



HKPFH Joint Venture


**Contract No.: CV/2013/06
Handling of Surplus Public Fill
(2014-2016)**

TSEUNG KWAN O AREA 137 FILL BANK


MONTHLY EM&A REPORT NO.39

(MARCH 2017)

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By E-mail and Fax No.: 2695 3944

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Attention: Mr. C L Lau

Dear Mr. Lau,

**Re: Contract No. CV/2013/06
Handling of Surplus Public Fill (2014 – 2016)
Monthly EM&A Report (No. 39) for March 2017 for the Tseung Kwan O
Area 137 Fill Bank**

Reference is made to your submission of the draft Monthly EM&A Report for March 2017 for the TKO Area 137 Fill Bank received by email on 13 April 2017 and the subsequent revision on 19 April 2017.

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

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

Yours sincerely,



Tony Cheng
Independent Environmental Checker

c.c. CEDD Attn: Mr. Simon Leung Fax No.: 2714 0113
 HKPFHJV Attn: Mr. Eric Wan Fax No.: 2744 6937

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EXECUTIVE SUMMARY

This monthly Environmental Monitoring and Audit (EM&A) report No.39 was prepared by ETS-Testconsult Ltd (ET) for the "Contract No: CV/2013/06 – Handling of Surplus Public Fill (2014-2016) – Tseung Kwan O (TKO) Area 137 Fill Bank" (The Project).

This report documented the findings of EM&A Works conducted during the operation phase of Fill Bank at TKO Area 137 in March 2017.

Site Activities

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

1. Operation of the TKO137 Fill Bank.
2. Transferring public fill to vessel and delivering to Taishan and other parties
3. Maintenance of tipping hall cladding
4. Re-alignment of the access road for Sorting Facilities
5. Remedial work for damaged U channel at Area A3

Environmental Monitoring Progress

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

- Noise Monitoring (Day-time): 1 Occasion at 1 designated location
- 24-hour TSP Monitoring: 5 Occasions at 2 designated locations
- 1-hour TSP Monitoring: 16 Occasions at 2 designated locations
- Marine Water Quality Monitoring: 14 Occasions at 2 designated locations
- Weekly-site inspection: 5 Occasions

Noise Monitoring

No exceedance of Action and Limit levels for noise monitoring was recorded in the reporting month.

Air Monitoring

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

Marine Water Quality Monitoring

According to the summary of marine water monitoring results, no exceedance of Action and Limit levels was recorded in this reporting month.

Weekly Site Inspections

In general, performance on environmental mitigation measures implemented was found to be satisfactory in this reporting month. 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 summons or successful prosecutions with respect to environmental issues was received in this month.

Future Key Issues

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

- Noise and air quality impact due to site works;
- Maintain wheel washing facilities properly;
- Maintain all drainage and desilting facilities properly;
- Use and maintain silt curtain properly;
- Clean up the fill material on concrete pavement along the BHA frequently;
- Sufficient drip trays for all oil drums / chemical containers;
- Implement all necessary preventive measures to avoid oil leakage. In the event an oil leakage happens, the Contractor should properly remove the leaked oil and handle the contaminated soil and all materials using for this cleaning works as chemical waste;
- Maintain good site practice and waste management to minimize environmental impacts at the site; and
- Follow-up improvements on waste management issues.

1.0 INTRODUCTION

HKPFH Joint Venture (HKPFH-JV) appointed Environmental Team (ET) of ETS-Testconsult Limited (ETL) to undertake the Environmental Monitoring and Audit (EM&A) for the “Contract No: CV/2013/06 – Handling of Surplus Public Fill (2014-2016) – Tseung Kwan O (TKO) Area 137 Fill Bank” (The Project).

In accordance with the Environmental Permit (No.: EP-134/2002/K) (the EP), an EM&A programme should be implemented in accordance with the procedures and requirements in the EM&A Manual of the approved EIA report (Registration No. AEIAR-060/2002). The EM&A programme for this study as stated in Section 2.3.1 of the EM&A Manual covers the following environmental aspects during the establishment, operation and removal phases of the Fill Bank at Tseung Kwan O Area 137:

- *Fugitive Dust;*
- *Noise generation from onsite activities;*
- *Water Quality; and*
- *Landscape and Visual.*

The EM&A programme requires environmental monitoring for air quality, noise and water quality and environmental site inspections for air quality, noise, 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 EIA study final report; and*
- *Environmental requirements in contract documents.*

Baseline monitoring was completed in August and September 2002 by MaterialLab. 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 Tseung Kwan O Area 137 in March 2017.

2.0 PROJECT INFORMATION

2.1 Scope of the Project

The scale and scope of the Project as stated in the EP include:

- Site clearance;
- Construction of a temporary storm water system;
- Stockpiling of 6 million m³ of public fill;
- Setting up two barging points: one at the TKO Basin and one at the Construction and Demolition Material Sorting Facility (C&DMSF) for transporting the stockpiled public fill by barges;
- Setting up a temporary barging point at the existing Explosive Off-loading Barging Point located in the south-eastern part of Area 137 for the month of May 2004 to December 2004 for transporting the stockpiled public fill by barge;
- Construction and operation of a Construction and Demolition Material Sorting Facility (C&DMSF);
- Setting up a Construction and Demolition Material Crushing Facility at the TKO Basin; and
- Remove the temporary fill bank.

2.2 Site Description

TKO Area 137 Fill Bank is located at the southern end of Wan Po Road. In the vicinity of the site are other industrial uses such as SENT landfill, TKO Industrial Estate, etc. Both Island Resort and Fullview Garden are also situated at more than 1.8km from the site. Other existing ASRs and NSRs, including resident developments and schools, are located at a further distance away from TKO Area 137.

2.3 Work Programme

Details of work programme are shown in Appendix G.

2.4 Project Organization and Management Structure

The project organization chart is shown in Appendix A.

2.5 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	Simon Leung, May Lau, James Sze, Phoebe Tang	Engineer's Representative	2762 5555	2714 0113
IEC (Ramboll Environ)	Tony Cheng	IEC	3465 2888	3465 2899
Contractor (HKPFH-JV)	Cecil Cheng	Project Manager	9225 7150	2744 6937
ET (ETL)	C. L. Lau	ET Leader	2946 7791	2695 3944

3.0 WORK PROGRESS IN THIS REPORTING MONTH

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

1. Operation of the TKO137 Fill Bank
2. Transferring public fill to vessel and delivering to Taishan and other parties
3. Maintenance of tipping hall cladding
4. Re-alignment of the access road for Sorting Facilities
5. Remedial work for damaged U channel at Area A3

4.0 AIR QUALITY MONITORING

4.1 Monitoring Requirement

TSP levels were monitored in the reporting month in accordance with the EM&A Manual. Table 4.4 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. A copy 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 every six days
1-hr TSP	1 hr	Three times per day every six days

4.4 Monitoring Locations

Table 4.3 tabulates the air quality monitoring locations of this project.

Table 4.3 Air quality monitoring locations

Monitoring station	Location
TKO-A1	Site Egress
TKO-A2a	CREO

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 EM&A Manual.

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 0.6m³/min and 1.7m³/min.) in accordance with the manufacturer's instruction to within the range recommended in USEPA Standard Title 40, CFR Part 50. The flow rate was indicated on the flow rate chart.
- For TSP sampling, fiberglass filters (Whatman G653) 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 month of 1 hour or 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 desiccator for 24 hour with the temperature of 25°C ± 3°C and the relative humidity (RH) <50% ±5%.
- All measurement procedures in Section 2.3 of the EM&A Manual were followed during the reporting month.

Maintenance & Calibration

- 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 (wind speed and wind direction) were directly extracted from Tseung Kwan O Station of Hong Kong Observatory. All wind data during this reporting month are shown in Appendix E.

4.6 Action and Limit Levels

Table 4.4 shows the Action and Limit levels for 24-hr TSP and 1-hr TSP monitoring.

Table 4.4 Action and Limit Levels for 24-hr TSP and 1-hr TSP

Monitoring Location	24-hr TSP ($\mu\text{g}/\text{m}^3$)		1-hr TSP ($\mu\text{g}/\text{m}^3$)	
	Action Level	Limit Level	Action Level	Limit Level
TKO-A1	210	260	376	500
TKO-A2a *	210	260	376	500

Remark (*): Since dust monitoring stations TKO-A2 and TKO-A2a are located close to the major dust emission sources and also close to the same sensitive receptor and no significant difference between them on the prevailing meteorological conditions, the baseline data from TKO-A2 (August and September 2002 by MaterialLab) can also be valid in the case of TKO-A2a.

4.7 Event-Action Plans

Please refer to Appendix F for details.

4.8 Results and Observation

4.8.1 1-hour and 24-hour TSP Monitoring results

Monitoring data of both 1-hour and 24-hour TSP monitoring carried out in this reporting month are summarized in Appendix B2. Graphical presentation of 1-hour and 24-hour TSP monitoring results for the reporting month is shown in Appendix B3. Wind data including wind speed and wind direction was extracted from Tseung Kwan O Station of Hong Kong Observatory during this reporting month and is presented in Appendix E.

No exceedance of Action and Limit Level of 1-hr TSP and 24-hour TSP monitoring results was recorded during the reporting month.

4.8.2 Observation

Generally, the Contractor implemented sufficient dust mitigation measures, including operation of the mist spraying systems at the CEDD Combined Reception Office and the site egress area, wheel washing facilities, road dampening by water bowsers and automatic water sprinklers on the main haul roads. Furthermore, hydroseeded slopes on the stockpiling areas was maintained properly in order to prevent dust generation from wind erosion of the exposed surfaces. Other dust sources near TKO Area 137 also included operation of the temporary CWSF and dumping activities at the SENT Landfill.

5.0 Noise Monitoring

5.1 Monitoring Requirements

Noise monitoring was conducted at 1 monitoring station as specified in the approved EM&A Monitoring Proposal 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.

5.2 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 (L_x). It complies with International Electro Technical Commission Publications 651:1979 (Type1) and 804:1985 (Type1), and speed in m/s was used to monitor the wind speed.

Table 5.1 summarizes noise monitoring equipment model being used. A copy of the calibration certificate for noise meter and calibrator are attached in Appendix C1.

Table 5.1 Noise Monitoring Equipment

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

5.3 Monitoring Parameters, Duration and Frequency

Duration, frequencies and parameters of noise measurement are presented in Table 5.2.

Table 5.2 Duration, Frequencies and Parameters of Noise Monitoring

<i>Time month</i>	<i>Duration/min</i>	<i>Parameters</i>	<i>Frequency</i>
<i>Day-time: 0700-1900 hrs on normal weekday</i>	<i>30</i>	<i>L_{eq}, L₁₀, L₉₀</i>	<i>Once per month</i>

5.4 Monitoring Locations

One Noise monitoring was conducted at the noise monitoring location, TKO-N1 as shown in Figure 2 during the reporting month. Table 5.3 describes the location of the monitoring station.

Table 5.3 Noise Monitoring Location

<i>Monitoring station</i>	<i>Location</i>	<i>Type of Measurement</i>
<i>TKO-N1</i>	<i>Outside site Egress along Wan Po Road</i>	<i>Free Field</i>

5.5 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 mins*
- 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(A), 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 month, the Leq, L10 and L90 were recorded. In addition, site conditions and noise sources were recorded on a standard record sheet.
- 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.

5.6 Action and Limit Levels

The Action and Limit levels for noise levels derived as illustrated in Table 5.4.

Table 5.4 Action and Limit Levels for noise monitoring

<i>Time Month</i>	<i>Time Month</i>	<i>Action</i>	<i>Limit</i>
<i>Normal hours</i>	<i>0700-1900 hrs on normal weekdays</i>	<i>When one documented complaint is received</i>	<i>75 dB(A)</i>

5.7 Event-Action Plans

Please refer to the Appendix F for details.

5.8 Results and Observation

5.8.1 Results

Only Day-time noise monitoring was carried out at monitoring station TKO-N1 in this reporting month. The detail of the noise monitoring is provided in Appendix C2. Graphical presentation of the monitoring result for the reporting month is shown in Appendix C3. Since no documented complaints on noise issue were received in this reporting month, no Action Level exceedances were recorded. Besides, no exceedances in Limit Level were recorded according to the result from Day-time monitoring.

5.8.2 Observation

The major noise source during the monitoring event was the dump truck traffic. Operation of the Fill Bank was from 08:00 to 21:00 from Monday to Sunday in the reporting month. Whereas the operation hours for barge activities in the TKO Basin was from 08:00 to 21:00. The monitoring result complied with the noise limit of 75dB(A).

6.0 MARINE WATER QUALITY MONITORING

6.1 Monitoring Requirements

In accordance with the EM&A Manual, 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 Control Station, C1 and Monitoring Station, M4.

6.2 Monitoring Locations

For the Reclamation Project, there were 4 Designated Monitoring Stations and 2 Designated Control Stations specified in the EM&A Manual. Upon the completion of the monitoring programme under Stage 2 reclamation works, the ET started monitoring events at the impact station M4 and the control station C1 from 18 May 2004 onwards. Figure 1 shows the location of the marine water quality monitoring stations. Table 6.1 describes the locations of the monitoring stations in the reporting month.

Table 6.1 Locations of Marine Water Monitoring Stations

<i>Station Description</i>	<i>Code</i>	<i>HK Metric Grid E</i>	<i>HK Metric Grid N</i>
<i>Control Station (Ebb tide)</i>	<i>TKO-C1</i>	<i>844 740.208</i>	<i>815 371.502</i>
<i>Monitoring Station, Tung Lung Chau Fish Culture Zone</i>	<i>TKO-M4</i>	<i>847 741.029</i>	<i>812 977.878</i>

6.3 Monitoring Parameters

Monitoring of the marine water quality parameters are listed in Table 6.2.

Table 6.2 Marine Water Quality Monitoring Parameters

<i>In-situ measurement</i>	<i>Laboratory analysis</i>
<i>Depth (m)</i>	<i>Suspended solids (mg/L)</i>
<i>Temperature (°C)</i>	
<i>Dissolved Oxygen (mg/L and % saturation)</i>	
<i>Turbidity (NTU)</i>	
<i>Salinity (ppt)</i>	

6.4 Monitoring Frequency

The monitoring frequency of the marine water monitoring is summarized in Table 6.3.

Table 6.3 Monitoring frequency of the marine water

Parameter	Frequency	No. of Location	No. of Depths
Temperature	3 days/week, 2 tides/day	2 (TKO-C1 and TKO-M4)	3 (Surface, mid-depth & bottom)
Salinity			
DO			
Turbidity			
Suspended solids			

6.5 Monitoring Methodology and Equipment Used

For Location of the monitoring stations

Global Positioning 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 and Temperature Measuring Equipment

A portable, weatherproof dissolved oxygen & salinity measuring instrument, which complete with cable, sensor and DC power source (e.g. YSI 85 or equivalent) was used for measuring:

- a dissolved oxygen level in the range of 0-20 mg/L and 0-200 % saturation;
- a salinity in range 0-40 ppt; and
- a temperature of 0-45 degree Celsius

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

Turbidity Measurement Instrument

A portable and weatherproof turbidity meter (HACH model 2100Q) was used during impact monitoring. It has a photoelectric sensor capable of measuring turbidity between 0-1000 NTU. Response of the sensor was checked with certified standard Turbidity solutions before the start of measurement.

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. If the water depth is less than 6 m, the mid-depth station shall be omitted and if the water depth is below 3 m, only the mid depth station shall be monitored.

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, labelled with a unique sample ID and sealed with a screw cap. The water samples were stored in a cool box maintained at 4°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 6.4.

Table 6.4 Summary of testing procedures

Laboratory Analysis	Testing Procedure	Detection Limit
Total suspended solids	In house method based on APHA 19 th 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. Wet bulb calibration for a DO meter was carried out before the start of measurement.

At each measurement/sampling depth, two consecutive measurements of dissolved oxygen (DO), dissolved oxygen saturation (DOS), turbidity and salinity were taken. For turbidity measurement, the sample was collected by using sampler and then transferred to the cell. The reading of turbidity of the sample was directly recorded from the Turbidimeter (HACH 2100Q) after inserting the cell to the Turbidimeter. For DO, DOS and Salinity, duplicate measurements were performed by dropping the calibrated probes of the corresponding monitoring equipments to the designated depths of the water column and taking readings after stabilized. 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.

Table 6.5 shows the equipment used for in-situ monitoring of water quality. The calibration certificates are attached in Appendix D1.

Table 6.5 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/005/04
Dissolved Oxygen (Saturation), Temperature, Salinity	YSI Dissolved Oxygen, Salinity & Temperature Meter, YSI 85	19/01/17	18/04/17	ET/EW/008/001*
Turbidity	HACH Model 2100Q Turbid Meter	19/12/16 21/03/17	18/03/17 20/06/17	ET/0505/015*
Turbidity	HACH Model 2100Q Turbid Meter	29/12/16	28/03/17	ET/0505/019*
Water Depth	Speedtech SM-5	-----	-----	ET/EW/002/08

Remark:(*) indicates the instrument should be calibrated on use.

6.6 Action and Limit Level

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

Table 6.6 Water Quality Action and Limit Levels

Parameter	Action Level	Limit Level
DO (mg/L)	<u>Surface & Middle</u> <5.45 mg/L (5%-ile of baseline data) <u>Bottom</u> <4.72 mg/L (5%-ile of baseline data)	<u>Surface & Middle</u> <5.10 mg/L (1%-ile of baseline data) <u>Bottom</u> <2.00 mg/L
SS (mg/L) (Depth-averaged)	>6.74 mg/L (95%-ile of baseline data) or >120% of the upstream control station's SS at the same tide on the same day	>7.67 mg/L (99%-ile of baseline data) or >130% of the upstream control station's SS at the same tide on the same day
Turbidity (NTU) (Depth-averaged)	>4.28 NTU (95%-ile of baseline data) or >120% of the upstream control station's turbidity at the same tide on the same day	>4.58 NTU (99%-ile of baseline data) or >130% of the upstream control station's turbidity at the same tide on the same day

6.7 Event and Action Plan

Please refer to the Appendix F for details.

6.8 Monitoring Duration in this reporting month

Below is the time schedule for the marine water quality monitoring events that were conducted in this reporting month:

Table 6.7 Time Schedule of Impact Marine Water Quality Monitoring

March 2017						
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.

The daily marine water quality monitoring duration are detailed in Appendix D2.

6.9 Marine Water Quality Monitoring Results

The impact water quality measurement results are detailed in Appendix D2. Appendix D3 presents the water quality monitoring data and graphical presentations of monitoring results respectively. The summary of marine water quality exceedances is shown in Table 6.8.

Table 6.8 Summary of Impact Marine Water Quality Exceedances in this reporting month

Station	Exceedance Level	DO		Turbidity		SS		Total	
		Flood	Ebb	Flood	Ebb	Flood	Ebb	Flood	Ebb
TKO-C1	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0
TKO-M4	Action	0	0	0	0	0	0	0	0
	Limit	0	0	0	0	0	0	0	0

According to the summary of marine water monitoring results, no exceedance of Action and limit levels was recorded for this reporting month.

7.0 ENVIRONMENTAL AUDIT

7.1 Weekly ET Site Inspections and EPD's Site Inspection

7.1.1 Weekly ET Site Inspections

Weekly ET 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, five weekly site inspections were conducted (01, 08, 17, 22 and 29 March 2017). Table 7.1 presents the key findings of weekly ET site inspection in this reporting month.

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

Date	Key Findings	Action(s) Taken recommended by ET	Action(s) Taken by the Contractor during the ET weekly site audit	Rectification Status by ET
01 March 2017	Silt curtain near Fat Tong Chau was damaged. (Previous item)	To repair the damaged silt curtain properly.	Silt curtain near Fat Tong Chau was repaired.	Closed
08 March 2017	No defective work or observation was recorded during the weekly ET site inspection.			
17 March 2017	Oil drums at wheel repairing workshop near the Contractor's site office were covered improperly. (New item)	To cover the oil drums properly by using tarpaulin sheets.	---	Follow-up
22 March 2017	Oil drums at wheel repairing workshop near the Contractor's site office were covered improperly. (Previous item)	To cover the oil drums properly by using tarpaulin sheets.	Oil drums at wheel repairing workshop near the Contractor's site office were covered by properly by using plastic sheets.	Closed
29 March 2017	Mud was noted on the ground near the Contractor's site office. (New item)	To clear the mud properly.	---	Follow-up

7.1.2 EPD's Site Inspection

No EPD's site inspection was carried out at TKO137 Fill Bank in March 2017.

7.2 Review of Environmental Monitoring Procedures

The monitoring works conducted by the Environmental Team were inspected regularly. The observations for the monitoring works were recorded and summarized as follows:

Air Quality Monitoring

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

Noise Monitoring

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

Water Quality Monitoring

- The monitoring team recorded the observations around the monitoring stations, which might affect the results.

7.3 Assessment of Environmental Monitoring Results

All monitoring results were audited against the Action and Limit levels and any exceedance would be validated.

No exceedance was recorded in water quality, air quality and noise monitoring in this month.

The monitoring results in this reporting month were comparable with those of baseline month. Detailed discussions were given in Section 4, 5 and 6 of this Report.

7.4 Advice on the Solid and Liquid Waste Management Status

The Contractor usually disposed of non-inert waste, including general refuse and materials segregated from the existing stockpiles, to SENT landfill. Table 7.2 summarizes data on offsite waste disposal in this reporting month.

Table 7.2 Actual amounts of Waste generated in this reporting month

Waste Type	Actual Amount	Disposal Locations
Public Fill (m ³)	52.3	TKO 137 Fill Bank
C&D Waste (kg)	0	SENT Landfill / Refuse Collection Point
Chemical Waste (kg/L)	0	Collected by licensed collector

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.

Concrete bunding has erected outside the CEDD combined reception office and near the automatic wheel washing facilities for storing generator sets and oil drums. 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 were 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, DP3 and DP4 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.

8.0 Status of Environmental Licensing and Permitting

All permits/licenses valid in this reporting month are summarized in Table 8.1.

