as possible once there is traffic jam	Closed

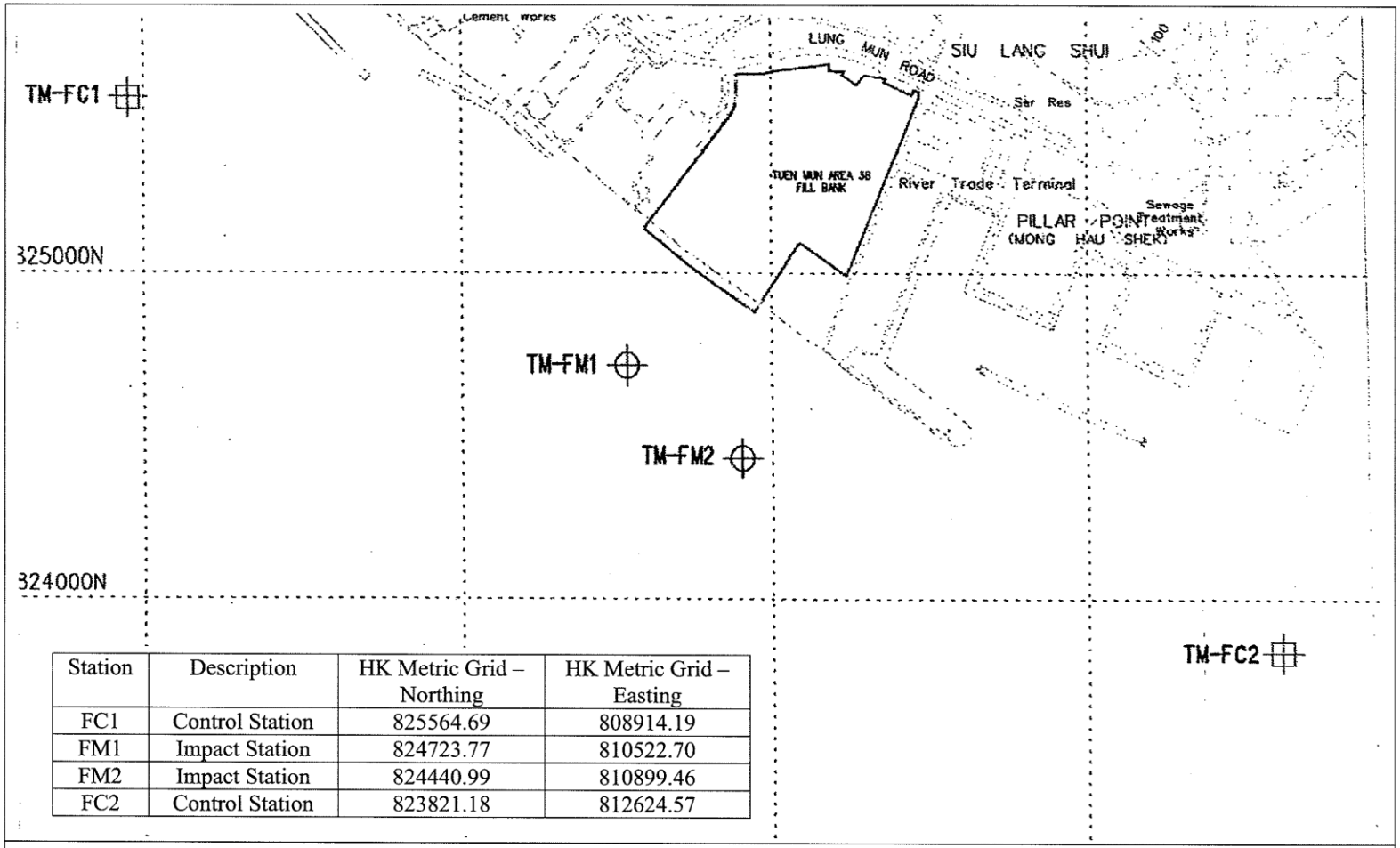
Figures



Contract No. CV/2015/07
Handling of Surplus Public Fill (2016-2018)

Figure 1
Locations of Air Quality Monitoring Stations –
Tuen Mun Area 38 Fill Bank

