



翠谷工程有限公司
Green Valley Landfill, Limited

South East New Territories (SENT) Landfill Extension

Monthly Environmental Monitoring & Audit Report No.4
for April 2019

April 2020

ERM

2507, 25/F
One Harbourfront
18 Tak Fung Street
Hung Hom, Kowloon
Hong Kong
T: 2271 3000
F: 2723 5660
www.erm.com





South East New Territories (SENT) Landfill Extension

Environmental Certification Sheet EP-308/2008/B and FEP-01/308/2008/B


Reference Document/Plan

Document/Plan to be Certified/Verified:	Monthly Environmental Monitoring & Audit Report No.4 for April 2019 for South East New Territories (SENT) Landfill Extension
Date of Report:	28 April 2020


Reference EP Condition

EP Condition:	Condition No. 3.4
Four hard copies and one electronic copy of monthly EM&A Report shall be submitted to the Director within 10 working days after the end of the reporting month. The EM&A Reports shall include a summary of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit Levels). The submissions shall be verified by the IEC. Additional copies of the submission shall be provided to the Director upon request by the Director.	

ET Certification

I hereby certify that the above referenced document/plan complies with the above referenced condition of EP-308/2008/B and FEP-01/308/2008/B.	
Frank Wan, Environmental Team Leader: (ERM Hong-Kong, Limited)	 Date: 28 April 2020

IEC Verification




I hereby verify that the above referenced document/plan complies with the above referenced condition of EP-308/2008/B and FEP-01/308/2008/B.	
W.K. Chiu, Independent Environmental Checker: (Meinhardt Infrastructure and Environment Limited)	 Date: 4 May 2020

South East New Territories (SENT) Landfill Extension

Monthly Environmental Monitoring & Audit Report for April 2019

Environmental Resources Management

2507, 25/F, One Harbourfront
18 Tak Fung Street
Hung Hom, Kowloon
Hong Kong
Telephone: (852) 2271 3000
Facsimile: (852) 2723 5660
E-mail: post.hk@erm.com
http://www.erm.com

Client: Green Valley Landfill Ltd.		Project No: 0465169			
Summary: This document presents the Monthly EM&A Report No.4 for April 2019 for <i>South East New Territories (SENT) Landfill Extension</i>		Date: 28 April 2020			
		Approved by:  Frank Wan Partner			
2	Monthly EM&A Report No.4 (for April 2019) (Section 2.3.1, Table 2.7 & 2.8, Annex F2 & G revised)	AL	FW	FW	28 Apr 20
1	Monthly EM&A Report No.4 (for April 2019) (Table 2.10 revised)	AL	TS	FW	16 Aug 19
0	Monthly EM&A Report No.4 (for April 2019)	AL	TS	FW	10 May 19
Revision	Description	By	Checked	Approved	Date
<p>This report has been prepared by Environmental Resources Management the trading name of 'ERM Hong-Kong, Limited', with all reasonable skill, care and diligence within the terms of the Contract with the client, incorporating our General Terms and Conditions of Business and taking account of the resources devoted to it by agreement with the client.</p> <p>We disclaim any responsibility to the client and others in respect of any matters outside the scope of the above.</p> <p>This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.</p>		<p>Distribution</p> <p><input type="checkbox"/> Internal</p> <p><input checked="" type="checkbox"/> Public</p> <p><input type="checkbox"/> Confidential</p> <div style="text-align: right;">   </div>			

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EXECUTIVE SUMMARY

The SENT Landfill Extension (SENTX) forms an integral part in the Strategic Plan in maintaining the continuity of landfill capacity in the Hong Kong for the cost-effective and environmentally satisfactory disposal of waste. ERM-Hong Kong, Limited (ERM) is commissioned to undertake the role of Environmental Team (ET) for the construction, operation/restoration and aftercare of SENTX Project (“the Project”) in accordance with the requirements specified in the Environmental Permit (EP), updated Environmental Monitoring and Audit (EM&A) Manual, the approved Environmental Impact Assessment (EIA) Report of the Project taking account of the latest design and other relevant statutory requirements. The construction (not including works related to site clearance and preparation) of the Project commenced on 2 January 2019.

This Monthly EM&A report presents the EM&A works carried out during the period from 1 to 30 April 2019 for the Project in accordance with the updated EM&A Manual.

Exceedance of Action and Limit Levels for Air Quality

No exceedance of Action and Limit Levels was recorded for construction air quality monitoring in the reporting period.

Exceedance of Action and Limit Levels for Noise

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

Exceedance of Action and Limit Levels for Surface Water Quality

Sampling could not be carried out for all the scheduled impact surface water quality monitoring events during the reporting period due to insufficient flow.

Environmental Complaints, Summons and Prosecutions

There were no complaints, notification of summons or prosecution recorded in the reporting period.

Reporting Change

There was no reporting change in the reporting period.

Future Key Issues

Potential environmental impacts arising from the upcoming construction activities in the next reporting period of May 2019 are mainly associated with dust emission from the construction works and from the exposed area and the potential surface water impact in the coming rainy season.

1 INTRODUCTION

1.1 BACKGROUND

The SENT Landfill Extension (SENTX) forms an integral part in the Strategic Plan in maintaining the continuity of landfill capacity in the Hong Kong for the cost-effective and environmentally satisfactory disposal of waste. The *Environmental Impact Assessment (EIA) Report* and the associated *Environmental Monitoring and Audit (EM&A) Manual* for the construction, operation, restoration and aftercare of the SENTX (hereafter referred to as “the Project”) have been approved under the *Environmental Impact Assessment Ordinance (EIAO)* in May 2008 (Register No.: AEIAR-117/2008) (hereafter referred to as the approved EIA Report) and an Environmental Permit (EP-308/2008) (EP) was granted by the Director of Environmental Protection (DEP) on 5 August 2008.

Since then, applications for Variation of an Environmental Permit (No. VEP-531/2017) were submitted to EPD and the Variation of Environmental Permits (EP-308/2008/A and EP-308/2008/B) were granted on 6 January 2012 and 20 January 2017, respectively, as the Hong Kong SAR Government has decided to reduce the scale of the design scheme of SENTX assessed in the approved EIA Report and SENTX will only receive construction waste. In May 2018, a Further Environmental Permit (FEP) (FEP-01/308/2008/B) was granted to the SENTX’s contractor, Green Valley Landfill, Limited (GVL).

ERM-Hong Kong, Limited (ERM) and Meinhardt Infrastructure and Environment Limited (Meinhardt) are commissioned to undertake the roles of Environmental Team (ET) and the Independent Environmental Checker (IEC), respectively, to undertake the EM&A activities for the Project in accordance with the requirements specified in the EP, updated EM&A Manual ⁽¹⁾, approved EIA Report ⁽²⁾ taking account of the latest design and other relevant statutory requirements.

1.2 PROJECT DESCRIPTION

The SENTX is a piggyback landfill, occupying the southern part of the existing SENT Landfill (including its infrastructure area) and 13 ha of Tseung Kwan O (TKO) Area 137. A layout plan of the SENTX is shown in *Figure 1.1*. Under the latest design, the SENTX has a net void capacity of about 6.5 Mm³ and provides an additional lifespan of about 6 years, commencing operation upon exhaustion of the SENT Landfill. The SENTX will receive construction waste only.

The key implementation milestones of the Project are indicatively summarised in *Table 1.1*. The construction works of the Project commenced on 2 January 2019.

(1) ERM (2018). South East New Territories (SENT) Landfill Extension: Environmental Monitoring & Audit Manual

(2) ERM (2007). South East New Territories (SENT) Landfill Extension - Feasibility Study: Environmental Impact Assessment Report

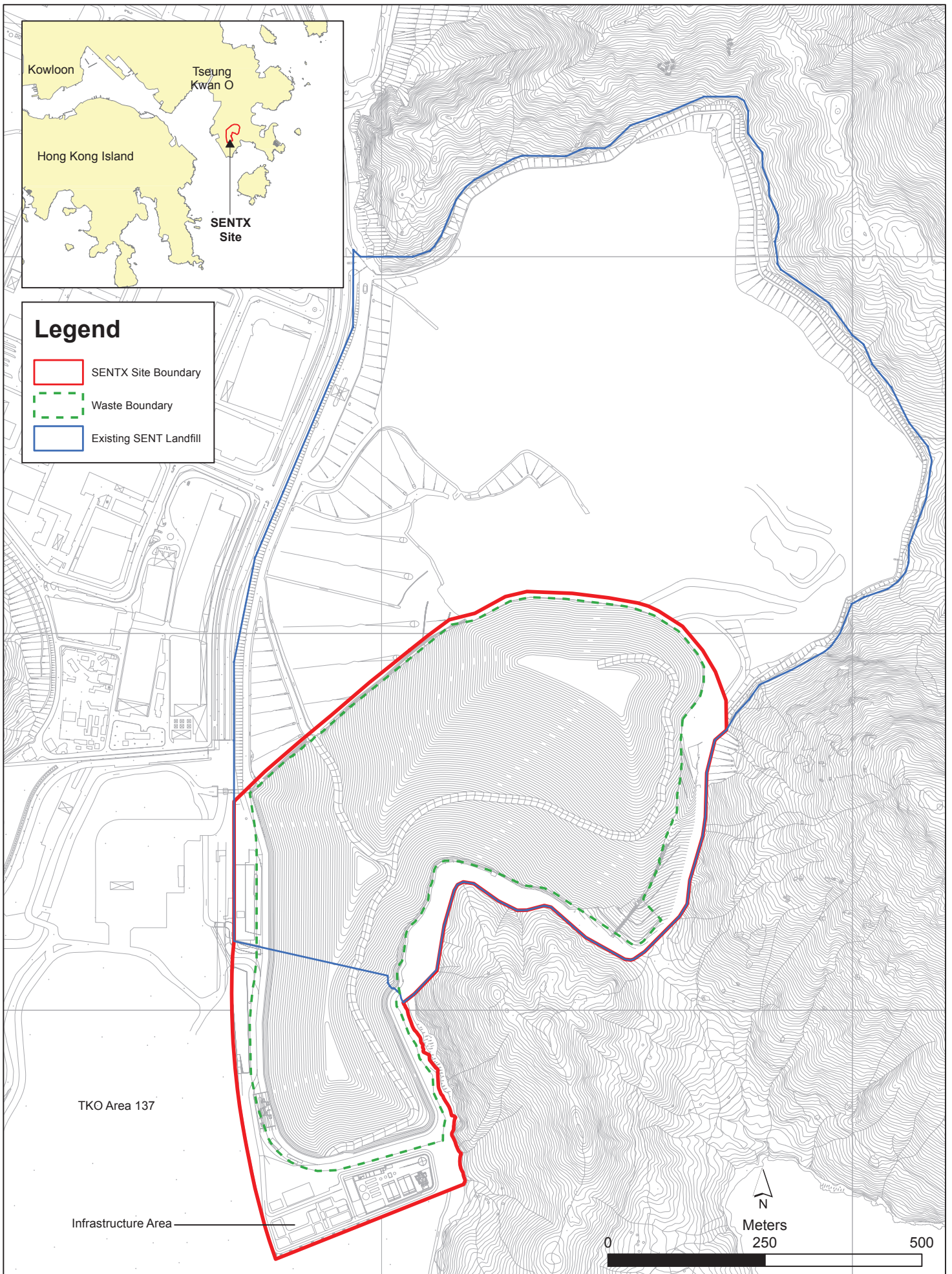


Figure 1.1

Layout Plan of SENTX

File: T:\GIS\CONTRACT\0354924\Mxd\0354924_Layout_Plan_of_SENTX.mxd
 Date: 5/9/2018

Table 1.1 *Estimated Key Dates of Implementation Programme*

Key Stage of the Project	Indicative Date
Start construction	2 January 2019
Commissioning of new infrastructure facilities	2020
Demolition of existing infrastructure facilities	2021
Start waste intake at SENTX	2021 or upon exhaustion of SENT Landfill
Estimated exhaustion date of SENTX	2027
End of aftercare for SENTX	2057

The major construction works of the SENTX includes:

- Site formation at the TKO Area 137 and the existing infrastructure area at SENT Landfill;
- Construction of surface and groundwater drainage systems;
- Construction of the leachate containment and collection systems;
- Construction of new leachate and landfill gas treatment facilities, site offices, maintenance yards at the new infrastructure area;
- Construction of new pipelines to transfer the leachate and landfill gas collected from the existing SENT Landfill to the treatment facilities at the new infrastructure area;
- Construction of the site access and new waste reception facilities; and
- Demolition of the facilities at the existing SENT Landfill infrastructure area.

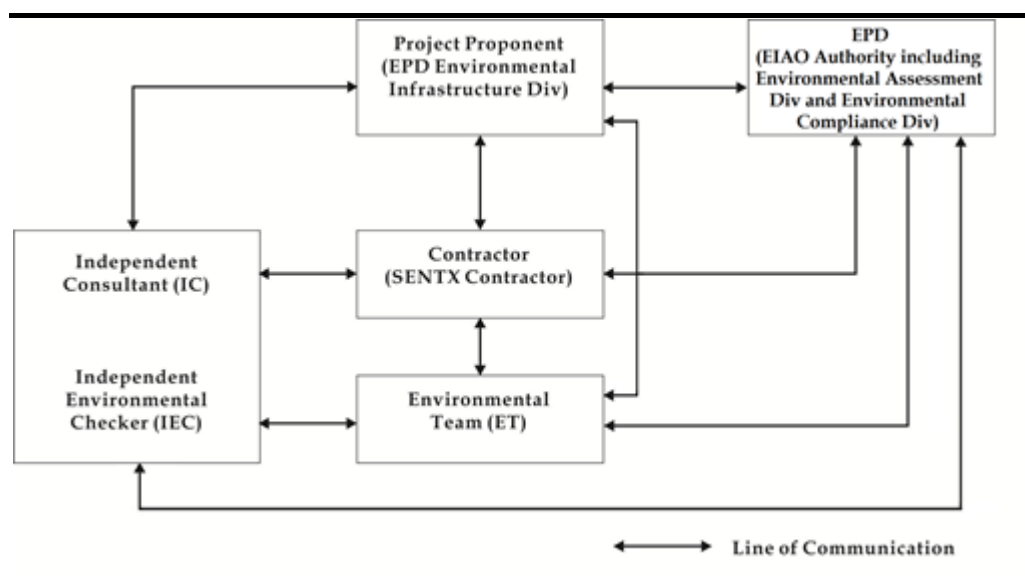
1.3 *SCOPE OF THE EM&A REPORT*

This is the Monthly EM&A Report for the Project which summarises the key findings of the EM&A programme during the reporting period from 1 to 30 April 2019 for the construction works.

1.4 *PROJECT ORGANISATION*

The organization structure of the Project is presented in *Figure 1.2*.

Figure 1.2 Organisation Chart



Contact details of the key personnel are summarized in *Table 1.2* below.

Table 1.2 Contact Information of Key Personnel

Party	Position	Name	Telephone
Contractor (Green Valley Landfill Limited)	Project Manager	Gary Barnicott	2706 8827
Environmental Team (ET) (ERM-Hong Kong, Limited)	ET Leader	Frank Wan	2271 3152
Independent Environmental Checker (IEC) (Meinhardt Infrastructure and Environment Limited)	IEC	Fredrick Leong	2859 1739

1.5 SUMMARY OF CONSTRUCTION WORKS

The programme of the construction is shown in *Annex A*. As informed by the Contractor, details of the major works carried out in this reporting period are listed below:

- Initial site clearance works, geotechnical review and utilities diversion on the Buttress Wall;
- Erection of temporary protection and application of the initial shotcrete panel;
- Shotcreting of the permanent works;
- Additional work excavating, removing and replacing unsuitable fill material;

- Plate load tests;
- Rebar fixing and concreting to the sediment tank and culvert X9;
- Site formation works for SENTX Infrastructure Area;
- Construction of perimeter bund for Cell 1 and 2;
- Construction of additional wheel wash facilities;
- Preparation of the temporary surface water management, including construction of temporary discharge monitoring points DP4 and DP6, shotcrete lining the of DP4 channel, cut-off channel around SENTX and temporary drainage to DP4 and DP6 Channels; and
- Boundary fencing erection.

The environmental mitigation implementation schedule is presented in *Annex B*.

1.6 SUMMARY OF EM&A PROGRAMME REQUIREMENTS

The status for all environmental aspects are presented in *Table 1.3*. The EM&A requirements remained unchanged during the reporting period.

Table 1.3 *Summary of Status for the Environmental Aspects under the Updated EM&A Manual*

Parameters	Status
Air Quality	
Baseline Monitoring	The results of baseline air quality monitoring were reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.3
Impact Monitoring	On-going
Noise	
Baseline Monitoring	The results of baseline noise monitoring were reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.3
Impact Monitoring	On-going
Surface Water Quality	
Baseline Monitoring	The results of baseline surface water quality monitoring were reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.3
Impact Monitoring	On-going
Waste Management	
Waste Monitoring	On-going
Landscape and Visual	
Baseline Monitoring	The results of baseline landscape and visual monitoring were reported in Baseline Monitoring Report and submitted to EPD under EP Condition 3.3
Construction Phase Audit	On-going
Site Environmental Audit	
Regular Site Inspection	On-going
Complaint Hotline and Email Channel	On-going
Environmental Log Book	On-going

Taking into account the construction works, impact monitoring of air quality, noise, surface water quality and waste management were carried out in the reporting period. The monitoring schedule of air quality, noise and surface water quality monitoring are provided in *Annex C*.

The EM&A programme also involved environmental site inspections and related auditing conducted by the ET for checking the implementation of the required environmental mitigation measures recommended in the approved EIA Report and relevant EP submissions. To promote the environmental awareness and enhance the environmental performance of the contractors, environmental trainings and regular environmental management meetings were conducted during the reporting period, which are summarized as below:

- One environmental management meeting was held with the Contractor, ER, ET, IEC and EPD on 11 April 2019; and
- Environmental toolbox trainings on Mosquito Control and Recycling were provided on 10 and 24 April 2019 respectively by the Contractor to the workers.

1.7 STATUS OF STATUTORY ENVIRONMENTAL COMPLIANCE WITH THE ENVIRONMENTAL PERMIT

The status of statutory environmental compliance with the EP conditions under the EIAO, submission status under the EP and implementation status of mitigation measures are presented in *Table 1.4*.

Table 1.4 *Status of Submissions and Implementation Status of Mitigation Measures under EP*

EP Condition	Submission / Implementation Status	Status
2.3	Management Organisation of Main Construction Companies	Accepted by EPD.
2.4	Setting up of Community Liaison Group	Community Liaison Group was set up.
2.5	Submission of Detailed Landfill Gas Hazard Assessment Report	Accepted by EPD on 10 January 2019.
2.6	Submission of Restoration and Ecological Enhancement Plan	To be prepared within 6 months after the commencement of construction of the Project.
2.7	Setting up of Trial Nursery	To be set up during construction phase.
2.8	Advance Screen Planting	To be completed within 9 months of taking possession of the Project Site.
2.9	Provision of Multi-layer Composite Liner System	Under implementation.

1.8 STATUS OF OTHER STATUTORY ENVIRONMENTAL REQUIREMENTS

The environmental licenses and permits, including environmental permit, water discharge license, registration as chemical waste producer and construction noise permit, which are valid in the reporting period are

presented in *Table 1.5*. No non-compliance with environmental statutory requirements was recorded.

Table 1.5 *Status of Statutory Environmental Requirements*

Description	Ref No.	Status
Environmental Permit	EP-308/2008	Granted on 5 August 2008
Variation of Environmental Permit	EP-308/2008/A	Granted on 6 January 2012
	EP-308/2008/B	Granted on 20 January 2017
Further Environmental Permit	FEP-01/308/2008/B	Granted on 16 May 2018
Water Discharge License under	Licence No.: WT00033525-	Validity from 27 March
Water Pollution Control Ordinance (Permit Holder: Chun Wo)	2019	2019 to 31 March 2024
Billing Account for Disposal of Construction Waste	Chit Account Number: 5001692	Approved on 28 December 2005
Registration as Chemical Waste Producer (Permit Holder: Chun Wo)	5213-839-C3507-10	Issued on 23 August 2018
Construction Noise Permit (Permit Holder: Chun Wo)	GW-RE0259-19	Validity from 15 April 2019 to 8 October 2019
	GW-RE0002-19	Validity from 8 January 2019 to 1 July 2019

The EM&A programme for the Project required environmental monitoring for air quality, noise and surface water quality as well as environmental site inspections for air quality, noise, surface water quality, waste management, and landscape and visual impacts. The EM&A requirements and related findings for each component are summarized in the following sections.

2.1 AIR QUALITY MONITORING

2.1.1 Monitoring Requirements and Equipment

According to the updated EM&A Manual of the Project, impact air quality monitoring (dust, in term of Total Suspended Particulates (TSP)) was carried out at the two designated monitoring locations (i.e. DM1 and DM2) at a 6-day interval. As there are two existing TSP monitoring stations (i.e. TKO-A1 and TKO-A2a) currently operating by the Civil Engineering and Development Department (CEDD) to monitor the 24-hour TSP levels at the proposed dust monitoring stations for the SENTX, it is considered that the CEDD monitoring data can represent the dust condition of the SENTX during the construction phase.

The Action and Limit Levels of the air quality monitoring is provided in *Table 2.1* below.

Table 2.1 Action and Limit Levels for 24-hour TSP

Monitoring Station	Action Level	Limit Level
DM-1 - Site Egress of TKO Area 137 Fill Bank	204 $\mu\text{g m}^{-3}$	260 $\mu\text{g m}^{-3}$
DM-2A -Combined Reception and Exit Office (CREO) of TKO Area 137 Fill Bank	193 $\mu\text{g m}^{-3}$	260 $\mu\text{g m}^{-3}$

High volume air samplers (HVSs) in compliance with the specifications listed under Section 3.2.2 of the updated EM&A Manual were used to measure 24-hour TSP levels at the CEDD dust monitoring stations. The HVSs were calibrated upon installation and thereafter at bi-monthly intervals to check the validity and accuracy of the results.

The equipment used in the impact air quality monitoring programme and monitoring locations are summarized in *Table 2.2* and illustrated in *Figure 2.1* respectively. Copies of the calibration certificates for the equipment are presented in *Annex D1*.

Table 2.2 Dust Monitoring Details

Monitoring Station	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
DM1	Site Egress of TKO Area 137 Fill Bank	24-hour TSP	Once every 6 days during the	4, 10, 16, 22, 28 April 2019	HVS Greasby 105 (S/N: 9795 (ET/EA/003/18))

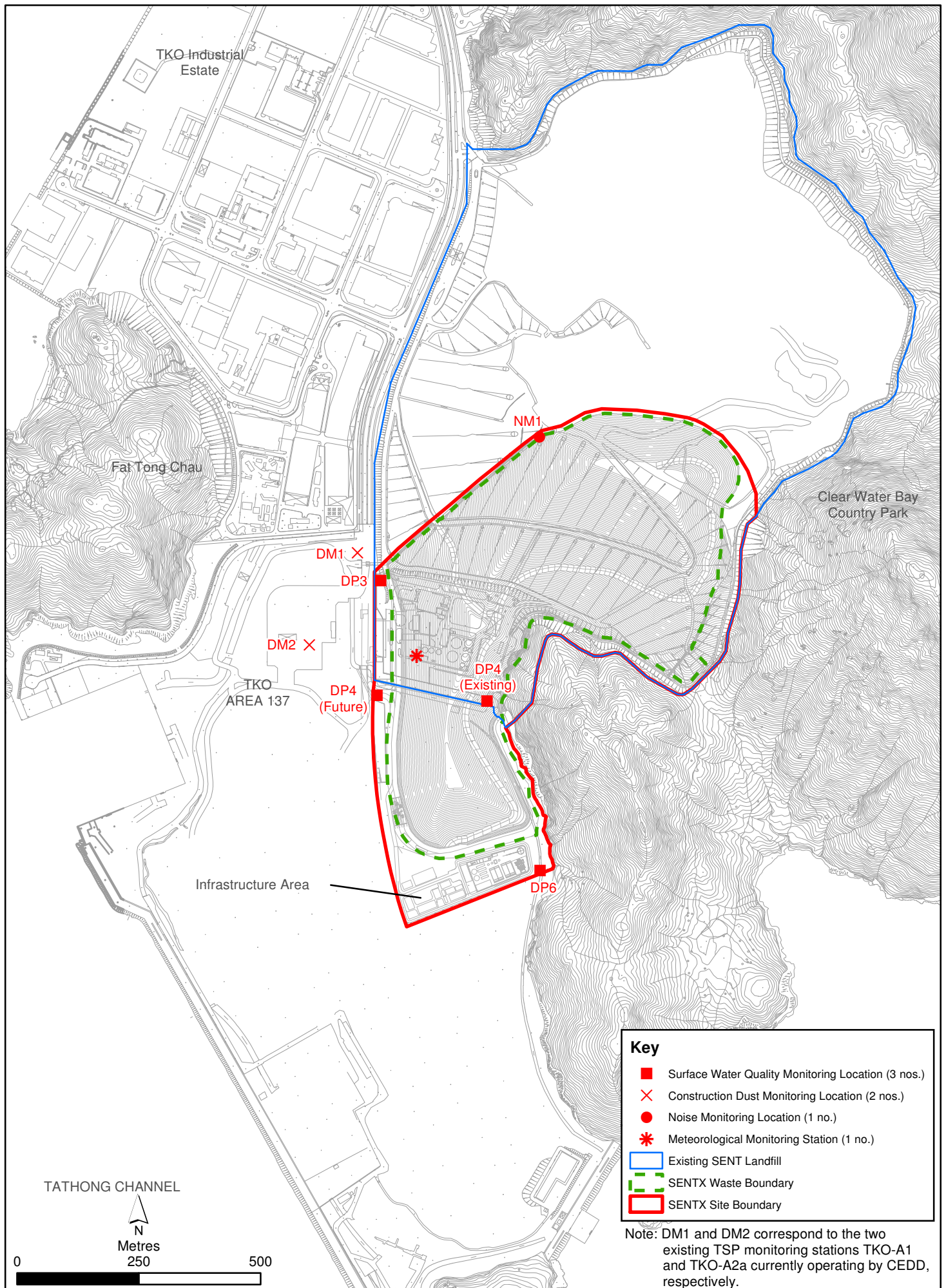


Figure 2.1

Environmental Impact Monitoring Locations

Monitoring Station	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
DM2	Combined Reception and Exit Office (CREO) of TKO Area 137 Fill Bank		construction phase of the Project		HVS Andersen G1051 (S/N: 1176 (ET/EA/003/05))

2.1.2 *Monitoring Schedule for the Reporting Month*

The schedule for air quality monitoring during the reporting period is provided in *Annex C*.

2.1.3 *Results and Observations*

The monitoring results for 24-hour TSP are summarized in *Table 2.3*. The detailed monitoring results and the graphical presentation of the 24-hour TSP results at each monitoring location are provided in *Annex D2*.

Table 2.3 *Summary of 24-hour TSP Monitoring Results in the Reporting Period*

Monitoring Station	Average 24-hr TSP Concentration ($\mu\text{g m}^{-3}$) (Range in bracket)	Action Level ($\mu\text{g/m}^3$)	Limit Level ($\mu\text{g/m}^3$)
DM-1 – Site Egress of TKO Area 137 Fill Bank	89 (76 - 100)	204	260
DM-2A –Combined Reception and Exit Office (CREO) of TKO Area 137 Fill Bank	77 (70 - 91)	193	260

The major dust sources in the reporting period included fugitive dust emission from exposed area in SENTX, as well as nearby operations of the existing SENT landfill and the TKO Area 137 Fill Bank.

All the 24-hour TSP results were below the Action and Limit Levels at the monitoring locations in the reporting period. No action is thus required to be undertaken in accordance with the Event and Action Plan presented in *Annex D3*.

2.1.4 *Meteorological Data*

Meteorological data obtained from the on-site meteorological monitoring station at the existing SENT landfill (see *Figure 2.1*) were used for the dust monitoring and are shown in *Annex D4*. The meteorological station will be relocated to a new position for SENTX as per the updated EM&A Manual after the new infrastructure area at the SENTX is constructed. It is considered that meteorological data obtained at the existing the on-site meteorological monitoring station are representative of the Project area and could be used for the construction phase dust monitoring programme for the Project.

2.2 NOISE MONITORING

2.2.1 Monitoring Requirements and Equipment

According to the updated EM&A Manual of the Project, impact noise monitoring was conducted weekly at the monitoring location (i.e. NM1) to obtain one set of 30 minutes measurement between 07:00 and 19:00 hours on normal weekdays.

The Action and Limit Level for construction noise of the Project is provided in *Table 2.4* below.

Table 2.4 *Action and Limit Levels for Construction Noise*

Time Period	Action Level ^(a)	Limit Level ^(b)
07:00 – 19:00 hrs on normal weekdays	When one documented complaint is received from any one of the noise sensitive receivers (NSRs) or 75 dB(A) recorded at the monitoring station	75 dB(A) at NSRs
Notes:		
(a)	75dB(A) along and at about 100m from the SENTX site boundary was set as the Action Level.	
(b)	Limits specified in the GW-TM and IND-TM for construction and operational noise, respectively.	

Noise monitoring was performed by ALS Technichem (HK) Pty Ltd. (HOKLAS Registration No. 066) using sound level meter at the designated monitoring station NM1 (see *Figure 2.1*) in accordance with the requirements stipulated in the updated EM&A Manual. Acoustic calibrator was deployed to check the sound level meter at a known sound pressure level. Details of the deployed equipment are provided in *Table 2.5*. Copies of the calibration certificates for the equipment are presented in *Annex E1*.

Table 2.5 *Noise Monitoring Details*

Monitoring Station ⁽¹⁾	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
NM1	SENTX Site Boundary (North)	L _{eq} (30 min) measurement between 07:00 and 19:00 hours on normal weekdays (Monday to Saturday)	Once per week for 30 mins during the construction period of the Project	4, 10, 18, 24 April 2019	Sound Level Meter: B&K 2238 (S/N: 2285722) Acoustic Calibrator: Rion NC-74 (S/N: 34246492), 3M AC-300 (S/N: AC300005555)

2.2.2 *Monitoring Schedule for the Reporting Month*

The schedule for noise monitoring during the reporting period is provided in *Annex C*.

2.2.3 *Results and Observations*

Results for noise monitoring are summarized in *Table 2.6*. The monitoring results and the graphical presentation of the data are provided in *Annex E2*.

Table 2.6 *Summary of Construction Noise Monitoring Results in the Reporting Period*

Monitoring Station	Measured Noise Level L_{eq} (30 min), dB(A)		
	Average	Range	Action and Limit Level
NM1	52.1	50.4 – 53.8	75

Major noise sources during the noise monitoring included noise from operations of the existing SENT landfill and the TKO Area 137 Fill Bank, aircrafts and insects.

No Action and Limit Levels exceedance was recorded for construction noise monitoring in the reporting period. No action is thus required to be undertaken in accordance with the Event and Action Plan presented in *Annex E3*.

2.3 *SURFACE WATER QUALITY MONITORING*

2.3.1 *Monitoring Requirements and Equipment*

According to the updated EM&A Manual of the Project, impact surface water quality monitoring were carried out at the three designated surface water discharge points (i.e. DP3, DP4 and DP6) weekly to ensure that the SENTX will not cause adverse water quality impact. Dissolved Oxygen (DO) and pH value were measured in-situ whereas the level of suspended solids (SS) were determined by ALS Technichem (HK) Pty Ltd. (HOKLAS Registration No. 066). Suspension of impact surface water quality monitoring at DP3 was approved under the Baseline Monitoring Report by EPD on 24 July 2019 until the actual commencement of construction works affecting DP3 in 2021.

The Action and Limit Levels of the surface water quality impact monitoring are provided in *Table 2.7*.

Table 2.7 *Action and Limit Levels for Surface Water Quality*

Parameters	Action Level	Limit Level
	DP4 & DP6	
DO	< 5.80 mg/L	< 5.42 mg/L
SS	> 11.7 mg/L	> 12.7 mg/L
pH	> 8.39	> 8.40

The locations of the monitoring stations under the Project are shown in *Figure 2.1*. All *in situ* monitoring instruments were checked, calibrated and certified by a laboratory accredited under HOKLAS or other international accreditation scheme before use, and subsequently re-calibrated at 3 monthly intervals throughout all stages of the surface water quality monitoring programme. Calibration for a DO meter was carried out before measurement according to the instruction manual of the equipment model. Details of the equipment used in the impact surface water quality monitoring works are provided in *Table 2.8*. Copies of the calibration certificates for the equipment are presented in *Annex F1*.

Table 2.8 *Impact Surface Water Quality Monitoring Details*

Monitoring Station	Location	Frequency	Monitoring Dates	Parameter	Equipment
DP4	Surface water discharge point DP4	Weekly	4, 10, 18, 24 April 2019	•pH •DO	YSI Professional DSS (S/N: 15H102620/15H103928)
DP6	Surface water discharge point DP6			•SS	

Notes:
Impact surface water quality monitoring at DP3 was suspended from the monitoring event on 25 July 2019 until the actual commencement of construction works affecting DP3 in 2021.

2.3.2 *Monitoring Schedule for the Reporting Month*

The schedule for surface water quality monitoring during the reporting period is provided in *Annex C*.

2.3.3 *Results and Observations*

A total of 4 monitoring events for impact surface water quality monitoring were scheduled at all designated monitoring stations during the reporting period. However, sampling could not be carried out for all the scheduled events during the reporting period due to insufficient flow. Details of impact water quality monitoring events are provided in *Annex F2*. No action is thus required to be undertaken in accordance with the Event and Action Plan presented in *Annex F3*.

2.4 *LANDSCAPE AND VISUAL MONITORING*

2.4.1 *Monitoring Requirements*

According to the updated EM&A Manual of the Project, the monthly landscape and visual audit was conducted on 18 April 2019 to monitor the implementation of the landscape and visual mitigation measures during construction phase.

All relevant environmental mitigation measures listed in the approved EIA Report and the EM&A Manual and their implementation status are summarised in *Annex B*.

2.4.2

Results and Observations

The Contractor has implemented environmental mitigation measures as stated in the approved EIA Report and the EM&A Manual.

Regarding the landscape and visual audit, the Contractor was reminded to identify the topsoil to be generated from the construction works and plan for the storage and re-use of the topsoil where practical. The Contractor shall consider the mitigation measures during the design phase, including the preparation of the Construction Drawings and Detailed Landscape Design Drawings. In addition, the Contractor was reminded to complete the advance screen planting works within 9 months of taking possession of the SENT Site (i.e. by September 2019).

2.5

EM&A SITE INSPECTION

Site inspections were carried out on a weekly basis with the Contractor, IEC and ER to monitor the implementation of proper environmental pollution control and mitigation measures for air quality, noise, surface water quality and waste management under the Project. In the reporting period, 4 site inspections were carried out on 4, 11, 18 and 24 April 2019.

Key observations during the site inspections are summarized in *Table 2.9*.

Table 2.9 *Key Observations Identified during the Site Inspection in this Reporting Month*

Inspection Date	Environmental Observations and Recommendations
4 April 2019	<ul style="list-style-type: none">• The Contractor shall keep the road near the Chun Wo's vehicle exit clear of dusty materials.• The Contractor shall remove the general refuse at DP6 channel to ensure the channel is functioning properly at all times.• The Contractor shall clear the general refuse in the refuse skip near Chun Wo's vehicle entrance regularly to reduce odour and pest impacts.
11 April 2019	<ul style="list-style-type: none">• The Contractor shall maintain the wheel washing facilities to avoid discharge of wash-water outside site boundaries.
18 April 2019	<ul style="list-style-type: none">• The Contractor shall keep the road near the vehicle exit clear of dusty materials and review the efficiency of the wheel washing facilities.• The Contractor shall maintain the wheel washing facilities to avoid discharge of wash-water outside site boundaries and into surrounding water bodies.• The Contractor shall clean up the oil stain near the site entrance.• The Contractor shall provide a drip tray for the fuel near the site entrance.• The Contractor shall dispose the fuel in the refuse skip as chemical waste in the chemical waste storage cupboard.

Inspection Date	Environmental Observations and Recommendations
24 April 2019	<ul style="list-style-type: none"> The Contractor shall maintain the Wetsep near the site entrance to ensure it is functioning at all times. The Contractor shall clean up the oil spillage near the sediment trap. The Contractor shall clear the general refuse near the site entrance and sediment trap. An enclosed bin shall be provided near the sediment trap for storage of general refuse. The Contractor shall avoid accumulation of stagnant water in the refuse skips near the site entrance.

The Contractor has rectified all of the observations identified during environmental site inspections in the reporting period.

2.6 WASTE MANAGEMENT STATUS

The Contractor has registered as chemical waste producer under the Contract. Sufficient numbers of receptacles were available for general refuse collection and sorting.

As informed by the Contractor, waste generated during this reporting period include mainly inert C&D materials. Reference has been made to the waste flow table prepared by the Contractor. The quantities of different types of wastes and imported fill materials are summarised in *Table 2.10*.

Table 2.10 Quantities of Different Waste Generated and Imported Fill Materials

Month/ Year	Inert C&D Materials (a) (in '000m ³)	Imported Fill (in '000kg)		Inert Construction Waste Re- used (in '000m ³)	Non-inert Construction Waste (b) (in '000m ³)	Recyclable Materials (c) (in '000kg)	Chemical Wastes (in '000kg)
		Rock	Soil				
1 - 30 Apr 19	0.251	0	2194.24	0	0.023	0	0

Notes:

- Inert construction wastes include hard rock and large broken concrete, and materials disposed as public fill. Density assumption: 1.6 (kg/L) for public fill.
- Non-inert construction wastes include general refuse disposed at landfill. Density assumption: 0.9 (kg/L) for general refuse.
- Recyclable materials include metals, paper, cardboard, plastics and others.

2.7 IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES

A summary of the Environmental Mitigation Implementation Schedule is presented in *Annex B*. The necessary mitigation measures were implemented properly for the Project.

2.8 SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMANCE LIMIT

Results for air quality monitoring (24-hour TSP) complied with the Action and Limit Levels in the reporting period. No Action and Limit Levels exceedances were recorded for construction noise monitoring. Impact

surface water quality monitoring could not be carried out for all the scheduled events during the reporting period due to insufficient flow.

Cumulative statistics on exceedances is provided in *Annex G*.

2.9 *SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL PROSECUTIONS*

There were no complaints, notification of summons or prosecution recorded in the reporting period.

Statistics on complaints, notifications of summons, successful prosecutions are summarised in *Annex G*.

3 *FUTURE KEY ISSUES*

3.1 *CONSTRUCTION PROGRAMME FOR THE COMING MONTH*

As informed by the Contractor, the major works for the Project in May 2019 will be:

- Continuation of site preparation in Area X1 and X2;
- Continuation of site clearance works at Area X1 and X2;
- Ongoing additional work excavating and removing unsuitable fill material and commencement of import material from SENT;
- Continuation of site formation works at Area X1;
- Continuation of fill works of perimeter bund for Cell 1X;
- Construction of Area A, construction of sediment trap and inlet box culvert X9 construction;
- Construction of Buttress Wall;
- Construction of raft foundation of Leachate Treatment Plant (LTP);
- Construction of CLP trench works in Part X2;
- Excavation of sediment trap discharge box culvert;
- Advance Screen Planting;
- Construction of substructure of new infrastructure; and
- Construction of foundation of Landfill Gas area.

3.2 *KEY ISSUES FOR THE COMING MONTH*

Potential environmental impacts arising from the above upcoming construction activities in the next reporting period of May 2019 are mainly associated with dust emission from the construction works and from the exposed area and the potential surface water impact in the coming rainy season. The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

3.3 *MONITORING SCHEDULE FOR THE COMING MONTH*

The tentative schedules for environmental monitoring in May 2019 are provided in *Annex H*.

CONCLUSION AND RECOMMENDATION

This EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 30 April 2019 in accordance with the updated EM&A Manual and the requirements of the Environmental Permit (EP-308/2008/B).

Air quality (24-hour TSP), noise and water quality (DO, pH and SS) monitoring were carried out in the reporting period. Results for air quality monitoring (24-hour TSP) complied with the Action and Limit Levels in the reporting period. No Action and Limit Levels exceedances were recorded for construction noise monitoring. Impact surface water quality monitoring could not be carried out for all the scheduled events during the reporting period due to insufficient flow.

Environmental site inspections were carried out during the reporting period. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site inspections.

There were no complaints, notification of summons or prosecution recorded in the reporting period.

The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

Annex A

Work Programme

WBS Path	Activity	Activity Name	Dur	Start	Finish	Predecessor Details	Successor Details	2018		2019		2020		2021		2022		2023	
								Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1
332	SA2.5	Construction (Initial Works)	1163	12-Apr-18	07-Jun-21	756													
333	SA2.5.02	Advance Works & Site Establishment	1148	12-Apr-18	02-Jun-21	35													
334	SA2.5.02.01	Site Establishment & Mobilization	333	12-Apr-18	15-May-19	820													
335	5.02.01	62-1000 Site Mobilization for Parts X1 & X2	30	31-Dec-18	20-Jan-19	820	11-1100 FS, 11-1200 FS												
336	5.02.01	62-1100 Site Mobilization for Parts X3, X4 & X5	30	12-Apr-18	11-May-18	1063	11-1300 FS, 11-1400 FS, 11-1500 FS												
337	5.02.01	62-1200 Temporary Office for Employer / ERI/C	60	10-Oct-18	08-Dec-18	0	23-1300 FS												
338	5.02.01	62-1300 Hoarding and Fencing Works	40	30-Jan-19	10-Mar-19	820	52-1000 FS, 52-1100 FS												
339	SA2.5.02.02	Site Survey & Investigation Works for Parts X1 & X2	50	31-Dec-18	18-Feb-19	840													
340	5.02.02	62-1400 Condition Survey	25	31-Dec-18	24-Jan-19	840	11-1100 FS, 11-1200 FS												
341	5.02.02	62-1500 Topographic Survey	20	31-Dec-18	19-Jan-19	845	11-1100 FS, 11-1200 FS												
342	5.02.02	62-1600 Site Inspection, Review of Condition Survey Report	25	25-Jan-19	18-Feb-19	840	52-1500 FS, 52-1600 FS												
343	SA2.5.02.03	Site Survey & Investigation Works for Parts X3, X4 & X5	58	12-Apr-18	31-May-18	1103													
344	5.02.03	62-1700 Condition Survey	25	12-Apr-18	06-May-18	1103	11-1300 FS, 11-1400 FS, 11-1500 FS												
345	5.02.03	62-1800 Topographic Survey	20	12-Apr-18	01-May-18	1108	11-1300 FS, 11-1400 FS, 11-1500 FS												
346	5.02.03	62-1900 Site Inspection, Review of Condition Survey Report	25	07-May-18	31-May-18	1103	52-1700 FS, 52-1800 FS												
347	SA2.5.02.04	Environmental Monitoring	975	02-Oct-18	02-Jun-21	35													
348	5.02.04	62-2000 Installation of Monitoring Stations & Waits (GP & DDI)	120	02-Oct-18	20-Jan-19	0	23-1600 FS												
349	5.02.04	62-2100 Installation of Monitoring Stations & Waits (GP & DDI) on Butress Wall	120	02-Oct-18	20-Jan-19	0	23-1600 FS												
350	5.02.04	62-2200 Conduct Baseline Monitoring for Construction (one month)	30	01-Dec-18	30-Dec-18	0	52-2000 SS 60, 52-2100 SS 60												
351	5.02.04	62-2300 Conduct Baseline Monitoring for Operation (one year)	365	03-Jun-20	02-Jun-21	35	32-1500 FS, 400, 53-4500 FS												
352	SA2.5.03	Civil Engineering Works	748	13-Jan-19	29-Jan-21	834													
353	SA2.5.03.01	Butress Wall	475	03-Apr-19	03-Jun-20	48													
354	5.03.01	63-1000 Section adj. SENT	300	13-Apr-19	06-Feb-20	96	11-1300 FS, 23-2500 FS, 53-3000 FS, 31-1200 FS, 11-1400 FS												
355	5.03.01	63-1100 Characterise SENT Landfill Gas Pipe	48	07-Feb-20	23-Mar-20	96	53-1000 FS, 53-1000 FS												
356	5.03.01	63-1200 Section at Cell 4	400	02-Mar-19	04-Apr-20	83	11-1300 FS, 23-2500 FS, 53-3000 FS, 11-1400 FS												
357	5.03.01	63-1300 Install Landfill Gas Pipe on Butress Wall	75	05-Apr-20	18-Jun-20	83	41-1800 FS, 53-1100 FS, 53-1200 FS, 53-1300 FS												
358	SA2.5.03.01	Landfill Cell 1	503	13-Jan-19	29-May-20	214													
359	5.03.01	63-1400 Earth bund (Eastern)	90	04-Aug-19	01-Nov-19	9	11-1100 FS, 23-2500 FS, 53-4200 FS, 53-2800 FS												
360	5.03.01	63-1500 Earth bund (Southern)	90	26-Apr-19	24-Jul-19	314	11-1100 FS, 23-2500 FS, 53-2800 FS												
361	5.03.01	63-1600 Earth bund (Western)	90	13-Jan-19	12-Apr-19	417	11-1100 FS, 23-2500 FS												
362	5.03.01	63-1700 Interfill bund (Cell 1G)	75	13-Jan-19	28-Mar-19	432	11-1100 FS, 23-2500 FS												
363	5.03.01	63-1800 Site Formation	90	13-Jan-19	12-Apr-19	217	11-1100 FS, 23-2500 FS, 31-1300 FS												
364	5.03.01	63-1900 Pump Station (PS#1X)	45	13-Apr-19	27-May-19	507	53-1800 FS, 53-1900 FS												
365	5.03.01	63-2000 Lining Works	135	02-Nov-19	15-Mar-20	214	41-1500 FS, 53-1400 FS, 53-1500 FS, 53-1600 FS, 53-1700 FS												
366	5.03.01	63-2100 Protective Stone Laying & Leachate Collection Pipe	75	16-Mar-20	29-May-20	214	53-2000 FS, 41-1500 FS, 53-1900 FS												
367	5.03.01	63-2200 Install Leachate Force Main	75	25-Jul-19	07-Oct-19	449	43-1500 FS, 53-1600 FS, 41-1500 FS, 53-1900 FS												
368	5.03.01	63-2300 Install Landfill Gas Pipe on earth bund	55	03-Nov-19	26-Dec-19	258	41-1500 FS, 53-1400 FS, 53-1500 FS												
369	5.03.01	63-2400 Leachate Pipe Connection (Cell 1 to LTP)	30	09-Mar-20	07-Apr-20	266	23-2500 FS, 54-1000 SS												
370	SA2.5.03.04	Landfill Cell 4	30	09-Jul-20	07-Aug-20	144													
371	5.03.04	63-2500 Provide Temporary Leachate Pipe on Cell 4 Area	30	09-Jul-20	07-Aug-20	144	23-2500 FS, 63-2600 SS 90												
372	SA2.5.03.05	Drainage - Surface Run-Off	740	16-Jan-19	24-Jun-21	859													
373	5.03.05	63-2600 Construct Cut-Off Channel 12A	60	16-Jan-19	18-Mar-19	9	11-1100 FS, 23-2500 FS												
374	5.03.05	63-2700 Construct Cut-Off Channel 12A to DPA	20	17-Mar-19	05-Apr-19	9	53-2600 FS, 31-1400 FS, 23-1900 FS												
375	5.03.05	63-2800 Diversion from Existing Trapezoidal Channel into Channel 12A	20	06-Apr-19	25-Apr-19	9	53-2700 FS												
376	5.03.05	63-2900 Removal of Existing Trapezoidal Channel along Eastern Bund	30	26-Apr-19	25-May-19	9	53-2800 FS												
377	5.03.05	63-3000 Cut-Off Channel G4 Diversion to Cut-Off Channel 11-2	45	16-Jan-19	01-Mar-19	83	11-1300 FS, 23-2800 FS												
378	5.03.05	63-3100 Cut-Off Channel X5 on Butress Wall, Cell 4, Cell 3	90	05-Apr-20	03-Jul-20	289	53-1000 FS, 53-1200 FS												
379	5.03.05	63-3200 Temporary Diversion Cut-Off Channel X5 to 12A	20	04-Jul-20	23-Jul-20	289	53-3300 FS, 23-1900 FS												
380	5.03.05	63-3300 Culvert X5 (5m long) & Perm Connection of Cut-Off Channel X5	30	26-Dec-20	24-Jan-21	134	53-4100 FF, 63-1900 FS, 53-3200 FS												
381	5.03.05	63-3400 Construct Perimeter Channel X6 on Eastern Bund & Southern Bund of Cell 1	50	02-Nov-19	21-Dec-19	249	53-4800 FS, 53-1900 FS												
382	5.03.05	63-3500 Construct Perimeter Channel X6 on Eastern Bund of Cell 2	50	20-Feb-20	08-Apr-20	189	63-1000 FS, 53-3400 FS												
383	5.03.05	63-3600 Construct Perimeter Channel X6 Eastern Bund of Cell 3	50	06-Jun-20	26-Jul-20	129	63-1900 FS, 53-3900 FS												
384	5.03.05	63-3700 Culvert X6 (25m long) at Cell 1 Southern Bund	75	25-Jul-19	07-Oct-19	1314	53-4500 FS												
385	5.03.05	63-3800 Perimeter Channel (WB) at Cell 1 Southern & Western Bund	45	25-Jul-19	07-Sep-19	1344	53-1500 FS, 53-1600 FS												
386	5.03.05	63-3900 Drop Inlet & Culvert (WS) - 21m long	180	29-Jul-20	24-Jan-21	129	11-1100 FS, 23-1900 FS, 53-3600 FS												
387	5.03.05	63-4000 Sediment Trap (ST)	180	29-Jul-20	24-Jan-21	129	11-1100 FS, 23-1900 FS, 11-2200 FS, 53-3900 FF												
388	5.03.05	63-4100 Dual Culvert 14m long (connect to DPA)	180	29-Jul-20	24-Jan-21	129	11-1100 FS, 11-1200 FS, 23-1900 FS, 53-3900 FF												
389	SA2.5.03.06	Drainage - Groundwater	200	26-May-19	11-Dec-19	269													
390	5.03.06	63-4200 Construct Groundwater Collection Pipe along Cells X1 & X2 Eastern Bund	70	26-May-19	02-Aug-19	9	11-1100 FS, 23-1600 FS, 53-2900 FS												
391	5.03.06	63-4300 Construct Groundwater Collection Pipe along Cell X3 Eastern Bund	50	04-Aug-19	22-Sep-19	159	53-4200 FS												
392	5.03.06	63-4400 Construct Groundwater Collection Pipe along Interfill Bund X2X3	50	23-Oct-19	11-Nov-19	209	53-4300 FS, 53-1200 FS												
393	5.03.06	63-4500 Construct Manhole MH-X1	30	13-Nov-19	11-Dec-19	209	53-4400 FS												
394	SA2.5.03.07	Utilities - Distribution within New Infrastructure Area	391	11-Aug-19	04-Sep-20	276													
395	5.03.07	63-4600 Power Supply HV Works (Transformer & HV switchgear)	5	30-Jun-20	04-Jul-20	0	54-3000 FS												
396	5.03.07	63-4700 Power Distribution, LV Power Supply works	2	05-Jul-20	06-Jul-20	0	54-3100 FS, 12-1200 FS												
397	5.03.07	63-4800 Sewerage (Collection to LTP)	60	07-Jul-20	04-Sep-20	271	54-1000 FS, 54-3100 FS, 54-3200 FS, 54-4100 FS												
398	5.03.07	63-4900 Sewerage (Discharge to Site Boundary)	60	07-Jul-20	04-Sep-20	271	54-1000 FS, 54-4100 FS, 54-4600 FS												
399	5.03.07	63-5000 Lighting Provision	30	07-Jul-20	05-Aug-20	6	54-1000 FS, 54-4100 FS, 54-4600 FS												
400	5.03.07	63-5100 Fire Services	115	02-Mar-20	04-Jul-20	2	53-6800 FS												

Annex B

Environmental Mitigation Implementation Schedule

Annex B Environmental Mitigation Implementation Schedule

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks	
						D	C	O/R	A			
<i>Air Quality - Construction Phase</i>												
4.8.1	AQ1	<u>Blasting</u> <ul style="list-style-type: none"> The area within 30m of the blasting area will be wetted prior to blasting. Blasting will not be carried out when the strong wind signal or tropical cyclone warning signal No. 3 or higher is hoisted, unless this is with the express prior permission of the Commissioner of Mines. loose material and stones in the Site will be removed prior to the blast operation During blasting, blast nets, screens and other protective covers will be used to prevent the projection of flying fragments and material resulting from blasting 	To minimise potential dust nuisance	Blasting area and 30m of blasting area	SENTX Contractor					✓	<i>Air Pollution Control (Construction Dust) Regulations</i>	Not applicable. Blasting is not required in the latest landfill design
4.8.1	AQ2	<u>Rock Drilling</u> <ul style="list-style-type: none"> Watering will be carried out at the rock drilling activities to avoid fugitive dust emissions. 	To minimise potential dust nuisance	Rock drilling area	SENTX Contractor					✓	<i>Air Pollution Control (Construction Dust) Regulations</i>	Not applicable. Rock drilling is not required in the latest landfill design

(1) D=Design; C=Construction; O/R=Operation/Restoration; A=Aftercare

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
4.8.1	AQ3	<u>Site Access Road</u> <ul style="list-style-type: none"> The main haul road will be kept clear of dusty materials or sprayed with water. The main haul road will be paved with aggregate or gravel. Vehicle speed will be limited to 10kph. 	To minimise potential dust nuisance	Main haul road	SENTX Contractor				✓	<i>Air Pollution Control (Construction Dust) Regulations</i> <i>HKAQO and EIAO-TM Annex 4</i>	Implemented
4.8.1	AQ4	<u>Stockpiling of Dusty Materials</u> <ul style="list-style-type: none"> Any stockpile of dusty materials will be covered entirely by impervious sheeting or placed in an area sheltered on the top and three sides or sprayed with water so as to ensure that the entire surface is wet. 	To minimise potential dust nuisance	All construction works area	SENTX Contractor				✓	<i>Air Pollution Control (Construction Dust) Regulations</i> <i>HKAQO and EIAO-TM Annex 4</i>	Implemented
4.8.1	AQ5	<u>Loading, unloading or transfer of dusty materials</u> <ul style="list-style-type: none"> All dusty materials will be sprayed with water immediately prior to any loading, unloading or transfer operation so as to maintain the dusty material wet. 	To minimise potential dust nuisance	All construction works area	SENTX Contractor				✓	<i>Air Pollution Control (Construction Dust) Regulations</i> <i>HKAQO and EIAO-TM Annex 4</i>	Not applicable
4.8.1	AQ6	<u>Site Boundary and Entrance</u> <ul style="list-style-type: none"> Where a site boundary adjoins a road, street, service lane or other area accessible to the public, hoarding of height not less than 2.4m from 	To minimise potential dust nuisance	Site boundary and entrance	SENTX Contractor				✓	<i>Air Pollution Control (Construction Dust) Regulations</i> <i>HKAQO and EIAO-</i>	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		ground level will be provided along the entire length of that portion of the site boundary except for the site entrance or exit.									<i>TM Annex 4</i>
4.8.1	AQ7	<u>Excavation Works</u> <ul style="list-style-type: none"> Working area of any excavation or earth moving operation will be sprayed with water immediately before, during and immediately after the operation so as to ensure that the entire surface is wet. 	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			<i>Air Pollution Control (Construction Dust) Regulations</i> <i>HKAQO and EIAO-TM Annex 4</i>	Implemented
4.8.1	AQ8	<u>Building Demolition</u> <ul style="list-style-type: none"> The area where the demolition works are planned to take place will be sprayed with water immediately prior to, during and immediately after the demolition activities. Any dusty materials remaining after a stockpile is removed will be wetted with water and cleared from the surface of roads or street. 	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			<i>Air Pollution Control (Construction Dust) Regulations</i> <i>HKAQO and EIAO-TM Annex 4</i>	Not applicable
4.8.1	AQ9	<u>Construction of the Superstructure of Building</u> <ul style="list-style-type: none"> Effective dust screens, sheeting or netting will be provided to enclose the scaffolding from the ground level up to the highest level of the scaffolding. 	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			<i>Air Pollution Control (Construction Dust) Regulations</i> <i>HKAQO and EIAO-TM Annex 4</i>	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
4.8.1	AQ10	Should a stone crushing plant be needed on site, the control measures recommended in the <i>Best Practicable Means Requirement for Mineral Works (Stone Crushing Plants) BPM 11/1</i> should be implemented.	To minimise potential dust nuisance	Stone crushing plant/ construction phase	SENTX Contractor		✓			<i>Best Practicable Means Requirement for Mineral Works (Stone Crushing Plants) BPM 11/1</i>	Not applicable. Stone crushing plant is not required in the latest landfill design
4.8.1	AQ11	Good site practices such as regular maintenance and checking of the diesel powered mechanical equipment will be adopted to avoid any black smoke emissions and to minimize gaseous emissions.	To minimise potential dust nuisance	All construction works area	SENTX Contractor		✓			<i>HKAQO and EIAO-TM Annex 4</i>	Implemented
4.10.1	AQ12	Dust monitoring once every 6 days	Ensure the dust generated from the project meets the air quality requirement	At monitoring locations shown in <i>Figure 3.2a</i>	SENTX Contractor		✓			<i>HKAQO and EIAO-TM Annex 4</i>	Implemented
4.10.2	AQ41	Monitoring of ambient TSP once every 6 days	Ensure the dust emission from the project meets the dust requirement	At monitoring locations shown in <i>Figure 11.3a</i>	SENTX Contractor		✓	✓		<i>HKAQO and EIAO-TM Annex 4</i>	Implemented
4.10.2	AQ46	Monitoring of meteorological station, continuously	Collect site specific meteorological data	At meteorological station shown in <i>Figure 11.3a</i>	SENTX Contractor		✓	✓	✓	-	Implemented

Noise – Construction Phase

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
5.7.1	N1	<p>Adopt good site practice listed below:</p> <ul style="list-style-type: none"> • Only well-maintained plant will be operated on-site and plant should be serviced regularly during the construction program; • Silencers or mufflers on construction equipment should be utilized and will be properly maintained during the construction program; • Mobile plant, if any, will be sited as far from NSRs as possible; • Machines and plant (such as trucks) that may be in intermittent use will be shut down between work periods or should be throttled down to a minimum; • Plant known to emit noise strongly in one direction will, wherever possible, be orientated so that the noise is directed away from the nearby NSRs; and • Material stockpiles and other structures will be effectively utilised, wherever practicable, in screening noise from on-site construction activities. 	To minimise potential construction noise nuisance.	All construction works area	SENTX Contractor				✓	<i>Noise Control Ordinance (NCO) and EIAO-TM Annex 5</i>	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
5.8	N2	Weekly noise monitoring	Ensure noise generated from the project meets the criteria	At monitoring locations shown in Figure 6.4a	SENTX Contractor		✓			Noise Control Ordinance (NCO) and EIAO-TM Annex 5	Implemented
Water Quality – Construction Phase											
6.8.1	WQ1	<u>Construction Runoff</u> <ul style="list-style-type: none"> Exposed soil areas will be minimised to reduce the contamination of runoff and erosion. 	To minimise potential water quality impacts arising from the construction works	All construction works area	SENTX Contractor		✓			ProPECC PN 1/94 EIAO-TM Annex 6	Reminder was given to Contractor
6.8.1	WQ2	<ul style="list-style-type: none"> Perimeter channels will be constructed in advance of site formation works and earthworks and intercepting channels will be provided for example along the edge of excavation. 	To minimise potential water quality impacts arising from the construction works	All construction works area	SENTX Contractor		✓	✓		ProPECC PN 1/94 Water Pollution Control Ordinance (WPCO) EIAO-TM Annex 6	Implemented
6.8.1	WQ3	<ul style="list-style-type: none"> Silt removal facilities, channels and manholes will be maintained and the deposited silt and grit should be removed regularly to ensure they are functioning properly at all times. 	To minimise potential water quality impacts arising from the construction works	All construction works area	SENTX Contractor		✓			ProPECC PN 1/94 WPCO EIAO-TM Annex 6	Deficiency of mitigation measures but rectified by the Contractor
6.8.1	WQ4	<ul style="list-style-type: none"> Temporary covers such as tarpaulin will also be provided to minimise the generation of high SS runoff. 	To minimise potential water quality impacts arising from the construction works	All construction works area	SENTX Contractor		✓			ProPECC PN 1/94 WPCO	Implemented
6.8.1	WQ5	<ul style="list-style-type: none"> The surface runoff contained any oil 	To minimise potential	All	SENTX		✓			ProPECC PN 1/94	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		and grease will pass through the oil interceptors.	water quality impacts arising from the construction works	construction works area	Contractor					WPCO EIAO-TM Annex 6	
6.8.1	WQ6	<ul style="list-style-type: none"> All sewer and drains will be sealed to prevent building debris, soil etc from entering public sewers/drains before commencing any demolition works 	To minimise potential water quality impacts arising from the demolition works	Infrastructure area at existing SENT Landfill	SENTX Contractor		✓			ProPECC PN 1/94 WPCO EIAO-TM Annex 6	Not applicable
6.8.1	WQ7	<ul style="list-style-type: none"> During the excavation works for the twin drainage tunnels, the recycle water for cooling the cutter head of the TBM will be conveyed to the sedimentation tanks for treatment and most of the treated water will be reused, where applicable and as much as possible, in the boring operations. 	To minimise potential water quality impacts arising from the tunnel works	Tunnel boring sites	SENTX Contractor		✓			ProPECC PN 1/94 WPCO EIAO-TM Annex 6	Not applicable. Excavation of drainage tunnels is not required in the latest landfill design.
6.8.1	WQ8	<ul style="list-style-type: none"> The fuel and waste lubricant oil from the on-site maintenance of machinery and equipment will be collected by a licensed chemical waste collector. 	To minimise potential water quality impacts arising from improper handling of fuel and oil	SENTX Site	SENTX Contractor		✓			ProPECC PN 1/94 WPCO Waste Disposal Ordinance (WDO)	Not applicable
6.8.1	WQ9	<ul style="list-style-type: none"> Implementation of excavation schedules, lining and covering of excavated stockpiles 	To minimise contaminated stormwater run-off from the SENTX Site	All construction works	SENTX Contractor		✓			ProPECC PN 1/94 WPCO EIAO-TM Annex 6	Not applicable
6.13	WQ10	<ul style="list-style-type: none"> Monitoring of surface water quality will be conducted on a regular basis as stated in the EM&A Manual. 	To minimise potential water quality impacts on surface water arising from the construction works	SENTX Site	SENTX Contractor		✓			WPCO Water-TM	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks		
						D	C	O/R	A				
6.8.2	WQ11	<u>Sewage Effluents</u> • Sufficient chemical toilets will be provided for the construction workforce.	To minimise potential water quality impacts arising from the sewage effluents	SENTX Site	SENTX Contractor					✓	WPCO	Implemented	
6.8.2	WQ12	• Untreated sewage will not be allowed to discharge into the surrounding water body.	To minimise potential water quality impacts arising from the sewage effluents	SENTX Site	SENTX Contractor					✓	WPCO WDO	Implemented	
6.8.2	WQ13	• A licensed waste collector will be employed to clean the chemical toilets on a regular basis.	To minimise potential water quality impacts arising from the sewage effluents	SENTX Site	SENTX Contractor					✓	WPCO WDO	Implemented	
Waste Management – Construction Phase													
7.6.1	WM1	All the necessary waste disposal permits are obtained prior to the commencement of construction work.	To ensure compliance with relevant statutory requirements	Before construction works commence	SENTX Contractor					✓	✓	WDO	Implemented
7.6.1	WM2	<u>Management of Waste Disposal</u> The construction contractor will open a billing account with the EPD. Every construction waste or public fill load to be transferred to the Government waste disposal facilities such as public fill reception facilities, sorting facilities, landfills will required a valid “chit” which contains the information of the account holder to facilitate waste	To ensure that adverse environmental impacts are prevented	SENTX Site	SENTX Contractor					✓		WDO <i>Waste Disposal (Charges for Disposal of Construction Waste) Regulation;</i> <i>Works Bureau Technical Circular No.31/2004; and</i>	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		<p>transaction recording and billing to the waste producer. A trip-ticket system will also be established to monitor the disposal of construction waste at the SENT Landfill and to control fly-tipping. The trip-ticket system will be included as one of the contractual requirements and implemented by the contractor.</p> <p>A recording system for the amount of waste generated, recycled and disposed of (including the disposal sites) will be established.</p>								Annex 5 and Annex 6 of Appendix G of ETWBTC No. 19/2005)	
7.6.1	WM3	<p><u>Measures for the Reduction of Construction Waste Generation</u></p> <p>Inert and non-inert construction waste will be segregated and stored in different containers or skips to facilitate reuse or recycling of the inert waste and proper disposal of the non-inert construction waste. Specific areas of the work site will be designated for such segregation and storage if immediate use is not practicable.</p>	To reduce construction waste generation	SENTX Site	SENTX Contractor			✓		WDO EIAO-TM Annex 7	Implemented
7.6.1	WM4	<p><u>Chemical Waste</u></p> <p>The construction contractor will register as a chemical waste producer with the EPD. Chemical waste will be handled in accordance with the <i>Code of Practice on the Packaging, Handling and Storage of</i></p>	To ensure proper handling of chemical waste	SENTX Site	SENTX Contractor			✓		WDO <i>Code of Practice on the Packaging, Handling and Storage of Chemical Wastes</i>	Deficiency of mitigation measures but rectified by the Contractor

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
<i>Chemical Wastes.</i>											
7.6.1	WM5	<u>Sewage</u> An adequate number of portable toilets will be provided at the site to ensure that sewage from site staff is properly collected. The portable toilets will be desludged and maintained regularly by a specialist contractor.	To ensure proper handling of sewage	SENTX Site	SENTX Contractor			✓		WDO EIAO-TM Annex 7	Implemented
7.6.1 and SENTX latest design	WM6	<u>General Refuse</u> General refuse will be stored in enclosed bins separately from construction and chemical wastes. The general refuse will be delivered to a transfer station or other landfill, separately from construction and chemical wastes, on a daily basis to reduce odour, pest and litter impacts. Recycling bins will be provided at strategic locations to facilitate recovery of aluminium can and waste paper from the SENTX Site. Materials recovered will be sold for recycling.	To ensure proper handling of general refuse	SENTX Site	SENTX Contractor			✓		WDO EIAO-TM Annex 7	Deficiency of mitigation measures but rectified by the Contractor
7.6.1	WM7	<u>Staff Training</u> At the commencement of the construction works, training will be provided to workers on the concepts of site cleanliness and on appropriate waste management procedures, including	To ensure that adverse environmental impacts are prevented	SENTX Site	SENTX Contractor			✓			Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
7.8	WM8	waste reduction, reuse and recycling. <u>Environmental Monitoring & Audit Requirements</u> Weekly audits of the waste management practices will be carried out during the construction phase. The audits examine all aspects of waste management including waste generation, storage, recycling, transport and disposal.	To ensure that adverse environmental impacts are prevented	SENTX Site	SENTX Contractor		✓		WDO	Implemented	
Landfill Gas Hazards - Design and Construction Phase											
8.6.2 and SENTX latest design	LFG1	Precautionary measures to be adopted by the contractors at the Project site and the adjacent development site within the landfill consultation zone are outlined in Paragraphs 8.3 to 8.49 of EPD's <i>Landfill Gas Hazard Assessment Guidance Notes (the Guidance Note)</i> . Those precautionary measures applicable to the SENTX will be confirmed in the detailed Qualitative Landfill Gas Hazard Assessment to be submitted by the contractor.	To protect workers from landfill gas risk	All construction works area	SENTX Contractor		✓		<i>Paragraphs 8.3 to 8.49 of EPD's Landfill Gas Hazards Assessment Guidance Note</i> <i>EIAO-TM Annex 7</i>	Implemented	
8.6.2	LFG2	Monitoring will be undertaken when construction works are carried out in confined space within the consultation zone with reference to the monitoring requirements and procedures specified in Paragraphs 8.23 to 8.28 of EPD's <i>Guidance Note</i> will be followed.	To protect workers from landfill gas risk	Confined space within the construction works area	SENTX Contractor		✓			Not applicable	

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		In the event of the trigger levels being exceeded, it is recommended that a person, such as the Safety Officer, is nominated, with deputies, to be responsible for dealing with any emergency which may occur due to landfill gas. In an emergency situation, the nominated person, or his deputies, shall have the necessary authority and shall ensure that the confined space is evacuated and the necessary works implemented for reducing the concentrations of gas. The appropriate organisations shall be contact.									
8.6.3	LFG4	Implementation of engineering measures according to Contract Specification requirements. These measures will include the placement of liner and installation of landfill gas management system to contain, manage and control landfill gas.	To protect workers from landfill gas risk	SENTX Site	SENTX Contractor	✓	✓	✓	✓	EIAO-TM Annex 7	Not applicable
8.6.3	LFG5	Engineering measures to significant engineering measures will be required in the design of the SENTX to protect the staff working in the infrastructure area. These measures include a combination of passive and active systems (examples are recommended in EPD's <i>Guidance Notes</i>). Landfill gas monitoring boreholes will be installed at the edge of the waste slope	To protect workers from landfill gas risk	Infrastructure Area	SENTX Contractor	✓	✓			EPD's <i>Landfill Gas Hazards Assessment Guidance Note</i> EIAO-TM Annex 7	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks			
						D	C	O/R	A					
		<ul style="list-style-type: none"> The surface runoff contained any oil and grease will pass through the oil interceptors; and, Control measures, including implementation of excavation schedules, lining and covering of excavated stockpiles will be implemented to minimise contaminated stormwater run-off from the SENTX site. 								-	Not applicable			
										-	Not applicable			
9.10.2 and SENTX latest design	EC2	<u>Good Construction Practice:</u>												
		<ul style="list-style-type: none"> Fences along the boundary of the SENTX Site will be erected before the commencement of works to prevent vehicle movements, and encroachment of personnel, onto adjacent areas. The work site boundaries will be regularly checked to ensure that they are not breached and that damage does not occur to surrounding areas. 	To minimise potential ecological impacts arising from the Project	SENTX Site	SENTX Contractor					✓	EIAO-TM Annex 16	Implemented		
9.12.1	EC9	<u>Environmental Monitoring & Audit Requirements</u>												
		The implementation of the ecological mitigation measures should be checked as part of the environmental monitoring and audit procedures during the	To ensure that adverse ecological impacts are prevented	SENTX	SENTX Contractor					✓	✓	✓	EIAO-TM Annex 16	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
construction period.											
Landscape and Visual – Construction Phase											
10.6.5	LV1	CM1 - The construction area and area allowed for the contractor's office, leachate treatment plant and laboratory areas will be minimised to a practical minimum, to avoid impacts on adjacent landscape.	To minimise the landscape and visual impacts	SENTX Site	SENTX Contractor	✓				<i>EIAO-TM Annex 18 and ETWBC 3/2006</i>	Not applicable
10.6.5	LV2	CM2 - Topsoil, where identified, will be stripped and stored for re-use in the construction of the soft landscape works, where practical. The Contract Specification will include storage and reuse of topsoil as appropriate.	To minimise the landscape and visual impacts	All construction works area	SENTX Contractor	✓				<i>EIAO-TM Annex 18</i>	Implemented
10.6.5	LV3	CM3 - All existing trees at the edges of the landfill will be carefully protected during construction. Detailed Tree Protection Specification will be provided in the Contract Specification. Under this Specification, the Contractor will be required to submit, for approval, a detailed working method statement for the protection of trees prior to undertaking any works adjacent to all retained trees, including trees in Contractor's works areas.	To minimise the landscape and visual impacts	Potential impacted area	SENTX Contractor	✓				<i>EIAO-TM Annex 18 and ETWBC 3/2006</i>	Implemented
10.6.5	LV4	CM4 - Trees unavoidably affected by the works will be transplanted, where necessary and practical. A detailed Tree	To minimise the landscape and visual impacts	Potential impacted area	SENTX Contractor	✓	✓			<i>EIAO-TM Annex 18 and ETWBC 3/2006</i>	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		Transplanting Specification will be provided in the Contract Specification, if applicable. Sufficient time for necessary tree root and crown preparation periods will be allowed in the project programme.									
10.6.5 and SENTX latest design	LV5	CM5 - Within 3 months of taking possession of the SENTX Site, the Contractor will plant advance screen planting of native species at Light Standard size at 1.5m centres along the High Junk Peak Trail so as to screen views of the Works from the trail. Tree planting locations will be agreed with AFCD. Works will be completed within 9 months of taking possession of the SENTX Site.	To minimise the landscape and visual impacts	At High Junk Peak Hiking Trail	SENTX Contractor		✓			<i>EIAO-TM Annex 18</i>	Implemented
10.6.5	LV6	CM6 - The Contractor's office, leachate treatment plant and laboratory will be given an aesthetic treatment in earth tones to reduce their visual impact and albedo and blend them into the surrounding landscape.	To minimise the landscape and visual impacts	Infrastructure area	SENTX Contractor	✓	✓			<i>EIAO-TM Annex 18</i>	Not applicable
10.6.5	LV7	CM7 - The Contractor's office, leachate treatment plant and laboratory will be surrounded by a minimum of 5m wide and 0.75m high earth bund on the west and south sides planted with a dense screen of tree and shrub vegetation. Additional tree planting will be provided in unused spaces with thin infrastructure	To minimise the landscape and visual impacts	Infrastructure area	SENTX Contractor	✓	✓			<i>EIAO-TM Annex 18 and ETWBC 7/2002</i>	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to implement the measure? ⁽¹⁾				What requirements or standards for the measure to achieve?	Implementation Status and Remarks
						D	C	O/R	A		
		site, along access roads and in and around car parks. This will be supplemented with shrub planting, where appropriate.									
10.6.5	LV8	CM8 - Planting trials will be carried out in an on-site nursery prior to implementation of the first phase of restoration to establish the best planting matrix and management intensity of the recommended plant materials for the restoration.	To minimise the landscape and visual impacts	SENTX Site	SENTX Contractor		✓			<i>EIAO-TM Annex 18</i>	Not applicable
11.4.1 and SENTX latest design	LV9	During the preparation of the detailed landscape design plan, the design submission will be audited against the recommendation proposed in the <i>ER Report</i> by the Registered Landscape Architect from the ET.	To ensure the implementation of mitigation measures proposed in this EIA Report	SENTX Site	SENTX Contractor/E T	✓	✓			<i>EIAO-TM Annex 18</i>	Implemented

Annex C

Monitoring Schedule for This Reporting Period

**South East New Territories (SENT) Landfill Extension
EM&A Impact Monitoring Schedule during Construction Phase**

April 2019

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4 Dust Monitoring Surface Water Monitoring (pm) Noise Monitoring (pm)	5	6
7	8	9	10 Dust Monitoring Surface Water Monitoring (pm) Noise Monitoring (pm)	11	12	13
14	15	16 Dust Monitoring	17	18 Surface Water Monitoring (pm) Noise Monitoring (pm)	19	20
21	22 Dust Monitoring	23	24 Surface Water Monitoring (pm) Noise Monitoring (pm)	25	26	27
28 Dust Monitoring	29	30				

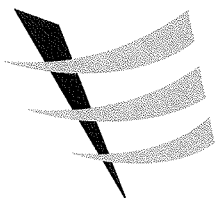
Note:
Impact dust monitoring will be conducted at two monitoring stations (DM1 and DM2) under the on-going EM&A programme TKO Area 137 Fill Bank and the results will be shared with SENTX.

Annex D

Air Quality

Annex D1

Calibration Certificates for Dust Monitoring Equipment



Calibration Report
of
High Volume Air Sampler

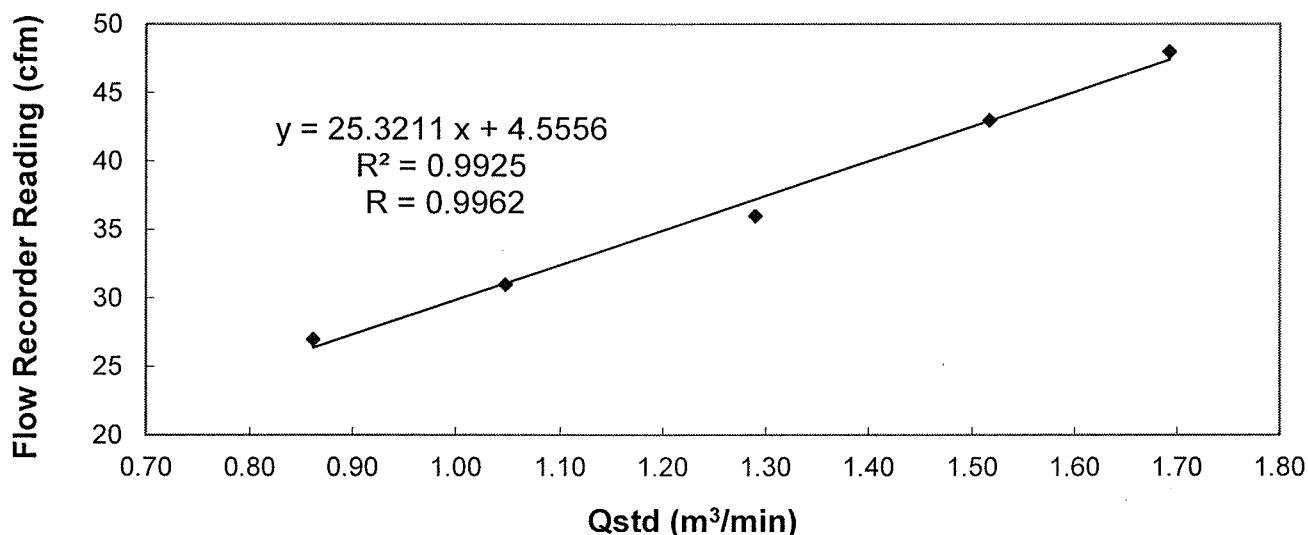
Manufacturer : Graseby 105 Date of Calibration : 12 April 2019

Serial No. : 9795 (ET / EA / 003 / 18) Calibration Due Date : 11 June 2019

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

Results	Flow recorder reading (cfm)	48	43	36	31	27
	Qstd (Actual flow rate, m ³ /min)	1.69	1.52	1.29	1.05	0.86
	Pressure : 762.06 mm Hg	Temp. : 296 K				

Sampler 9795 Calibration Curve
Site: Tseung Kwan O 137 (TKO-A1)

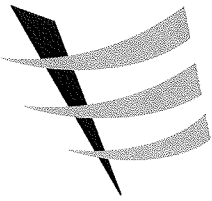


Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

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

Calibrated by :
LIAO, Yun Chao
(Technician)

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



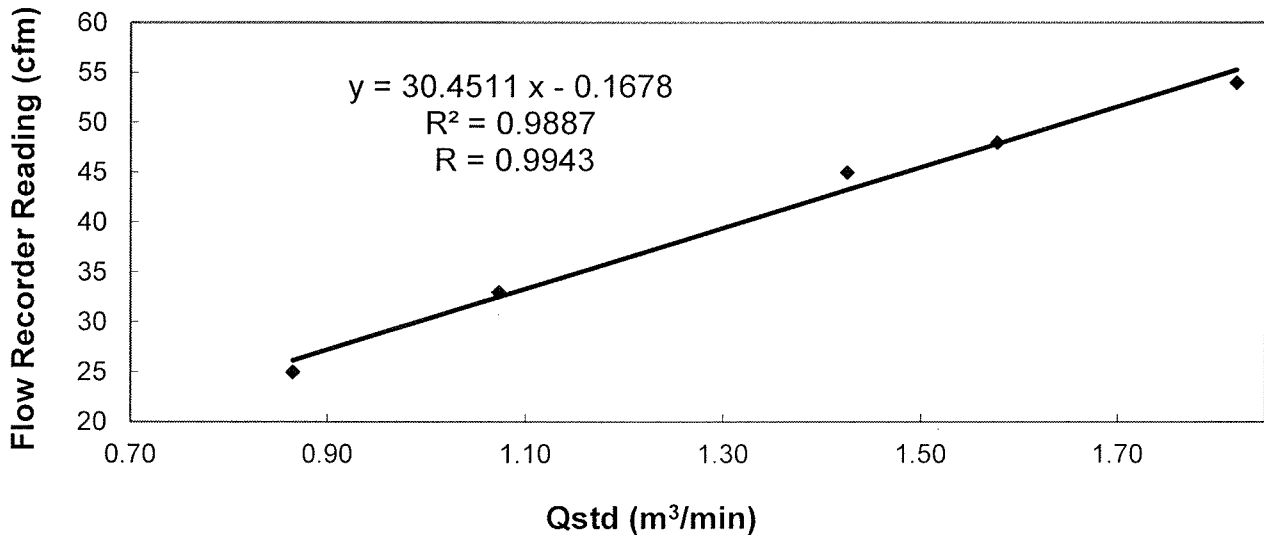
Calibration Report
of
High Volume Air Sampler

Manufacturer : Andersen G1051 **Date of Calibration** : 15 February 2019
Serial No. : 1176 (ET / EA / 003 / 05) **Calibration Due Date** : 14 April 2019
Method : Based on Operations Manual for the 5-point calibration using standard calibration kit
manufactured by Tisch TE-5025 A

Results :

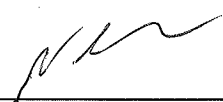
Flow recorder reading (cfm)	54	48	45	33	25
Qstd (Actual flow rate, m ³ /min)	1.82	1.58	1.43	1.07	0.86
Pressure :	768.81 mm Hg		Temp. :	291 K	

Sampler 1176 Calibration Curve
Site: Tseung Kwan O 137 (TKO-A2a)

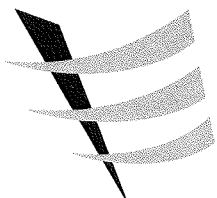


Acceptance Criteria : Correlation coefficient (r) of the calibration curve greater than 0.990 after a 5-point calibration

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

Calibrated by : 
LIAO, Yun Chao
(Technician)

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



Calibration Report
of
High Volume Air Sampler

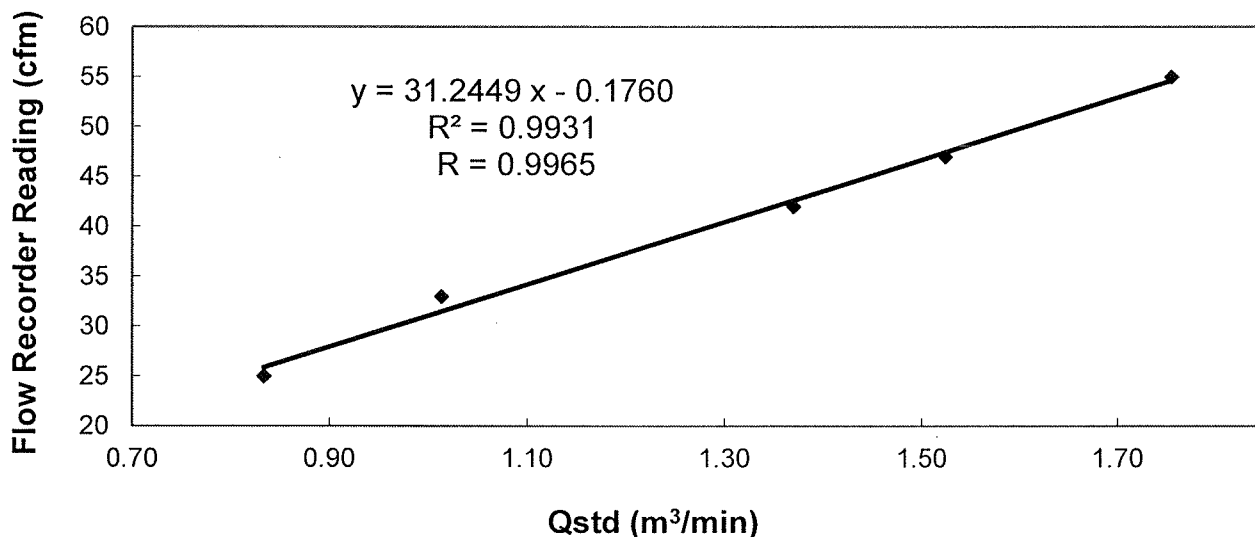
Manufacturer : Andersen G1051 Date of Calibration : 12 April 2019

Serial No. : 1176 (ET / EA / 003 / 05) Calibration Due Date : 11 June 2019

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

Results	Flow recorder reading (cfm)	55	47	42	33	25
	Qstd (Actual flow rate, m ³ /min)	1.75	1.52	1.37	1.01	0.83
	Pressure :	762.06 mm Hg			Temp. :	296 K

Sampler 1176 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 :
LIAO, Yun Chao
(Technician)

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

Annex D2

24-hour TSP Monitoring Results

Table D2.1 24-hour TSP Monitoring Results at DM1

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP ($\mu\text{g}/\text{m}^3$)
4 Apr 19	8:00	5 Apr 19	8:00	Fine	90
10 Apr 19	14:30	11 Apr 19	14:30	Fine	100
16 Apr 19	8:00	17 Apr 19	8:00	Fine	99
22 Apr 19	8:00	23 Apr 19	8:00	Fine	76
28 Apr 19	8:00	29 Apr 19	8:00	Fine	82
Average					89
Min					76
Max					100

Note:
DM1 corresponds to the existing TSP monitoring station TKO-A1 currently operating by CEDD.

Figure D2.1 Graphical Presentation for 24-hr TSP Monitoring at DM1

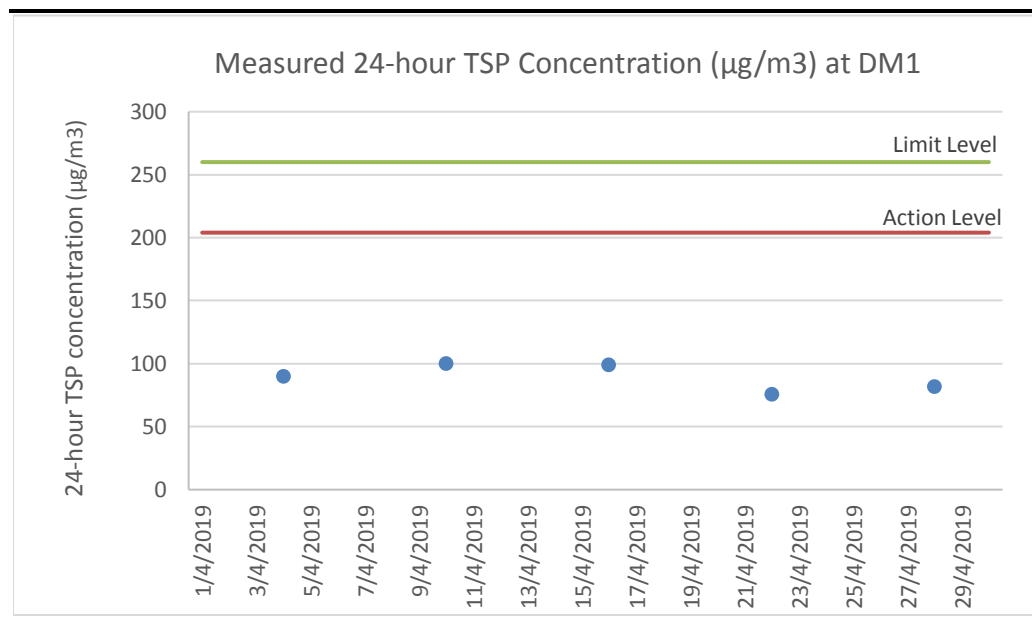


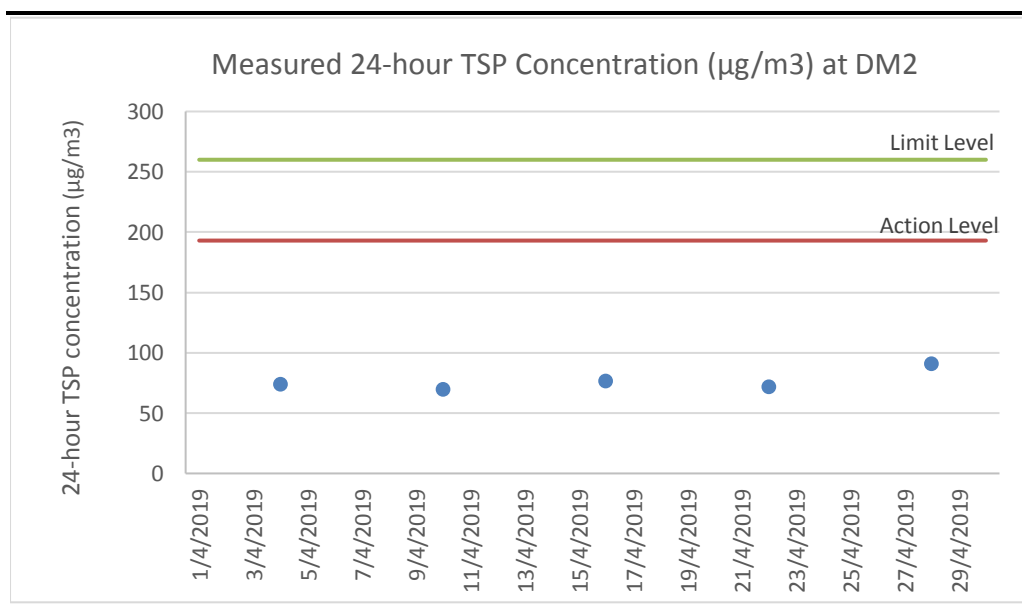
Table D2.2 24-hour TSP Monitoring Results at DM2

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP ($\mu\text{g}/\text{m}^3$)
4 Apr 19	8:00	5 Apr 19	8:00	Fine	74
10 Apr 19	14:38	11 Apr 19	14:38	Fine	70
16 Apr 19	8:00	17 Apr 19	8:00	Fine	77
22 Apr 19	8:00	23 Apr 19	8:00	Fine	72
28 Apr 19	8:00	29 Apr 19	8:00	Fine	91
Average					77
Min					70
Max					91

Note:

DM2 corresponds to the existing TSP monitoring station TKO-A2a currently operating by CEDD.

Figure D2.2 Graphical Presentation for 24-hr TSP Monitoring at DM2



Annex D3

Event and Action Plan for Dust Monitoring

Annex D3 *Event and Action Plan for Dust Monitoring During Construction Phase*

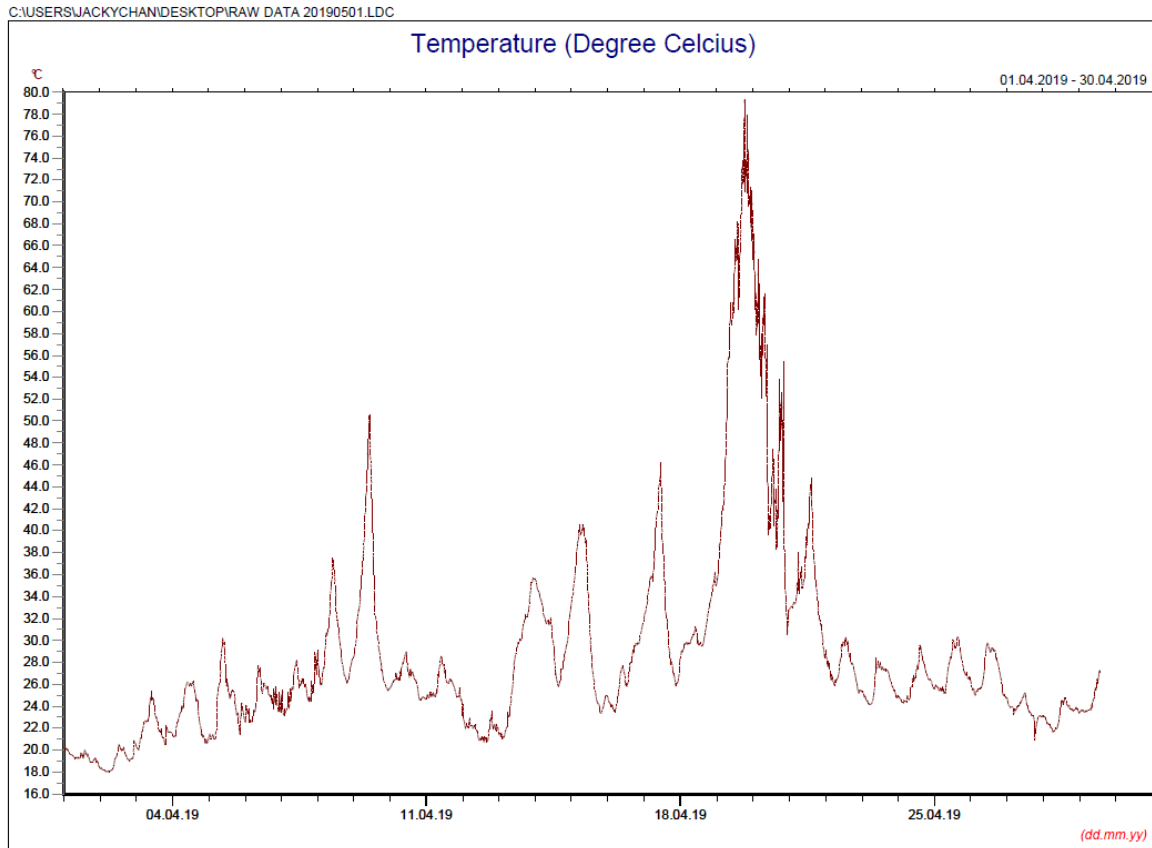
Event	Action		
	ET	IEC	Contractor
<i>Action Level</i>			
Exceedance for one sample	<ul style="list-style-type: none"> Identify the source(s) and investigate the cause(s) of exceedance Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project Repeat measurement to confirm finding if exceedance is due to the Project Increase monitoring frequency to daily if exceedance is due to the Project and continue until the monitoring results reduce to below action level 	<ul style="list-style-type: none"> Verify the Notification of Exceedance Check monitoring data submitted by ET Check Contractor's working methods 	<ul style="list-style-type: none"> Rectify any unacceptable practice Amend working methods if appropriate
Exceedance for two or more consecutive samples	<ul style="list-style-type: none"> Identify the source(s) and investigate the cause(s) of exceedance Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project Discuss with Contractor and IEC for remedial measures required Ensure remedial measures are properly implemented If exceedance continues, arrange meeting with Contractor & IEC Continue monitoring at daily intervals if exceedance is due to the Project If no exceedance for 3 consecutive days, cease additional monitoring 	<ul style="list-style-type: none"> Verify the Notification of Exceedance Check monitoring data submitted by ET Check Contractor's working methods Discuss with ET and Contractor on proposed remedial measures Review proposals on remedial measures Audit the implementation of the remedial measures Audit the effectiveness of the implemented remedial measures 	<ul style="list-style-type: none"> Submit proposals for remedial measures to IEC Implement the agreed proposals Amend proposal if appropriate

Event	Action		
	ET	IEC	Contractor
<i>Limit Level</i>			
Exceedance for one sample	<ul style="list-style-type: none"> Identify the source(s) and investigate the cause(s) of exceedance Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC, Project Proponent and EPD whether the cause of exceedance is due to the Project Discuss with Contractor and IEC for remedial measures required Ensure remedial measures are properly implemented Repeat measurement to confirm finding if exceedance is due to the Project Increase monitoring frequency to daily if exceedance is due to the Project and continue until the monitoring results reduce to below limit level 	<ul style="list-style-type: none"> Verify the Notification of Exceedance Check monitoring data submitted by ET Check Contractor's working methods Discuss with ET and Contractor on proposed remedial measures Review proposals on remedial measures Audit the implementation of the remedial measures Audit the effectiveness of the implemented remedial measures 	<ul style="list-style-type: none"> Take immediate action to avoid further exceedance Submit proposals for remedial measures to IEC Implement the agreed proposals Amend proposal if appropriate
Exceedance for two or more consecutive samples	<ul style="list-style-type: none"> Identify source(s) and investigate the cause(s) of exceedance Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC, Project Proponent and EPD the causes & actions taken for the exceedances Discuss with Contractor and IEC for remedial measures required Ensure remedial measures are properly implemented Continue monitoring at daily intervals if exceedance is due to the Project If no exceedance for 3 consecutive days, cease additional monitoring If exceedance due to the Project continues, consider what portion of the work is responsible and stop that portion of work until the exceedance is abated 	<ul style="list-style-type: none"> Verify the Notification of Exceedance Check monitoring data submitted by ET Check Contractor's working methods Discuss with ET and Contractor on proposed remedial measures Review proposals on remedial measures Audit the implementation of the remedial measures Audit the effectiveness of the implemented remedial measures 	<ul style="list-style-type: none"> Take immediate action to avoid further exceedance Submit proposals for remedial measures to IEC Implement the agreed proposals Resubmit proposals if problem still not under control

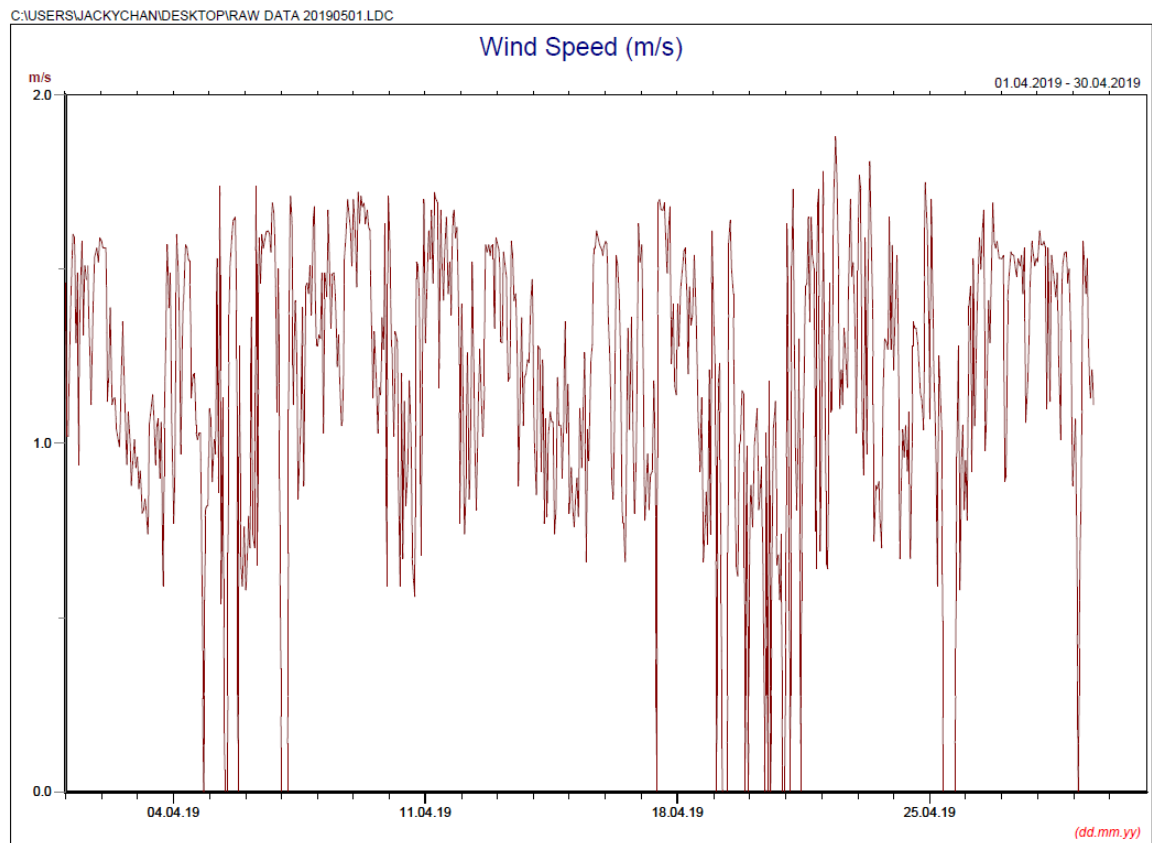
Annex D4

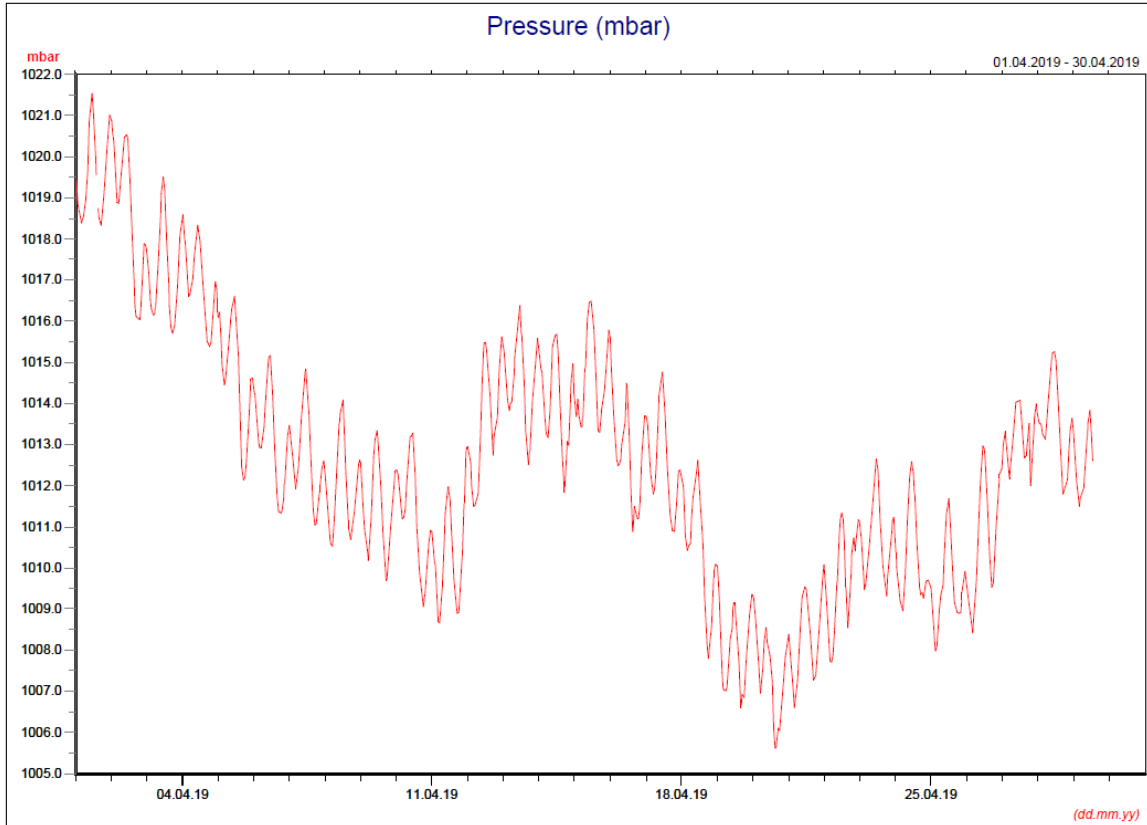
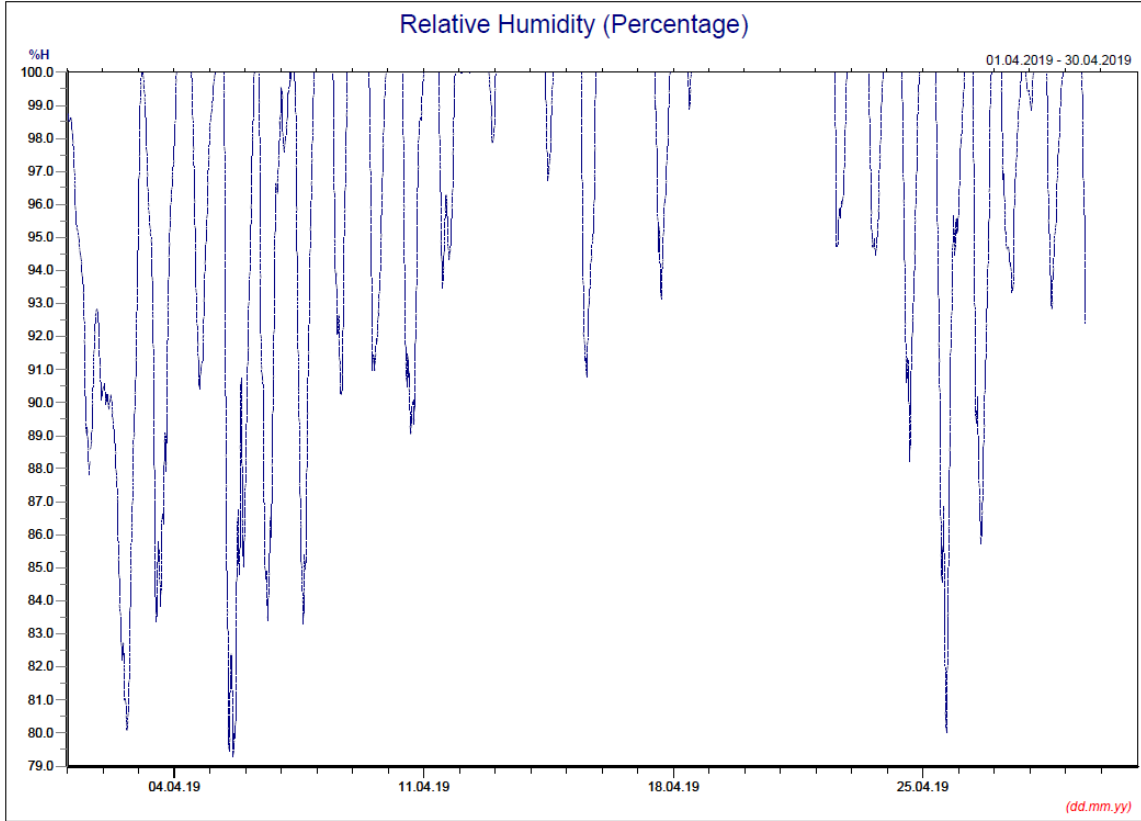
Meteorological Data

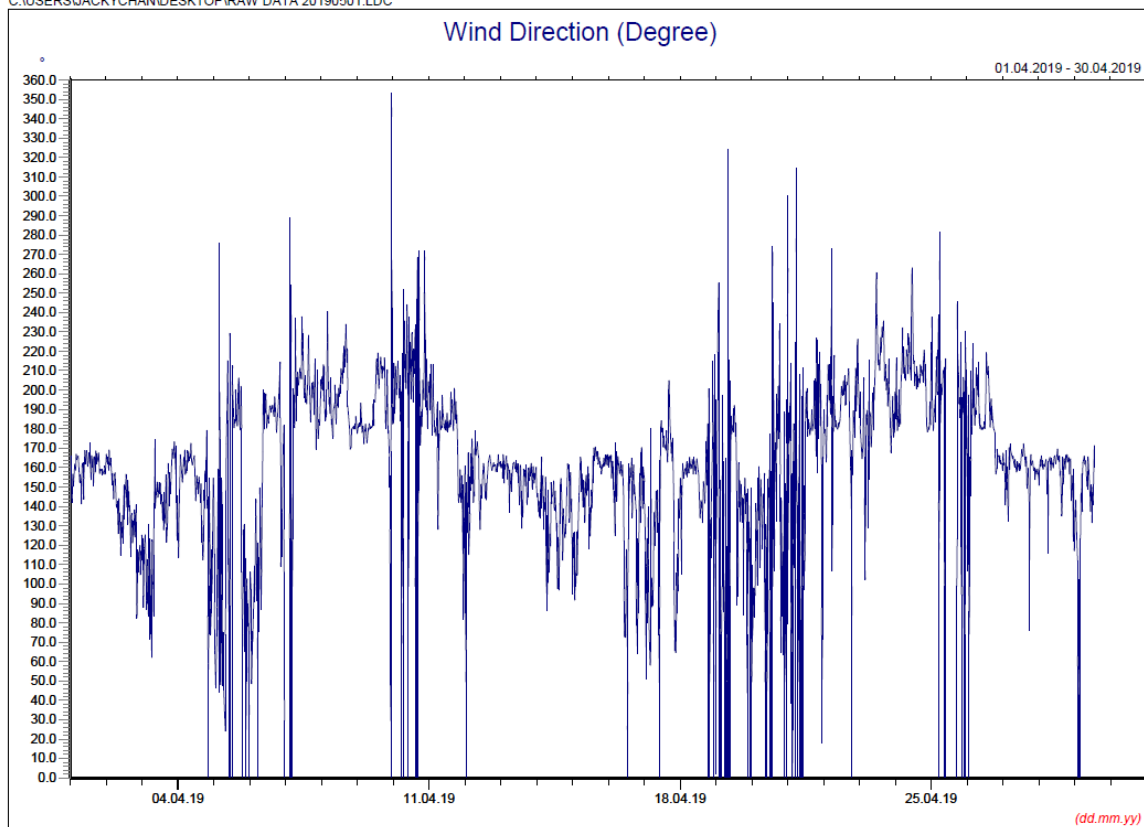
Annex D4 Meteorological Data



* Note: Data on 20 April 2019 was discarded due to equipment failure.







Manual Rain Gauge Readings

April 2019

Date	Rainfall (mm)
1 Apr 19	0.2
2 Apr 19	0.0
3 Apr 19	0.4
4 Apr 19	0.0
5 Apr 19	0.0
6 Apr 19	0.0
7 Apr 19	0.0
8 Apr 19	0.0
9 Apr 19	0.0
10 Apr 19	0.0
11 Apr 19	0.5
12 Apr 19	23.8
13 Apr 19	1.6
14 Apr 19	10.2
15 Apr 19	3.7
16 Apr 19	8.2
17 Apr 19	0.2
18 Apr 19	23.4
19 Apr 19	95.4
20 Apr 19	28.9
21 Apr 19	0.3
22 Apr 19	0.0
23 Apr 19	0.0
24 Apr 19	0.0
25 Apr 19	0.0
26 Apr 19	0.1
27 Apr 19	15.2
28 Apr 19	0.1
29 Apr 19	0.0
30 Apr 19	13.9
TOTAL RAINFALL	226.1

Annex E

Noise

Annex E1

Calibration Certificates for Noise Monitoring Equipment

Certificate of Calibration

校正證書

Certificate No. : C183086
證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-0867) Date of Receipt / 收件日期 : 29 May 2018
Description / 儀器名稱 : Integrating Sound Level Meter (EQ009)
Manufacturer / 製造商 : Brüel & Kjær
Model No. / 型號 : 2238
Serial No. / 編號 : 2285722
Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : $(23 \pm 2)^{\circ}\text{C}$ Relative Humidity / 相對濕度 : $(50 \pm 25)\%$
Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check


DATE OF TEST / 測試日期 : 10 June 2018

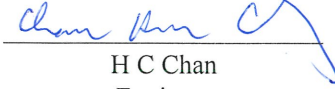
TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.
The results do not exceed manufacturer's specification.
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA

Tested By : 
測試 : K C Lee
Engineer

Certified By : 
核證 : H C Chan
Engineer

Date of Issue : 11 June 2018
簽發日期

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

Certificate of Calibration

校正證書

Certificate No. : C183086
證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours, and switched on to warm up for over 10 minutes before the commencement of the test.
- Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.
- The results presented are the mean of 3 measurements at each calibration point.

- Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL280	40 MHz Arbitrary Waveform Generator	C180024
CL281	Multifunction Acoustic Calibrator	PA160023

- Test procedure : MA101N.

- Results :

- 6.1 Sound Pressure Level

- 6.1.1 Reference Sound Pressure Level

- 6.1.1.1 Before Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L _{AFP}	A	F	94.00	1	94.1

- 6.1.1.2 After Self-calibration

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L _{AFP}	A	F	94.00	1	94.0	± 0.7

- 6.1.2 Linearity

UUT Setting				Applied Value		UUT Reading (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)	
50 - 130	L _{AFP}	A	F	94.00	1	94.0 (Ref.)
				104.00		104.0
				114.00		114.0

IEC 60651 Type 1 Spec. : ± 0.4 dB per 10 dB step and ± 0.7 dB for overall different.

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration

校正證書

Certificate No. : C183086
證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq. (kHz)		
50 - 130	L _{AFP}	A	F	94.00	1	94.0	Ref.
	L _{ASP}		S			94.1	± 0.1
	L _{AIP}		I			94.1	± 0.1

6.2.2 Tone Burst Signal (2 kHz)

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Burst Duration		
30 - 110	L _{AFP}	A	F	106.0	Continuous	106.0	Ref.
	L _{AFMax}				200 ms	104.9	-1.0 ± 1.0
	L _{ASP}	S	Continuous		106.0	Ref.	
	L _{ASMax}		500 ms		102.0	-4.1 ± 1.0	

6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{AFP}	A	F	94.00	31.5 Hz	54.5	-39.4 ± 1.5
					63 Hz	67.8	-26.2 ± 1.5
					125 Hz	77.8	-16.1 ± 1.0
					250 Hz	85.3	-8.6 ± 1.0
					500 Hz	90.8	-3.2 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	95.2	+1.2 ± 1.0
					4 kHz	95.0	+1.0 ± 1.0
					8 kHz	92.8	-1.1 (+1.5 ; -3.0)
12.5 kHz	89.7	-4.3 (+3.0 ; -6.0)					

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Certificate of Calibration

校正證書

Certificate No. : C183086

證書編號

6.3.2 C-Weighting

UUT Setting				Applied Value		UUT Reading (dB)	IEC 60651 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Time Weighting	Level (dB)	Freq.		
50 - 130	L _{CFP}	C	F	94.00	31.5 Hz	90.9	-3.0 ± 1.5
					63 Hz	93.1	-0.8 ± 1.5
					125 Hz	93.8	-0.2 ± 1.0
					250 Hz	94.0	0.0 ± 1.0
					500 Hz	94.0	0.0 ± 1.0
					1 kHz	94.0	Ref.
					2 kHz	93.8	-0.2 ± 1.0
					4 kHz	93.1	-0.8 ± 1.0
					8 kHz	90.9	-3.0 (+1.5 ; -3.0)
12.5 kHz	87.7	-6.2 (+3.0 ; -6.0)					

6.4 Time Averaging

UUT Setting				Applied Value					UUT Reading (dB)	IEC 60804 Type 1 Spec. (dB)
Range (dB)	Parameter	Frequency Weighting	Integrating Time	Frequency (kHz)	Burst Duration (ms)	Burst Duty Factor	Burst Level (dB)	Equivalent Level (dB)		
30 - 110	L _{Aeq}	A	10 sec.	4	1	1/10	110.0	100	99.9	± 0.5
								90	90.0	± 0.5
			60 sec.					80	79.0	± 1.0
			5 min.					70	69.1	± 1.0

Remarks : - UUT Microphone Model No. : 4188 & S/N : 2658547

- Mfr's Spec. : IEC 60651 Type 1 & IEC 60804 Type 1

- Uncertainties of Applied Value :

94 dB	31.5 Hz - 125 Hz	: ± 0.35 dB
	250 Hz - 500 Hz	: ± 0.30 dB
	1 kHz	: ± 0.20 dB
	2 kHz - 4 kHz	: ± 0.35 dB
	8 kHz	: ± 0.45 dB
	12.5 kHz	: ± 0.70 dB
	104 dB : 1 kHz	: ± 0.10 dB (Ref. 94 dB)
	114 dB : 1 kHz	: ± 0.10 dB (Ref. 94 dB)
	Burst equivalent level	: ± 0.2 dB (Ref. 110 dB continuous sound level)

- The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this 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 environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited 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 the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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輝創工程有限公司

Sun Creation Engineering Limited

Calibration & Testing Laboratory

Certificate of Calibration

校正證書

Certificate No. : C183260

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號 : IC18-0867)

Date of Receipt / 收件日期 : 12 June 2018

Description / 儀器名稱 : Sound Calibrator (EQ083)

Manufacturer / 製造商 : Rion

Model No. / 型號 : NC-74

Serial No. / 編號 : 34246492

Supplied By / 委託者 : Action-United Environmental Services and Consulting
Unit A, 20/F., Gold King Industrial Building,
35-41 Tai Lin Pai Road, Kwai Chung, N.T.

TEST CONDITIONS / 測試條件

Temperature / 溫度 : (23 ± 2)°C

Relative Humidity / 相對濕度 : (50 ± 25)%

Line Voltage / 電壓 : ---

TEST SPECIFICATIONS / 測試規範

Calibration check

DATE OF TEST / 測試日期 : 18 June 2018

TEST RESULTS / 測試結果

The results apply to the particular unit-under-test only.

The results do not exceed manufacturer's specification.

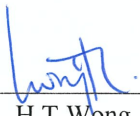
The results are detailed in the subsequent page(s).

The test equipment used for calibration are traceable to National Standards via :

- The Government of The Hong Kong Special Administrative Region Standard & Calibration Laboratory
- Agilent Technologies / Keysight Technologies
- Rohde & Schwarz Laboratory, Germany
- Fluke Everett Service Center, USA


Tested By

測試


H T Wong
Technical Officer

Certified By

核證


K C Lee
Engineer

Date of Issue

簽發日期

20 June 2018

The test equipment used for calibration are traceable to the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

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Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 — 校正及檢測實驗室

c/o 香港新界屯門興安里一號四樓

Tel/電話: (852) 2927 2606

Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com



Certificate of Calibration 校正證書

Certificate No. : C183260

證書編號

- The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.
- The results presented are the mean of 3 measurements at each calibration point.
- Test equipment :

<u>Equipment ID</u>	<u>Description</u>	<u>Certificate No.</u>
CL130	Universal Counter	C173864
CL281	Multifunction Acoustic Calibrator	PA160023
TST150A	Measuring Amplifier	C181288

- Test procedure : MA100N.

- Results :

- 5.1 Sound Level Accuracy

UUT Nominal Value	Measured Value (dB)	Mfr's Spec. (dB)	Uncertainty of Measured Value (dB)
94 dB, 1 kHz	94.0	± 0.3	± 0.2

- 5.2 Frequency Accuracy

UUT Nominal Value (kHz)	Measured Value (kHz)	Mfr's Spec.	Uncertainty of Measured Value (Hz)
1	1.001	1 kHz ± 1 %	± 1

Remark : The uncertainties are for a confidence probability of not less than 95 %.

Note :

Only the original copy or the laboratory's certified true copy is valid.

The values given in this 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 environment changes, vibration and shock during transportation, overloading, mis-handling, or the capability of any other laboratory to repeat the measurement. Sun Creation Engineering Limited 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 the Nation Standards as specified in this certificate. This certificate shall not be reproduced except in full, without the prior written approval of this laboratory.

本證書所載校正用之測試器材均可溯源至國際標準。局部複印本證書需先獲本實驗室書面批准。

Sun Creation Engineering Limited – Calibration & Testing Laboratory

c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong

輝創工程有限公司 — 校正及檢測實驗室

c/o 香港新界屯門興安里一號四樓

Tel/電話: (852) 2927 2606 Fax/傳真: (852) 2744 8986

E-mail/電郵: callab@suncreation.com

Website/網址: www.suncreation.com



CERTIFICATE OF CALIBRATION

Certificate No.: 18CA1128 01

Page: 1 of 2

Item tested

Description: Sound Calibrator (Class 1)
Manufacturer: 3M
Type/Model No.: AC-300
Serial/Equipment No.: AC300005555 / EM373
Adaptors used: -

Item submitted by

Customer: Green Valley Landfill, Limited (Hong Kong)
Address of Customer: -
Request No.: -
Date of receipt: 28-Nov-2018

Date of test: 29-Nov-2018

Reference equipment used in the calibration

Description:	Model:	Serial No.	Expiry Date:	Traceable to:
Lab standard microphone	B&K 4180	2412857	20-Apr-2019	SCL
Preamplifier	B&K 2673	2743150	27-Apr-2019	CEPREI
Measuring amplifier	B&K 2610	2346941	08-May-2019	CEPREI
Signal generator	DS 360	61227	24-Apr-2019	CEPREI
Digital multi-meter	34401A	US36087050	23-Apr-2019	CEPREI
Audio analyzer	8903B	GB41300350	23-Apr-2019	CEPREI
Universal counter	53132A	MY40003662	24-Apr-2019	CEPREI

Ambient conditions

Temperature: 20 ± 1 °C
Relative humidity: 50 ± 10 %
Air pressure: 1000 ± 5 hPa

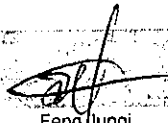

Test specifications

- The Sound Calibrator has been calibrated in accordance with the requirements as specified in IEC 60942 1997 Annex B and the lab calibration procedure SMTP004-CA-156.
- The calibrator was tested with its axis vertical facing downwards at the specific frequency using insert voltage technique.
- The results are rounded to the nearest 0.01 dB and 0.1 Hz and have not been corrected for variations from a reference pressure of 1013.25 hectoPascals as the maker's information indicates that the instrument is insensitive to pressure changes.

Test results

This is to certify that the sound calibrator conforms to the requirements of annex B of IEC 60942: 1997 for the conditions under which the test was performed. This does not imply that the sound calibrator meets IEC 60942 under any other conditions.

Details of the performed measurements are presented on page 2 of this certificate.

Approved Signatory:  Date: 29-Nov-2018 Company Chop: 

Comments: The results reported in this certificate refer to the condition of the instrument on the date of calibration and carry no implication regarding the long-term stability of the instrument.

Annex E2

Noise Monitoring Results

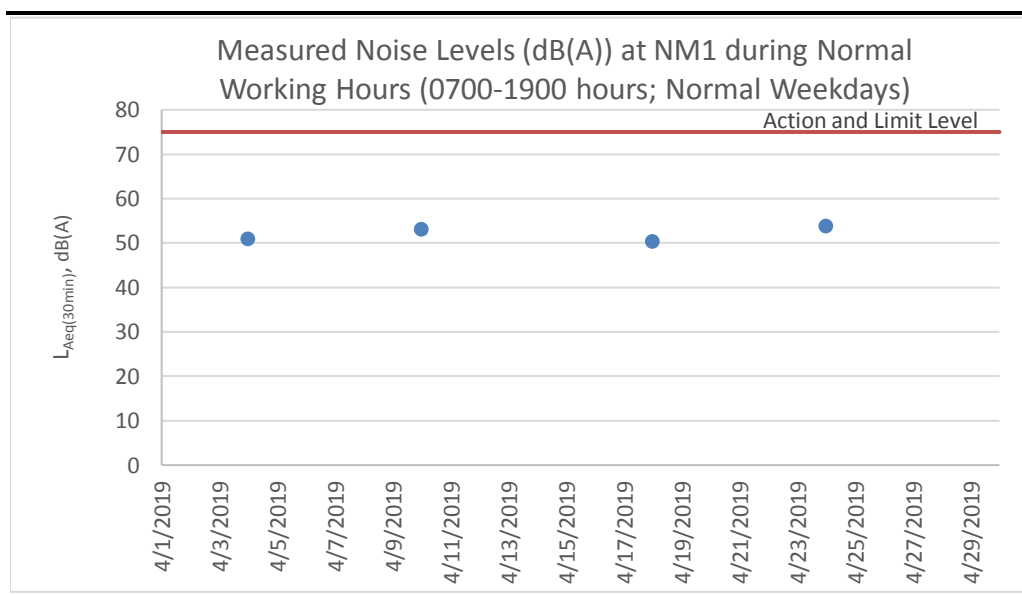
Table E2.1 Measured Noise Levels (dB(A)) at NM1 during Normal Working Hours (0700-1900 hours; Normal Weekdays)

Date	Start Time	Finish Time	Weather	L ₁₀ (30min)	L ₉₀ (30min)	L _{eq} (30min)
4 Apr 2019	14:54	15:24	Sunny	52.5	48.5	51.0
10 Apr 2019	14:26	14:56	Sunny	54.0	51.0	53.2
18 Apr 2019	14:36	15:06	Sunny	51.5	48.5	50.4
24 Apr 2019	14:55	15:25	Sunny	55.5	52.0	53.8
						Average 52.1
						Min 50.4
						Max 53.8

Note:

Correction of +3 dB(A) was made for free field measurements.

Figure E2.1 Graphical Presentation for Noise Monitoring at NM1



Annex E3

Event and Action Plan for Noise Monitoring

Annex E3 *Event and Action Plan for Construction Noise*

Event	Action		
	ET	IEC	Contractor
<p>Action Level</p> <ul style="list-style-type: none"> Identify the source(s) and investigate the cause(s) of exceedance and complaint Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project Discuss with Contractor and IEC for remedial measures required Ensure remedial measures are properly implemented Have additional monitoring if exceedance is due to the Project. If exceedance stops, cease additional monitoring 	<ul style="list-style-type: none"> Verify the Notification of Exceedance Check monitoring data submitted by ET Discuss with ET and Contractor on proposed remedial measures Review proposals on remedial measures Audit the implementation of the remedial measures Audit the effectiveness of the implemented remedial measures 	<ul style="list-style-type: none"> Submit proposals for remedial measures to IEC Implement the agreed proposals 	
<p>Limit Level</p> <ul style="list-style-type: none"> Identify the source(s) and investigate the cause(s) of exceedance and complaint Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC, Project Proponent and EPD whether the cause of exceedance is due to the Project Analyse the operation of SENTX and investigate the causes of exceedance Provide interim report to Contractor, IEC, Project Proponent and EPD the causes of the exceedances Discuss with Contractor and IEC for remedial measures required Ensure remedial measures are properly implemented Report the remedial measures implemented and the additional monitoring results to Contractor, IEC, Project Proponent and EPD Have additional monitoring if exceedance is due to the Project. If exceedance stops, cease additional monitoring 	<ul style="list-style-type: none"> Verify the Notification of Exceedance Check monitoring data submitted by ET Discuss with ET and Contractor on proposed remedial measures Review proposals on remedial measures Audit the implementation of the remedial measures Audit the effectiveness of the implemented remedial measures 	<ul style="list-style-type: none"> Take immediate measures to avoid further exceedance Submit proposals for remedial measures to IEC within 3 working days of notification Implement the agreed proposals Resubmit proposals if problem still not under control Stop the relevant activity of works as determined by the Project Proponent until the exceedance is abated 	

Annex F

Surface Water Quality

Annex F1

Calibration Certificates for
Surface Water Quality
Monitoring Equipment



REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT:	BEN TAM	WORK ORDER:	HK1906866
CLIENT:	ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING		
ADDRESS:	RM A 20/F., GOLD KING IND BLDG, NO. 35-41 TAI LIN PAI ROAD, KWAI CHUNG, N.T. HONG KONG	SUB-BATCH:	0
		LABORATORY:	HONG KONG
		DATE RECEIVED:	18-Feb-2019
		DATE OF ISSUE:	26-Feb-2019

COMMENTS

The performance of the equipment stated in this report is checked with independent reference material and results compared against a calibrated secondary source.

The "Tolerance Limit" quoted is the acceptance criteria applicable for similar equipment used by the ALS Hong Kong laboratory or quoted from relevant international standards.

Scope of Test:	Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature
Equipment Type:	Multifunctional Meter
Brand Name:	YSI
Model No.:	Professional DSS
Serial No.:	15H102620/ 15H103928
Equipment No.:	EQW018
Date of Calibration:	25 February, 2019

NOTES

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

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

Mr Chan Siu Ming, Vico
Manager - Inorganic

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REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK1906866
 SUB-BATCH: 0
 DATE OF ISSUE: 26-Feb-2019
 CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter
 Brand Name: YSI
 Model No.: Professional DSS
 Serial No.: 15H102620/ 15H103928
 Equipment No.: EQW018
 Date of Calibration: 25 February, 2019 Date of Next Calibration: 25 May, 2019

PARAMETERS:

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

Expected Reading ($\mu\text{S}/\text{cm}$)	Displayed Reading ($\mu\text{S}/\text{cm}$)	Tolerance (%)
6667	6119	-8.2
12890	11792	-8.5
58670	54356	-7.4
	Tolerance Limit (%)	± 10.0

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

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.63	2.54	-0.09
5.84	5.98	+0.14
8.57	8.56	-0.01
	Tolerance Limit (mg/L)	± 0.20

pH Value Method Ref: APHA (21st edition), 4500H:B

Expected Reading (pH unit)	Displayed Reading (pH unit)	Tolerance (pH unit)
4.0	3.98	-0.02
7.0	7.11	+0.11
10.0	10.05	+0.05
	Tolerance Limit (pH unit)	± 0.20

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

Mr Chan Siu Ming, Vico
Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK1906866
 SUB-BATCH: 0
 DATE OF ISSUE: 26-Feb-2019
 CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter
 Brand Name: YSI
 Model No.: Professional DSS
 Serial No.: 15H102620/ 15H103928
 Equipment No.: EQW018
 Date of Calibration: 25 February, 2019 Date of Next Calibration: 25 May, 2019

PARAMETERS:

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

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.02	--
4	3.75	-6.3
40	37.15	-7.1
80	83.91	+4.9
400	410.68	+2.7
800	792.16	-1.0
	Tolerance Limit (%)	±10.0

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.03	--
10	10.06	+0.6
20	20.02	+0.1
30	30.23	+0.8
	Tolerance Limit (%)	±10.0

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

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 Manager - Inorganic

REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION



WORK ORDER: HK1906866
SUB-BATCH: 0
DATE OF ISSUE: 26-Feb-2019
CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter
Brand Name: YSI
Model No.: Professional DSS
Serial No.: 15H102620/ 15H103928
Equipment No.: EQW018
Date of Calibration: 25 February, 2019 Date of Next Calibration: 25 May, 2019

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

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10.5	10.9	+0.4
21.0	20.4	-0.6
39.0	38.7	-0.3
	Tolerance Limit (°C)	±2.0

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

Mr Chan Siu Ming, Vico
Manager - Inorganic

Annex F2

Surface Water Quality Monitoring Results

Table F2.1 Surface Water Quality Monitoring Results at DP4

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	pH	Suspended Solids (SS) (mg/L)
4 Apr 2019	14:13	Sunny		Unable to collect water sample due to insufficient flow				
10 Apr 2019	14:05	Sunny		Unable to collect water sample due to insufficient flow				
18 Apr 2019	14:15	Sunny		Unable to collect water sample due to insufficient flow				
24 Apr 2019	14:33	Sunny		Unable to collect water sample due to insufficient flow				
					Average	-	-	-
					Min	-	-	-
					Max	-	-	-

Table F2.2 Surface Water Quality Monitoring Results at DP6

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	pH	Suspended Solids (SS) (mg/L)
4 Apr 2019	14:19	Sunny		Unable to collect water sample due to insufficient flow				
10 Apr 2019	14:12	Sunny		Unable to collect water sample due to insufficient flow				
18 Apr 2019	14:22	Sunny		Unable to collect water sample due to insufficient flow				
24 Apr 2019	14:39	Sunny		Unable to collect water sample due to insufficient flow				
					Average	-	-	-
					Min	-	-	-
					Max	-	-	-

Annex F3

Event and Action Plan for Surface Water Quality Monitoring

Annex F3 **Event and Action Plan for Surface Water Quality During Construction Phase**

Event	Action		
	ET	IEC	Contractor
Action Level being exceeded by one sampling day	<ul style="list-style-type: none"> Repeat <i>in situ</i> measurement to confirm findings Identify the source(s) and investigate the cause(s) of exceedance Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project Repeat measurement on the next day of exceedance if exceedance is due to the Project 	<ul style="list-style-type: none"> Verify the Notification of Exceedance Check monitoring data submitted by ET Check Contractor's working methods 	<ul style="list-style-type: none"> Rectify any unacceptable practice Amend working methods if appropriate
Action Level being exceeded by two consecutive sampling days	<ul style="list-style-type: none"> Repeat <i>in situ</i> measurement to confirm findings Identify the source(s) and investigate the cause(s) of exceedance Prepare Notification of Exceedance within 24 hours Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project Discuss with Contractor and IEC for remedial measures required Ensure remedial measures are properly implemented Increase the monitoring frequency to daily if exceedance is due to the Project and continue until no exceedance of Action Level 	<ul style="list-style-type: none"> Verify the Notification of Exceedance Check monitoring data submitted by ET Check Contractor's working methods Discuss with ET Leader and Contractor on proposed remedial measures Review proposals on remedial measures Audit the implementation of the remedial measures Audit the effectiveness of the implemented remedial measures 	<ul style="list-style-type: none"> Submit proposals for remedial measures to IEC Implement the agreed proposals Amend proposal if appropriate

Event	Action		
	ET	IEC	Contractor
Limit Level being exceeded by two consecutive sampling days	<ul style="list-style-type: none"> Repeat <i>in situ</i> measurement to confirm findings Identify source(s) of impact and cause(s) of exceedance Prepare the Notification of Exceedance within 24 hours Inform Contractor, IEC, Project Proponent and EPD whether the cause of exceedance is due to the Project Discuss with Contractor and IEC for remedial measures required Ensure remedial measures are properly implemented Increase the monitoring frequency to daily if exceedance is due to the Project until no exceedance of Limit Level 	<ul style="list-style-type: none"> Verify the Notification of Exceedance Check monitoring data submitted by ET Check Contractor's working methods Discuss with ET and Contractor on proposed remedial measures Review proposals on remedial measures Audit the implementation of the remedial measures Audit the effectiveness of the implemented remedial measures 	<ul style="list-style-type: none"> Critically review the working methods Rectify unacceptable practice Check all plant and equipment Consider changes of working methods Discuss with the ET and IEC and propose mitigation measures to the IEC Implement the agreed mitigation measures Increase
Limit Level being exceeded by more than two consecutive sampling days	<ul style="list-style-type: none"> Repeat <i>in situ</i> measurement to confirm findings Identify source(s) of impact and cause(s) of exceedance Prepare the Notification of Exceedance within 24 hours Inform Contractor, IEC, Project Proponent and EPD whether the cause of exceedance is due to the Project Check monitoring data, all plant, equipment and Contractor's working methods Discuss with Contractor and IEC for remedial measures required Ensure mitigation measures are implemented Increase the monitoring frequency to daily if exceedance is due to the Project until no exceedance of Limit Level for two consecutive days 	<ul style="list-style-type: none"> Verify the Notification of Exceedance Check monitoring data submitted by ET Check Contractor's working methods Discuss with ET and Contractor on proposed remedial measures Review proposals on remedial measures Audit the implementation of the remedial measures Audit the effectiveness of the implemented remedial measures 	<ul style="list-style-type: none"> Critically review the working methods Rectify unacceptable practice Check all plant and equipment Consider changes of working methods Discuss with the ET and IEC and propose mitigation measures Implement the agreed mitigation measures As directed by the Project Proponent, slow down or stop all or part of the construction activities

Annex G

Cumulative Statistics on
Exceedances,
Environmental Complaints,
Notification of Summons
and Status of Prosecutions

Table G1 *Cumulative Statistics on Exceedances*

		Total No. recorded in this reporting period	Total No. recorded since project commencement
Air Quality (24-hr TSP)	Action	0	0
	Limit	0	0
Noise	Action	0	0
	Limit	0	0
Surface Water Quality	Action	0	0
	Limit	0	1

Table G2 *Cumulative Statistics on Complaints, Notifications of Summons and Successful Prosecutions*

Reporting Period	Cumulative Statistics		
	Complaints	Notifications of Summons	Prosecutions
This Reporting Period (1 - 30 April 2019)	0	0	0
Total no. received since project commencement	0	0	0

Annex H

Monitoring Schedule for the Next Reporting Period

**South East New Territories (SENT) Landfill Extension
EM&A Impact Monitoring Schedule during Construction Phase**

May 2019

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2 Surface Water Monitoring (pm) Noise Monitoring (pm)	3	4 Dust Monitoring
5	6	7	8 Surface Water Monitoring (pm) Noise Monitoring (pm)	9	10 Dust Monitoring	11
12	13	14	15	16 Dust Monitoring Surface Water Monitoring (pm) Noise Monitoring (pm)	17	18
19	20	21	22 Dust Monitoring	23 Surface Water Monitoring (pm) Noise Monitoring (pm)	24	25
26	27	28 Dust Monitoring	29	30 Surface Water Monitoring (pm) Noise Monitoring (pm)	31	

Note:
Impact dust monitoring will be conducted at two monitoring stations (DM1 and DM2) under the on-going EM&A programme TKO Area 137 Fill Bank and the results will be shared with SENTX.