Table 8.1 Summary of environmental licensing and permit status

Description	Permit No.	Valid Month		Section
		From	To	
Amended Environmental Permit	EP-134/2002/K	04/02/13	---	<ul style="list-style-type: none"> ▪ Site clearance ▪ Construction of a temporary storm water system ▪ Stockpiling of 6 million m³ of public fill ▪ Setting up two barging points for transporting the stockpiled public fill by barges ▪ Setting up a temporary barging point at the existing Explosive Off-loading Barging Point for the month of May 2004 to December 2004 for transporting the stockpiled public fill by barge ▪ Construction of operation of a construction and Demolition Material Sorting Facility (C&DMSF) ▪ Setting up a Construction and Demolition Material Crushing Facility at the TKO Basin ▪ Remove the temporary fill bank
Marine Dumping Permit	EP/MD/17-165	04/01/17	31/03/17	<ul style="list-style-type: none"> ▪ Approval for dumping 3,500,000 tons (approximately equal to 1,944,444 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	5213-839-H3552-01	21/01/14	---	<ul style="list-style-type: none"> ▪ Spent Lubricating Oil and Spent Battery
Billing Account for Waste Disposal	7018998	---	---	<ul style="list-style-type: none"> ▪ ---

9.0 ENVIRONMENTAL NON-CONFORMANCE

9.1 Summary of air quality, noise and marine water quality

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

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

According to the summary of marine water monitoring results, no exceedance of Action and Limit levels was recorded for this reporting month.

9.2 Summary of Environmental Complaints

No complaint was received in this reporting month.

9.3 Summary of Notification of Summons and successful Prosecution

There was no notification of summons and successful prosecution respect to environmental issues registered in this reporting month.

10.0 IMPLEMENTATION STATUS

10.1 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. Any deficiencies were noted in the remarks of the schedule.

10.2 Implementation Status of Event and Action Plan

Since no exceedance of Action and Limit level of air, noise and marine water monitoring results was recorded for this reporting month, no further action was required.

10.3 Implementation Status of Environmental Complaint, Notifications of Summons and Successful Prosecutions Handling

No complaint, notification of summon and successful prosecution was received in this month.

A summary of environmental complaints, notifications of summons and successful prosecutions was given in Table 10.1 and further details of the complaint could be found in the Complaint Log (Appendix L).

Table 10.1 Summary of Environmental Complaints and Prosecutions

<i>Complaints logged</i>		<i>Summons served</i>		<i>Successful prosecution received</i>	
<i>March 2017</i>	<i>Cumulative</i>	<i>March 2017</i>	<i>Cumulative</i>	<i>March 2017</i>	<i>Cumulative</i>
0	12	0	0	0	0

11.0 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Impact monitoring of air quality, noise and water quality were carried out at designated locations in accordance with the EM&A Manual in this reporting month.

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

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

According to the summary of marine water monitoring results, no exceedance of Action and Limit levels was recorded for this reporting month.

No complaint, prosecutions and notifications of summons were received in this reporting month.

According to the ET weekly site inspections carried out in this reporting month, 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.

Recommendations

According to the environmental site inspections performed in the reporting month, 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 site 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, permanent desilting chambers, regularly;
- Operate and maintain the silt curtains regularly;
- Operate the cleaning vessel within the TKO Basin regularly;
- Clean up the fill material on the concrete pavement at BHA frequently; and
- Remove the stagnant water or provide approved pesticides for the stagnant water in the permanent desilting chambers, 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;
- Maintain the hydroseeded slopes in accordance with the Landscape Plan.

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 mesh screen on top of the additional drainage to avoid improper dumping of rubbish;
- 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.

12.0 FUTURE KEY ISSUES**12.1 Work Programme for the Coming Month**

As informed by the Contractor, the activities to be conducted by them in the next month included:

1. Operation of the TKO137 Fill Bank.
2. Transferring public fill to vessel and delivering to Taishan and other parties.
3. Re-alignment of the access road for Sorting Facilities
4. Remedial work for damaged U channel at Area A3

12.2 Key Issues for the Coming Month

Key issues to be considered in the coming month include:

- Chemical and waste management;
- Treatment of runoff and wastewater prior to discharge;
- Dust generated from loading and unloading activities; and
- Dust generated from dump trucks traffic.

Mitigation measures to be required in the coming month:

Air Quality Impact

- To provide adequate water spraying on haul roads and working platform;
- To operate and maintain automatic wheel washing facilities properly;
- To dampen the fill material prior to unloading or movement;
- To provide road sweeping on haul road near site egress and public roads outside site egress;
- To ensure implementation of the dust mitigation measures for the site activities;
- To maintain proper operation of the mist spraying system;
- To provide proper maintenance for vehicles and machines on site; and
- To investigate any other dust sources around the air sensitive receivers

Noise

- To switch off equipment if not in use;
- To operate silent equipment;
- To identify the noise sources inside and outside of the site;
- To follow up any exceedance caused by the Fill Bank operation; and
- To re-schedule the work activities in the event of valid noise exceedance.

Water Quality Impact

- To maintain the drainage system in the Fill Bank;
- To ensure the cleanliness of oil interceptor bypass tanks and all the drainage channels;
- To maintain the existing silt trap to ensure good efficiency of wheel wash facilities;
- To repair, inspect and maintain the silt curtains regularly;
- To provide covers for the drip trays to avoid stagnant water pond due to rainfall;
- To deploy a cleaning vessel to remove floating rubbish in the TKO Basin;
- To clean up the concrete paved area at Portion I every night to avoid fill materials from being washed into the sea; and
- To avoid any stagnant water or provide insecticide to avoid mosquito breeding in the Fill Bank.

Chemical and Waste Management

- To remove waste from the site regularly;
- To properly store and handle chemical wastes on site;
- To implement trip ticket system for all the imported public fill and general refuse disposal;
- To provide and manage sufficiently sized drip trays for diesel drums or chemical containers;
- To remove existing unwanted material in the stockpiles and avoid improper disposal at the Fill Bank through inspection of imported truckloads;
- To maintain proper housekeeping at the workshop area;
- To remove the oil stains in the event of leakage and handle all materials using for this cleaning works as chemical waste;
- To maintain mesh screen on top of the additional drainage, DP3 opening to avoid improper dumping of rubbish into this channel; and
- To identify C&D material by packaging, labeling, storage, transportation and disposal in accordance with statutory regulations.

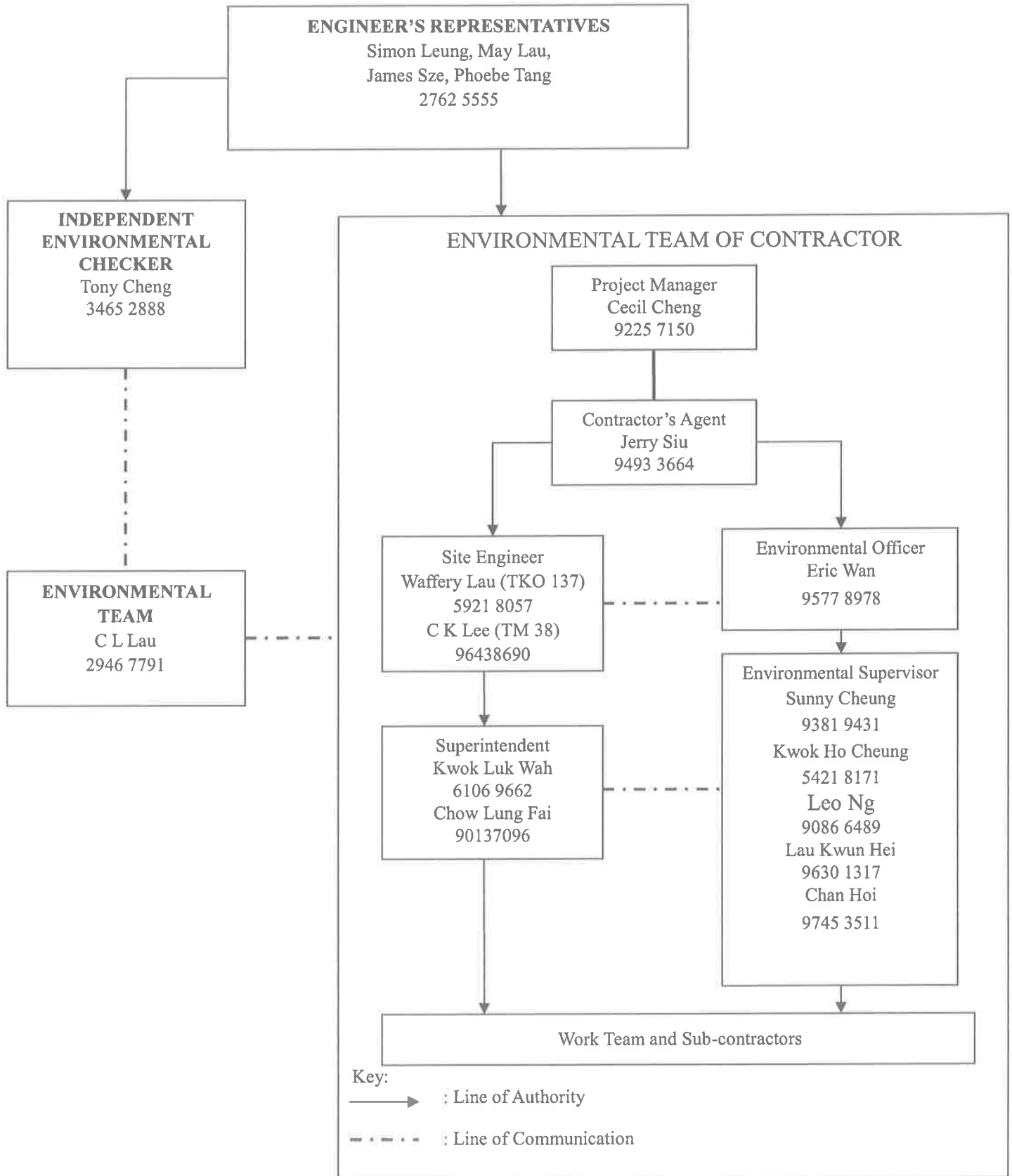
12.3 Monitoring Schedule for the Coming Month

The proposed EM&A program of the coming month is attached in Appendix M.

- END OF REPORT -

Appendix A

Project Organization Chart



Appendix B1

Calibration Certificates for Impact Air Quality Monitoring Equipment



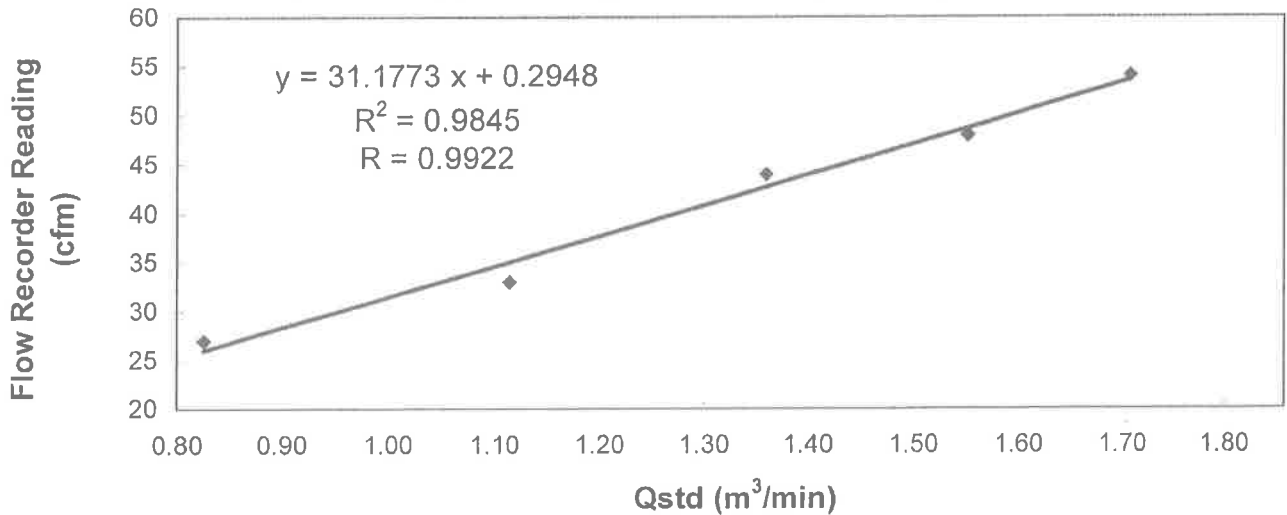
Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW Date of Calibration : 24 March 2017
Serial No. : 10581 (ET / EA / 003 / 22) Calibration Due Date : 23 May 2017
Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	54	48	44	33	27
Qstd (Actual flow rate, m ³ /min)	1.71	1.55	1.36	1.12	0.82
Pressure :	765.81	mm Hg	Temp. :	295	K

Sampler 10581 Calibration Curve
Site: Tseung Kwan O 137 (TKO-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 : LAW Sau Yee
LAW, Sau Yee
(Senior Environmental Officer)



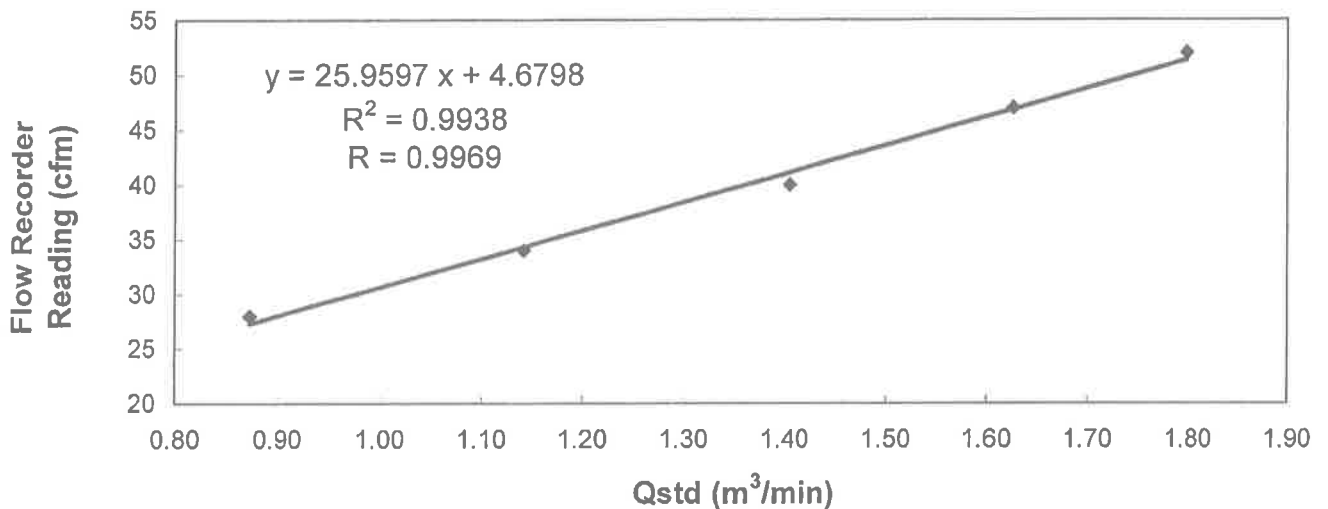
Calibration Report
of
High Volume Air Sampler

Manufacturer : Graseby GMW Date of Calibration : 25 January 2017
Serial No. : 1172 (ET / EA / 003 / 11) Calibration Due Date : 24 March 2017
Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results :

Flow recorder reading (cfm)	52	47	40	34	28
Qstd (Actual flow rate, m ³ /min)	1.80	1.63	1.40	1.14	0.87
Pressure :	765.06	mm Hg	Temp. :	291	K

Sampler 1172 Calibration Curve
Site: Tseung Kwan O 137 (TKO-A2a)



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 : LAW, Sau Yee
LAW, Sau Yee
(Senior Environmental Officer)

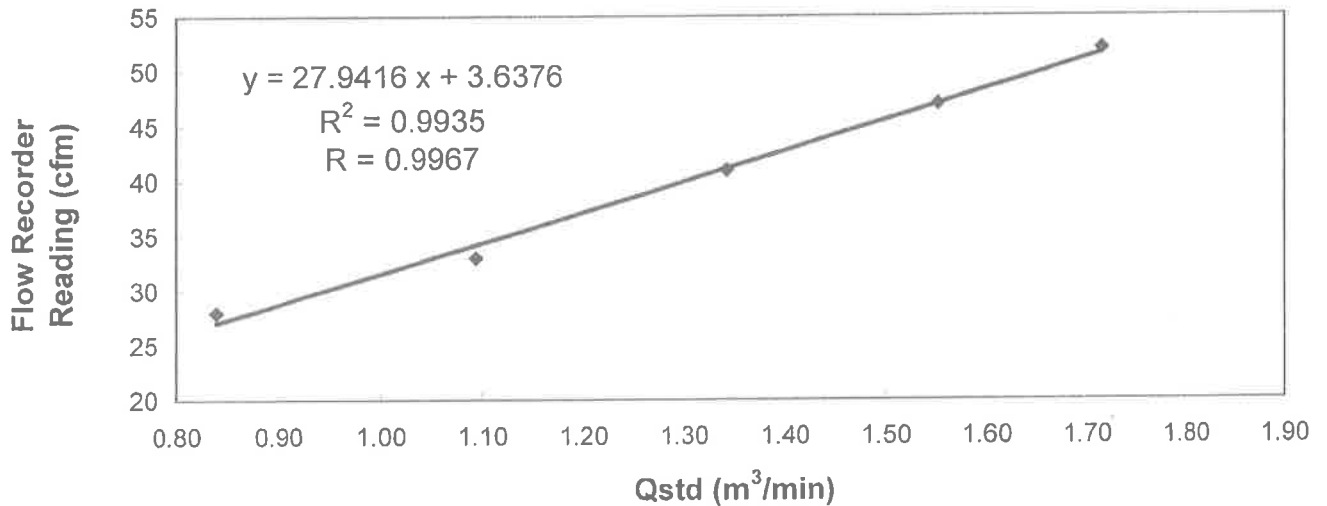


**Calibration Report
of
High Volume Air Sampler**

Manufacturer : Graseby GMW Date of Calibration : 24 March 2017
 Serial No. : 1172 (ET / EA / 003 / 11) Calibration Due Date : 23 May 2017
 Method : Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the Operations Manual

Results	Flow recorder reading (cfm)	52	47	41	33	28
	Qstd (Actual flow rate, m ³ /min)	1.72	1.55	1.34	1.09	0.84
	Pressure : 765.81 mm Hg	Temp. : 295 K				

**Sampler 1172 Calibration Curve
Site: Tseung Kwan O 137 (TKO-A2a)**



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 : LAW Sau Yee
LAW, Sau Yee
(Senior Environmental Officer)

ET/EA/004/13



TISCH ENVIRONMENTAL, INC.
 145 SOUTH MIAMI AVE
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 877.263.7610 TOLL FREE
 513.467.9009 FAX

ORIFICE TRANSFER STANDARD CERTIFICATION WORKSHEET TE-5025A

Date - Apr 12, 2016 Rootsmeter S/N 0438320 Ta (K) - 294
 Operator Tisch Orifice I.D. - 3163 Pa (mm) - 758.19

PLATE OR Run #	VOLUME START (m3)	VOLUME STOP (m3)	DIFF VOLUME (m3)	DIFF TIME (min)	METER	ORFICE
					DIFF Hg (mm)	DIFF H2O (in.)
1	NA	NA	1.00	1.4390	3.2	2.00
2	NA	NA	1.00	1.0280	6.4	4.00
3	NA	NA	1.00	0.9160	7.9	5.00
4	NA	NA	1.00	0.8760	8.7	5.50
5	NA	NA	1.00	0.7240	12.7	8.00

DATA TABULATION

Vstd	(x axis) Qstd	(y axis)	Va	(x axis) Qa	(y axis)
1.0069	0.6997	1.4221	0.9958	0.6920	0.8806
1.0027	0.9754	2.0112	0.9916	0.9646	1.2454
1.0006	1.0923	2.2485	0.9895	1.0802	1.3924
0.9996	1.1411	2.3583	0.9885	1.1284	1.4604
0.9942	1.3732	2.8442	0.9832	1.3580	1.7613
Qstd slope (m) = 2.11024			Qa slope (m) = 1.32140		
intercept (b) = -0.05237			intercept (b) = -0.03243		
coefficient (r) = 0.99995			coefficient (r) = 0.99995		
y axis = SQRT[H2O(Pa/760) (298/Ta)]			y axis = SQRT[H2O(Ta/Pa)]		

CALCULATIONS

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

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

For subsequent flow rate calculations:

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

Appendix B2

Impact Air Quality Monitoring Results

Summary of 24-hr TSP Monitoring Results

Monitoring Station : TKO-A1
Location : Site Egress

Date	Start Time	Finish Date	Finish Time	Elapse Time		Sampling Time (hrs)	Flow Rate (m ³ /min.)		Average (m ³ /min.)	Filter Weight (g)		Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final	
03/03/17	15:07	04/03/17	15:07	26168.33	26192.33	24.00	1.0840	1.0840	1.0840	2.7684	2.8729	67
09/03/17	08:30	10/03/17	08:30	26194.33	26218.33	24.00	1.0840	1.0840	1.0840	2.7256	2.8354	70
15/03/17	11:00	16/03/17	11:00	26222.33	26246.33	24.00	1.0840	1.0840	1.0840	2.7343	2.8432	70
21/03/17	08:00	22/03/17	08:00	26248.33	26272.33	24.00	1.0840	1.0840	1.0840	2.8001	2.9045	67
27/03/17	10:05	28/03/17	10:05	26276.33	26300.33	24.00	1.0358	1.0358	1.0358	2.7940	2.9075	76

Monitoring Station : TKO-A2a
Location : CREO

Date	Start Time	Finish Date	Finish Time	Elapse Time		Sampling Time (hrs)	Flow Rate (m ³ /min.)		Average (m ³ /min.)	Filter Weight (g)		Conc. (µg/m ³)
				Initial	Final		Initial	Final		Initial	Final	
03/03/17	15:12	04/03/17	15:12	26179.64	26203.64	24.00	1.0524	1.0524	1.0524	2.7751	2.8818	70
09/03/17	08:30	10/03/17	08:30	26205.64	26229.64	24.00	1.0524	1.0524	1.0524	2.7334	2.8443	73
15/03/17	11:10	16/03/17	11:10	26233.64	26257.64	24.00	1.0524	1.0524	1.0524	2.7226	2.8349	74
21/03/17	08:00	22/03/17	08:00	26259.64	26283.64	24.00	1.0524	1.0524	1.0524	2.7843	2.8988	76
27/03/17	10:10	28/03/17	10:10	26287.64	26311.64	24.00	1.0151	1.0151	1.0151	2.8013	2.9100	74

Summary of 1-hr TSP Monitoring Results

Monitoring Station : TKO-A1
Location : Site Egress

Date	Time		Elapse Time		Sampling Time (hrs)	Flow Rate (m ³ /min.)		Average (m ³ /min.)	Filter Weight (g)		Conc. (µg/m ³)
	Start	Finish	Initial	Final		Initial	Final		Initial	Final	
01/03/17	10:00	11:00	26166.33	26167.33	1.00	1.0840	1.0840	1.0840	2.7421	2.7566	223
03/03/17	14:07	15:07	26167.33	26168.33	1.00	1.0840	1.0840	1.0840	2.7567	2.7691	191
06/03/17	09:10	10:10	26192.33	26193.33	1.00	1.0840	1.0840	1.0840	2.7749	2.7947	304
08/03/17	14:20	15:20	26193.33	26194.33	1.00	1.0840	1.0840	1.0840	2.7206	2.7339	204
10/03/17	15:27	16:27	26218.33	26219.33	1.00	1.0840	1.0840	1.0840	2.7655	2.7783	197
10/03/17	16:27	17:27	26219.33	26220.33	1.00	1.0840	1.0840	1.0840	2.7844	2.7999	238
13/03/17	13:00	14:00	26220.33	26221.33	1.00	1.0840	1.0840	1.0840	2.7154	2.7296	218
15/03/17	10:00	11:00	26221.33	26222.33	1.00	1.0840	1.0840	1.0840	2.7408	2.7603	300
17/03/17	08:10	09:10	26246.33	26247.33	1.00	1.0840	1.0840	1.0840	2.7948	2.8132	283
20/03/17	09:10	10:10	26247.33	26248.33	1.00	1.0840	1.0840	1.0840	2.7899	2.8073	268
22/03/17	13:00	14:00	26272.33	26273.33	1.00	1.0840	1.0840	1.0840	2.7941	2.8125	283
22/03/17	14:00	15:00	26273.33	26274.33	1.00	1.0840	1.0840	1.0840	2.8043	2.8242	306
24/03/17	13:30	14:30	26274.33	26275.33	1.00	1.0358	1.0358	1.0358	2.7921	2.8105	296
27/03/17	09:05	10:05	26275.33	26276.33	1.00	1.0358	1.0358	1.0358	2.7845	2.8040	314
29/03/17	13:00	14:00	26300.33	26301.33	1.00	1.0358	1.0358	1.0358	2.7849	2.8033	296
31/03/17	11:45	12:45	26301.33	26302.33	1.00	1.0358	1.0358	1.0358	2.8045	2.8222	285

Monitoring Station : TKO-A2a
Location : CREO

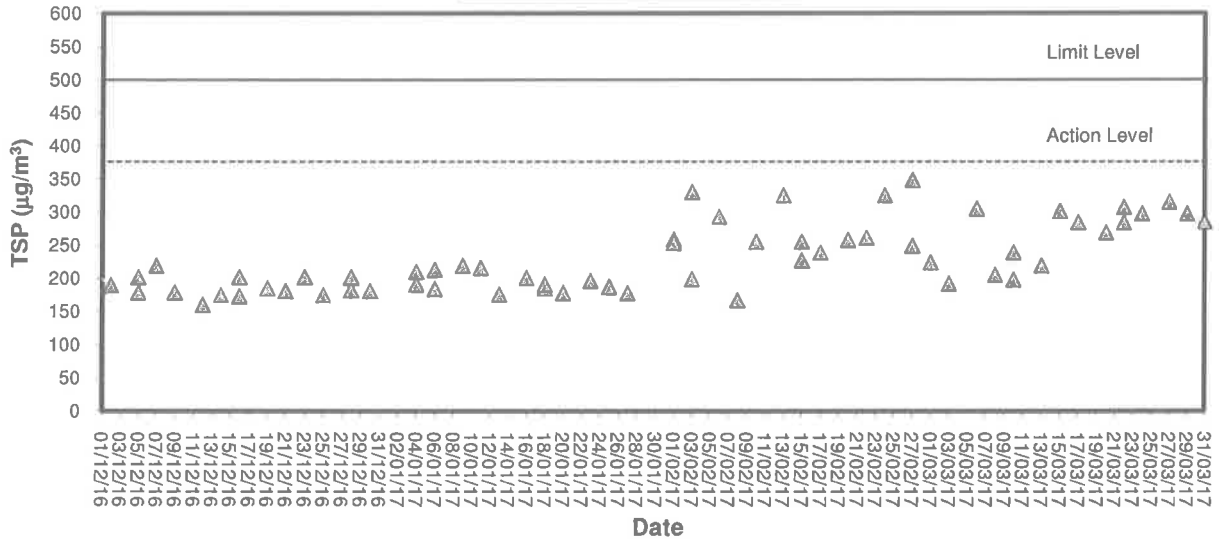
Date	Time		Elapse Time		Sampling Time (hrs)	Flow Rate (m ³ /min.)		Average (m ³ /min.)	Filter Weight (g)		Conc. (µg/m ³)
	Start	Finish	Initial	Final		Initial	Final		Initial	Final	
01/03/17	10:05	11:05	26177.64	26178.64	1.00	1.0524	1.0524	1.0524	2.7563	2.7730	264
03/03/17	14:12	15:12	26178.64	26179.64	1.00	1.0524	1.0524	1.0524	2.7099	2.7235	215
06/03/17	09:15	10:15	26203.64	26204.64	1.00	1.0524	1.0524	1.0524	2.7583	2.7756	274
08/03/17	14:25	15:25	26204.64	26205.64	1.00	1.0524	1.0524	1.0524	2.7340	2.7497	249
10/03/17	15:36	16:36	26229.64	26230.64	1.00	1.0524	1.0524	1.0524	2.7768	2.7909	223
10/03/17	16:36	17:36	26230.64	26231.64	1.00	1.0524	1.0524	1.0524	2.7501	2.7683	288
13/03/17	13:00	14:00	26231.64	26232.64	1.00	1.0524	1.0524	1.0524	2.7085	2.7244	252
15/03/17	10:10	11:10	26232.64	26233.64	1.00	1.0524	1.0524	1.0524	2.7531	2.7711	285
17/03/17	08:20	09:20	26257.64	26258.64	1.00	1.0524	1.0524	1.0524	2.8032	2.8229	312
20/03/17	09:20	10:20	26258.64	26259.64	1.00	1.0524	1.0524	1.0524	2.7745	2.7915	268
22/03/17	13:05	14:05	26283.64	26284.64	1.00	1.0524	1.0524	1.0524	2.7844	2.8034	301
22/03/17	14:05	15:05	26284.64	26285.64	1.00	1.0524	1.0524	1.0524	2.7984	2.8188	323
24/03/17	13:40	14:40	26285.64	26286.64	1.00	1.0151	1.0151	1.0151	2.8051	2.8226	287
27/03/17	09:10	10:10	26286.64	26287.64	1.00	1.0151	1.0151	1.0151	2.7966	2.8150	302
29/03/17	13:00	14:00	26311.64	26312.64	1.00	1.0151	1.0151	1.0151	2.7965	2.8134	277
31/03/17	11:50	12:50	26312.64	26313.64	1.00	1.0151	1.0151	1.0151	2.7966	2.8151	304

Appendix B3

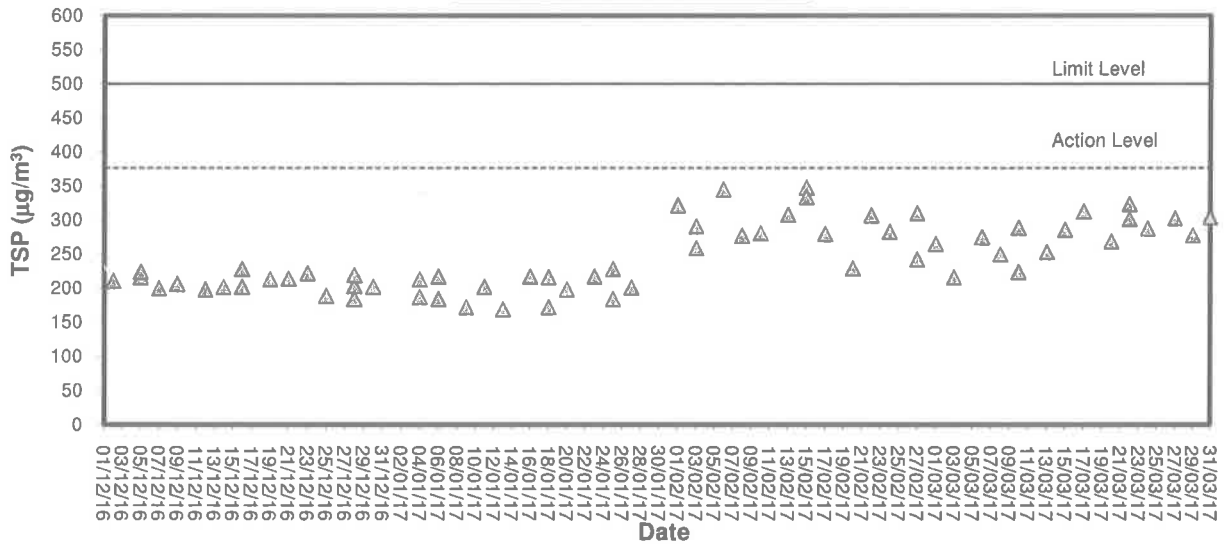
Graphical Plots of Impact Air Quality Monitoring Data



1-hour TSP level at TKO-A1

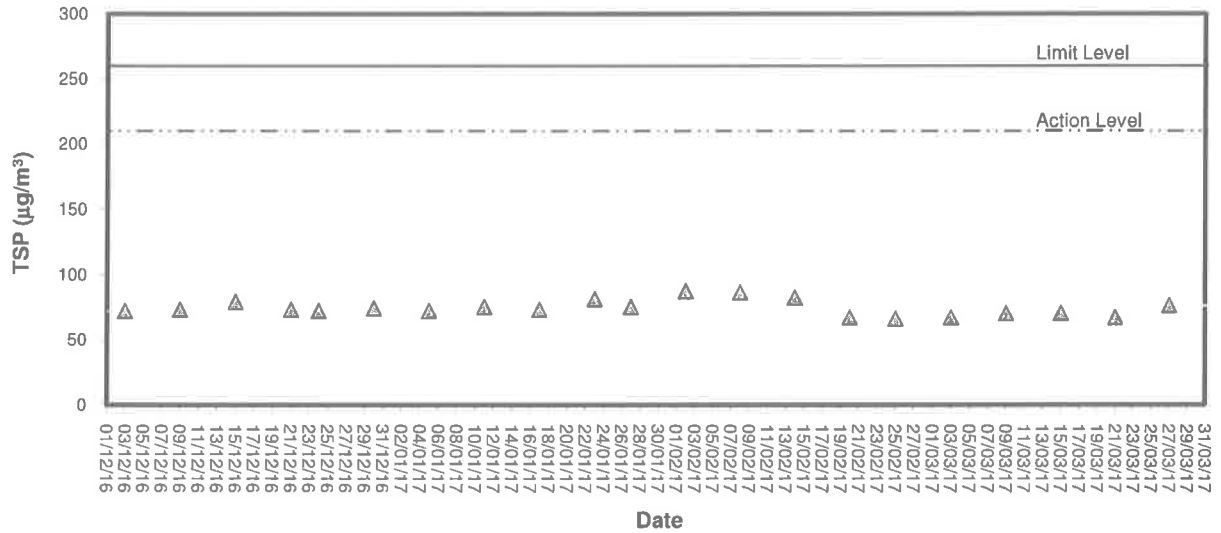


1-hour TSP level at TKO-A2a

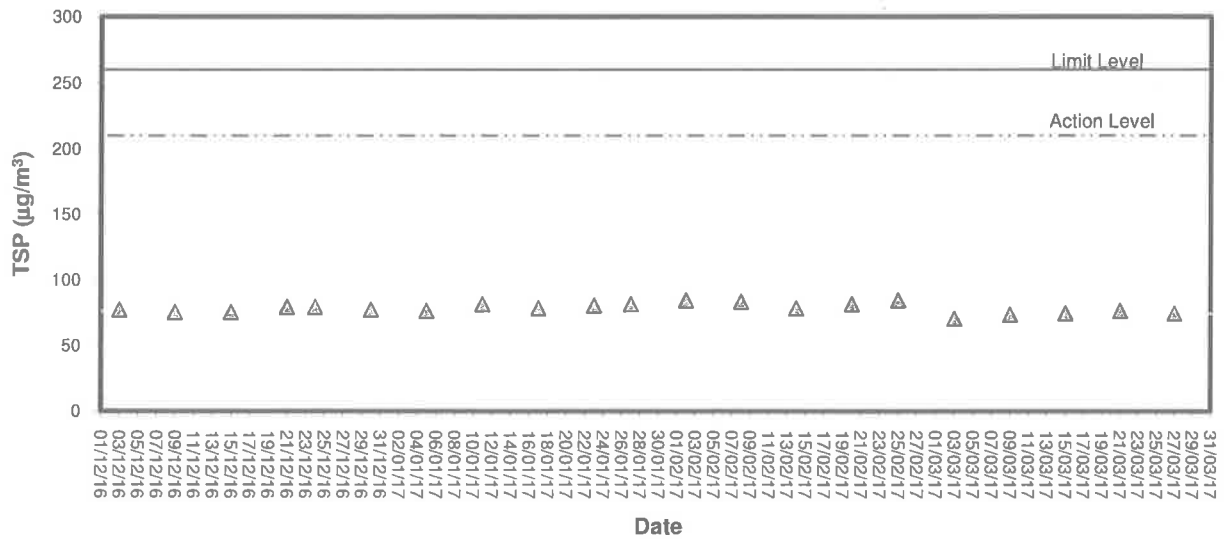




24-hour TSP level at TKO-A1



24-hour TSP level at TKO-A2a



Appendix C1

Calibration Certificates for Impact Noise Monitoring Equipment



Calibration Certificate

Certificate No. **609158**

Page 1 of 2 Pages

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q63739

Date of receipt : 7-Oct-16

Item Tested

Description : Sound Level Calibrator

Manufacturer : Rion

Model : NC-73

I.D. : ET/EN/002/01

Serial No. : 10196943

Test Conditions

Date of Test : 24-Oct-16

Ambient Temperature : (23 ± 3)°C

Supply Voltage : --

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : F21, Z02.

Test Results

All results were within the manufacturer's specification.

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

Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S014	Spectrum Analyzer	605758	NIM-PRC & SCL-HKSAR
S240	Sound Level Calibrator	601604	NIM-PRC & SCL-HKSAR
S041	Universal Counter	607883	SCL-HKSAR
S206	Sound Level Meter	605757	SCL-HKSAR

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

The test equipment used for calibration are traceable to International System of Units (SI), or by reference to a natural constant.
The test results apply to the above Unit-Under-Test only

Calibrated by : 
Kin Wong

Approved by : 
Alan Chu

Date: 24-Oct-16

This Certificate is issued by:
Hong Kong Calibration Ltd.
Unit 8B, 24/F., Well Fung Industrial Centre, No. 68-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.
Tel: 2425 8801 Fax: 2425 8646



Calibration Certificate

Certificate No. 609158

Page 2 of 2 Pages

Results :

1. Level Accuracy (at 1 kHz)

UUT Nominal Value	Measured Value	Mfr's Spec.
94 dB	94.0 dB	± 1 dB

Uncertainty : ± 0.2 dB

2. Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's Spec.
1 kHz	0.993 kHz	± 2 %

Uncertainty : ± 0.1 %

3. Level Stability : 0.0 dB

Uncertainty : ± 0.01 dB

4. Total Harmonic Distortion : < 0.4 %

Mfr's Spec. : < 3 %

Uncertainty : ± 2.3 % of reading

Remarks: 1. UUT : Unit-Under-Test
2. The uncertainty claimed is for a confidence probability of not less than 95%.
3. Atmospheric Pressure : 1020 hPa

----- END -----



Hong Kong Calibration Ltd.

香港校正有限公司

Calibration Certificate

Certificate No. **611393**

Page 1 of 3 Pages

Customer : ETS-Testconsult Limited

Address : 8/F., Block B, Veristrong Industrial Centre, 34-36 Au Pui Wan St., Fotan, Hong Kong.

Order No. : Q64510

Date of receipt : 8-Dec-16

Item Tested

Description : Precision Integrating Sound Level Meter (ET/EN/003/12)

Manufacturer : Rion

I.D. : ET/EN/003/12

Model : NL-31

Serial No. : 00773032

Test Conditions

Date of Test : 23-Dec-16

Supply Voltage : --

Ambient Temperature : (23 ± 3)°C

Relative Humidity : (50 ± 25) %

Test Specifications

Calibration check.

Ref. Document/Procedure : IEC 61672 Type 1 Spec..

Test Results

All results were within the IEC 61672 Type 1 specification.

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

Main Test equipment used:

<u>Equipment No.</u>	<u>Description</u>	<u>Cert. No.</u>	<u>Traceable to</u>
S017	Multi-Function Generator	C147450	SCL-HKSAR
S240	Sound Level Calibrator	601604	NIM-PRC & SCL-HKSAR

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

The test equipment used for calibration are traceable to International System of Units (SI), or by reference to a natural constant.
The test results apply to the above Unit-Under-Test only

Calibrated by : _____

Alan Chu

Approved by : _____

Kin Wong

This Certificate is issued by:

Hong Kong Calibration Ltd.

Unit 8B, 24/F., Well Fung Industrial Centre, No. 58-76, Ta Chuen Ping Street, Kwai Chung, NT, Hong Kong.

Tel: 2425 8801 Fax: 2425 8646

Date: 23-Dec-16



Calibration Certificate

Certificate No. **611393**

Page 2 of 3 Pages

Results :

1. **Self-generated noise:** 16.8 dBA (Mfr's Spec \leq 20 dBA)

2. Acoustical signal test

UUT Setting			Applied Value (dB)	UUT Reading (dB)
Level Range (dB)	Weight	Response		
20 – 100	L _A	Fast	94.0	93.8
		Slow		93.8
	L _C	Fast		93.8
	L _p	Fast		93.8
30 – 120	L _A	Fast	94.0	93.8
		Slow		93.8
	L _C	Fast		93.8
	L _p	Fast		93.8
30 – 120	L _A	Fast	114.0	113.8
		Slow		113.8
	L _C	Fast		113.8
	L _p	Fast		113.8

IEC 61672 Type 1 Spec. : \pm 1.1 dB

Uncertainty : \pm 0.1 dB

3 Electrical signal tests of frequency weightings (A weighting)

Frequency	Attenuation (dB)	IEC 61672 Type 1 Spec.
31.5 Hz	- 39.6	- 39.4 dB, \pm 2 dB
63 Hz	- 26.3	- 26.2 dB, \pm 1.5 dB
125 Hz	- 16.3	- 16.1 dB, \pm 1.5 dB
250 Hz	- 8.8	- 8.6 dB, \pm 1 dB
500 Hz	- 3.3	- 3.2 dB, \pm 1.4 dB
1 kHz	0.0 (Ref.)	0 dB, \pm 1.1 dB
2 kHz	+ 1.2	+ 1.2 dB, \pm 1.6 dB
4 kHz	+ 1.0	+ 1.0 dB, \pm 1.6 dB
8 kHz	- 1.1	- 1.1 dB, + 2.1 dB ~ -3.1 dB
16 kHz	- 6.6	- 6.6 dB, + 3.5 dB ~ - 17.0 dB

Uncertainty : \pm 0.1 dB



Calibration Certificate

Certificate No. 611393

Page 3 of 3 Pages

4. Frequency & Time weightings at 1 kHz

4.1 Frequency Weighting (Fast)

UUT Setting	Applied Value (dB)	UUT Reading (dB)	Difference (dB)	IEC 61672 Type 1 Spec.
A	94.0	93.8 (Ref.)	--	± 0.4 dB
C	94.0	93.8	0.0	
Z	94.0	93.8	0.0	

4.2 Time Weighting (A-weighted)

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

Uncertainty : ± 0.1 dB

Remarks : 1. UUT : Unit-Under-Test

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

3. Atmospheric Pressure : 1026 hPa.

4. Preamplifier model : NH-21 , S/N : 25043

5. The UUT's internal calibration was performed before the calibration.

----- END -----

Appendix C2

Impact Noise Monitoring Results

Day-time Noise Monitoring

Monitoring Location: TKO-N1 (Site Egress)

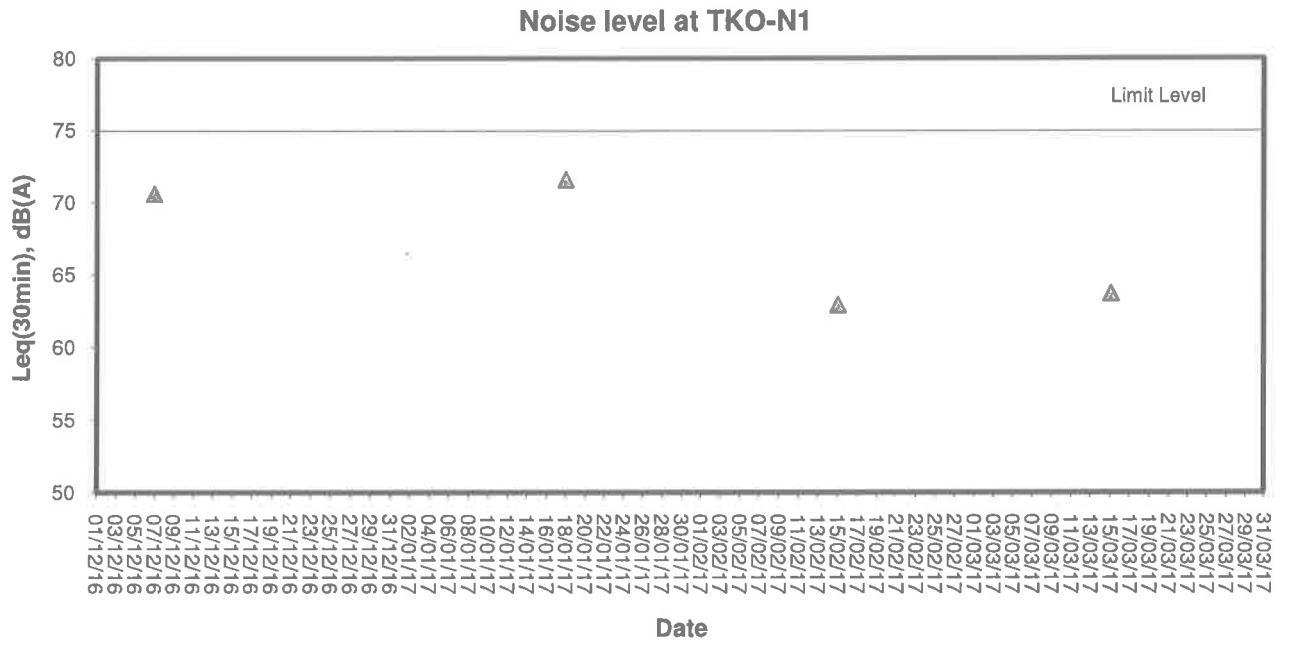
Date	Start Sampling Time (hh:mm)	Noise Level dB (A)			Wind Speed (m/s)	Weather Condition
		L _{eq(30min)}	L ₁₀	L ₉₀		
15/03/17	10:05	63.7	65.9	59.8	0.7	Cloudy

Appendix C3

Graphical Plots of Impact Noise Monitoring Data



Noise Monitoring (Day-time)



Appendix D1

Calibration Certificates for Impact Marine Water Quality Monitoring Equipments



Internal Calibration Report of Dissolved Oxygen Meter

Equipment Ref. No. : <u>ET/EW/008/001</u>	Manufacturer : <u>YSI</u>
Model No. : <u>85</u>	Serial No. : <u>05L 1285</u>
Date of Calibration : <u>19/01/2017</u>	Calibration Due Date : <u>18/04/2017</u>

Temperature Verification

Ref. No. of Reference Thermometer : ET/0521/017
 Ref. No. of Water Bath : ---

Reference Thermometer reading	Temperature (°C)			
	Measured	20.3	Corrected	19.8
DO Meter reading	Measured	20.0	Difference	-0.2

Standardization of sodium thiosulphate (Na₂S₂O₃) solution

Reagent No. of Na ₂ S ₂ O ₃ titrant	CPE/012/4.5/001/15	Reagent No. of 0.025N K ₂ Cr ₂ O ₇	CPE/012/4.4/002/16
		Trial 1	Trial 2
Initial Vol. of Na ₂ S ₂ O ₃ (ml)		0.00	10.35
Final Vol. of Na ₂ S ₂ O ₃ (ml)		10.35	20.70
Vol. of Na ₂ S ₂ O ₃ used (ml)		10.35	10.35
Normality of Na ₂ S ₂ O ₃ solution (N)		0.02415	0.02415
Average Normality (N) of Na ₂ S ₂ O ₃ solution (N)		0.02415	
Acceptance criteria, Deviation		Less than ± 0.001N	

Calculation: Normality of Na₂S₂O₃, N = 0.25 / ml Na₂S₂O₃ used

Linearity Checking

Determination of dissolved oxygen content by Winkler Titration *

Purging Time (min)	2		5		10	
	1	2	1	2	1	2
Initial Vol. of Na ₂ S ₂ O ₃ (ml)	0.00	11.40	23.00	0.00	6.10	9.90
Final Vol. of Na ₂ S ₂ O ₃ (ml)	11.40	23.00	29.60	6.10	9.90	13.80
Vol. (V) of Na ₂ S ₂ O ₃ used (ml)	11.40	11.60	6.60	6.10	3.80	3.90
Dissolved Oxygen (DO), mg/L	7.39	7.52	4.28	3.95	2.46	2.53
Acceptance criteria, Deviation	Less than + 0.3mg/L		Less than + 0.3mg/L		Less than + 0.3mg/L	

Calculation: DO (mg/L) = V x N x 8000/298

Purging time, min	DO meter reading, mg/L			Winkler Titration result *, mg/L			Difference (%) of DO Content
	1	2	Average	1	2	Average	
2	7.45	7.49	7.47	7.39	7.52	7.46	0.13
5	4.15	4.11	4.13	4.28	3.95	4.12	0.24
10	2.35	2.44	2.40	2.46	2.53	2.50	4.08
Linear regression coefficient				0.9997			



Internal Calibration Report of Dissolved Oxygen Meter

Zero Point Checking

DO meter reading, mg/L	0.00
------------------------	------

Salinity Checking

Reagent No. of NaCl (10ppt)	CPE/012/4.7/003/33	Reagent No. of NaCl (30ppt)	CPE/012/4.8/003/33
-----------------------------	--------------------	-----------------------------	--------------------

Determination of dissolved oxygen content by Winkler Titration **

Salinity (ppt)	10		30	
Trial	1	2	1	2
Initial Vol. of Na ₂ S ₂ O ₃ (ml)	0.00	10.90	21.80	31.20
Final Vol. of Na ₂ S ₂ O ₃ (ml)	10.90	21.80	31.20	40.60
Vol. (V) of Na ₂ S ₂ O ₃ used (ml)	10.90	10.90	9.40	9.40
Dissolved Oxygen (DO), mg/L	7.07	7.07	6.09	6.09
Acceptance criteria, Deviation	Less than + 0.3mg/L		Less than + 0.3mg/L	

Calculation: $DO (mg/L) = V \times N \times 8000/298$

Salinity (ppt)	DO meter reading, mg/L			Winkler Titration result**, mg/L			Difference (%) of DO Content
	1	2	Average	1	2	Average	
10	7.12	7.08	7.1	7.07	7.07	7.07	0.42
30	6.02	6.03	6.03	6.09	6.09	6.09	0.99

Acceptance Criteria

- (1) Differenc between temperature readings from temperature sensor of DO probe and reference thermometer : < 0.5 °C
- (2) Linear regression coefficient : >0.99
- (3) Zero checking: 0.0mg/L
- (4) Difference (%) of DO content from the meter reading and by winkler titration : within ± 5%


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

Delete as appropriate

Calibrated by

: 

Approved by :





Performance Check of Salinity Meter

Equipment Ref. No. : ET/EW/008/001 Manufacturer : YSI
Model No. : 85 Serial No. : 05L 1285
Date of Calibration : 19/01/2017 Due Date : 18/04/2017

Ref. No. of Salinity Standard used (30ppt)

S/001/9

Salinity Standard (ppt)	Measured Salinity (ppt)	Difference * (%)
30.0	30.3	1.0

(*) Difference (%) = (Measured Salinity – Salinity Standard value) / Salinity Standard value x 100

Acceptance Criteria

Difference : -10 % to 10 %

The salinity meter complies * / ~~does not comply~~ * with the specified requirements and is deemed acceptable * / ~~unacceptable~~ * for use. Measurements are traceable to national standards.

Checked by : 

Approved by : 



Performance Check of Turbidity Meter

Equipment Ref. No. : ET/0505/015 Manufacturer : HACH

Model No. : 2100Q Serial No. : 14110C036534

Date of Calibration : 19/12/2016 Due Date : 18/06/2017

Theoretical Value of Turbidity Standard (NTU)	Measured Value (NTU)	Difference % *
20	19.8	-1.00
100	103	3.00
800	786	-1.75

(*) Difference = (Measured Value – Theoretical Value) / Theoretical Value x 100

Acceptance Criteria

Difference : -5 % to 5 %

The turbidity meter complies * / ~~does not comply~~ * with the specified requirements and is deemed acceptable * / ~~unacceptable~~ * for use. Measurements are traceable to national standards.

Prepared by : 

Checked by : 



Performance Check of Turbidity Meter

Equipment Ref. No. : ET/0505/015 Manufacturer : HACH

Model No. : 2100Q Serial No. : 14110C036534

Date of Calibration : 21/03/2017 Due Date : 20/06/2017

Theoretical Value of Turbidity Standard (NTU)	Measured Value (NTU)	Difference % *
20	19.7	-1.50
100	102	2.00
800	785	-1.88

(*) Difference = (Measured Value – Theoretical Value) / Theoretical Value x 100

Acceptance Criteria

Difference : -5 % to 5 %

The turbidity meter complies * / ~~does not comply~~ * with the specified requirements and is deemed acceptable * / ~~unacceptable~~ * for use. Measurements are traceable to national standards.

Prepared by : 

Checked by : 



Performance Check of Turbidity Meter

Equipment Ref. No. : ET/0505/019 Manufacturer : HACH
Model No. : 2100Q Serial No. : 16100C053166
Date of Calibration : 29/12/2016 Due Date : 28/02/2017 ^{63 12}

Theoretical Value of Turbidity Standard (NTU)	Measured Value (NTU)	Difference % *
20	20.2	1.0
100	99.8	-0.2
800	796	-0.5

(*) Difference = (Measured Value – Theoretical Value) / Theoretical Value x 100

Acceptance Criteria

Difference : -5 % to 5 %

The turbidity meter complies * / ~~does not comply~~ * with the specified requirements and is deemed acceptable * / ~~unacceptable~~ * for use. Measurements are traceable to national standards.

Prepared by : 

Checked by : 

Appendix D2

Impact Marine Water Quality Monitoring Results

Mid-Flood Tide



東業地產測量顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TKO-C1

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	Value	Average	Value	Average	Value	Average	Depth-average	Value
01/03/17	0800-0825	16/Cloudy	Surface	17.3	27.1	27.2	6.67	6.69	81.7	81.9	3.16	3.20	4.1	4.7	4.8	
			Middle	17.2	27.4	6.60	6.62	80.9	81.1	3.24	3.49	5.2	5.4			
			Bottom	17.4	27.3	6.64	6.82	81.3	83.9	3.53	3.36	5.3	4.7			
03/03/17	0900-0925	17/Cloudy	Surface	17.2	27.5	6.83	6.82	84.0	83.9	3.45	3.32	4.0	4.0	4.5		
			Middle	17.2	27.1	6.81	6.60	83.8	80.9	3.39	3.03	4.7	3.9			
			Bottom	17.3	27.3	6.77	6.74	80.5	82.6	3.05	3.27	5.2	4.6			
06/03/17	1130-1155	21/Cloudy	Surface	18.4	27.4	6.89	6.92	84.4	84.8	3.25	3.47	4.1	4.7	4.9		
			Middle	18.5	27.5	6.95	7.41	85.2	92.2	3.49	3.25	5.2	4.5			
			Bottom	18.6	26.6	7.43	7.54	92.1	94.2	3.23	3.13	4.3	4.3			
08/03/17	1400-1425	18/Cloudy	Surface	17.6	26.7	7.50	6.63	92.2	82.2	3.10	3.19	4.8	4.8	4.4		
			Middle	17.7	26.8	7.57	6.73	93.8	83.7	3.15	3.06	4.7	4.7			
			Bottom	17.8	26.8	7.63	6.89	94.6	85.9	3.30	3.33	5.0	4.5			
10/03/17	1600-1621	17/Cloudy	Surface	17.7	26.9	7.68	6.66	95.5	95.9	3.36	3.33	5.3	5.4	4.7		
			Middle	17.6	28.2	6.62	6.63	96.2	82.2	3.21	3.19	4.8	4.8			
			Bottom	17.8	28.1	6.63	6.63	82.1	82.2	3.16	3.19	4.7	4.7			
13/03/17	1830-1855	22/Cloudy	Surface	19.2	28.3	6.71	6.73	83.5	83.7	3.09	3.06	4.0	4.3	4.6		
			Middle	19.3	28.2	6.74	6.89	83.9	83.7	3.03	3.06	4.5	4.5			
			Bottom	19.3	28.3	6.89	6.89	85.9	85.9	3.37	3.33	4.4	4.2			
15/03/17	0800-0824	18/Cloudy	Surface	17.7	28.4	6.88	6.88	85.8	85.9	3.29	3.33	3.9	4.9	4.6		
			Middle	17.9	28.1	6.41	6.42	79.4	79.5	3.18	3.22	4.5	4.6			
			Bottom	18.0	28.0	6.43	6.69	79.6	83.4	3.26	3.44	4.6	4.8			
17/03/17	0830-0847	17/Cloudy	Surface	17.7	28.3	6.70	6.75	83.5	83.4	3.48	3.44	5.1	4.8	4.6		
			Middle	17.7	28.3	6.75	6.75	84.1	84.2	3.40	3.59	5.1	4.8			
			Bottom	17.8	28.3	6.75	6.88	84.2	86.1	3.56	3.61	4.3	4.9			

Mid-Flood Tide

Monitoring Station : TKO-C1



專營 專業 測試 顧問 有限公司
ETS-TESTCONSULT LIMITED

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)					
			Surface	Bottom		Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Depth-average
20/03/17	1000-1025	20/Cloudy	Surface	1.0	17.6	27.6	27.6	7.68	7.71	95.6	96.0	3.28	3.26	4.9	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
			Middle	9.9	17.7	27.7	27.7	7.73	7.56	96.3	94.2	3.23	3.46	4.5	4.7							
			Bottom	18.8	17.9	27.8	27.8	7.54	7.85	93.9	98.1	3.44	3.30	4.5	4.7							
22/03/17	1930-1955	21/Cloudy	Surface	1.0	17.9	27.7	27.7	7.85	6.77	94.4	84.5	3.47	3.09	4.3	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
			Middle	10.4	18.0	27.8	27.8	7.89	6.84	84.1	85.4	3.31	3.27	4.6	4.6							
			Bottom	19.7	18.1	27.9	27.9	6.74	6.86	84.8	87.1	3.10	3.46	4.6	4.6							
24/03/17	1430-1455	21/Cloudy	Surface	1.0	18.6	28.0	28.0	6.95	6.97	85.6	87.1	3.43	3.46	4.1	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
			Middle	10.2	18.7	28.1	28.1	6.86	6.96	86.8	88.2	3.48	3.09	3.5	4.3							
			Bottom	19.4	18.8	28.2	28.2	6.91	7.07	87.3	90.0	2.89	3.28	3.8	4.8							
27/03/17	1715-1740	20/Cloudy	Surface	1.0	18.8	27.9	27.9	6.97	6.56	87.7	83.3	2.92	2.87	4.0	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
			Middle	10.1	18.9	28.0	28.0	6.94	6.45	88.4	81.9	3.07	2.96	4.0	4.5							
			Bottom	19.2	19.0	28.1	28.1	6.98	6.80	89.7	86.3	3.10	3.08	4.0	4.5							
29/03/17	1930-1940	20/Cloudy	Surface	1.0	18.9	28.2	28.2	6.78	6.68	86.0	85.0	3.05	2.69	4.3	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
			Middle	10.3	18.9	28.2	28.2	6.82	6.52	86.6	83.8	3.09	2.78	4.6	3.8							
			Bottom	19.6	19.0	28.3	28.3	6.70	6.92	88.2	83.0	2.88	2.90	4.3	3.9							
31/03/17	0800-0825	20/Cloudy	Surface	1.0	18.8	28.3	28.3	6.94	6.74	88.6	85.7	2.91	2.60	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
			Middle	10.4	18.8	28.4	28.4	6.72	6.63	85.4	84.3	2.58	2.69	3.6	3.5							
			Bottom	19.8	18.9	28.5	28.5	6.76	6.98	85.9	89.1	2.61	2.81	3.4	3.9							

Mid-Flood Tide

Monitoring Station : TKO-M4

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	Value	Average	Value	Average	Value	Average	Depth-average	Value
01/03/17	0835-0900	16/Cloudy	Surface	17.2	27.1	27.1	6.53	6.53	79.9	79.9	3.17	3.15	5.1	4.8	4.8	
			Middle	17.4	27.2	27.3	6.74	6.75	82.8	82.9	3.19	3.17	4.4	4.6		
			Bottom	17.5	27.3	27.3	6.76	6.80	83.0	83.8	3.14	3.43	4.7	5.2		
03/03/17	0935-1000	17/Cloudy	Surface	17.3	27.1	27.2	6.62	6.65	81.1	81.5	3.21	3.23	4.8	4.9	4.9	
			Middle	17.2	27.2	27.3	6.68	6.57	81.9	80.5	3.24	3.10	4.9	4.4		
			Bottom	17.2	27.4	27.5	6.55	6.45	80.3	79.0	3.12	3.24	4.1	4.9		
06/03/17	1205-1230	21/Cloudy	Surface	18.4	26.6	26.7	7.29	7.32	79.2	91.3	3.26	3.30	4.3	4.2	4.5	
			Middle	18.5	26.7	26.7	7.34	7.45	91.6	93.2	3.32	3.21	4.0	4.8		
			Bottom	18.5	26.7	26.7	7.48	7.58	92.8	94.9	3.19	3.46	4.8	4.7		
08/03/17	1431-1447	18/Cloudy	Surface	17.5	28.0	28.1	6.45	6.46	95.2	80.0	3.43	3.17	5.2	4.6	4.6	
			Middle	17.5	28.1	28.1	6.47	6.52	80.1	80.7	3.20	3.04	4.2	4.9		
			Bottom	17.6	28.2	28.2	6.51	6.72	80.6	83.4	3.01	3.28	4.8	4.3		
10/03/17	1626-1642	17/Cloudy	Surface	17.6	28.0	28.1	6.71	6.52	83.3	80.8	3.25	3.17	3.9	4.6	4.6	
			Middle	17.5	28.1	28.2	6.52	6.47	80.7	80.2	3.31	3.32	4.6	4.2		
			Bottom	17.7	28.2	28.3	6.64	6.66	83.5	82.8	3.07	3.46	4.1	5.0		
13/03/17	1905-1930	22/Cloudy	Surface	19.0	27.4	27.5	7.20	7.19	91.4	91.3	3.42	3.45	5.1	4.8	4.9	
			Middle	19.1	27.5	27.5	7.18	7.42	91.1	94.4	3.48	3.26	4.5	4.6		
			Bottom	19.2	27.6	27.6	7.38	7.57	93.9	96.4	3.23	3.57	4.6	5.2		
15/03/17	0829-0851	18/Cloudy	Surface	17.9	28.2	28.2	6.47	6.46	96.8	80.5	3.54	3.15	5.4	4.5	4.7	
			Middle	17.8	28.2	28.2	6.45	6.41	80.6	79.7	3.18	3.28	4.5	4.8		
			Bottom	17.9	28.2	28.3	6.39	6.75	79.6	84.2	3.24	3.40	5.0	5.0		
17/03/17	0900-0917	17/Cloudy	Surface	17.6	27.8	27.9	6.74	6.60	84.1	81.9	3.44	3.22	4.4	4.9	4.9	
			Middle	17.7	27.9	27.9	6.58	6.68	82.1	83.0	3.24	3.29	4.9	5.0		
			Bottom	17.8	28.0	28.0	6.61	6.76	81.7	84.1	3.19	3.45	4.8	4.9		

Mid-Flood Tide

Monitoring Station : TKO-M4

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	Value	Average	Value	Average	Value	Depth-average	Value	Average
20/03/17	1035-1100	20/Cloudy	Surface	17.7	27.6	27.7	7.53	7.56	93.8	94.1	3.10	3.13	3.7	4.2	4.5	
			Middle	17.8	27.8	27.9	7.66	7.68	95.4	95.6	3.25	3.27	4.7	4.6		
			Bottom	17.9	28.0	27.9	7.69	7.45	95.8	92.8	3.28	3.44	4.9	4.8		
22/03/17	2005-2030	21/Cloudy	Surface	17.9	27.8	27.9	7.42	6.68	93.2	83.4	3.41	3.11	4.8	4.0	4.3	
			Middle	18.0	28.0	28.1	6.87	6.84	85.8	85.4	3.26	3.28	4.2	4.6		
			Bottom	18.0	28.2	28.2	6.81	6.74	85.0	84.1	3.29	3.36	4.3	4.2		
24/03/17	1505-1530	21/Cloudy	Surface	18.5	28.1	28.2	6.70	6.82	83.7	86.1	3.37	2.93	4.0	4.3	4.2	
			Middle	18.5	28.4	28.4	6.80	6.96	84.5	88.1	3.35	3.10	4.1	4.3		
			Bottom	18.7	28.4	28.3	6.82	6.86	87.7	87.0	3.11	3.18	4.4	4.1		
27/03/17	1750-1815	20/Cloudy	Surface	18.8	28.0	27.9	6.41	6.43	81.4	81.6	3.17	4.56	4.1	4.3	4.4	
			Middle	18.8	28.1	28.2	6.44	6.58	81.7	83.5	3.04	2.90	4.0	4.2		
			Bottom	18.9	28.2	28.2	6.57	6.64	83.4	84.3	2.89	3.29	4.6	4.7		
29/03/17	1950-2000	20/Cloudy	Surface	19.0	28.4	28.3	6.66	6.55	84.5	83.5	3.27	2.88	5.0	4.1	4.3	
			Middle	19.1	28.4	28.5	6.53	6.70	84.0	85.7	3.30	2.72	4.0	4.3		
			Bottom	19.1	28.6	28.7	6.62	6.76	83.3	86.5	2.90	3.11	4.1	4.7		
31/03/17	0835-0900	20/Cloudy	Surface	18.9	28.4	28.5	6.56	6.60	86.8	84.2	2.73	2.79	4.7	4.2	3.8	
			Middle	19.0	28.7	28.7	6.69	6.76	85.6	86.4	2.71	2.63	4.4	3.6		
			Bottom	19.1	28.7	28.8	6.71	6.82	88.8	87.4	2.09	3.02	4.6	3.8		

Mid-Ebb Tide



東業 測試 顧問 有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TKO-C1

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	Value	Average
01/03/17	1400-1425	16/Cloudy	Surface	17.4	27.3	27.3	6.58	6.60	6.56	80.9	81.1	3.22	3.26	4.2	4.8	4.8		
			Middle	17.5	27.4	27.3	6.51	6.53	6.55	80.3	80.5	3.30	3.55	5.3	5.0			
			Bottom	17.5	27.6	27.6	6.74	6.73	6.73	83.1	83.0	3.59	3.42	4.9	4.5		4.8	
03/03/17	1530-1555	20/Cloudy	Surface	17.4	27.2	27.3	6.44	6.42	6.49	79.6	79.4	3.38	3.19	4.1	4.5	4.9		
			Middle	17.6	27.4	27.5	6.40	6.55	6.57	79.1	81.0	3.21	3.45	4.8	5.0			
			Bottom	17.7	27.6	27.6	6.53	6.76	6.73	80.7	83.6	3.42	3.54	5.6	5.1			
06/03/17	1900-1925	19/Cloudy	Surface	19.0	26.9	26.9	7.27	7.24	7.34	91.9	91.5	3.51	3.38	4.7	5.1	4.7		
			Middle	19.1	27.0	27.0	7.21	7.44	7.40	91.1	94.2	3.40	3.25	5.4	4.1			
			Bottom	19.3	27.1	27.1	7.40	7.56	7.53	93.7	96.0	3.28	3.50	4.2	4.9			
08/03/17	0830-0852	16/Cloudy	Surface	17.5	27.8	27.9	6.37	6.36	6.42	96.4	78.8	3.47	3.26	4.9	5.0	5.1		
			Middle	17.6	28.0	28.1	6.34	6.49	6.48	78.6	80.6	3.24	3.65	5.0	5.2			
			Bottom	17.7	28.2	28.1	6.48	6.69	6.69	80.5	83.3	3.62	3.51	5.4	5.1			
10/03/17	1030-1050	17/Cloudy	Surface	17.6	28.0	28.0	6.67	6.22	6.29	83.1	77.1	3.54	3.36	4.1	4.6	4.9		
			Middle	17.7	28.1	28.2	6.71	6.36	6.36	83.5	79.1	3.47	3.50	4.9	4.8			
			Bottom	17.8	28.2	28.3	6.24	6.58	6.58	77.3	82.0	3.32	3.71	5.0	5.4			
13/03/17	1230-1250	22/Cloudy	Surface	18.4	27.6	27.6	7.21	7.25	7.31	90.6	91.0	3.68	3.45	4.8	5.2	4.9		
			Middle	18.5	27.7	27.8	7.28	7.37	7.40	91.4	92.7	3.42	3.27	5.1	4.3			
			Bottom	18.6	27.9	27.9	7.34	7.56	7.56	93.1	95.2	3.24	3.58	4.2	5.0			
15/03/17	1330-1354	18/Cloudy	Surface	17.8	28.0	28.1	6.42	6.44	6.49	80.1	80.2	3.29	3.42	4.8	4.8	5.0		
			Middle	17.9	28.3	28.3	6.52	6.54	6.54	80.3	81.6	3.44	3.61	4.8	4.7			
			Bottom	18.1	28.4	28.4	6.55	6.72	6.72	81.8	84.3	3.65	3.74	4.4	5.6			
17/03/17	1430-1447	19/Cloudy	Surface	18.0	27.9	28.0	6.70	6.51	6.55	84.0	80.9	3.71	3.01	5.2	4.4	4.5		
			Middle	18.0	28.0	28.1	6.49	6.59	6.57	80.7	81.9	3.04	3.21	4.3	4.4			
			Bottom	18.1	28.2	28.2	6.52	6.75	6.75	81.0	83.9	2.97	3.41	4.5	4.8			

Mid-Ebb Tide



東興實地測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TKO-C1

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	Value	Average	Value	Average	Value	Average	Value
20/03/17	1700-1725	20/Cloudy	Surface	17.8	27.8	27.8	7.56	7.58	94.2	94.5	3.37	3.39	5.4	5.1	
			Middle	17.9	27.9	7.36	7.38	91.7	91.9	3.51	3.54	4.8	4.6	3.42	5.0
			Bottom	18.0	28.1	7.65	7.67	95.3	95.5	3.36	3.34	5.0	5.2		
22/03/17	0800-0825	20/Cloudy	Surface	18.0	27.8	27.9	6.57	6.56	82.0	81.9	3.25	3.27	4.6	5.0	
			Middle	18.1	28.0	6.71	6.73	83.8	84.0	3.36	3.37	5.3	4.7	3.39	4.9
			Bottom	18.2	28.2	6.82	6.85	85.1	85.5	3.57	3.54	4.9	5.0		
24/03/17	1000-1025	21/Cloudy	Surface	18.5	27.8	27.9	6.80	6.83	85.6	85.9	2.98	3.00	4.2	4.1	
			Middle	18.6	28.1	6.88	6.90	87.0	87.3	3.16	3.18	3.9	4.7	3.18	4.4
			Bottom	18.6	28.3	7.01	7.03	88.7	88.9	3.34	3.37	4.4	4.6		
27/03/17	1130-1155	20/Cloudy	Surface	18.7	27.8	27.9	6.76	6.78	85.8	86.1	3.06	3.08	4.3	4.2	
			Middle	18.8	28.0	6.66	6.64	83.9	84.2	3.11	3.14	4.0	4.7	3.16	4.4
			Bottom	18.8	28.1	6.92	6.95	87.8	88.2	3.26	3.27	4.1	4.8		
29/03/17	1245-1310	20/Cloudy	Surface	18.7	28.3	28.4	6.60	6.62	83.8	84.1	3.28	2.78	3.6	3.6	
			Middle	18.8	28.5	6.53	6.51	82.6	82.9	2.89	2.87	3.6	3.4	2.88	3.7
			Bottom	18.9	28.7	6.88	6.86	87.2	87.5	2.97	2.99	4.0	4.4		
31/03/17	1415-1440	20/Cloudy	Surface	18.9	28.5	28.6	6.63	6.65	84.5	84.8	3.00	2.66	4.5	3.5	
			Middle	19.0	28.6	6.56	6.54	83.4	83.6	2.72	2.75	3.5	3.8	2.76	3.8
			Bottom	19.1	28.8	6.87	6.89	88.0	88.2	2.85	2.87	4.3	4.2		

Mid-Ebb Tide



東業德測測試顧問有限公司
ETS-TESTCONSULT LIMITED

Monitoring Station : TKO-M4

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	Value	Average	Value	Average	Value	Average	Depth-average	Value
01/03/17	1435-1500	16/Cloudy	Surface	17.3	27.1	27.2	6.44	6.43	78.9	78.8	3.23	3.21	4.2	4.0	4.5	
			Middle	17.4	27.2	27.3	6.65	6.66	81.7	81.8	3.18	3.25	3.8	4.6		
			Bottom	17.5	27.3	27.5	6.66	6.71	81.8	82.7	3.20	3.20	4.5	4.9		
03/03/17	1605-1630	20/Cloudy	Surface	17.4	27.3	27.3	6.69	6.60	82.5	81.6	3.44	3.35	5.3	4.9	4.6	
			Middle	17.4	27.1	27.2	6.58	6.35	81.3	78.4	3.32	3.17	5.1	4.5		
			Bottom	17.5	27.2	27.4	6.62	6.37	81.8	78.8	3.37	3.15	4.4	4.4		
06/03/17	1935-2000	19/Cloudy	Surface	19.0	26.8	26.9	7.18	7.21	78.4	91.2	3.38	3.46	4.1	4.3	4.8	
			Middle	19.0	26.9	26.9	7.36	7.39	91.5	93.4	3.48	3.31	4.5	5.0		
			Bottom	19.1	27.0	27.0	7.41	7.51	93.7	95.0	3.36	3.59	5.0	5.0		
08/03/17	0858-0918	16/Cloudy	Surface	17.5	27.9	27.9	7.48	6.43	94.7	79.6	3.52	3.43	4.2	5.3	4.7	
			Middle	17.4	28.0	28.0	6.42	6.31	79.5	78.4	3.40	3.22	5.1	4.3		
			Bottom	17.5	27.9	28.1	6.43	6.53	79.6	81.4	3.46	3.29	5.5	4.6		
10/03/17	1055-1116	17/Cloudy	Surface	17.5	28.0	28.0	6.54	6.35	81.2	81.4	3.38	3.42	4.7	4.7	5.2	
			Middle	17.4	28.1	28.1	6.33	6.43	81.5	79.4	3.45	3.51	4.5	5.1		
			Bottom	17.7	28.2	28.2	6.36	6.61	78.3	82.2	3.47	3.34	4.9	5.0		
13/03/17	1300-1330	22/Cloudy	Surface	18.3	27.6	27.7	6.60	7.33	82.0	91.9	3.60	3.63	5.8	5.9	4.8	
			Middle	18.4	27.7	27.8	7.30	7.46	91.5	93.6	3.53	3.41	5.9	5.0		
			Bottom	18.5	27.8	27.8	7.43	7.25	93.3	82.6	3.38	3.67	4.2	4.6		
15/03/17	1400-1422	18/Cloudy	Surface	17.7	28.0	28.0	6.33	6.34	82.2	78.7	3.66	3.30	4.8	4.6	4.6	
			Middle	17.8	28.0	28.0	6.34	6.47	91.6	80.5	3.61	3.28	5.1	4.2		
			Bottom	18.0	28.2	28.2	6.46	6.61	78.7	82.6	3.43	3.46	5.1	5.1		
17/03/17	1501-1518	19/Cloudy	Surface	18.0	27.9	27.9	6.59	6.45	90.8	80.1	3.67	3.07	4.8	4.2	4.4	
			Middle	18.0	27.9	27.9	6.43	6.53	91.6	81.1	3.61	3.11	5.1	4.4		
			Bottom	18.1	28.0	28.1	6.46	6.70	82.8	83.2	3.49	3.26	4.2	4.7		

Mid-Ebb Tide

Monitoring Station : TKO-M4

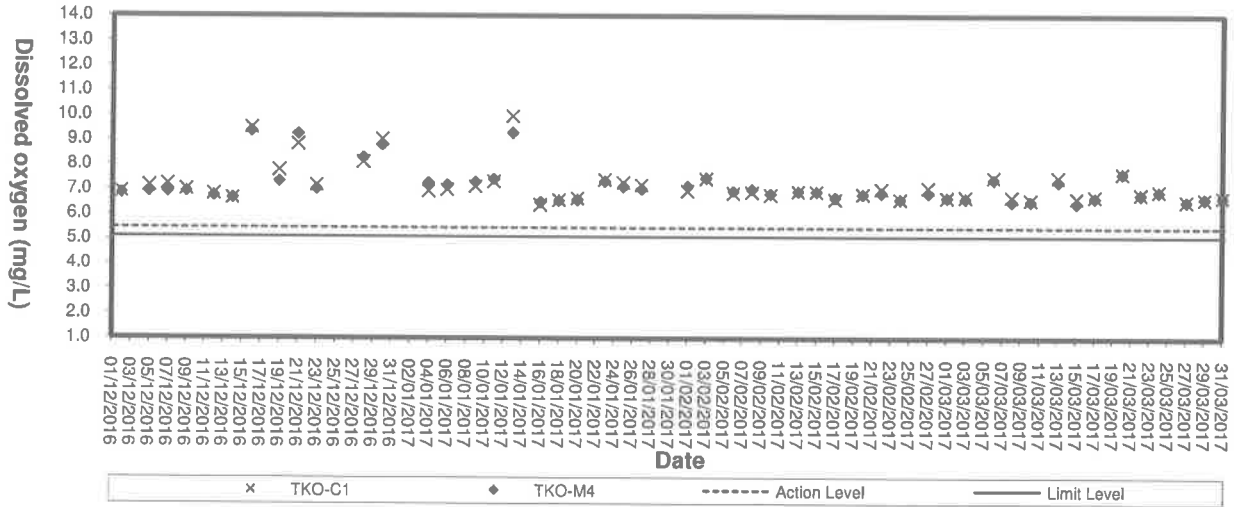
Date	Sampling Duration	Ambient Temp (°C) / Weather Condition	Monitoring Depth (m)	Temp (°C)	Salinity (ppt)		Dissolved Oxygen (mg/L)		Dissolved Oxygen Saturation (%)		Turbidity (NTU)			Suspended Solids (mg/L)		
					Value	Average	Value	Average	Value	Average	Value	Average	Value	Average	Depth-average	Value
20/03/17	1735-1800	20/Cloudy	Surface	17.7	27.7	27.4	7.41	7.44	92.3	92.6	3.25	3.27	4.2	4.3	4.7	
			Middle	17.9	27.8	7.38	7.41	91.9	92.2	3.36	3.38	5.4	5.4			
			Bottom	18.0	28.0	7.30	7.34	90.9	91.4	3.55	3.57	4.6	4.5			
22/03/17	0835-0900	20/Cloudy	Surface	17.9	27.9	28.0	6.55	6.57	81.8	82.0	3.39	3.40	5.1	5.0	5.0	
			Middle	18.0	28.1	6.75	6.73	82.2	84.0	3.41	3.36	4.8	4.7			
			Bottom	18.1	28.1	6.70	6.45	83.7	80.5	3.33	3.58	4.3	5.1			
24/03/17	1035-1100	21/Cloudy	Surface	18.4	28.0	28.1	6.74	6.76	80.2	85.2	3.56	3.04	5.7	4.6	4.4	
			Middle	18.5	28.2	6.93	6.90	85.4	87.2	3.05	3.19	4.5	4.2			
			Bottom	18.6	28.3	6.87	6.80	86.8	86.0	3.20	3.27	4.5	4.6			
27/03/17	1205-1230	20/Cloudy	Surface	18.7	27.8	27.9	6.83	6.54	86.4	82.9	3.26	3.16	4.1	4.6	4.7	
			Middle	18.8	28.0	6.55	6.81	83.1	86.4	3.14	3.09	5.1	5.0			
			Bottom	18.8	28.1	6.79	6.75	86.2	85.6	3.07	3.37	4.3	4.1			
29/03/17	1320-1345	20/Cloudy	Surface	18.8	28.2	28.2	6.72	6.75	85.9	82.4	3.38	2.97	4.1	4.0	4.1	
			Middle	18.9	28.3	6.47	6.64	82.2	84.6	2.95	2.81	3.9	4.1			
			Bottom	19.0	28.4	6.50	6.70	84.5	85.6	2.80	3.20	4.2	4.3			
31/03/17	1450-1515	20/Cloudy	Surface	19.0	28.5	28.6	6.68	6.52	84.7	83.3	3.18	2.85	4.1	3.7	3.8	
			Middle	19.1	28.7	6.53	6.67	83.1	85.4	3.21	2.69	3.4	3.8			
			Bottom	19.5	28.8	6.66	6.73	85.3	86.5	2.87	3.08	4.0	4.0			

Appendix D3

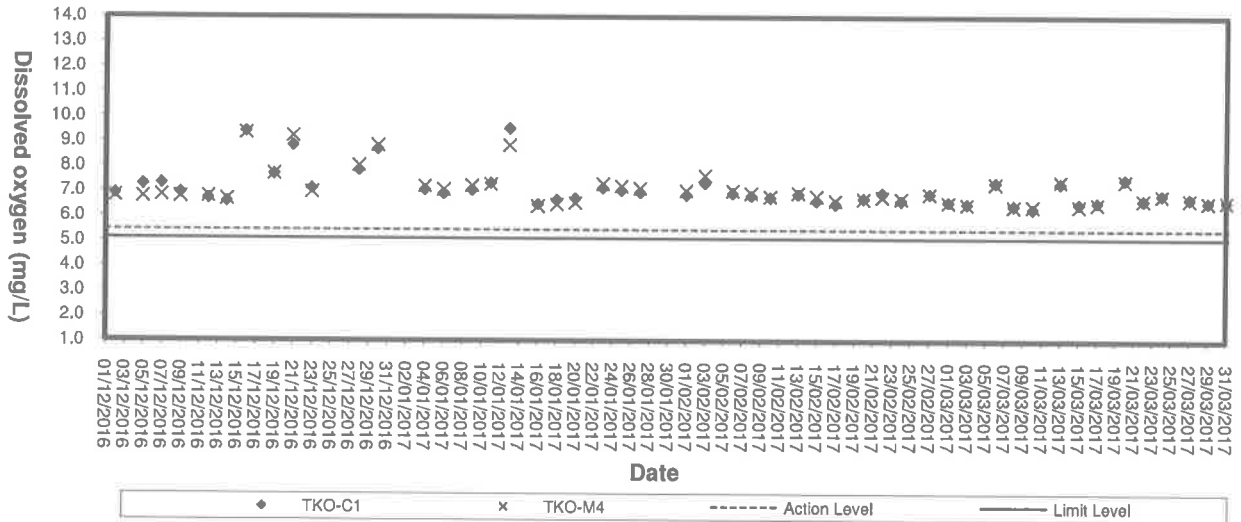
Graphical Plots of Impact Marine Water Quality Monitoring Data



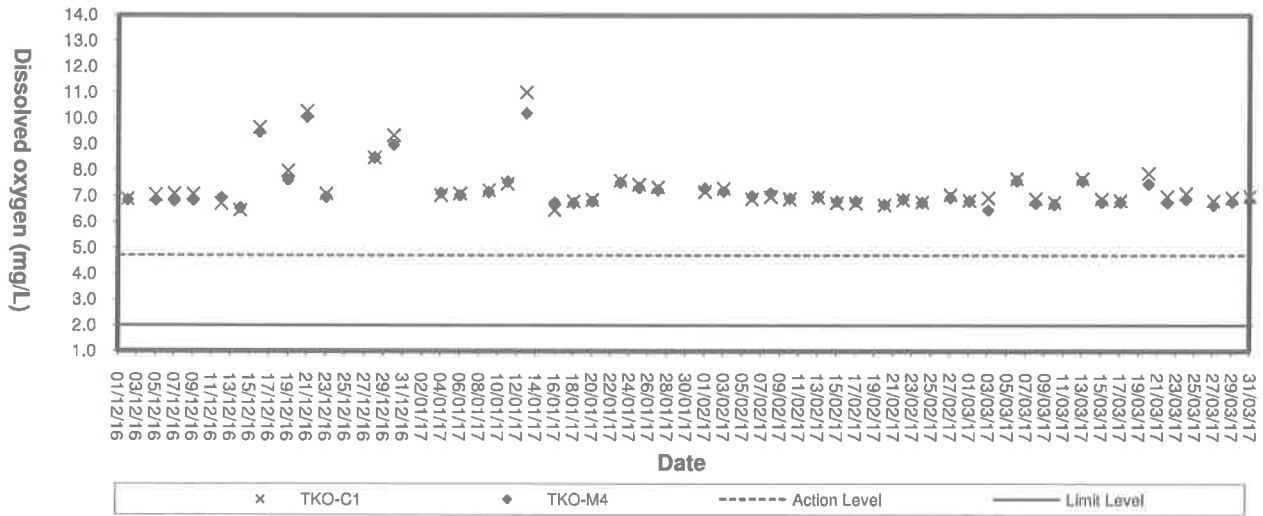
Dissolved Oxygen (Surface & Middle) at Mid-Flood Tide



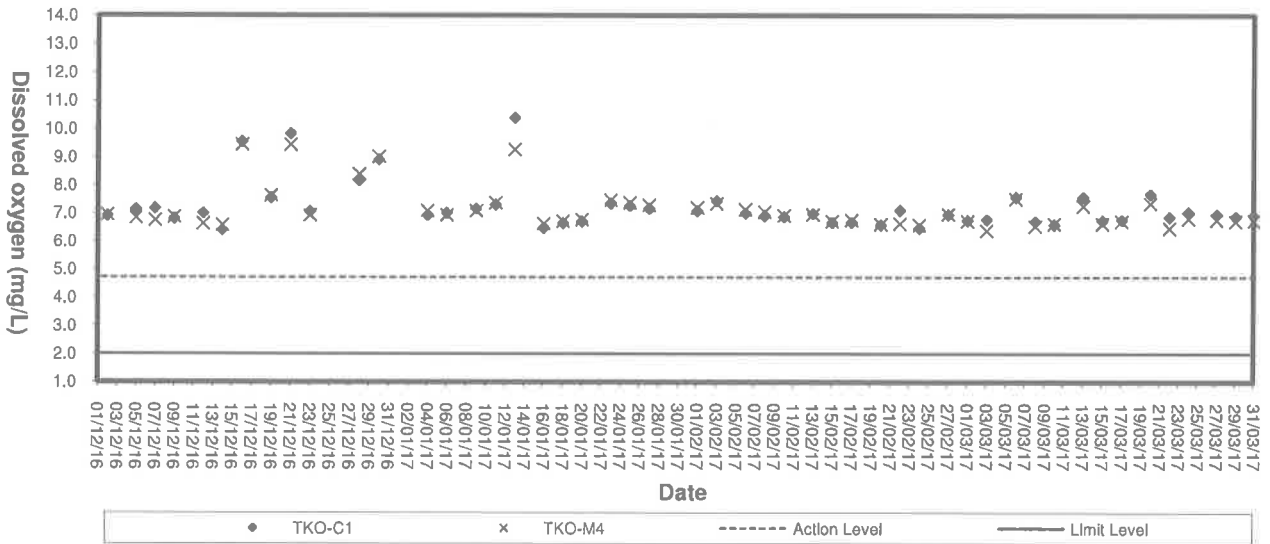
Dissolved Oxygen (Surface & Middle) at Mid-Ebb Tide



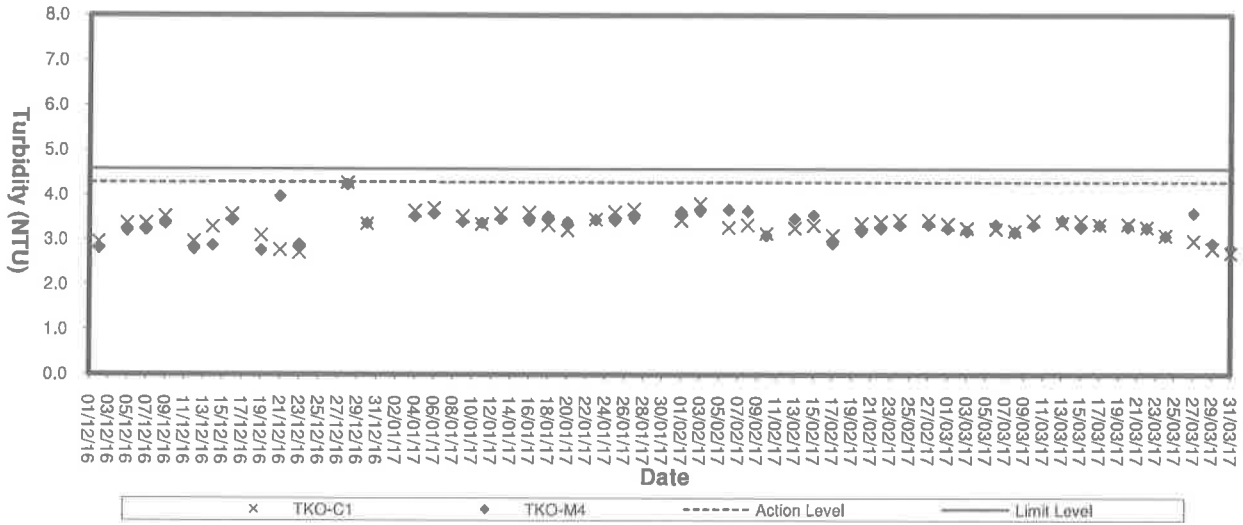
Dissolved Oxygen (Bottom) at Mid-Flood Tide



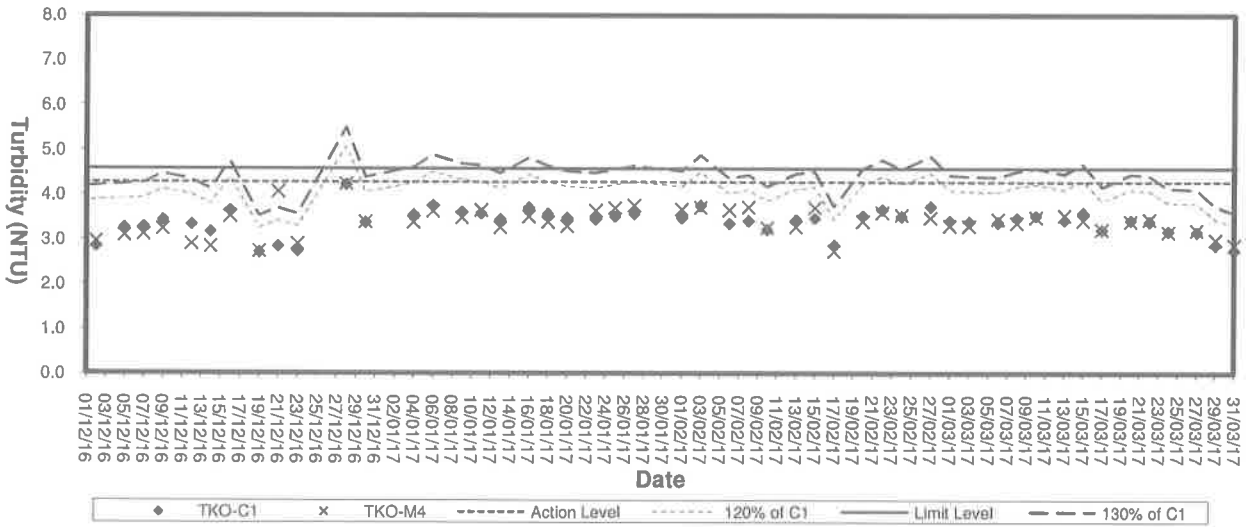
Dissolved Oxygen (Bottom) at Mid-Ebb Tide



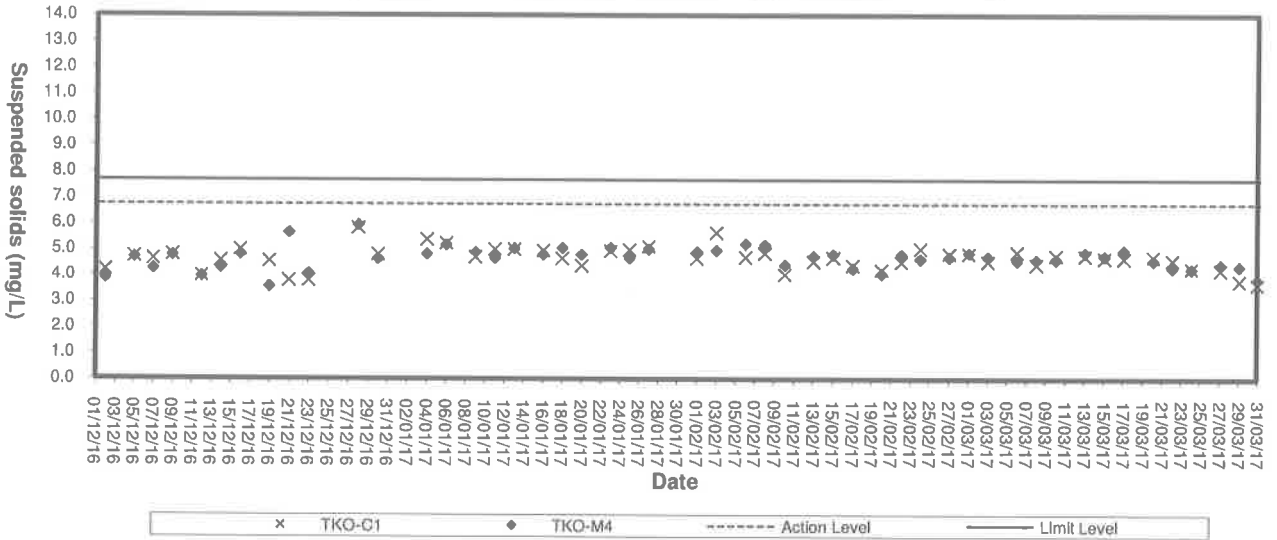
Turbidity (Depth-average) at Mid-Flood Tide



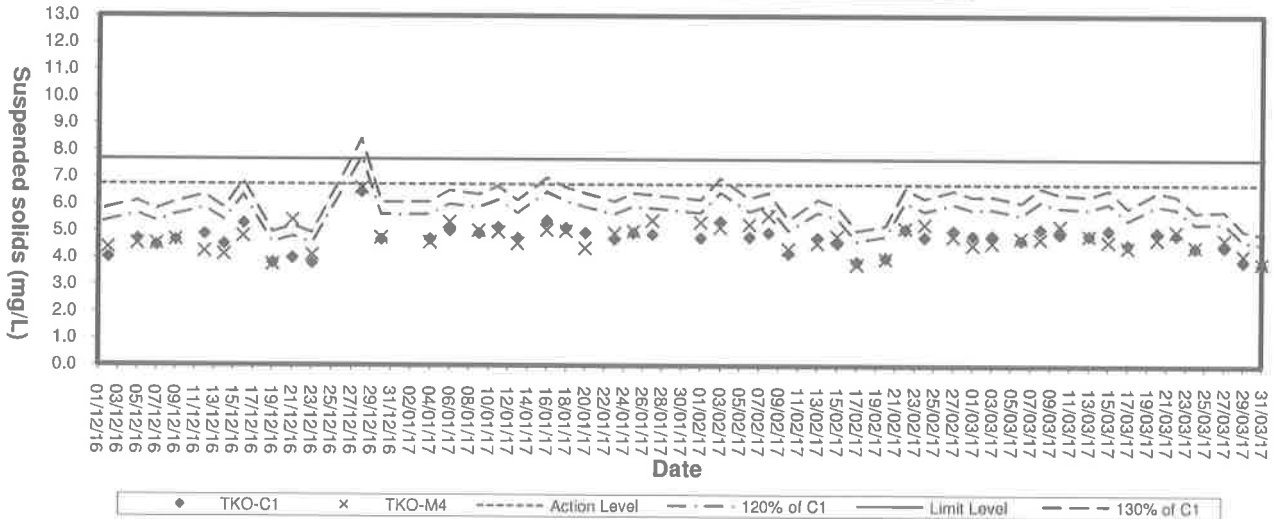
Turbidity (Depth-average) at Mid-Ebb Tide



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



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



Appendix E

Weather Condition

Daily Extract of Meteorological Observations, March 2017 – Tseung Kwan O

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)					
01	***	23.4	17.8	12.7	12.0	70	0.0	340	4.2
02	***	23.9#	18.1	14.2#	4.8	46	0.0	020	8.3
03	***	19.3	16.3	13.9	10.1	68	0.0	020	7.9
04	***	21.4	18.0	15.3	13.0	73	0.0	010	6.5
05	***	24.0#	19.7	17.9#	16.9	84	0.0	020	3.7
06	***	25.0	19.6	17.0	15.4	79	0.0	010	5.6
07	***	19.3#	17.2	16.3#	12.9	76	0.0	020	7.2
08	***	16.7	15.3	14.1	13.1	87	2.5	060	5.8
09	***	17.9	16.1	15.1	11.9	77	1.0	020	6.4
10	***	18.3	16.9	15.2	15.7	93	0.5	010	5.4
11	***	17.3	16.3	15.6	15.5	96	2.0	350	6.2
12	***	18.5	17.4	16.2	16.6	95	3.0	360	5.1
13	***	23.0#	20.6	18.5#	19.8	95	0.0	060	2.9
14	***	20.9	17.9	15.7	17.5	97	13.0	010	5.4
15	***	16.7	16.0	15.3	12.1	78	0.0	020	7.0
16	***	18.6	16.9	15.8	13.4	80	0.0	010	6.5
17	***	18.5	17.2	16.0	15.5	90	0.5	010	6.8
18	***	19.3#	18.1	16.5#	17.0	94	1.0	360	6.4
19	***	19.7	19.1	17.9	18.5	96	11.0	010	6.1
20	***	26.3#	20.9	17.8#	18.9	89	0.0	030	5.2
21	***	27.7	22.1	18.1	19.7	87	0.0	060	6.9
22	***	18.8	18.0	17.0	16.3	90	1.0	040	8.0
23	***	24.1	20.4	18.1	17.8	86	0.0	020	4.9
24	***	20.5	19.5	17.9	17.2	87	0.5	020	6.9
25	***	22.8	19.0	15.3	16.2	84	0.0	060	6.0
26	***	16.4#	14.6	12.8#	10.6	77	1.0	340	6.9
27	***	22.1	18.3	14.4	8.4	54	0.0	020	9.4
28	***	23.5#	19.6	16.2#	13.7	69	0.0	050	8.2
29	***	22.9	20.9	19.4	18.2	85	0.0	020	6.6
30	***	21.8	20.9	20.2	19.4	91	0.0	010	5.5
31	***	22.5	19.4	14.6	18.4	94	20.5	340	6.6

*** *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

ACTION

IC(E)

ER

Contractor

ACTION LEVEL

LIMIT LEVEL

EVENT	ET Leader	IC(E)	ER	Contractor
1. Exceedance for one sample	<ol style="list-style-type: none"> Identify source, investigate the causes of exceedance and propose remedial measures Inform ER, IC(E) and Contractor Repeat measurement to confirm finding Increase monitoring frequency to daily 	<ol style="list-style-type: none"> Check monitoring data submitted by the ET Check contractor's working method 	<ol style="list-style-type: none"> Notify Contractor 	<ol style="list-style-type: none"> Rectify any unacceptable practise Amend working methods if appropriate
2. Exceedance for two or more consecutive samples	<ol style="list-style-type: none"> Identify source, investigate the causes of exceedance and propose remedial measures Inform IC(E) and Contractor Repeat measurements to confirm finding Increase monitoring frequency to daily Discuss with IC(E) and Contractor on remedial actions If exceedance continues, arrange meeting with IC(E) and ER. If exceedance stops, cease additional monitoring 	<ol style="list-style-type: none"> Check monitoring data submitted by the ET Check the Contractor's working method Discuss with ET and Contractor on possible remedial measures Advise the ER on the effectiveness of the proposed remedial measures Supervise implementation of remedial measures 	<ol style="list-style-type: none"> Confirm receipt of notification of failure in writing Notify the Contractor Ensure remedial measures properly implemented 	<ol style="list-style-type: none"> Submit proposals for remedial actions to IC(E) within 3 working days of notification Implement the agreed proposals Amend proposal if appropriate
1. Exceedance for one sample	<ol style="list-style-type: none"> Identify source, investigate the causes of exceedance and propose remedial measures Inform ER, Contractor and EPD Repeat measurement to confirm finding Increase monitoring frequency to daily Assess the effectiveness of Contractor's remedial actions and keep IC(E), EPD and ER informed of the results 	<ol style="list-style-type: none"> Check monitoring data submitted by the ET Check Contractor's working method Discuss with ET and Contractor on possible remedial measures Advise the ER on the effectiveness of the proposed remedial measures Supervise implementation of remedial measures 	<ol style="list-style-type: none"> Confirm receipt of notification of failure in writing Notify the Contractor Ensure remedial measures properly implemented 	<ol style="list-style-type: none"> Take immediate action to avoid further exceedance Submit proposals for remedial actions to IC(E) within 3 working days of notification Implement the agreed proposals Amend proposal if appropriate.

EVENT/ACTION PLAN FOR AIR QUALITY EXCEEDANCE

EVENT	ACTION			Contractor
	ET Leader	IC(E)	ER	
<p>2. Exceedance for two or more consecutive samples</p>	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 1. Discuss amongst ER, ET and Contractor on the potential remedial actions 2. Review Contractor's remedial actions whenever necessary to assure their effectiveness and advise the ER accordingly 3. Supervise the implementation of remedial measures 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing 2. Notify 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 	<ol style="list-style-type: none"> 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/ACTION PLAN FOR NOISE EXCEEDANCE

EVENT	ACTION			
	ET Leader	IC(E)	ER	Contractor
Action Level	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 	<ol style="list-style-type: none"> 1. Submit noise mitigation proposals to IC(E). 2. Implement noise mitigation proposals.
Limit Level	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Confirm receipt of notification of failure in writing. 2. Notify the Contractor. 3. Require the Contractor to propose remedial measures for the analysed noise problem. 4. Ensure remedial measures are properly implemented. 5. If 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. 	<ol style="list-style-type: none"> 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 AND ACTION PLAN FOR WATER QUALITY EXCEEDANCE

Event	ACTION			IEC
	ET Leader	Contractor	ER	
<p>Action level being exceeded by one sampling day</p>	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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
<p>Action level being exceeded by more than one consecutive sampling days</p>	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 AND ACTION PLAN FOR WATER QUALITY EXCEEDANCE

Event	ACTION			IEC
	ET Leader	Contractor	ER	
Limit level being exceeded by one sampling day	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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 AND ACTION PLAN FOR WATER QUALITY EXCEEDANCE

Event	ACTION		
	ET Leader	Contractor	ER
Limit Level being exceeded by more than one consecutive sampling days	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Notify ER and IEC in writing within 24 hours of the identification of the exceedance and Rectify unacceptable practice; 2. Check all plant and equipment; 3. Consider changes of working methods; 4. 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 activities. 	<ol style="list-style-type: none"> 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.
			IEC

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.

Appendix G

Works Programme

Master Programme of Contract No. CV/2013/06 - Handling of Surplus Public Fill

Site Location : Tseung Kwan O Area 137 Fill Bank

ID	Activity	Original Duration	Start	Finish
A1150	Take Over	0	23-Jan-14	
A1170	Operation	1100	23-Jan-14	30-May-17
A1370	Hand Over to CEDD	0		30-May-17
Stage A1	Construction of New Office	120	28-Nov-13	27-May-14
A1080	Submission	30	28-Nov-13	27-Dec-13
A1090	Approval by Engineer	7	28-Dec-13	03-Jan-14
A1100	Installation	64	23-Jan-14	27-May-14
A1110	Hand Over to Engineer	0		27-May-14
Stage A1	Surveillance System	120	28-Nov-13	27-May-14
A1190	Submission	30	28-Nov-13	27-Dec-13
A1200	Approval by Engineer	7	28-Dec-13	03-Jan-14
A1210	Installation	64	23-Jan-14	27-May-14
A1230	Hand Over to Engineer	0		27-May-14

Appendix H

Weekly ET's Site Inspection Record

Inspection Date : 01 MAR 2017


Time : 15:00

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

Wind : Calm / Light / Breeze / Strong

Temperature : 21.2

Humidity : High / Moderate / Low

Inspected by	CEDD	Contractor / Sub-Contractor	ET
Signature:			
Name:	C. L. HON	Enckwan	ETKwan
Title	A20W/P3(1)	EO	ET



Handling of Surplus Public Fill (2014-2016) - Tseung Kwan O Area 137 Fill Bank

Environmental Checklist

	Implementation Stages*			Remark
	Yes	No	N/A	
Water Quality				
▪ Drainage system should be adequate and well maintained to prevent flooding and overflow, especially after rain storms.	✓			
▪ The permanent drainage channels should have sediment basin, traps and baffles and maintain property.	✓			
▪ 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.	✓			
▪ Manholes should be covered and sealed.	✓			
▪ Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	✓			
▪ A buffer distance of at least 100m shall be maintained between the boundary of the public fill stockpiling area and the sea front.	✓			
▪ A buffer distance of at least 20m shall be maintained between the boundary of the C&DMSF and the seafront.	✓			
▪ The stormwater intercepting system shall be effective to collect runoff and remove suspended solids before discharge.	✓			
▪ The temporary slope surfaces, especially those facing to the north of the site shall be covered with impermeable sheet or sprayed with water or protected by other method approved by CEDD.	✓			
▪ 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 hardcore 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.	✓			
▪ Oil intercept in addition of sand / silt removal facilities shall be provided at the car parking areas.	✓			
▪ Oil interceptor shall be provided at work shop.	✓			
▪ 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 is 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.	✓			
▪ Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	✓			
▪ 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.	✓			
▪ 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.	✓			
▪ Existing silt curtain at the outward side of the basin near the Barging Handling Area (BHA) throughout the period shall be repair, maintain and service when there is public fill intake by barges to the Fill Bank in accordance with PS Clause 1.68. The total length of the silt curtains shall not be less than 160m, and a gap of about 80m shall be left open for access of barges. The silt curtain shall be properly maintained such that it can also serve the function of refuse containment boom to confine floating refuse.	✓			
▪ A waste collection vessel shall be deployed to remove floating debris.	✓			

Environmental Checklist		Implementation Stages*			Remark
		Yes	No	N/A	
Landscape and Visual					
▪	The design of the fill bank and platform heights adopted should allow the fill bank to fit into the general topography of the surrounding land. Straight edged slopes should be avoided.	√			
▪	The maximum stockpiling height at the fill bank shall be limited to a maximum of +35.2mPD.	√			
▪	Surface of outer slopes of the fill bank shall preferably be hydroseeded or covered with geo-textile matting of appropriate colour (e.g. dark green / brown) once completed.	√			
▪	The barging point and the C&DMSF at the fill bank shall not be in operation from 07:00 pm to 08:00 am daily to avoid potential visual impact from glare.	√			
Other Environmental Factors					
▪	C&D waste sorted from mixed C&D material shall be removed from the temporary buffer storage area on a daily basis and transfer to SENT landfill for disposal.	√			
▪	Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	√			
▪	Any unused materials or those with remaining functional capacity should be recycled and stored properly.	√			
▪	All generators, fuel and oil storage are within bundle areas.	√			
▪	Oil leakage from machinery, vehicle and plant is prevented.	√			
▪	The Environmental Permit should be displaced conspicuously on site.	√			
▪	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.	√			
▪	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.	√			



Summary of the Weekly Site Inspection:

Item	Details of defective works or observations	Proposed Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Follow up Date
1	Follow up action to item 1 on 22/02/17, silt curtain near Fat Tong Chau was repaired.	--	170301_001	No	--

Remark

Name	Title	Signature	Date
Linda Law	Senior Environmental Officer		01 March 2017

Photo

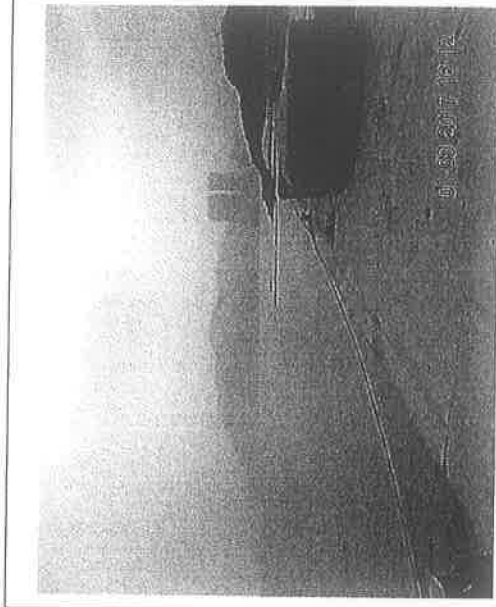





Photo 170301_001 (Silt curtain near Fat Tong Chau) (Improved)



CEDD Contract No.: CV2013/06

Handling of Surplus Public Fill (2014-2016) - Tseung Kwan O Area 137 Fill Bank

Inspection Date : 8/MAR/2017
 Time : 15:00
 Weather : Sunny / Fine / Cloudy / Overcast / Drizzle / Rain / Storm / Hazy
 Wind : Calm / Light / Breeze / Strong
 Temperature : 17°C
 Humidity : High / Moderate / Low

Inspected by	CEDD	Contractor / Sub-Contractor	ET
Signature:			
Name:	C. L. HON	Eric Wan	Eric Wan
Title	A20W/P3C17	EO	EO

Environmental Checklist			Implementation Stages*		Remark
			Yes	No / N/A	
Fugitive Dust Emission					
▪	Dust control / mitigation measures shall be provided to prevent dust nuisance.	✓			
▪	A buffer zone of at least 100m shall be maintained between the edge of the stockpiling area and the nearest ASRs at the TKO Industrial Estate. Within the buffer zone, no dusty material shall be stockpiled and no loading / unloading and similar activities should be allowed.	✓			
▪	Water sprays shall be provided and used to dampen materials.	✓			
▪	Regular cleaning and watering the site shall be provided to minimize the fugitive dust emissions.	✓			
▪	All vehicles shall be restrict to a maximum speed of 10 km per hour.	✓			
▪	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.	✓			
▪	The designated site main haul road shall be paved or regular watering.	✓			
▪	Frequent watering of work site shall be at least three times per day.	✓			
▪	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.	✓			
▪	All plant and equipment should be well maintained e.g. without black smoke emission.	✓			
▪	Open burning should be prohibited.	✓			
▪	The temporary slope surfaces, especially those facing to the north of the site shall be covered with impermeable sheet or sprayed with water or protected by other method approved by CEDD.	✓			
▪	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 shot concrete, latex, vinyl, bitumen, or other suitable surface stabilizer approved by CEDD.	✓			
▪	When fill material is transfer by belt conveyor systems, the conveyors shall be enclosed on top and 2 sides.	✓			
▪	The belt scraper shall be equipped with bottom plates or other similar means to prevent falling of material from the return belt.	✓			
▪	The level of stockpiling belt conveyor shall be adjustable such that the vertical distance between the belt conveyor and the material landing point is maintained at no more than 1m.	✓			
▪	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.	✓			
▪	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.	✓			
▪	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.	✓			

	Implementation Stages*			Remark
	Yes	No	N/A	
Water Quality				
Drainage system should be adequate and well maintained to prevent flooding and overflow, especially after rain storms.	✓			
The permanent drainage channels should have sediment basin, traps and baffles and maintain properly.	✓			
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.	✓			
Manholes should be covered and sealed.	✓			
Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	✓			
A buffer distance of at least 100m shall be maintained between the boundary of the public fill stockpiling area and the sea front.	✓			
A buffer distance of at least 20m shall be maintained between the boundary of the C&DMSF and the seafront.	✓			
The stormwater intercepting system shall be effective to collect of runoff and remove suspended solids before discharge.	✓			
The temporary slope surfaces, especially those facing to the north of the site shall be covered with impermeable sheet or sprayed with water or protected by other method approved by CEDD.	✓			
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 hardcore 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.	✓			
Oil intercept in addition of sand / silt removal facilities shall be provided at the car parking areas.	✓			
Oil interceptor shall be provided at work shop.	✓			
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 is 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.	✓			
Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	✓			
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.	✓			
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.	✓			
Existing silt curtain at the outward side of the basin near the Barging Handling Area (BHA) throughout the period shall be repair, maintain and service when there is public fill intake by barges to the Fill Bank in accordance with PS Clause 1.68. The total length of the silt curtains shall not be less than 160m, and a gap of about 80m shall be left open for access of barges. The silt curtain shall be properly maintained such that it can also serve the function of refuse containment boom to confine floating refuse.	✓			
A waste collection vessel shall be deployed to remove floating debris.	✓			

	Implementation Stages*			Remark
	Yes	No	N/A	
Environmental Checklist				
Landscape and Visual				
▪ The design of the fill bank and platform heights adopted should allow the fill bank to fit into the general topography of the surrounding land. Straight edged slopes should be avoided.	✓			
▪ The maximum stockpiling height at the fill bank shall be limited to a maximum of +35.2mPD.	✓			
▪ Surface of outer slopes of the fill bank shall preferably be hydroseeded or covered with geo-textile matting of appropriate colour (e.g. dark green / brown) once completed.	✓			
▪ The barging point and the C&DMSF at the fill bank shall not be in operation from 07:00 pm to 08:00 am daily to avoid potential visual impact from glare.	✓			
Other Environmental Factors				
▪ C&D waste sorted from mixed C&D material shall be removed from the temporary buffer storage area on a daily basis and transfer to SENT landfill for disposal.	✓			
▪ Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	✓			
▪ Any unused materials or those with remaining functional capacity should be recycled and stored properly.	✓			
▪ All generators, fuel and oil storage are within bundle areas.	✓			
▪ Oil leakage from machinery, vehicle and plant is prevented.	✓			
▪ The Environmental Permit should be displaced conspicuously on site.	✓			
▪ 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.	✓			
▪ 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.	✓			

Summary of the Weekly Site Inspection:

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

Remark

Name	Title	Signature	Date
Checked by Linda Law	Senior Environmental Officer		08 March 2017



CEDD Contract No.: CV/2013/06

Handling of Surplus Public Fill (2014-2016) - Tseung Kwan O Area 137 Fill Bank

Inspection Date : 17/3/17




Time : 15:15

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-Contractor	ET
Signature:			
Name:	KING MAN KING	Eric Wan	Mark Yee Wan
Title	AZOW	EO	E.T

	Implementation Stages*			Remark
	Yes	No	N/A	
	Environmental Checklist			
Fugitive Dust Emission				
▪ Dust control / mitigation measures shall be provided to prevent dust nuisance.	√			
▪ A buffer zone of at least 100m shall be maintained between the edge of the stockpiling area and the nearest ASRs at the TKO Industrial Estate. Within the buffer zone, no dusty material shall be stockpiled and no loading / unloading and similar activities should be allowed.	√			
▪ Water sprays shall be provided and used to dampen materials.	√			
▪ Regular cleaning and watering the site shall be provided to minimize the fugitive dust emissions.	√			
▪ All vehicles shall be restricted to a maximum speed of 10 km per hour.	√			
▪ 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.	√			
▪ The designated site main haul road shall be paved or regular watering.	√			
▪ Frequent watering of work site shall be at least three times per day.	√			
▪ 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.	√			
▪ All plant and equipment should be well maintained e.g. without black smoke emission.	√			
▪ Open burning should be prohibited.	√			
▪ The temporary slope surfaces, especially those facing to the north of the site shall be covered with impermeable sheet or sprayed with water or protected by other method approved by CEDD.	√			
▪ 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 shot concrete, latex, vinyl, bitumen, or other suitable surface stabilizer approved by CEDD.	√			
▪ When fill material is transfer by belt conveyor systems, the conveyors shall be enclosed on top and 2 sides.	√			
▪ The belt scraper shall be equipped with bottom plates or other similar means to prevent falling of material from the return belt.	√			
▪ The level of stockpiling belt conveyor shall be adjustable such that the vertical distance between the belt conveyor and the material landing point is maintained at no more than 1m.	√			
▪ Approval or exemption Non-road Mobile Machinery (NRM/M) 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.	√			
▪ 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.	√			
▪ 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.	√			

Handling of Surplus Public Fill (2014-2016) - Tseung Kwan O Area 137 Fill Bank

	Implementation Stages*		Remark
	Yes	No / N/A	
Water Quality			
Drainage system should be adequate and well maintained to prevent flooding and overflow, especially after rain storms.	√		
The permanent drainage channels should have sediment basin, traps and baffles and maintain properly.	√		
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.	√		
Manholes should be covered and sealed.	√		
Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	√		
A buffer distance of at least 100m shall be maintained between the boundary of the public fill stockpiling area and the sea front.	√		
A buffer distance of at least 20m shall be maintained between the boundary of the C&DMSF and the seafront.	√		
The stormwater intercepting system shall be effective to collect of runoff and remove suspended solids before discharge.	√		
The temporary slope surfaces, especially those facing to the north of the site shall be covered with impermeable sheet or sprayed with water or protected by other method approved by CEDD.	√		
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 shotcrete, 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 hardcore 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.	√		
Oil intercept in addition of sand / silt removal facilities shall be provided at the car parking areas.	√		
Oil interceptor shall be provided at work shop.	√		
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 is 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.	√		
Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	√		
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.	√		
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.	√		
Existing silt curtain at the outward side of the basin near the Barging Handling Area (BHA) throughout the period shall be repair, maintain and service when there is public fill intake by barges to the Fill Bank in accordance with PS Clause 1.68. The total length of the silt curtains shall not be less than 160m, and a gap of about 80m shall be left open for access of barges. The silt curtain shall be properly maintained such that it can also serve the function of refuse containment boom to confine floating refuse.	√		
A waste collection vessel shall be deployed to remove floating debris.	√		

Implementation Stages*		Remark	
			Yes
Environmental Checklist			
Landscape and Visual			
<ul style="list-style-type: none"> ▪ The design of the fill bank and platform heights adopted should allow the fill bank to fit into the general topography of the surrounding land. Straight edged slopes should be avoided. ▪ The maximum stockpiling height at the fill bank shall be limited to a maximum of +35.2mPD. ▪ Surface of outer slopes of the fill bank shall preferably be hydroseeded or covered with geo-textile matting of appropriate colour (e.g. dark green / brown) once completed. ▪ The berthing point and the C&DMSF at the fill bank shall not be in operation from 07:00 pm to 08:00 am daily to avoid potential visual impact from glare. 	√		
Other Environmental Factors			
<ul style="list-style-type: none"> ▪ C&D waste sorted from mixed C&D material shall be removed from the temporary buffer storage area on a daily basis and transfer to SENT landfill for disposal. ▪ Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. ▪ Any unused materials or those with remaining functional capacity should be recycled and stored properly. ▪ All generators, fuel and oil storage are within bundle areas. ▪ Oil leakage from machinery, vehicle and plant is prevented. ▪ The Environmental Permit should be displaced conspicuously on site. ▪ 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. ▪ 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. 	√		

Summary of the Weekly Site Inspection:

Item	Details of defective works or observations	Proposed Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Follow up Date
1	Oil drums at wheel repairing workshop near the Contractor's site office were covered improperly.	To cover the oil drums properly by using tarpaulin sheets.	170317_001	Yes	22/03/17

Remark

Name	Title	Signature	Date
Checked by Linda Law	Senior Environmental Officer		17 March 2017

Photo

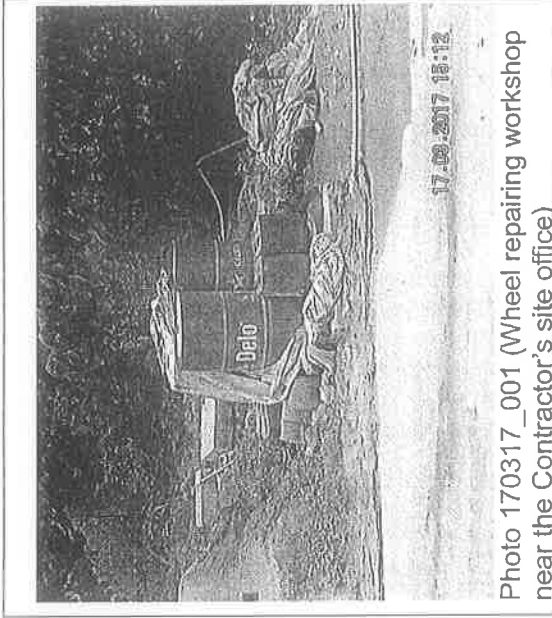


Photo 170317_001 (Wheel repairing workshop near the Contractor's site office)

Inspection Date : 22 MAR 2017



Time : 15:30

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

Wind : Calm / Light / Breeze / Strong

Temperature : 17°C

Humidity : High / Moderate / Low

Inspected by	CEDD	Contractor / Sub-Contractor	ET
Signature:			US
Name:	E. L. HON	Eric Wan	K-Mikwan
Title	A20W/P3C17	EG	ET

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Fugitive Dust Emission				
▪ Dust control / mitigation measures shall be provided to prevent dust nuisance.	✓			
▪ A buffer zone of at least 100m shall be maintained between the edge of the stockpiling area and the nearest ASRs at the TKO Industrial Estate. Within the buffer zone, no dusty material shall be stockpiled and no loading / unloading and similar activities should be allowed.	✓			
▪ Water sprays shall be provided and used to dampen materials	✓			
▪ Regular cleaning and watering the site shall be provided to minimize the fugitive dust emissions.	✓			
▪ All vehicles shall be restrict to a maximum speed of 10 km per hour.	✓			
▪ 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.	✓			
▪ The designated site main haul road shall be paved or regular watering.	✓			
▪ Frequent watering of work site shall be at least three times per day.	✓			
▪ 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.	✓			
▪ All plant and equipment should be well maintained e.g. without black smoke emission.	✓			
▪ Open burning should be prohibited.	✓			
▪ The temporary slope surfaces, especially those facing to the north of the site shall be covered with impermeable sheet or sprayed with water or protected by other method approved by CEDD.	✓			
▪ 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 shot concrete, latex, vinyl, bitumen, or other suitable surface stabilizer approved by CEDD.	✓			
▪ When fill material is transfer by belt conveyor systems, the conveyors shall be enclosed on top and 2 sides.	✓			
▪ The belt scraper shall be equipped with bottom plates or other similar means to prevent falling of material from the return belt.	✓			
▪ The level of stockpiling belt conveyor shall be adjustable such that the vertical distance between the belt conveyor and the material landing point is maintained at no more than 1m.	✓			
▪ 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.	✓			
▪ 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.	✓			
▪ 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.	✓			

Handling of Surplus Public Fill (2014-2016) - Tseung Kwan O Area 137 Fill Bank

	Implementation Stages*		Remark
	Yes	No / N/A	
Water Quality			
Drainage system should be adequate and well maintained to prevent flooding and overflow, especially after rain storms.	✓		
The permanent drainage channels should have sediment basin, traps and baffles and maintain properly.	✓		
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.	✓		
Manholes should be covered and sealed.	✓		
Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	✓		
A buffer distance of at least 100m shall be maintained between the boundary of the public fill stockpiling area and the sea front.	✓		
A buffer distance of at least 20m shall be maintained between the boundary of the C&DMSF and the seafloor.	✓		
The stormwater intercepting system shall be effective to collect runoff and remove suspended solids before discharge.	✓		
The temporary slope surfaces, especially those facing to the north of the site shall be covered with impermeable sheet or sprayed with water or protected by other method approved by CEDD.	✓		
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 hardcore 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.	✓		
Oil intercept in addition of sand / silt removal facilities shall be provided at the car parking areas.	✓		
Oil interceptor shall be provided at work shop.	✓		
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 is 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.	✓		
Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	✓		
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.	✓		
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.	✓		
Existing silt curtain at the outward side of the basin near the Barging Handling Area (BHA) throughout the period shall be repair, maintain and service when there is public fill intake by barges to the Fill Bank in accordance with PS Clause 1.68. The total length of the silt curtains shall not be less than 160m, and a gap of about 80m shall be left open for access of barges. The silt curtain shall be properly maintained such that it can also serve the function of refuse containment boom to confine floating refuse.	✓		
A waste collection vessel shall be deployed to remove floating debris.	✓		

	Implementation Stages*			Remark
	Yes	No	N/A	
Environmental Checklist				
Landscape and Visual				
▪ The design of the fill bank and platform heights adopted should allow the fill bank to fit into the general topography of the surrounding land. Straight edged slopes should be avoided.	√			
▪ The maximum stockpiling height at the fill bank shall be limited to a maximum of +35.2mPD.	√			
▪ Surface of outer slopes of the fill bank shall preferably be hydroseeded or covered with geo-textile matting of appropriate colour (e.g. dark green / brown) once completed.	√			
▪ The barging point and the C&DMSF at the fill bank shall not be in operation from 07:00 pm to 08:00 am daily to avoid potential visual impact from glare.	√			
Other Environmental Factors				
▪ C&D waste sorted from mixed C&D material shall be removed from the temporary buffer storage area on a daily basis and transfer to SENT landfill for disposal.	√			
▪ Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste.	√			
▪ Any unused materials or those with remaining functional capacity should be recycled and stored properly.	√			
▪ All generators, fuel and oil storage are within bundle areas.	√			
▪ Oil leakage from machinery, vehicle and plant is prevented.	√			
▪ The Environmental Permit should be displaced conspicuously on site.	√			
▪ 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.	√			
▪ 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.	√			

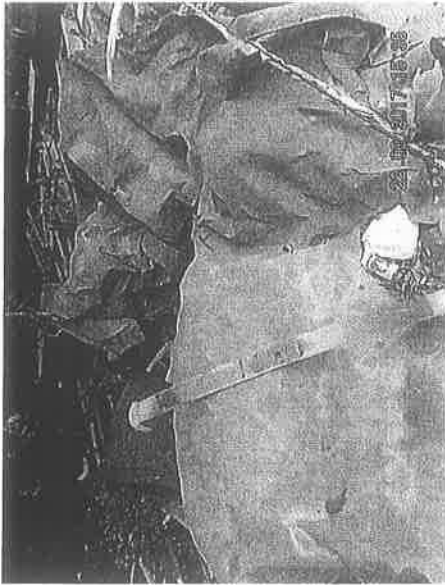
Summary of the Weekly Site Inspection:

Item	Details of defective works or observations	Proposed Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Follow up Date
1	Follow up action to item 1 on 17/03/17, oil drums at wheel repairing workshop near the Contractor's site office were covered by properly by using plastic sheets.	--	170322_001	No	--

Remark

Name	Title	Signature	Date
Checked by Linda Law	Senior Environmental Officer		22 March 2017

Photo

 <p>Photo 170322_001 (Wheel repairing workshop near the Contractor's site office)</p>		
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CEDD Contract No.: CV/2013/06

Handling of Surplus Public Fill (2014-2016) - Tseung Kwan O Area 137 Fill Bank

Inspection Date : 29/3/17

Time : 15:00

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

Wind : Calm / Light / Breeze / Strong

Temperature : 21°C

Humidity : High / Moderate / Low

Inspected by	CEDD	Contractor / Sub-Contractor	ET
Signature:			
Name:	C. L. HON	Eric Wan	Nak Kiu Wai
Title	AZON / P3C17	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.	✓		Item 1
▪ A buffer zone of at least 100m shall be maintained between the edge of the stockpiling area and the nearest ASRs at the TKO Industrial Estate. Within the buffer zone, no dusty material shall be stockpiled and no loading / unloading and similar activities should be allowed.	✓		
▪ Water sprays shall be provided and used to dampen materials.	✓		
▪ Regular cleaning and watering the site shall be provided to minimize the fugitive dust emissions.	✓		Item 1
▪ All vehicles shall be restrict to a maximum speed of 10 km per hour.	✓		
▪ 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.	✓		
▪ The designated site main haul road shall be paved or regular watering.	✓		
▪ Frequent watering of work site shall be at least three times per day.	✓		
▪ 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.	✓		
▪ All plant and equipment should be well maintained e.g. without black smoke emission.	✓		
▪ Open burning should be prohibited.	✓		
▪ The temporary slope surfaces, especially those facing to the north of the site shall be covered with impermeable sheet or sprayed with water or protected by other method approved by CEDD.	✓		
▪ 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 shot concrete, latex, vinyl, bitumen, or other suitable surface stabilizer approved by CEDD.	✓		
▪ When fill material is transfer by belt conveyor systems, the conveyors shall be enclosed on top and 2 sides.	✓		
▪ The belt scraper shall be equipped with bottom plates or other similar means to prevent falling of material from the return belt.	✓		
▪ The level of stockpiling belt conveyor shall be adjustable such that the vertical distance between the belt conveyor and the material landing point is maintained at no more than 1m.	✓		
▪ 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.	✓		
▪ 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.	✓		
▪ 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	
Water Quality			
Drainage system should be adequate and well maintained to prevent flooding and overflow, especially after rain storms.	✓		
The permanent drainage channels should have sediment basin, traps and baffles and maintain properly.	✓		
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.	✓		
Manholes should be covered and sealed.	✓		
Unnecessary water retained in receptacles and standing water should be avoided to prevent mosquito breeding.	✓		
A buffer distance of at least 100m shall be maintained between the boundary of the public fill stockpiling area and the sea front.	✓		
A buffer distance of at least 20m shall be maintained between the boundary of the C&DMSF and the seafront.	✓		
The stormwater intercepting system shall be effective to collect of runoff and remove suspended solids before discharge.	✓		
The temporary slope surfaces, especially those facing to the north of the site shall be covered with impermeable sheet or sprayed with water or protected by other method approved by CEDD.	✓		
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 silt 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.	✓		
Oil intercept in addition of sand / silt removal facilities shall be provided at the car parking areas.	✓		
Oil interceptor shall be provided at work shop.	✓		
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 is 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.	✓		
Adequate environmental control measures shall be provided to prevent / avoid dropping of fill material into the sea during the transfer.	✓		
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.	✓		
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.	✓		
Existing silt curtain at the outward side of the basin near the Barging Handling Area (BHA) throughout the period shall be repair, maintain and service when there is public fill intake by barges to the Fill Bank in accordance with PS Clause 1.68. The total length of the silt curtains shall not be less than 160m, and a gap of about 80m shall be left open for access of barges. The silt curtain shall be properly maintained such that it can also serve the function of refuse containment boom to confine floating refuse.	✓		
A waste collection vessel shall be deployed to remove floating debris.	✓		

Environmental Checklist	Implementation Stages*			Remark
	Yes	No	N/A	
Landscape and Visual				
<ul style="list-style-type: none"> ▪ The design of the fill bank and platform heights adopted should allow the fill bank to fit into the general topography of the surrounding land. Straight edged slopes should be avoided. ▪ The maximum stockpiling height at the fill bank shall be limited to a maximum of +35.2mPD. ▪ Surface of outer slopes of the fill bank shall preferably be hydroseeded or covered with geo-textile matting of appropriate colour (e.g. dark green / brown) once completed. ▪ The barging point and the C&DMSF at the fill bank shall not be in operation from 07:00 pm to 08:00 am daily to avoid potential visual impact from glare. 	√			
Other Environmental Factors				
<ul style="list-style-type: none"> ▪ C&D waste sorted from mixed C&D material shall be removed from the temporary buffer storage area on a daily basis and transfer to SENT landfill for disposal. ▪ Plan and stock construction materials carefully to minimise amount of waste generated and avoid unnecessary generation of waste. ▪ Any unused materials or those with remaining functional capacity should be recycled and stored properly. ▪ All generators, fuel and oil storage are within bundle areas. ▪ Oil leakage from machinery, vehicle and plant is prevented. ▪ The Environmental Permit should be displaced conspicuously on site. ▪ 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. ▪ 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. 	√			

Summary of the Weekly Site Inspection:

Item	Details of defective works or observations	Proposed Follow Up Action	Photo Ref.	Further Action Required (Yes/No)	Follow up Date
1	Mud was noted on the ground near the Contractor's site office.	To clear the mud properly.	170329_001	Yes	29/03/17

Remark

Name	Title	Signature	Date
Linda Law	Senior Environmental Officer		29 March 2017

Photo

 <p>Photo 170329_001 (Near the Contractor's site office)</p>		
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Appendix I

Implementation Schedule of Mitigation Measures

Appendix J

Site General Layout plan

Appendix K

Monitoring Schedule for the Coming Month

Contract No. CV/2013/06 Handling of Surplus Public Fill
Tseung Kwan O Area137
Time Schedule for Impact Water Quality Monitoring (WQM), Impact Air Monitoring (1-hr TSP & 24-hr TSP), Weekly Site Inspection (Weekly SI) and Impact Noise Monitoring (NM)
April 2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat
26	27 1-hr & 24 hr TSP WQM Mid-ebb (11:30 -12:30) Mid-flood (17:15 -18:15)	28	29 1-hr TSP Weekly SI (pm) WQM Mid-ebb (12:45 -13:45) Mid-flood (19:00 -20:00)	30	31 1-hr TSP WQM Mid-flood (08:00-09:00) Mid-ebb (14:15-15:15)	1 / 4 24 hr TSP
2	3 1-hr TSP x 2 WQM Mid-Flood (10:00-11:00) Mid-Ebb (17:00-18:00)	4	5 1-hr TSP Weekly SI (pm) WQM Mid-flood (12:30-13:30) Mid-ebb (19:30-20:30)	6	7 1-hr & 24 hr TSP WQM Mid-ebb (09:30-10:30) Mid-flood (15:00-16:00)	8
9	10 1-hr TSP WQM Mid-ebb (11:30 -12:30) Mid-flood (17:30 -18:30)	11	12 1-hr TSP Weekly SI (pm) WQM Mid-ebb (12:30 -13:30) Mid-flood (19:00 -20:00)	13 24 hr TSP	14	15
16	17	18 1-hr TSP x 3	19 1-hr & 24 hr TSP NM Weekly SI (pm) WQM Mid-flood (08:00 -09:00) Mid-ebb (17:30 -18:30)	20	21 1-hr TSP WQM Mid-ebb (08:30 -09:30) Mid-flood (13:00 -14:00)	22
23	24 1-hr TSP WQM Mid-ebb (10:30 -11:30) Mid-flood (16:00 -17:00)	25 24 hr TSP	26 1-hr TSP x 2 Weekly SI (pm) WQM Mid-ebb (12:00 -13:00) Mid-flood (18:00 - 19:00)	27	28 1-hr TSP WQM Mid-flood (08:00 -09:00) Mid-ebb (13:00 -14:00)	29 24 hr TSP
30	1 / 5	2 1-hr TSP x 2 WQM Mid-flood (10:30-11:30) Mid-ebb (17:00-18:00)	3	4 1-hr TSP WQM Mid-flood (12:00-13:00) Mid-ebb (19:00-20:00)	5 1-hr & 24 hr TSP Weekly SI (pm)	6 WQM Mid-ebb (09:00 -10:00) Mid-flood (15:00 -16:00)

Appendix L

Complaint Log

Complaint Logs

Log Ref.	Location	Received Date	Details of Complaint	Investigation / Mitigation Action	Status
001	Siu Sai Wan Promenade	13 October 2014	One complaint was received via the Hotline on 13 October 2014 from a district councillor of Eastern District Council (Ref No.: H22/RS/00025513-14) against the dust emission from South East New Territories Landfill or Tsueng Kwan O 137 Fill Bank observed from a resident during the way at Siu Sai Wan Promenade in early October 2014. The complainant complained that the dust emission caused an environmental nuisance.	<p>After received the details of the complaint from the Contractor on 11 November 2014, ET have performed a site inspection on 11 November 2014 to investigate this event. During the site inspection, no fugitive dust emission was recorded within the working areas of the Fill Bank.</p> <p>Besides, refer to the dust monitoring data and ET weekly site inspections during the early October 2014, no evidence showed that fugitive dust emission was observed. Hence no further action was required.</p> <p>Due to this event, the Contractor was reminded to take more effort on the frequency of watering on site especially during dry weather.</p>	Closed
002A	佛堂洲 near TKO137 Fill Bank	20, 21 and 29 May 2016	Three complaints received on 20, 21 and 29 May 2016, which were forwarded to ET on 01 June 2016, from EPD (NCF-N08/RE/000012222-16, NCF-N08/RE/00012941-16 and NCF-N08/RE/000012543-16) against the muddy water discharged from TKO137 Fill Bank to the nearby marine area. The complainant complained that muddy water generated caused an environmental nuisance.	<p>After received the details of the complaint from the Contractor on 01 June 2016, ET have performed a site investigation on 01 June 2016 to investigate this event. During the site inspection, no muddy water was observed discharged from the Fill Bank to nearby environment.</p> <p>Besides, refer to the marine water monitoring results during that period, no exceedance was recorded on Turbidity and Suspended Solids. This reflects that this occurrence did not affect the condition of marine water near the TKO137 Fill Bank</p> <p>Details of Action(s) Taken by the Contactor:</p> <ul style="list-style-type: none"> • Drainage system were adequate and well maintained to prevent flooding and overflow; • Sand and silt removal facilities, e.g. silting screen, were provided before the discharge point; • Temporary intercepting drains were used at the stockpiling area to divert polluted stormwater to the intercepting channels. Earth bunds and sand bay barriers were used to assist the diversion of polluted stormwater to the intercepting channels; • Catchpits and intercepting channels were maintained, and the deposited silt and grit were 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. 	Closed

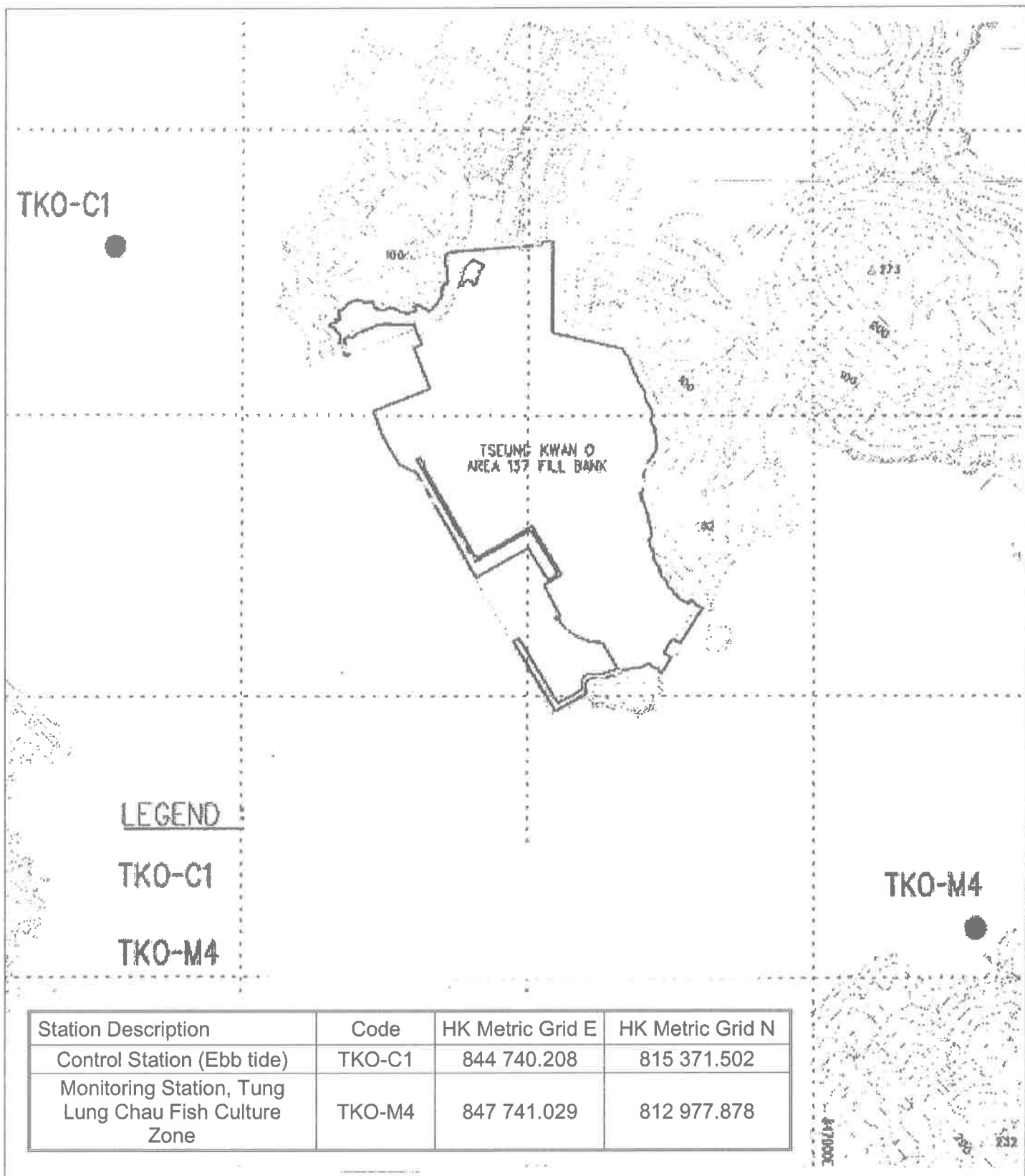
Complaint Logs

Log Ref.	Location	Received Date	Details of Complaint	Investigation / Mitigation Action	Status
003A	Barging Points at TKO137 Fill Bank	25 and 27 May 2016	Two complaints received on 25 and 27 May 2016, which were forwarded to ET on 01 June 2016, from EPD (Ref. NCF-N08/RE/00012768-16 and NCF-N08/RE/000013040-16) against the dust emission from barging points at TKO137 Fill Bank. The complainant complained that dust generated caused an environmental nuisance.	<p>After received the details of the complaint from the Contractor on 01 June 2016, ET have performed a site investigation on 01 June 2016 to investigate this event. During the site inspection, no dust emission was observed at the Barging Handling Area.</p> <p>Besides, refer to the impact dust monitoring results on 25 and 27 May 2016, no exceedance was recorded.</p> <p>Details of Action(s) Taken by the Contactor:</p> <ul style="list-style-type: none"> • Proper operation of water spraying system at tipping hall • Repair and maintain the water spraying system at tipping hall properly • Provide high pressure jetting at the tipping end of the tipping hall • Provide water spraying system at the weighbridge to wet the debris and rubbles on the truck in order to reduce the dust emission during the unloading work 	Closed
004	Wan Po Road near Tseung Kwan O Industrial Estate	22 and 26 May 2016	Two complaints received on 22 and 26 May 2016, which were forwarded to ET on 02 June 2016, from 1823 (Case#2-2257302039) & EPD (Ref: NCF-N08/RE/00012545-16) and EPF (Ref. NCF-N08/RE/00013106-16) against the muddy water noted at Wan Po Road near Tseung Kwan O Industrial Estate. The complainant complained that water and waste generated caused an environmental nuisance.	<p>Refer to the ET site investigation on 03 June 2016, the condition of Wan Po Road near Tseung Kwan O Industrial Estate was found satisfactory.</p> <p>Details of Action(s) Taken by the Contactor:</p> <ul style="list-style-type: none"> • Regular water spraying by water lorries is provided for road cleaning at Wan Po Road; • Regular cleaning on Wan Po 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; • 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; • Site vehicle for transporting materials are covered properly by using clean tarpaulin sheets; • Regular cleaning at the site haul road is provided to minimize the fugitive dust emission. 	Closed

Complaint Logs

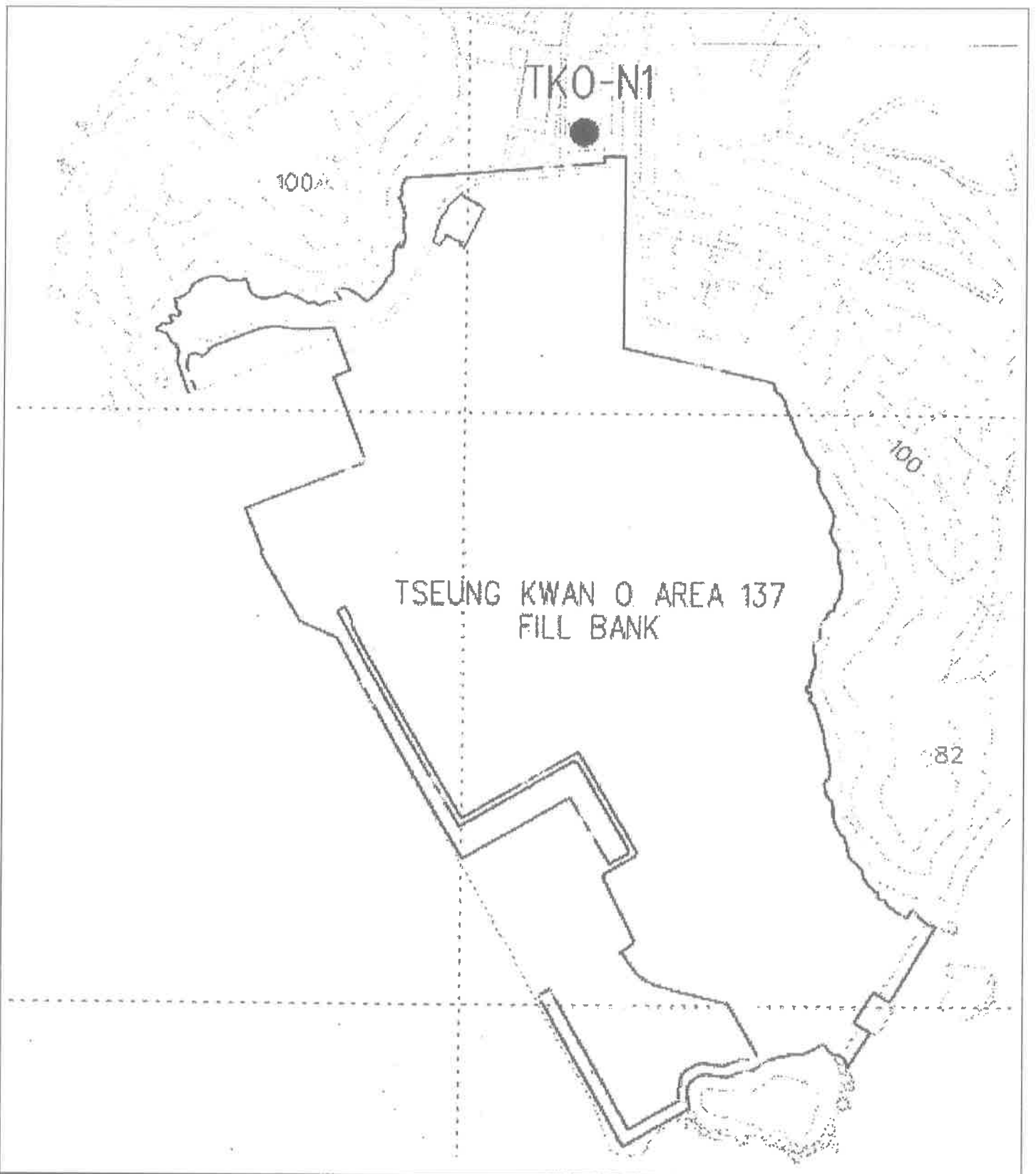
Log Ref.	Location	Received Date	Details of Complaint	Investigation / Mitigation Action	Status
005	Portion A5 at TKO 137	06 and 09 June 16	Two complaints received on 06 and 09 June 2016, which were forwarded to ET on 21 June 2016, from EPD (Electronic Submission Reference Number: ECS-060616-5904 (13855-16) and ECS: 090616-5911 (14067-16) against the muddy water discharged from Portion A5 at TKO137 Fill Bank to the nearby marine area. The complainant complained that muddy water generated caused an environmental nuisance.	<p>Refer to the ET site investigation on 22 June 2016, no muddy water was noted discharged from the site and the sea condition was found satisfactory. Besides, refer to the marine water monitoring results from 01 to 22 Jun 2016, no exceedance was recorded on Turbidity and Suspended Solids. This reflects that this occurrence did not affect the condition of marine water near the TKO137Fill Bank.</p> <p>Details of Action(s) Taken by the Contactor:</p> <ul style="list-style-type: none"> • Drainage system were adequate and well maintained to prevent flooding and overflow; • Sand and silt removal facilities, e.g. silting screen, were provided before the discharge point; • Temporary intercepting drains were used at the stockpiling area to divert polluted stormwater to the intercepting channels. Earth bunds and sand bay barriers were used to assist the diversion of polluted stormwater to the intercepting channels; • Catchpits and intercepting channels were maintained, and the deposited silt and grit were 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. 	Closed
006	Sea off at TKO 137	09 July and 10 August 2016	Two complaints received on 09 July and 10 August 2016, which were forwarded to ET on 25 August 2016, from EPD (EPD Ref. : NCF-N08/RE/00017515-16 and NCF-N08/RE/00019971-16) against the muddy water discharged at sea off near TKO137 Fill Bank. The complainant complained that muddy water generated caused an environmental nuisance.	<p>Refer to the ET site investigation on 26 August 2016, no muddy water was noted discharged from the site and the sea condition was found satisfactory. Besides, refer to the marine water monitoring results from 09 July to 25 August 2016, no exceedance was recorded on Turbidity and Suspended Solids. This reflects that this occurrence did not affect the condition of marine water near the TKO137Fill Bank.</p> <p>Details of Action(s) Taken by the Contactor:</p> <ul style="list-style-type: none"> • Drainage system were adequate and well maintained to prevent flooding and overflow; • Sand and silt removal facilities, e.g. silting screen, were provided before the discharge point; • Temporary intercepting drains were used at the stockpiling area to divert polluted stormwater to the intercepting channels. Earth bunds and sand bay barriers were used to assist the diversion of polluted stormwater to the intercepting channels; • Catchpits and intercepting channels were maintained, and the deposited silt and grit were 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. 	Closed

Figures



Contract No. CV/2013/06
 Handling of Surplus Public Fill (2014-2016)

Figure 1
 Locations of Water Quality Monitoring Stations –
 Tseung Kwan O Area 137 Fill Bank



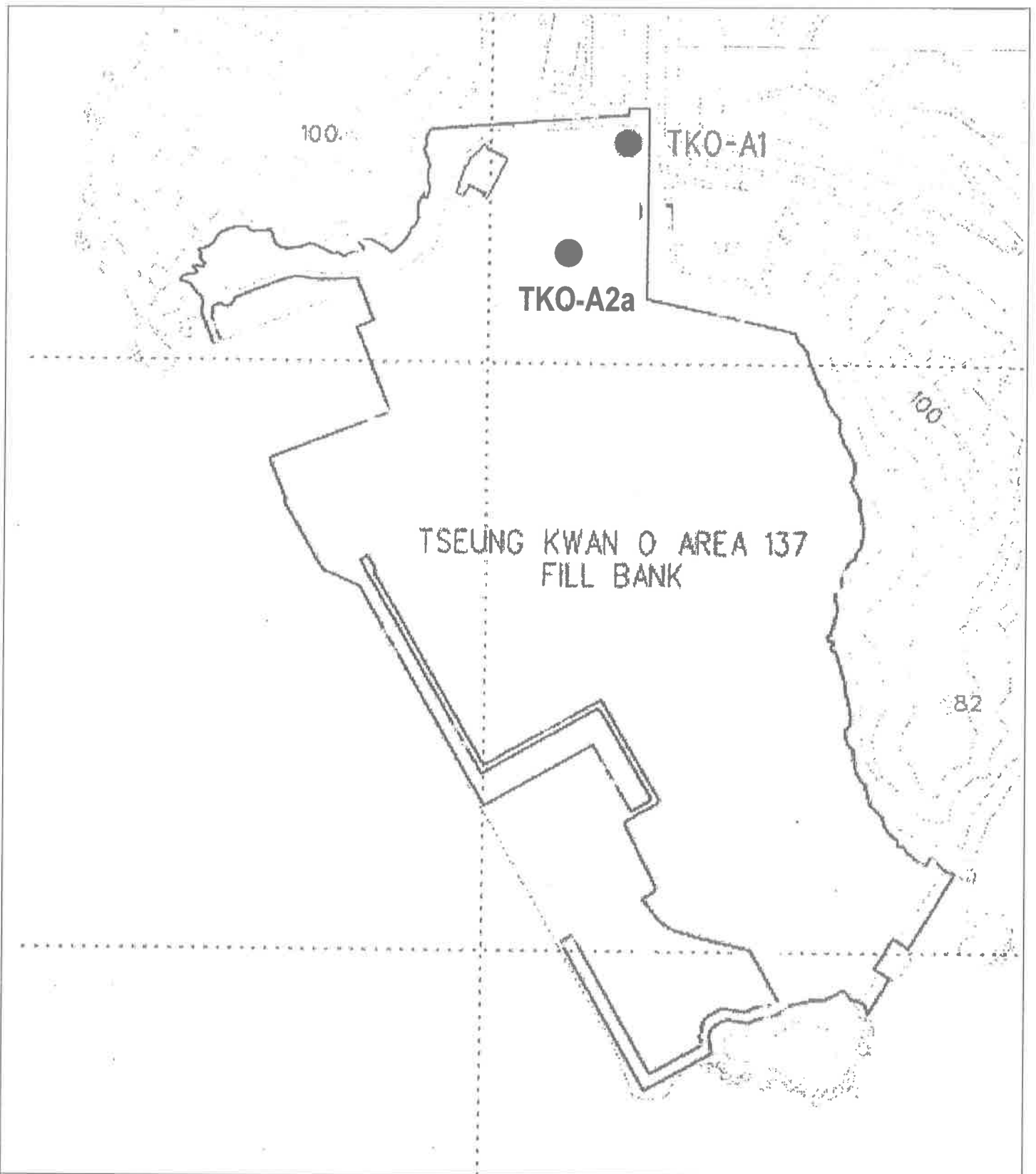
Contract No. CV/2013/06
Handling of Surplus Public Fill (2014-2016)

Figure 2

Location of Noise Monitoring Station –
Tseung Kwan O Area 137 Fill Bank



東業德勤測試顧問有限公司
ETS-TESTCONSULT LIMITED



Contract No. CV/2013/06
 Handling of Surplus Public Fill (2014-2016)

Figure 3
 Locations of Air Quality Monitoring Stations –
 Tseung Kwan O Area 137 Fill Bank



東業德勤測試顧問有限公司
 ETS-TESTCONSULT LIMITED