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED



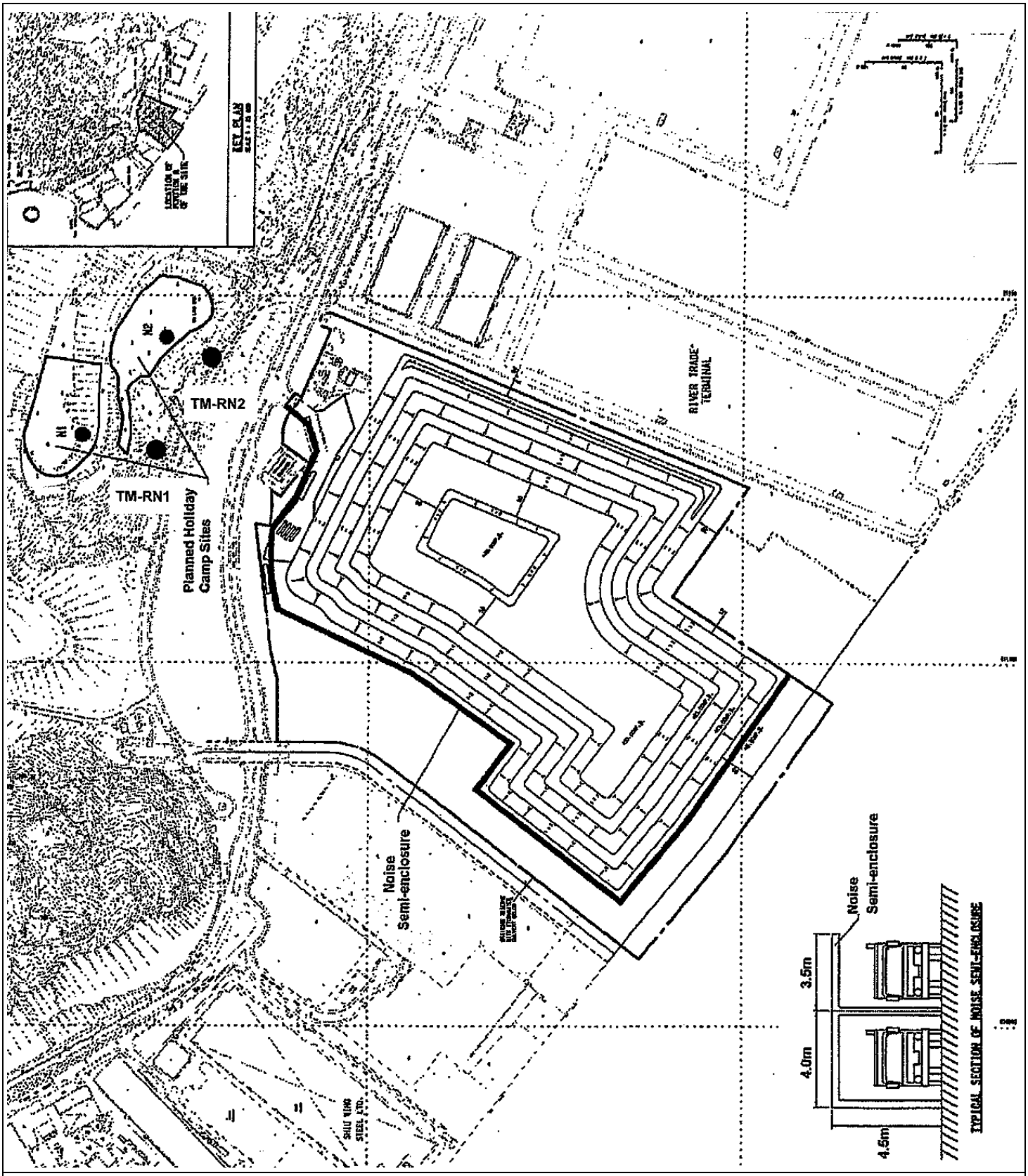
Station	Description	HK Metric Grid – Northing	HK Metric Grid – Easting
FC1	Control Station	825564.69	808914.19
FM1	Impact Station	824723.77	810522.70
FM2	Impact Station	824440.99	810899.46
FC2	Control Station	823821.18	812624.57

Contract No. CV/2015/07
Handling of Surplus Public Fill (2016-2018)

Figure 2
Locations of Water Quality Monitoring Station –
Tuen Mun Area 38 Fill Bank

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED

東業德勤測試顧問有限公司
ETS-TESTCONSULT LTD.



Contract No. CV/2015/07
Handling of Surplus Public Fill (2016 - 2018)

Figure 3
Locations of Noise Monitoring Stations –
Tuen Mun Area 38 Fill Bank

東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED