



## **South East New Territories (SENT) Landfill Extension**

Monthly Environmental Monitoring & Audit Report No.11 for November 2019

December 2019

#### **ERM**

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#### 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.11

for November 2019 for South East New Territories (SENT)

Landfill Extension

Date of Report: 12 December 2019

#### 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.

Warchitt.

Frank Wan,

Environmental Team Leader:

(ERM Hong-Kong, Limited)

Date: 12 December 2019

Date: 12-12-2019

#### **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.

E1 -500/ 2000/ D and T E1 -01/ 500/ 2008/ D

Fredrick Leong,

Independent Environmental Checker:

(Meinhardt Infrastructure and

**Environment Limited**)

# **South East New Territories (SENT) Landfill Extension**

## **Monthly Environmental Monitoring & Audit Report for November 2019**

### **Environmental Resources Management**

2507, 25/F, One Harbourfront 18 Tak Fung Street Hunghom, Kowloon Hong Kong

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Client:		Projec	ct No:			
Green Valley Landfill Ltd.		0465169				
Summary:		Date:				
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This document presents the Monthly EM&A Report No.11 for November 2019 for South East New Territories (SENT) Landfill Extension		Approved by:  Aacht A				
		Fran Partn	k Wan er			
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Revision	Description	Ву	Checked	Approved	Date	
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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 November 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 for construction air quality monitoring was recorded in the reporting period.

#### **Exceedance of Action and Limit Levels for Noise**

No exceedance of Action and Limit Levels for construction noise monitoring was recorded 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 December 2019 are mainly associated with dust emission from the exposed area and loading and uploading operation of dusty materials.

#### 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.

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

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

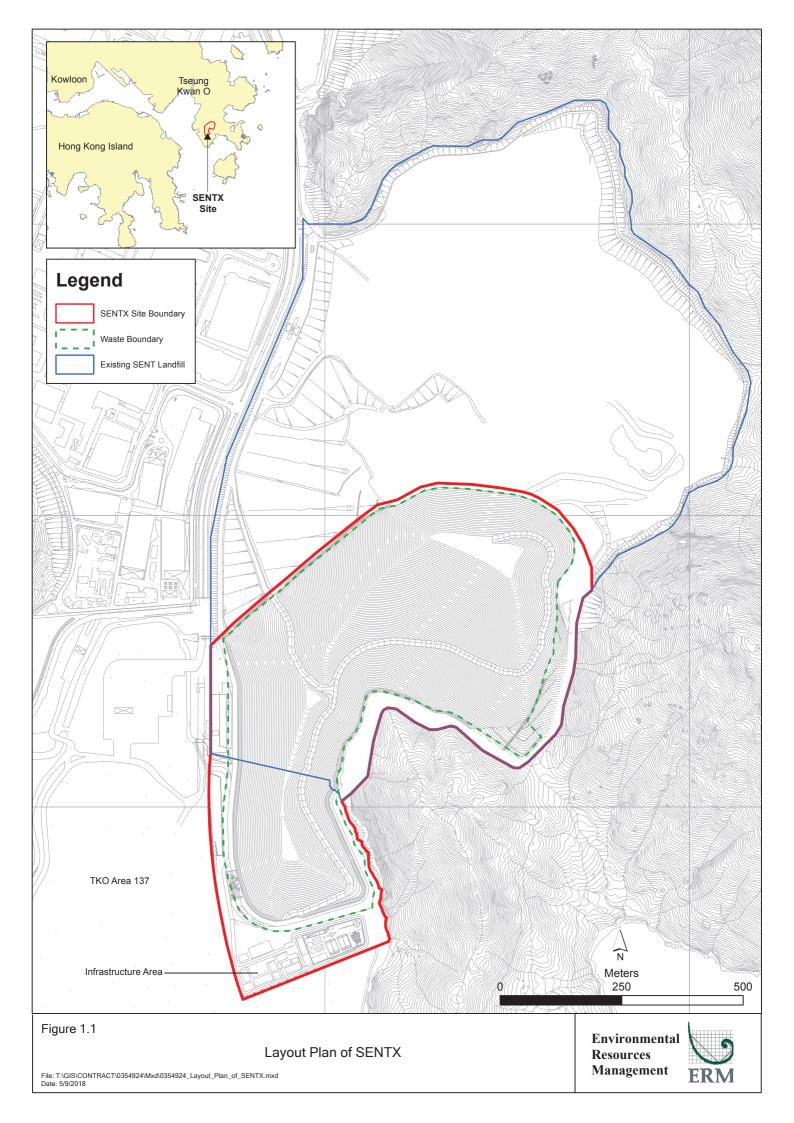


 Table 1.1
 Estimated Key Dates of Implementation Programme

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.

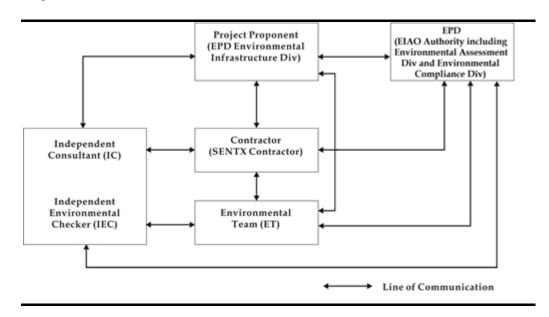
#### 1.3 SCOPE OF THE EM&A REPORT

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 November 2019 for the construction works.

#### 1.4 PROJECT ORGANISATION

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

Figure 1.2 Organisation Chart



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

Table 1.2 Contact Information of Key Personnel

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

#### 1.5 SUMMARY OF CONSTRUCTION WORKS

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

- Rebar fixing, concreting and formwork erection for the plinth and the fitout work for the control building of Landfill Gas Plant area and placing of landfill gas generator;
- Excavating, removing and replacing unsuitable fill materials;
- Sediment trap remedial works;
- Construction of drop inlet shaft and last bay of outlet box culvert;

- Rebar fixing, formwork and concreting to the plinth of tanks at Leachate Treatment Plant (LTP) and construction of superstructure of Bioplant buildings;
- Rebar, formwork and concreting to the substructure of infrastructure buildings (EPD, GVL and laboratory buildings);
- Backfilling works around the raft foundation of maintenance building;
- Installation of ammonia stripping plant, equalization tank, sequencing batch reactor tank and treated effluent tank at LTP area;
- Construction of perimeter bund for Cell 1X and 2X;
- Maintenance and improvement of the temporary surface water drainage;
- Shotcreting and mass concrete for Buttress Wall;
- Installing groundwater pipe works from East to West in Cell 2X;
- CLP trench works;
- Liner installation at Cell 1X; and
- Construction of X9B channel.

The implementation schedule of the mitigation measured recommended in the Updated EM&A Manual 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		

Parameters	Status
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 On-going
Site Environmental Audit	
Regular Site Inspection	On-going
Complaint Hotline and Email	On-going
Channel	
Environmental Log Book	On-going 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 summarised as below:

- One environmental management meeting was held with the Contractor, ER, ET, IEC and EPD on 13 November 2019; and
- Environmental toolbox trainings on Waste Reduction in Construction Industry and Good Practice of Wastewater Management in Construction Sites were provided on 7 November and 26 November 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 required under the EP and Implementation Status of Mitigation Measures

EP	Submission/Implementation Status	Status
Condition		
2.3	Management Organisation of Main	Submitted and accepted by EPD.
	Construction Companies	
2.4	Setting up of Community Liaison Group	Community Liaison Group was set up.
2.5	Submission of Detailed Landfill Gas	Submitted and accepted by EPD on 10
	Hazard Assessment Report	January 2019.
2.6	Submission of Restoration and Ecological	Submitted to EPD on 28 June 2019.
	Enhancement Plan	
2.7	Setting up of Trial Nursery	Trial Nursery works was commenced
		on 28 August 2019.

EP	Submission/Implementation Status	Status
Condition		
2.8	Advance Screen Planting	Advance Screen Planting works were completed on 28 June 2019.
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 EP, *Water Pollution Control Ordinance* (WPCO) discharge license, registration as a chemical waste producer, and construction noise permit) that are valid in the reporting period are presented in *Table 1.5*. No non-compliance with environmental statutory requirements was identified.

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
WPCO (Permit Holder: Chun Wo)	2019	2019 to 31 March 2024
Billing Account for Disposal of	Chit Account Number:	Approved on 28 December
Construction Waste	5001692	2005
Registration as a Chemical Waste	5213-839-C3507-10	Issued on 23 August 2018
Producer (Permit Holder: Chun Wo)	0210 009 0000, 10	1000000 011 20 1100000 2010
Registration as a Chemical Waste	5518-839-R2289-06	Issued on 24 October 2019
Producer (Permit Holder: REC)		
Construction Noise Permit (Permit	GW-RE0695-19	Validity from 9 September
Holder: Chun Wo)		2019 to 3 March 2020
Construction Noise Permit (Permit	GW-RE0831-19	Validity from 17 October
Holder: REC)		2019 to 30 December 2019

#### 2 EM&A RESULTS

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 summarised 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

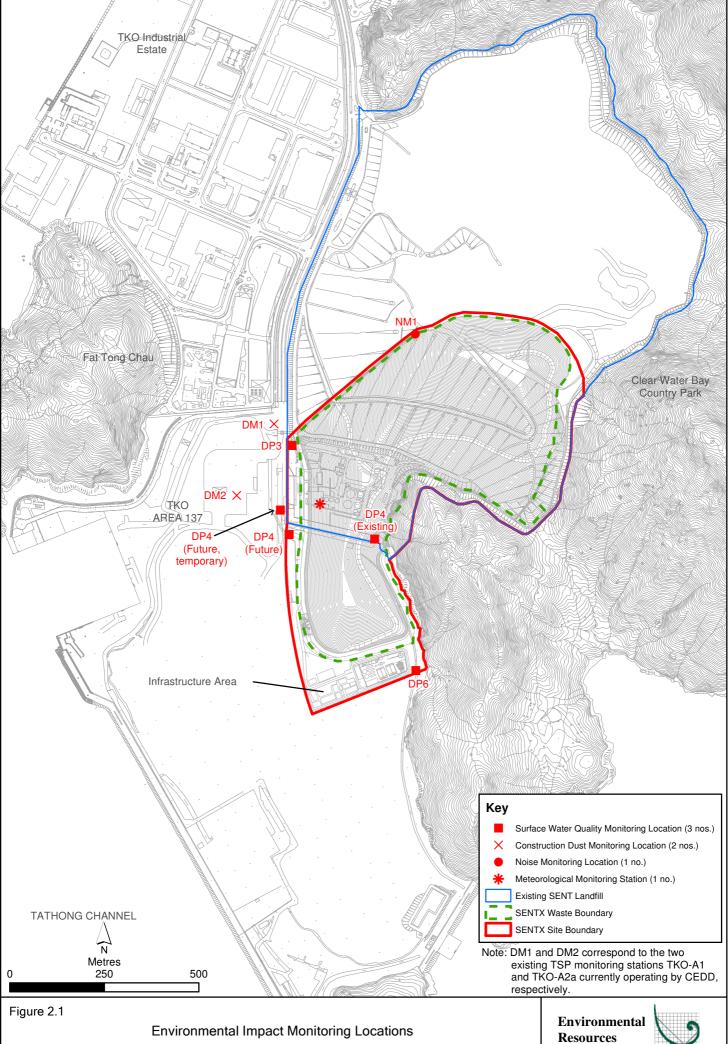
Monitoring Station	Action Level	Limit Level
DM-1 - Site Egress of TKO Area 137 Fill Bank	204 μg m- <sup>3</sup>	260 μg m- <sup>3</sup>
DM-2A -Combined Reception and Exit Office (CREO) of TKO Area 137 Fill Bank	193 μg m- <sup>3</sup>	260 μg m- <sup>3</sup>

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 summarised 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	24-hour	Once every 6	6, 12, 18, 24, 30	HVS Greasby 105
	TKO Area 137	TSP	days during the	November	(S/N: 9795
	Fill Bank		construction	2019	(ET/EA/003/18))



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Management



Monitoring Station	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
DM2	Combined Reception and Exit Office (CREO) of TKO Area 137 Fill Bank		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 summarised 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 (µg m <sup>-3</sup> ) (Range in bracket)	Action Level (μg/m³)	Limit Level (μg/m³)
DM-1 - Site Egress of TKO Area 137 Fill Bank	95 (84 - 106)	204	260
DM-2A -Combined Reception and Exit Office (CREO) of TKO Area 137 Fill Bank	100 (88 – 106)	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 D*3.

#### 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 Levels for construction noise of the Project are 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)	75 dB(A) at NSRs	
	or		
	75 dB(A) recorded at the monitoring station		

#### 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	Location	Parameter	Frequency	Monitoring	Equipment
Station (1)			and Duration	Dates	
NM1	SENTX Site Boundary (North)	L <sub>eq (30 min)</sub> 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	7, 15, 21, 28 November 2019	Sound Level Meter: B&K 2238 (S/N: 2285762) Acoustic Calibrator: Rion NC-75 (S/N: 34680623)
					Rion NC-74 (S/N: 34657231)

#### 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

A total of 4 impact noise monitoring events were scheduled during the reporting period. Results for noise monitoring are summarised 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 Leq (30 min), dB(A)					
	Average	Range	Action and Limit Level			
NM1	54.0	52.1 - 57.0	75			

Major noise sources identified 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. Temporary relocation of surface water discharge point DP4 to DP4 (Future, temporary) as an interim arrangement due to site constraints and construction sequence was approved by EPD on 14 May 2019. Surface water quality monitoring was carried out at DP4 (Future, temporary) (i.e. DP4T) from the monitoring event on 16 May 2019. In addition, 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.

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).

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	
pН	> 8.39	> 8.40	

The locations of the monitoring stations for 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 (Future, temporary)	Surface water discharge point DP4	Weekly	7, 15, 21, 28 November 2019	•pH •DO	YSI Professional DSS (S/N: 15H102620)
DP6	Surface water discharge point DP6	-		•SS	

#### Notes:

- (a) DP4 was temporary relocated to DP4 (Future, temporary) (i.e. DP4T) as an interim discharge point from the monitoring event on 16 May 2019.
- (b) 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 26 November 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 updated 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 maintain the advance screen planting works as soon as possible to ensure effective screening of views of project works from the High Junk Peak Trail. . The Contractor shall consider the mitigation measures during the design phase, including the preparation of the Construction Drawings and Detailed Landscape Design Drawings.

#### 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 7, 13, 21 and 28 November 2019.

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

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

Inspection Date	vironmental Observations and Recommendations			
7 November 2019	-			
13 November 2019	<ul> <li>The Contractor shall clear and dispose of the general refuse at DP4T channel to reduce pest and odour issues.</li> </ul>			
	<ul> <li>The Contractor shall replace the NRMM labels on the roller and excavator near DP4T to ensure all NRMM labels displayed on</li> </ul>			
	site are clearly visible and in correct size as specified in the APCO.			

Inspection Date	Environmental Observations and Recommendations
21 November 2019	The Contractor shall enhance watering to the site, especially
	around areas with loading and unloading activities.
	• The Contractor shall clear the oil spillage at the roller near DP4T and handle the clean-up materials as chemical waste.
	The Contractor shall avoid accumulation of liquid in the drip
	tray near buttress wall and shall treat the clean-up materials as
	chemical waste.
	The Contractor shall store the general refuse near sediment trap
	properly in a refuse skip and dispose of the waste regularly to
	reduce pest and odour issues.
28 November 2019	The Contractor shall increase watering frequency and enhance
	watering to the site, especially to the main haul road and around
	works areas in Cell 2X.
	• The Contractor shall avoid accumulation of stagnant water and remove the waste disposed at X9B culvert.
	• The Contractor shall dispose of the chemical waste in the refuse
	skip near buttress wall separately in the chemical waste cabinet.
	The Contractor shall dispose of the general refuse accumulated
	near EPD building and bioplant building regularly to reduce odour and pest issues.
	odour and pest issues.

The Contractor has rectified all of the observations identified during environmental site inspections in the reporting period. Key environmental deficiencies identified and the corresponding rectification actions are presented in *Table 2.10*.

Table 2.10 Summary of Environmental Deficiencies Identified and Corresponding Rectification Actions

Deficiencies	Rectifications Implemented		ented Proposed Additional Control Measures		
Surface Water					
Intercepting channels	•	Reviewed drainage plan.	•	Addition of channels.	
& drainage system			•	Expedite the construction of permanent sediment trap and	
				discharge culverts.	

Deficiencies	Rectifications Implemented	Proposed Additional Control
DP channels (design & regular silt removal)	<ul> <li>Carried out regular maintenance and cleaning of channels.</li> <li>DP4 channel: Area near the channel was paved with concrete and a bund was built.</li> <li>DP6 channel: Gravel piles on the channel were covered with concrete which serve as blocks for running water and to divide the channel into several sections. A pump was placed in the water zone in the upstream section to pump water to the Wetsep for treatment prior to the discharge to the last section before the weir plate.</li> <li>DP6: Pipes through the gravel piles between different channel sections were covered with geotextiles to block debris and silt.</li> </ul>	N.A.
Stockpiles & exposed soil	<ul> <li>Installed silt fencing near surface water channel along DP6 channel.</li> </ul>	<ul><li>Improve soil covering.</li><li>Compaction and cover for stockpiles and soil slopes.</li></ul>
Wetsep (treatment capacity & number)	<ul> <li>Reviewed Wetsep capacity.</li> <li>Chemicals dosage of the Wetsep was increased to enhance the efficiency.</li> </ul>	Install additional Wetsep.
Backflow / ponding during heavy rainfall	<ul> <li>Raised with EPD (LDG) and CEDD.</li> </ul>	N.A.

#### 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 2.11*.

Table 2.11 Quantities of Different Waste Generated and Imported Fill Materials

Month/ Year	Inert C&D Materials	Impoi (in '00	ted Fill Okg)	Inert Construction Waste Re- used	Non-inert Construction Waste (b) (in '000m³)	Recyclable Materials <sup>(c)</sup> (in '000kg)	Chemical Wastes (in '000kg)
	(in '000m³)	Rock	Soil	(in '000m³)			
1 - 30 November 19	0.410	0	17130.00	0	0.077	0	0

#### Notes:

- (a) 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.
- (b) Non-inert construction wastes include general refuse disposed at landfill. Density assumption: 0.9 (kg/L) for general refuse.
- (c) 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

The 24-hour TSP monitoring results and construction noise monitoring results complied with the Action and Limit Levels in the reporting period. 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 December 2019 will be:

- Site clearance, preparation and formation of Area X1 and X2;
- Excavation and removal of unsuitable fill materials;
- Remaining site formation works at Area X1;
- Filling of perimeter bund for Cell 1X and Cell 2X;
- Construction of buttress wall;
- Construction of perimeter wall and plinths at LTP area and substructure of bioplant;
- Installation of ammonia stripping plant and pipe work at LTP area;
- Construction of discharge box culvert;
- Construction of superstructure of new infrastructure buildings;
- Completing the remaining plinths and superstructure of Landfill Gas Plant area;
- Fitting out work inside the CLP room and Landfill Gas Plant room;
- Construction of X9B channels and apron channel along the toe of eastern perimeter bund;
- Construction of groundwater pipe from south to north at Cell 2, 3 and 4;
- Construction of superstructure at maintenance building;
- Installation of equalization and sequencing batch reactor tanks and other equipment at LTP area;
- Installation of settlement cells;
- Installation of monitoring wells; and
- Liner installation.

#### 3.2 KEY ISSUES FOR THE COMING MONTH

Potential environmental impacts arising from the above upcoming construction activities in the next reporting period of December 2019 are mainly associated with dust emission from the exposed area and loading and uploading operation of dusty materials. 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 December 2019 are provided in  $Annex\ H.$ 

#### 4 CONCLUSION AND RECOMMENDATION

This EM&A Report presents the findings of the EM&A activities undertaken during the period from 1 to 30 November 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.

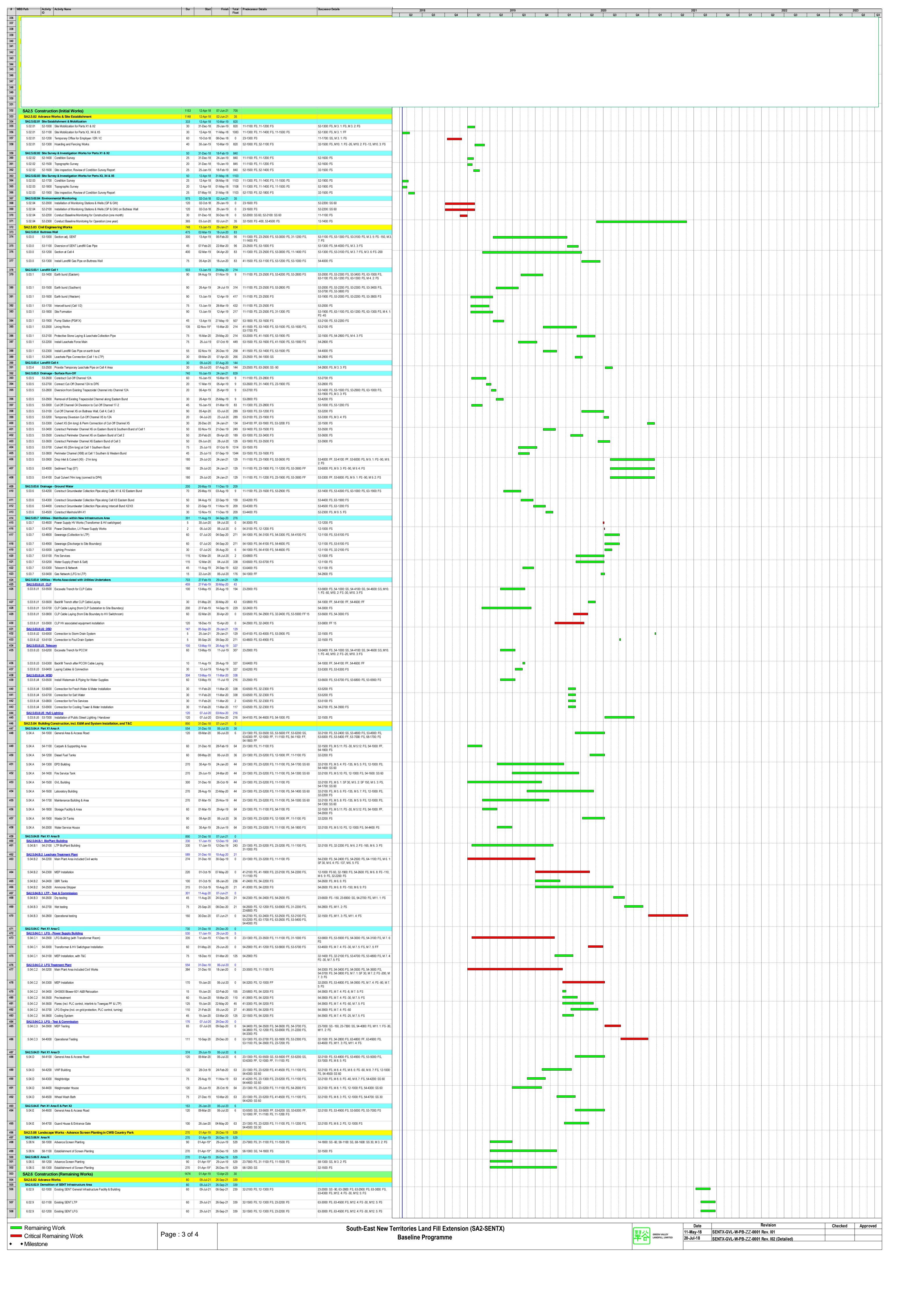
Environmental site inspections were carried out during the reporting period. Recommendations on remedial actions were given to the Contractor for the deficiencies identified during the site inspections.

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



# \	MDC D-/I		\ <b>04!</b> ''	Activity Name		1	<u>.                               </u>	Total Predecessor Details	Successor Details
		I	D		Dur	Sta		Float	Success of Details
509 510	SA2.6. SA2.6.			neering Works Cell 2			9 13-Apr-23 9 23-Jan-21		
511	6.03.2	2 6	3-1000	Earth bund (Eastern)				9 11-1100: FS, 23-2500: FS, 53-4200: FS, 53-1400: FS 53-2800: FS	53-3500: FS, 63-1500: FS, 63-1800: FS, 63-1900: FS, 63-2000: FS, 63-2100: FS, 63-2200: FS, M12. 1: FS -50, M12.
								55 2555.1.5	2: FS, 63-1100: FS
512	6.03.2	2 6	3-1100	Earth bund (Western)	110	20-Feb-2	0 08-Jun-20	84 11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: FS	
513	6.03.2	2 6	3-1200	Intercell bund (Cell 2/3)	90	09-Jun-2	06-Sen-20	63-1000: FS 734 11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: FS	63-3600: FS, 63-1200: FS 63-1500: FS
313				,				53-4400: FS, 63-1100: FS	
514	6.03.2	2 6	3-1300	Site Formation	75	02-Nov-1	9 15-Jan-20	14 11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: FS	63-1400: FS, 63-4200: FS
515	6.03.2	2 6	3-1400	Pump Station (PS#2X)	45	09-Jun-2	0 23-Jul-20	84 63-1300: FS, 63-1100: FS	63-1600: FS, 63-1700: FS
516	6.03.2	2 6	3-1500	Lining Works	90	01-Oct-2	* 29-Dec-20	710 41-1500: FS, 63-1000: FS, 63-1100: FS, 63-1200: FS	63-1600: FS, M12. 3: FS, 63-2400: FS
517	6.03.2	2 6	3-1600	Protective Stone Laying & Leachate Collection Pipe	25	30-Dec-2	0 23-Jan-21	810 63-1500: FS, 41-1500: FS, 63-1400: FS	32-1600: FS, M12. 3: FS
518	6.03.2	2 6	3-1700	Install Leachate Force Main	75	24-Jul-	0 06-Oct-20	84 63-1100: FS, 41-1500: FS, 63-1400: FS	54-2800: FS, M12. 3: FS
519	6.03.2	2 6	3-1800	Install Landfill Gas Pipe on earth bund	35	20-Feb-2	0 25-Mar-20	168 41-1500: FS, 63-1000: FS	54-4000: FS, M12. 3: FS
520	SA2.6.						0 02-Feb-22		70 0000 FO FO 0000 FO 00 0100 FO 00 0700 FO WOOL
521	6.03.3	3 6	3-1900	Earth bund (Eastern)	110	20-Feb-2	0 08-Jun-20	9 11-1100: FS, 53-4200: FS, 63-1000: FS, 53-4300: FS 53-2800: FS, 63-4200: FS	53-3300: FS, 53-3600: FS, 63-2400: FS, 63-2700: FS, M12. 1: FS -50, M12. 2: FS, 63-2000: FS -45, 63-2200: FS
522	0.00.1	2	22 2000	Forth hand (Markows)	440	05 4 (	0 40 4 00	40 44 4400 F0 60 4000 F0 60 4000 F0 45	22 2222 50 22 2422 50 22 2222 50 22
522	6.03.3	3 6	3-2000	Earth bund (Western)	110	25-Apr-2	0 12-Aug-20	19 11-1100: FS, 63-1000: FS, 63-1900: FS -45	63-2300: FS, 63-2400: FS, 63-2600: FS, 63-3700: FS, 63-2100: FS -45
523	6.03.3	3 6	3-2100	Intercell bund (Cell 3/4)	105	29-Jun-2	0 11-Oct-20	789 11-1100: FS, 63-1000: FS, 63-4200: FS, 63-2000: FS	45 63-2400: FS
524	6.03.3	3 6	3-2200	Site Formation	75	09-Jun-2	0 22-Aug-20	9 11-1100: FS, 63-1000: FS, 63-1900: FS	63-2300: FS
525				Pump Station (PS#3X)				9 63-2200: FS, 63-2000: FS	63-2500: FS, 63-2600: FS
526	<u> </u>			Lining Works				435 41-1500: FS, 63-1900: FS, 63-2000: FS, 63-2100: FS	·
527	<u> </u>			Protective Stone Laying & Leachate Collection Pipe	05	00 1== 1	00 5-6 00	63-1500: FS 435 63-2400: FS, 41-1500: FS, 63-2300: FS	32-1700: FS, M12. 3: FS
528	<u> </u>			Install Leachate Force Main				9 63-2000: FS, 41-1500: FS, 63-2300: FS	53-2500: SS -90. 54-2800: FS. M12. 3: FS
529				Install Landfill Gas Pipe on earth bund				58 41-1500: FS, 63-1900: FS	54-4000: FS, M12. 3: FS
530	SA2.6.			·			1 13-Apr-23	· ·	01.1000.1.0J.m.z
531	6.03.4	4 6	3-2800	Remaining Portion of Buttress Wall				494 62-1000: FS	
532	6.03.4	4 6	3-2900	D Earth bund (Western) incl. MSE Wall	120	07-Sep-2	1 04-Jan-22	239 62-1000: FS	63-3000: FS, 63-3100: FS, 63-3200: FS, 63-3400: FS, 63-3800: FS, 63-3900: FS, 63-4100: SS -90, M 9. 6: FS -60,
	l								M 9. 7: FS -30, M 9. 8: FS
533	6.037	1 6	3-3000	Site Formation	120	05-lan-1	2 04-May-22	239 62-1000: FS, 62-1100: FS, 62-1200: FS, 63-2900: FS	63-3100: FS
							,	63-4100: FS	
534				Pump Station (PS#4X)				239 63-3000: FS, 63-2900: FS	63-3300: FS, 63-3400: FS
535				Lining Works				0 41-1500: FS, 63-2900: FS	63-3300: FS, M12. 6: FS
536				Protective Stone Laying & Leachate Collection Pipe				0 41-1500: FS, 63-3200: FS, 63-3100: FS	12-1900: FS, 32-1800: FS, M12. 6: FS
537				Install Leachate Force Main & Remove Temporary Leachate Pipe				269 41-1500: FS, 63-2900: FS, 63-3100: FS	12-1900: FS, 32-1800: FS, M12. 6: FS
538				e - Surface Run-Off Perimeter Channel (X9A) at Cell 2 Western Bund			0 03-Feb-22 0 23-Jun-20	1054 63-1100: FS	12-1900: FS
540				Perimeter Channel (X10A) at Cell 2 Western Bund				1029 63-1100: FS	63.4000: FS
541				Perimeter Channel (X10A) at Cell 3 Western Bund				964 63-2000: FS	63-4000: FS
542	6.03.5	5 6	3-3800	Perimeter Channel (X10A) at Cell 4 Western Bund	20	05-Jan-2	2 24-Jan-22	464 63-2900: FS	63-4000: FS
543	6.03.5	5 6	3-3900	Perimeter Channel (X10C) at Cell 4 Western Bund	15	05-Jan-2	2 19-Jan-22	469 63-2900: FS	63-4000: FS
544	6.03.5	5 6	3-4000	Connection to Existing DP3	10	25-Jan-2	2 03-Feb-22	464 63-3900: FS, 63-3600: FS, 63-3700: FS, 63-3800: FS	12-1900: FS
545	6 03 6	5 6	3-4100	Remove Cut-Off Channel C-7 at bottom of Buttress Wall	30	09- lun (	1 08_IuL-21	419 63-2900: SS -90	63-3000: FS
546				Temporary Channel (X7T) at SENT Infrastructure Area				14 63-1300: FS	63-1900: FS, 63-2100: FS
547				e - Ground Water			1 30-Nov-21		
548	6.03.6	6 6	3-4300	Construct Temporary Channel (TC-1), from MH-1 to Existing UC-825	50	07-Sep-2	1 26-Oct-21	529 23-1900: FS, 11-1300: FS, 62-1000: FS	63-4400: FS
549				Divert GW at MH-1 to TC-1				529 63-4300: FS	63-4500: FS, M 9. 9: FS
550				Reconnection of GWCP across Cell 4				529 62-1100: FS, 62-1200: FS, 63-4400: FS	12-1900: FS
551 552	<u> </u>	.03.8 Ut <u>6.03.8.U</u>		- Works Associated with Utilities Undertakers			27-Jul-21 27-Jul-21		
553				LFG Generator On-grid Testing				655 32-2500: FS, 12-1200: FS, 54-4000: FS	63-4700: FS
554	6.03	.8.U1 6	3-4700	LFG Generator On-grid Inspection & Verify	30	28-Jun-2	1 27-Jul-21	655 63-4600: FS	12-1900: FS
555		6.03.8.U					08-Jan-21		62 4000; FC
556				D Laying Gas Mains (from LFG to Town Gas PF)  Gas Meter Relocation & Connection at LFG				855 54-4000: FF 855 63-4800: FS, 54-4000: FS	63-4900: FS 12-1900: FS
558				Gas Meter Relocation & Connection at LFG  E&M Works			0 08-Jan-21 22-Jul-21	· · · · · · · · · · · · · · · · · · ·	12-1300. F3
559	SA2.6.		_				9 22-Jul-21 9 22-Jul-21		
560	SA2.6	6.04.C.0	2 LFG	Treatment Plant	661	01-Oct-	9 22-Jul-21	660	40,4000,50
561				O GHS600 Blower 601 C Relocation O Absorption Chiller (Optional)				660 32-1500: FS	12-1900: FS
563				oe Works			9 29-Dec-19 9 03-Dec-20	1231 54-2200: FS 891	12-1900: FS
564				pe vvorks ea - Tree Removal & Transplanting			9 26-Nov-19		
565	6.08.1	1 6	8-1000	Access trees condition and select for transplanting	30	01-Apr-1	* 30-Apr-19	1264 14-1300: FS	68-1100: FS, 68-1200: FS, 68-1400: FS
566				Prepare new site to receive trees				1264 68-1000: FS	68-1200: SS
		1 6	8-1200	Transplant selected trees		-		1264 68-1000: FS, 68-1100: SS	68-1300: FS
567	The second second			Prune trees prior to removal from Cell 4	90			1264 68-1200: FS	12-1900: FS
567				Total Falling D. (170)			00 11.40	1384 23-8200: FS, 31-1600: FS, 68-1000: FS	12-1900: FS
567 568 569	6.08.1	1 6	8-1400	Tree Felling - Part X3				004	
567 568 569 570 571	6.08.1 <b>SA2.6</b> .	1 6	8-1400 ENTX A	Area - Trial Nursery & Tree Planting	583	01-May-1	9 03-Dec-20		12-1900: FS, M 3. 2: FS
567 568 569 570 571	6.08.1 <b>SA2.6</b> . 6.08.2	1 6 . <b>08.2 SE</b> 2 6	68-1400 ENTX A 68-1600		583 300	01-May-1	9 03-Dec-20 9 24-Feb-20	891 1174 14-1800: FS, 58-1000: SS 30 891 54-1000: FS, 23-7600: FS	12-1900: FS, M 3. 2: FS 12-1900: 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) D C O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
Air Quali	ty - Cons	truction Phase						
4.8.1	AQ1	<ul> <li>Blasting</li> <li>The area within 30m of the blasting area will be wetted prior to blasting.</li> <li>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.</li> <li>loose material and stones in the Site will be removed prior to the blast operation</li> </ul>	To minimise potential dust nuisance	al Blasting area and 30m of blasting area	SENTX Contractor	<b>✓</b>	Air Pollution Control (Construction Dust) Regulations	Not applicable. Blasting is not required in the latest landfill design
		<ul> <li>During blasting, blast nets, screens and other protective covers will be used to prevent the projection of flying fragments and material resulting from blasting</li> </ul>						
4.8.1	AQ2	<ul> <li>Rock Drilling</li> <li>Watering will be carried out at the rock drilling activities to avoid fugitive dust emissions.</li> </ul>	To minimise potential dust nuisance	Rock drilling area	SENTX Contractor	✓	Air Pollution Control (Construction Dust) Regulations	Not applicable. Rock drilling is not required in the latest landfill design
(1) D=Desig	gn; C=Const	ruction; 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?		implemo ure? <sup>(1)</sup> O/R	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
4.8.1	AQ3	<ul> <li>Site Access Road</li> <li>The main haul road will be kept clear of dusty materials or sprayed with water.</li> <li>The main haul road will be paved with aggregate or gravel.</li> <li>Vehicle speed will be limited to 10kph.</li> </ul>	To minimise potential dust nuisance	Main haul road	SENTX Contractor	<b>✓</b>		Air Pollution Control (Construction Dust) Regulations HKAQO and EIAO- TM Annex 4	Deficiency of mitigation measures but rectified by the Contractor
4.8.1	AQ4	Stockpiling of Dusty Materials  • 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	✓		Air Pollution Control (Construction Dust) Regulations HKAQO and EIAO- TM Annex 4	Reminder was given to Contractor
4.8.1	AQ5	<ul> <li>Loading, unloading or transfer of dusty materials</li> <li>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.</li> </ul>	To minimise potential dust nuisance	All construction works area	SENTX Contractor	<b>√</b>		Air Pollution Control (Construction Dust) Regulations HKAQO and EIAO- TM Annex 4	Deficiency of mitigation measures but rectified by the Contractor
4.8.1	AQ6	Site Boundary and Entrance  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	✓		Air Pollution Control (Construction Dust) Regulations HKAQO and EIAO-	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?	the n		implen ure? <sup>(1)</sup> O/R	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		ground level will be provided along the entire length of that portion of the site boundary except for the site entrance or exit.							TM Annex 4	
4.8.1	AQ7	Excavation Works	To minimise potential		SENTX		✓		Air Pollution Control	Not applicable
		<ul> <li>Working area of any excavation or earth moving operation will be sprayed with water immediately before, during and immediately after</li> </ul>	dust nuisance	construction works area	Contractor				(Construction Dust) Regulations  HKAQO and EIAO-	
		the operation so as to ensure that the entire surface is wet.							TM Annex 4	
4.8.1	AQ8	Building Demolition	To minimise potential	All construction works area	SENTX Contractor	•	✓		Air Pollution Control	Not applicable
		• The area where the demolition works are planned to take place will be	dust nuisance						(Construction Dust) Regulations	
		sprayed with water immediately prior to, during and immediately after the demolition activities.							HKAQO and EIAO- TM Annex 4	
		<ul> <li>Any dusty materials remaining after a stockpile is removed will be wetted with water and cleared from the surface of roads or street.</li> </ul>								
4.8.1	AQ9	Construction of the Superstructure of Building	To minimise potential dust nuisance	All construction	SENTX Contractor		✓		Air Pollution Control (Construction Dust)	Implemented
		Effective dust screens, sheeting or		works area					Regulations	
		netting will be provided to enclose the scaffolding from the ground level up to the highest level of the scaffolding.	up to the highest level of the						HKAQO and EIAO- TM Annex 4	

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?		imple: ure? <sup>(1)</sup> O/R		What requirements or standards for the measure to achieve?	Implementation Status and Remarks
4.8.1	AQ10	Should a stone crushing plant be needed on site, the control measures recommended in the Best Practicable Means Requirement for Mineral Works (Stone Crushing Plants) BPM 11/1 should be implemented.	To minimise potential dust nuisance	Stone crushing plant/ construction phase	SENTX Contractor	✓			Best Practicable Means Requirement for Mineral Works (Stone Crushing Plants) BPM 11/1	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	✓			HKAQO and EIAO- TM Annex 4	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	✓			HKAQO and EIAO- TM Annex 4	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 Figure 11.3a	SENTX Contractor	✓	✓		HKAQO and EIAO- TM Annex 4	Implemented
4.10.2	AQ46	Monitoring of meteorological station, continuously	Collect site specific meteorological data	At meteorologica l station shown in Figure 11.3a	SENTX Contractor	✓	✓	✓	-	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended	Location of the Measures	Who to implement the measure?	the	meas	imples sure? (1)		What requirements or standards for the measure to achieve?	Implementation Status and Remarks
			Measure & Main Concerns to address			D	С	O/R	A		
5.7.1	N1	Adopt good site practice listed below:	To minimise potential construction noise	All construction	SENTX Contractor		✓			Noise Control Ordinance (NCO) and	Implemented
		<ul> <li>Only well-maintained plant will be operated on-site and plant should be serviced regularly during the construction program;</li> </ul>	n ill	works area						EIAO-TM Annex 5	
		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.									

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	Implementation Status and Remarks
	1101	Thinguist Heusties				D	С	O/R A	measure to achieve?	Surus una remaras
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		<b>√</b>		Noise Control Ordinance (NCO) and EIAO-TM Annex 5	Implemented
Water Qua	ality <b>-</b> Co	nstruction Phase								
6.8.1	WQ1	Construction Runoff								
		• Exposed soil areas will be minimised	To minimise potential		SENTX		✓		ProPECC PN 1/94	Implemented
		to reduce the contamination of runoff and erosion.	water quality impacts arising from the construction works	construction works area	Contractor				EIAO-TM Annex 6	
6.8.1	WQ2	Perimeter channels will be	To minimise potential		SENTX	✓	✓		ProPECC PN 1/94	Implemented
		constructed in advance of site formation works and earthworks and intercepting channels will be provided	water quality impacts arising from the construction works	construction works area	Contractor				Water Pollution Control Ordinance (WPCO)	
		for example along the edge of excavation.							EIAO-TM Annex 6	
6.8.1	WQ3	Silt removal facilities, channels and	To minimise potential		SENTX		✓		ProPECC PN 1/94	Implemented
		manholes will be maintained and the deposited silt and grit should be	water quality impacts arising from the	construction works area	Contractor				WPCO	
		removed regularly to ensure they are functioning properly at all times.	construction works						EIAO-TM Annex 6	
6.8.1	WQ4	Temporary covers such as tarpaulin	To minimise potential		SENTX		✓		ProPECC PN 1/94	Implemented
		will also be provided to minimise the generation of high SS runoff.	water quality impacts arising from the construction works	construction works area	Contractor				WPCO	
6.8.1	WQ5	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	Location of the Measures	Who to implement			implen ure? <sup>(1)</sup>	nent	What requirements or standards for the	Implementation Status and Remarks
			Measure & Main Concerns to address		the measure?	D	С	O/R	A	measure to achieve?	
		and grease will pass through the oil interceptors.	water quality impacts arising from the	construction works area	Contractor					WPCO	
		merceptors.	construction works	works area						EIAO-TM Annex 6	
6.8.1	WQ6	• All sewer and drains will be sealed to	To minimise potential	Infrastructure			✓			ProPECC PN 1/94	Not applicable
		prevent building debris, soil etc from entering public sewers/drains before	water quality impacts arising from the	area at existing SENT	Contractor					WPCO	
		commencing any demolition works	demolition works	Landfill						EIAO-TM Annex 6	
6.8.1	WQ7	During the excavation works for the	To minimise potential	Tunnel boring			✓			ProPECC PN 1/94	Not applicable.
		twin drainage tunnels, the recycle water for cooling the cutter head of	water quality impacts arising from the	sites	Contractor					WPCO	Excavation of drainage tunnels is not required
		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.	tunnel works							EIAO-TM Annex 6	in the latest landfill design.
6.8.1	WQ8	• The fuel and waste lubricant oil from	To minimise potential	SENTX Site	SENTX		✓			ProPECC PN 1/94	Implemented
		the on-site maintenance of machinery and equipment will be collected by a	water quality impacts arising from improper		Contractor					WPCO	
		licensed chemical waste collector.	handling of fuel and oil							Waste Disposal Ordinance (WDO)	
6.8.1	WQ9	Implementation of excavation	To minimise	All	SENTX		✓			ProPECC PN 1/94	Implemented
		schedules, lining and covering of excavated stockpiles	contaminated stormwater run-off	construction works	Contractor					WPCO	
		excavated stockpiles	from the SENTX Site							EIAO-TM Annex 6	
6.13	WQ10	0 1 5	To minimise potential	SENTX Site	SENTX		✓			WPCO	Implemented
		will be conducted on a regular basis as stated in the EM&A Manual.	water quality impacts on surface water arising from the construction works		Contractor					Water-TM	

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?			implement ure? <sup>(1)</sup> O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
6.8.2	WQ11	Sewage Effluents								
		<ul> <li>Sufficient chemical toilets will be provided for the construction workforce.</li> </ul>	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 minimise potential	SENTX Site	SENTX		✓		WPCO	Implemented
		to discharge into the surrounding water body.	water quality impacts arising from the sewage effluents		Contractor				WDO	
6.8.2	WQ13	A licensed waste collector will be	To minimise potential	SENTX Site	SENTX		✓		WPCO	Implemented
		employed to clean the chemical toilets on a regular basis.	water quality impacts arising from the sewage effluents		Contractor				WDO	
Waste Ma	nagement	- 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	Management of Waste Disposal								
		The construction contractor will open a	To ensure that	SENTX Site	SENTX		✓		WDO	Implemented
		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,	adverse environmental impacts are prevented		Contractor				Waste Disposal (Charges for Disposal of Construction Waste) Regulation;	
		landfills will required a valid "chit" which contains the information of the account holder to facilitate waste							Works Bureau Technical Circular No.31/2004; and	

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main	Location of the Measures	Who to implement the measure?	When to the mea	o implement sure? <sup>(1)</sup> O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
			Concerns to address		the measure.	D С	O/K II	measure to acmeve.	
		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.						Annex 5 and Annex 6 of Appendix G of ETWBTC No. 19/2005)	
		A recording system for the amount of waste generated, recycled and disposed of (including the disposal sites) will be established.							
7.6.1	WM3	Measures for the Reduction of Construction Waste Generation							
		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.	To reduce construction waste generation	SENTX Site	SENTX Contractor	<b>√</b>		WDO EIAO-TM Annex 7	Implemented
7.6.1	WM4	Chemical Waste							
		The construction contractor will register	To ensure proper	SENTX Site	SENTX	✓		WDO	Implemented
		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>	handling of chemical waste		Contractor			Code of Practice on the Packaging, Handling and Storage of Chemical Wastes	

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures  Chemical Wastes.	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	the m		implemen ure? <sup>(1)</sup> O/R A	or standards for the	Implementation Status and Remarks
7.6.1	WM5	Sewage  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.		SENTX Site	SENTX Contractor		✓		WDO EIAO-TM Annex 7	Implemented
7.6.1 and SENTX latest design	WM6	General Refuse  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.	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	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.  Staff Training								
		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?	the m	easur	nplement e? <sup>(1)</sup> D/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		waste reduction, reuse and recycling.								
7.8	WM8	Environmental Monitoring & Audit Requirements  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 G	as Hazar	ds - 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 Landfill Gas Hazard Assessment Guidance Notes (the Guidance Note). Those precautionary measures applicable to the SENTX will be confirmed in the detailed Qualitative Landfill Gas Hazard Assessment to be submitted by the contractor.		All construction works area	SENTX Contractor	•			Paragraphs 8.3 to 8.49 of EPD's Landfill Gas Hazards Assessment Guidance Note EIAO-TM Annex 7	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	Location of the Measures	Who to implement			imple: sure? (1)		What requirements or standards for the	Implementation Status and Remarks
			Measure & Main Concerns to address		the measure?		С	O/R		measure to achieve?	
		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.					<b>√</b>	\[   \]	✓		
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	✓	✓	<b>√</b>	✓	EIAO-TM Annex 7	Implemented
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	· ·	Infrastructure Area	SENTX Contractor	<b>✓</b>	<b>√</b>			EPD's Landfill Gas Hazards Assessment Guidance Note EIAO-TM Annex 7	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended	Location of the Measures	Who to implement	the	meas	implem sure? <sup>(1)</sup>		What requirements or standards for the	Implementation Status and Remarks
			Measure & Main Concerns to address		the measure?	D	С	O/R	A	measure to achieve?	
		between the waste and the new infrastructure area to monitor the migration of landfill gas, if any.									
Ecology -	Construct	tion Phase									
9.10.2	EC1	Measures to control construction runoff:	To minimise potential		SENTX		✓			EIAO-TM Annex 16	Implemented
		• Exposed soil areas will be	water quality impacts affecting ecological	construction works area	Contractor					ProPECC PN 1/94	
		minimised to reduce the contamination of runoff and erosion;	resources							Water Pollution Control Ordinance (WPCO)	
										EIAO-TM Annex 6	
		<ul> <li>To prevent stormwater runoff from washing across exposed soil surfaces, 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;</li> </ul>								-	Implemented
		<ul> <li>Silt removal facilities, channels and manholes will be maintained and the deposited silt and grit will be removed regularly to ensure they are functioning properly at all times;</li> </ul>								-	Implemented
		<ul> <li>Temporary covers such as tarpaulin will also be provided to minimise the generation of high suspended solids runoff;</li> </ul>								-	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended	Location of the Measures	Who to	Wher		_	nent	What requirements or standards for the	Implementation Status and Remarks
	Kei	Wittigation Weasures	Measure & Main Concerns to address	the Measures	implement the measure?			O/R	A	measure to achieve?	Status and Remarks
		<ul> <li>The surface runoff contained any oil and grease will pass through the oil interceptors; and,</li> </ul>								-	Not applicable
		<ul> <li>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.</li> </ul>								-	Implemented
9.10.2 and	EC2	Good Construction Practice:									
SENTX latest design		<ul> <li>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.</li> </ul>	To minimise potential ecological impacts arising from the Project	SENTX Site	SENTX Contractor		✓			EIAO-TM Annex 16	Implemented
		<ul> <li>The work site boundaries will be regularly checked to ensure that they are not breached and that damage does not occur to surrounding areas.</li> </ul>									
9.12.1	EC9	Environmental Monitoring & Audit Requirements	_				,	,	,	TIA O TIA A	
		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		<b>√</b>	✓	<b>✓</b>	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?			implement sure? <sup>(1)</sup> O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		construction period.								
Landscape	e and Visu	aal - 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		✓		EIAO-TM Annex 18 and ETWBC 3/2006	Implemented
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		<b>√</b>		EIAO-TM Annex 18	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		✓		EIAO-TM Annex 18 and ETWBC 3/2006	Implemented
10.6.5	LV4	CM4 - Trees unavoidably affected by the works will be transplanted, where necessary and practical. A detailed Tree	landscape and visual	Potential impacted area	SENTX Contractor	✓	✓		EIAO-TM Annex 18 and ETWBC 3/2006	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended	Location of the Measures	Who to implement			implement sure? (1)	What requirements or standards for the	Implementation Status and Remarks
	1101		Measure & Main Concerns to address	•110 1120 <b>1</b> 10 <b>1</b> 12 <b>0</b> 5	the measure?	D	С	O/R A	measure to achieve?	<b>3 11 11 11 11 11 11 11 11 11 11 11 11 11</b>
		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		✓		EIAO-TM Annex 18	Reminder was given to Contractor
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	<b>✓</b>	<b>✓</b>		EIAO-TM Annex 18	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	✓	✓		EIAO-TM Annex 18 and ETWBC 7/2002	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended	Location of the Measures	Who to implement			implement sure? <sup>(1)</sup>	What requirements or standards for the	he Status and Remarks
			Measure & Main Concerns to address		the measure?	D	С	O/R A	measure to achieve?	
		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		✓		EIAO-TM Annex 18	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	✓	<b>√</b>		EIAO-TM Annex 18	Implemented

### Annex C

# Monitoring Schedule for This Reporting Period

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

November 2019

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

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.

# Air Quality

Calibration Certificates for Dust Monitoring Equipment



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# Calibration Report of High Volume Air Sampler

Manufacturer

Graseby 105

Date of Calibration

23 October 2019

Serial No.

: 9795 (ET/EA/003/18)

Calibration Due Date

22 December 2019

Method

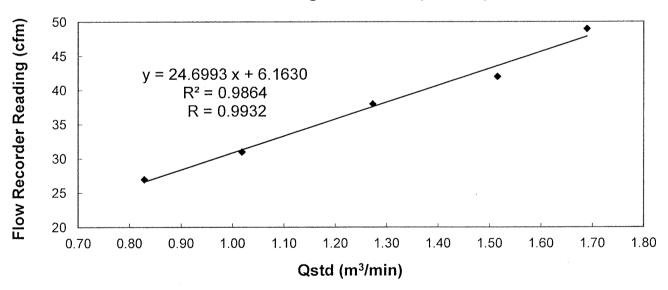
Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the

**Operations Manual** 

Results

Flow recorder rea	49	42	38	31	27	
Qstd (Actual flow	1.69	1.51	1.27	1.02	0.83	
Pressure: 760.56 mm Hg			Temp.:	299	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:

MAK, Kei Wai

(Assistant Supervisor)

Checked by

LAU, Chi Leung

(Environmental Team Leader)

- END OF REPORT -



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# Calibration Report of High Volume Air Sampler

Manufacturer

Andersen G1051

Date of Calibration

23 October 2019

Serial No.

1176 (ET/EA/003/05)

Calibration Due Date

22 December 2019

Method

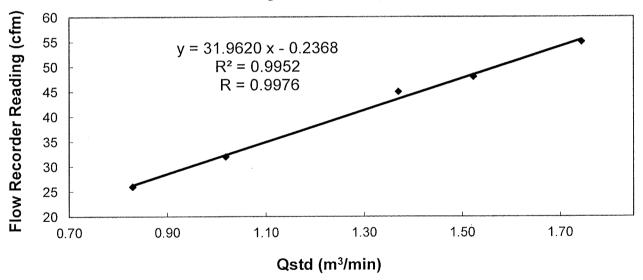
Based on Operations Manual for the 5-point calibration using standard calibration kit

manufactured by Tisch TE-5025 A

Results

Flow recorder read	55	48	45	32	26	
Qstd (Actual flow r	1.74	1.52	1.37	1.02	0.83	
Pressure: 760.56 mm Hg			Temp. :	299	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:

MAK, Kei Wai

(Assistant Supervisor)

Checked by :

LAU, Chi Leung

(Environmental Team Leader)

- END OF REPORT -

# 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 (μg/m3)
6 Nov 19	8:30	7 Nov 19	8:30	Fine	106
12 Nov 19	8:30	13 Nov 19	8:30	Cloudy	96
18 Nov 19	12:30	19 Nov 19	12:30	Fine	97
24 Nov 19	8:00	25 Nov 19	8:00	Fine	91
30 Nov 19	8:00	1 Dec 19	8:00	Cloudy	84
				Average	95
				Min	84
				Max	106

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

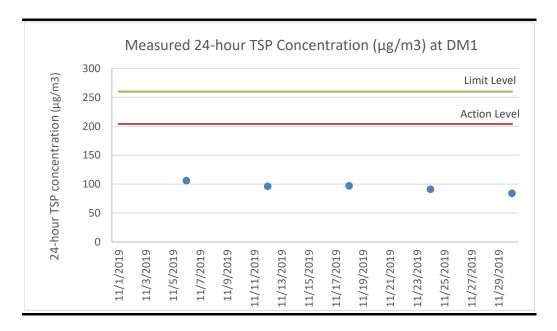


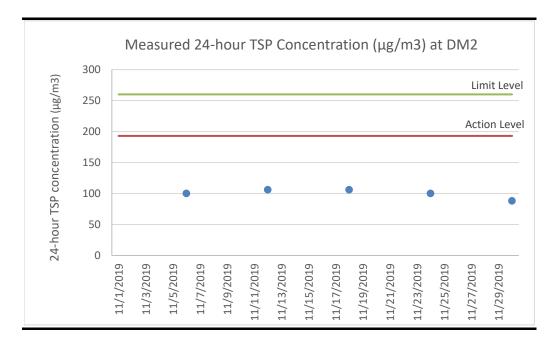
Table D2.2 24-hour TSP Monitoring Results at DM2

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (μg/m3)
6 Nov 19	8:35	7 Nov 19	8:35	Fine	100
12 Nov 19	8:30	13 Nov 19	8:30	Cloudy	106
18 Nov 19	12:35	19 Nov 19	12:35	Fine	106
24 Nov 19	8:00	25 Nov 19	8:00	Fine	100
30 Nov 19	8:00	1 Dec 19	8:00	Cloudy	88
				Average	100
				Min	88
				Max	106

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



# Event and Action Plan for Dust Monitoring

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

		Action	
Event	ET	IEC	Contractor
Action Level			
Exceedance for one sample	<ul> <li>Identify the source(s) and investigate the cause(s) of exceedance</li> <li>Prepare Notification of Exceedance within 24 hours</li> <li>Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project</li> <li>Repeat measurement to confirm finding if exceedance is due to the Project</li> <li>Increase monitoring frequency to daily if exceedance is due to the Project and continue until the monitoring results reduce to below action level</li> </ul>	<ul> <li>Verify the Notification of Exceedance</li> <li>Check monitoring data submitted by ET</li> <li>Check Contractor's working methods</li> </ul>	<ul> <li>Rectify any unacceptable practice</li> <li>Amend working methods if appropriate</li> </ul>
Exceedance for two or more consecutive samples	<ul> <li>Identify the source(s) and investigate the cause(s) of exceedance</li> <li>Prepare Notification of Exceedance within 24 hours</li> <li>Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project</li> <li>Discuss with Contractor and IEC for remedial measures required</li> <li>Ensure remedial measures are properly implemented</li> <li>If exceedance continues, arrange meeting with Contractor &amp; IEC</li> <li>Continue monitoring at daily intervals if exceedance is due to the Project</li> <li>If no exceedance for 3 consecutive days, cease additional monitoring</li> </ul>	Check monitoring data submitted by ET	<ul> <li>Submit proposals for remedial measures to IEC</li> <li>Implement the agreed proposals</li> <li>Amend proposal if appropriate</li> </ul>

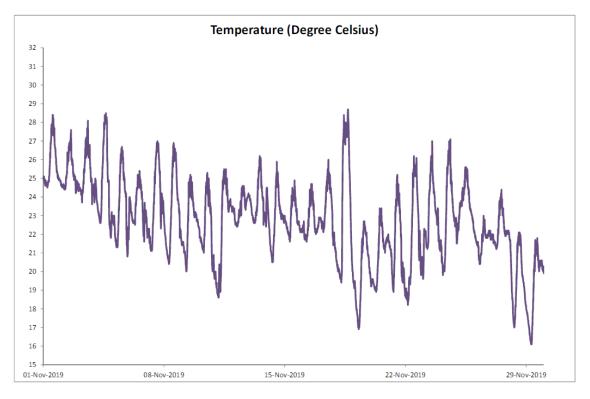
		Action	
Event	ET	IEC	Contractor
Limit Level			
Exceedance for one sample	<ul> <li>Identify the source(s) and investigate the cause(s) of exceedance</li> <li>Prepare Notification of Exceedance within 24 hours</li> <li>Inform Contractor, IEC, Project Proponent and EPD whether the cause of exceedance is due to the Project</li> <li>Discuss with Contractor and IEC for remedial measures required</li> <li>Ensure remedial measures are properly implemented</li> <li>Repeat measurement to confirm finding if exceedance is due to the Project</li> <li>Increase monitoring frequency to daily if exceedance is due to the Project and continue until the monitoring results reduce to below limit level</li> </ul>	<ul><li>Check monitoring data submitted by ET</li><li>Check Contractor's working methods</li></ul>	<ul> <li>Take immediate action to avoid further exceedance</li> <li>Submit proposals for remedial measures to IEC</li> <li>Implement the agreed proposals</li> <li>Amend proposal if appropriate</li> </ul>
Exceedance for two or more consecutive samples	<ul> <li>Identify source(s) and investigate the cause(s) of exceedance</li> <li>Prepare Notification of Exceedance within 24 hours</li> <li>Inform Contractor, IEC, Project Proponent and EPD the causes &amp; actions taken for the exceedances</li> <li>Discuss with Contractor and IEC for remedial measures required</li> <li>Ensure remedial measures are properly implemented</li> <li>Continue monitoring at daily intervals if exceedance is due to the Project</li> <li>If no exceedance for 3 consecutive days, cease additional monitoring</li> <li>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</li> </ul>		<ul> <li>Take immediate action to avoid further exceedance</li> <li>Submit proposals for remedial measures to IEC</li> <li>Implement the agreed proposals</li> <li>Resubmit proposals if problem still not under control</li> </ul>

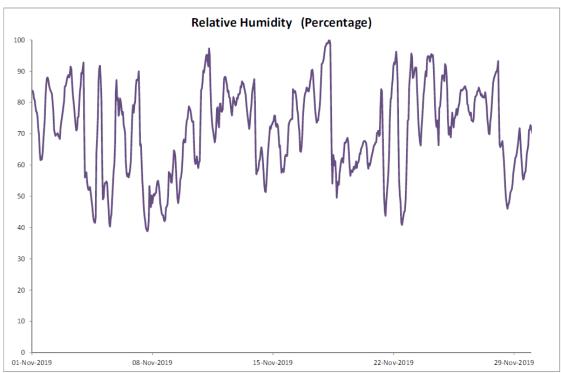
ENVIRONMENTAL RESOURCES MANAGEMENT

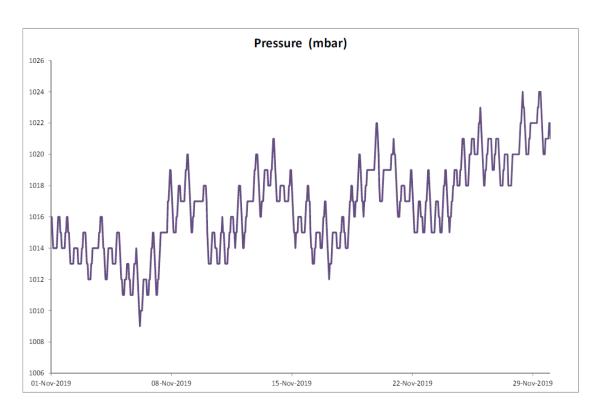
GREEN VALLEY LANDFILL LTD.

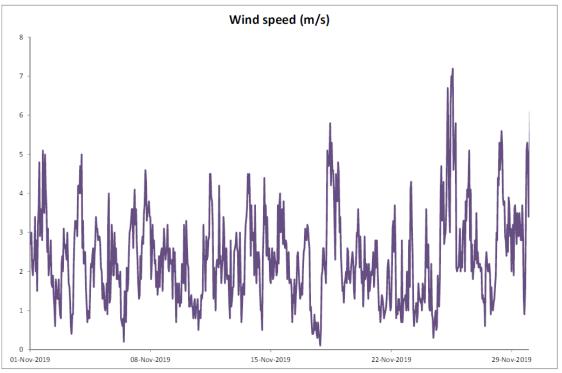
# Meteorological Data

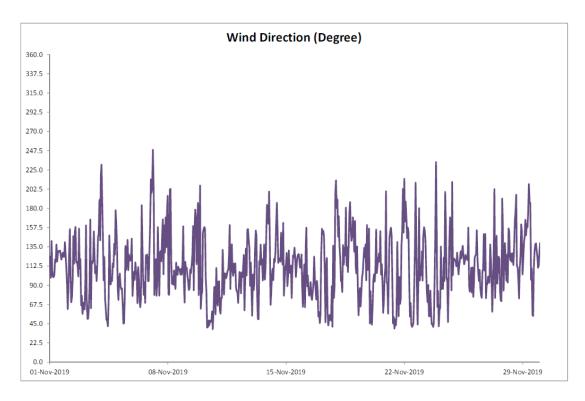
Annex D4 Meteorological Data

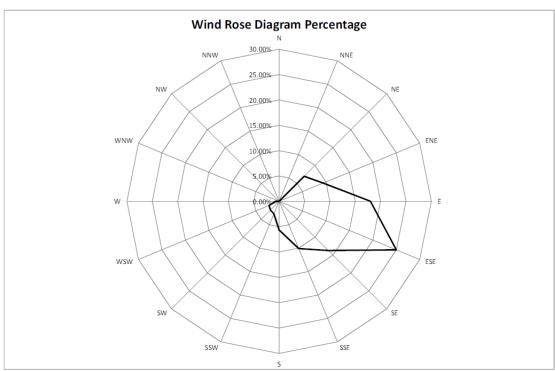












#### Manual Rain Gauge Readings

#### November 2019

Date	Rainfall
	(mm)
1-Nov-19	0.0
2-Nov-19	0.0
3-Nov-19	0.0
4-Nov-19	0.0
5-Nov-19	0.0
6-Nov-19	0.0
7-Nov-19	0.0
8-Nov-19	0.0
9-Nov-19	0.0
10-Nov-19	0.0
11-Nov-19	0.0
12-Nov-19	0.0
13-Nov-19	0.0
14-Nov-19	0.0
15-Nov-19	0.0
16-Nov-19	0.0
17-Nov-19	0.0
18-Nov-19	0.0
19-Nov-19	0.0
20-Nov-19	0.0
21-Nov-19	0.0
22-Nov-19	0.0
23-Nov-19	0.0
24-Nov-19	0.0
25-Nov-19	0.0
26-Nov-19	0.0
27-Nov-19	0.0
28-Nov-19	0.0
29-Nov-19	0.0
30-Nov-19	0.0
TOTAL RAINFALL	0.0

Annex E

Noise

### Annex E1

Calibration Certificates for Noise Monitoring Equipment



#### Sun Creation Engineering Limited

Calibration & Testing Laboratory

# Certificate of Calibration 校正證書

Certificate No.: C193753

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC19-1098)

Date of Receipt / 收件日期: 5 July 2019

Description / 儀器名稱

Integrating Sound Level Meter (EQ006)

Manufacturer / 製造商

Brüel & Kjær

Model No. / 型號

2238

Serial No. / 編號

2285762

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 :

 $(23 \pm 2)^{\circ}$ C

Relative Humidity / 相對濕度 :

 $(50 \pm 25)\%$ 

Line Voltage / 電壓

TEST SPECIFICATIONS / 測試規節

Calibration check

DATE OF TEST / 測試日期

16 July 2019

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
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試

K P Cheuk

Assistant Engineer

Certified By 核證

K C Lee Engineer Date of Issue 簽發日期

22 July 2019

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** 

# Certificate of Calibration 校正證書

Certificate No.: C193753

證書編號

- 1. 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.
- 2. Self-calibration using laboratory acoustic calibrator was performed before the test from 6.1.1.2 to 6.4.
- 3. The results presented are the mean of 3 measurements at each calibration point.
- 4. Test equipment:

**Equipment ID** 

Description

Certificate No.

CL280 CL281

40 MHz Arbitrary Waveform Generator

C190176

Multifunction Acoustic Calibrator

CDK1806821

- 5. Test procedure: MA101N.
- 6. Results:
- 6.1 Sound Pressure Level
- 6.1.1 Reference Sound Pressure Level

#### 6.1.1.1 Before Self-calibration

	UUT S	Setting	Applied	Value	UUT	
Range	Parameter	Frequency Time		Level	Freq.	Reading
(dB)		Weighting	Weighting Weighting		(kHz)	(dB)
50 - 130	$L_{AFP}$	A	A F		1	94.4

#### 6.1.1.2 After Self-calibration

UUT Setting				Applied	d Value	UUT	IEC 60651
Range	Parameter	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)
50 - 130	$L_{AFP}$	A	F	94.00	1	94.1	± 0.7

#### 6.1.2 Linearity

	UU	Γ Setting	Applied	d Value	UUT	
Range	Parameter	Frequency	Time	Level Freq.		Reading
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)
50 - 130	$L_{AFP}$	A	F	94.00	1	94.1 (Ref.)
				104.00		104.1
				114.00		114.0

IEC 60651 Type 1 Spec. :  $\pm$  0.4 dB per 10 dB step and  $\pm$  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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**Calibration & Testing Laboratory** 

# Certificate of Calibration 校正證書

Certificate No.: C193753

證書編號

6.2 Time Weighting

6.2.1 Continuous Signal

Continue	201111111111111111111111111111111111111										
UUT Setting				Applied Value		UUT	IEC 60651				
Range	Parameter	Frequency	Time	Level Freq.		Reading	Type 1 Spec.				
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)	(dB)				
50 - 130	$L_{AFP}$	A	F	94.00	1	94.1	Ref.				
	$L_{ASP}$		S			94.1	± 0.1				
	$L_{AIP}$		I			94.2	± 0.1				

6.2.2 Tone Burst Signal (2 kHz)

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

#### 6.3 Frequency Weighting

6.3.1 A-Weighting

UUT Setting			Applied Value		UUT	IEC 60651	
Range	Parameter	Frequency	Time	Level Freq.		Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)		(dB)	(dB)
50 - 130	$L_{AFP}$	A	F	94.00	31.5 Hz	55.2	$-39.4 \pm 1.5$
		1			63 Hz	68.1	$-26.2 \pm 1.5$
				2	125 Hz	78.0	$-16.1 \pm 1.0$
					250 Hz	85.4	$-8.6 \pm 1.0$
		_			500 Hz	90.8	$-3.2 \pm 1.0$
					1 kHz	94.1	Ref.
					2 kHz	95.3	$+1.2 \pm 1.0$
					4 kHz	95.1	$+1.0 \pm 1.0$
					8 kHz	93.0	-1.1 (+1.5; -3.0)
					12.5 kHz	89.9	-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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#### **Sun Creation Engineering Limited**

**Calibration & Testing Laboratory** 

# Certificate of Calibration 校正證書

Certificate No.: C193753

證書編號

6.3.2 C-Weighting

	UUT Setting			Applied Value		UUT	IEC 60651
Range	Parameter	Frequency	Time	Level	Freq.	Reading	Type 1 Spec.
(dB)		Weighting	Weighting	(dB)		(dB)	(dB)
50 - 130	$L_{CFP}$	C	F	94.00	31.5 Hz	91.5	$-3.0 \pm 1.5$
					63 Hz	93.4	$-0.8 \pm 1.5$
					125 Hz	93.9	$-0.2 \pm 1.0$
					250 Hz	94.1	$0.0 \pm 1.0$
					500 Hz	94.1	$0.0 \pm 1.0$
					1 kHz	94.1	Ref.
					2 kHz	93.9	$-0.2 \pm 1.0$
					4 kHz	93.3	$-0.8 \pm 1.0$
					8 kHz	91.1	-3.0 (+1.5; -3.0)
					12.5 kHz	88.0	-6.2 (+3.0 ; -6.0)

6.4 Time Averaging

UUT Setting				Applied Value					UUT	IEC 60804
Range	Parameter	Frequency	Integrating	Frequency	Burst	Burst	Burst	Equivalent	Reading	Type 1
(dB)		Weighting	Time	(kHz)	Duration	Duty	Level	Level	(dB)	Spec.
					(ms)	Factor	(dB)	(dB)		(dB)
30 - 110	$L_{Aeq}$	A	10 sec.	4	1	1/10	110.0	100	100.0	± 0.5
						$1/10^{2}$		90	90.0	± 0.5
			60 sec.			$1/10^{3}$		80	79.2	± 1.0
			5 min.			1/104		70	69.2	± 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 :  $\pm$  0.35 dB

12.5 kHz : ± 0.70 dB

 $\begin{array}{lll} 104~\text{dB}: 1~\text{kHz} & : \pm 0.10~\text{dB}~\text{(Ref. 94 dB)} \\ 114~\text{dB}: 1~\text{kHz} & : \pm 0.10~\text{dB}~\text{(Ref. 94 dB)} \\ \text{Burst equivalent level} & : \pm 0.2~\text{dB}~\text{(Ref. 110 dB)} \\ & \text{continuous sound level)} \end{array}$ 

- 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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#### Sun Creation Engineering Limited

**Calibration & Testing Laboratory** 

# Certificate of Calibration 校正證書

Certificate No.:

C186448

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: 8 November 2018

Description / 儀器名稱

Sound Calibrator (EQ089)

Manufacturer / 製造商

Rion

Model No. / 型號 Serial No. / 編號

NC-75 34680623

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 / 温度 :  $(23 \pm 2)^{\circ}$ 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

24 November 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
- The Bruel & Kjaer Calibration Laboratory, Denmark
- 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

Lee Engineer Date of Issue 簽發日期

27 November 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 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所書面批准。

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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



#### Sun Creation Engineering Limited

**Calibration & Testing Laboratory** 

### Certificate of Calibration 松正證書

Certificate No.:

C186448

證書編號

1. The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement of the test.

2. The results presented are the mean of 3 measurements at each calibration point.

3. Test equipment:

Equipment ID CL130 CL281 TST150A <u>Description</u>
Universal Counter
Multifunction Acoustic Calibrator
Measuring Amplifier

Certificate No. C183775 CDK1806821 C181288

4. Test procedure: MA100N.

5. Results:

5.1 Sound Level Accuracy

UUT	Measured Value	Mfr's Spec.	Uncertainty of Measured Value		
Nominal Value	(dB)	(dB)	(dB)		
94 dB, 1 kHz	94.0	± 0.25	± 0.2		

5.2 Frequency Accuracy

UUT Nominal Value	Measured Value	Mfr's	Uncertainty of Measured Value	
(kHz)	(kHz)	Spec.	(Hz)	
1	1.000 0	$1 \text{ kHz} \pm 0.1 \%$	± 0.1	

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.

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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.:

Date of Receipt / 收件日期: 27 August 2019

C194819

證書編號

ITEM TESTED / 送檢項目 (Job No. / 序引編號: IC19-1098)

Description / 儀器名稱

Sound Calibrator (EQ087)

Manufacturer / 製造商

Rion

Model No. / 型號

NC-74

Serial No. / 編號

34657231

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

 $(23 \pm 2)^{\circ}$ C

Relative Humidity / 相對濕度 :  $(50 \pm 25)\%$ 

TEST SPECIFICATIONS / 測試規範

Calibration check

Line Voltage / 電壓

DATE OF TEST / 測試日期

7 September 2019

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
- The Bruel & Kjaer Calibration Laboratory, Denmark
- Agilent Technologies / Keysight Technologies
- Fluke Everett Service Center, USA

Tested By 測試

H T Wong

Technical Officer

Certified By 核證

Lee Engineer Date of Issue 簽發日期

10 September 2019

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 一 校正及檢測實驗所



# Certificate of Calibration 校正證書

Certificate No.:

C194819

證書編號

The unit-under-test (UUT) was allowed to stabilize in the laboratory for over 12 hours before the commencement 1.

The results presented are the mean of 3 measurements at each calibration point. 2.

3. Test equipment:

> Equipment ID CL130 CL281 TST150A

Description Universal Counter Multifunction Acoustic Calibrator Measuring Amplifier

Certificate No. C193756 CDK1806821 C181288

Test procedure: MA100N.

Results: 5.

5.1 Sound Level Accuracy

UUT	Measured Value	Mfr's Spec.	Uncertainty of Measured Value
Nominal Value	(dB)	(dB)	(dB)
94 dB, 1 kHz	94.1	± 0.3	± 0.2

Frequency Accuracy

1 requestey recuracy			
<b>UUT Nominal Value</b>	Measured Value	Mfr's	Uncertainty of Measured Value
(kHz)	(kHz)	Spec.	(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所書面批准。

# Annex E2

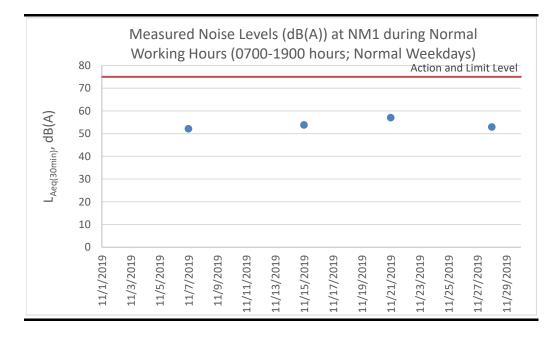
# Noise Monitoring Results

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 <sub>10 (30min)</sub>	L <sub>90 (30min)</sub>	Leq (30min)
7 Nov 19	14:37	15:07	Sunny	53.5	50.0	52.1
15 Nov 19	15:01	15:31	Sunny	56.0	48.0	53.8
21 Nov 19	14:34	15:04	Sunny	58.5	54.5	57.0
28 Nov 19	14:39	15:09	Sunny	54.0	51.0	52.9
					Average	e 54.0
					Mir	ı 52.1
					Max	<b>x</b> 57.0

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

<b>Event</b>		Action								
	ET	IEC	Contractor							
Action Level	<ul> <li>Identify the source(s) and investigate the cause(s) of exceedance and complaint</li> <li>Prepare Notification of Exceedance within 24 hours</li> <li>Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project</li> <li>Discuss with Contractor and IEC for remedial measures required</li> <li>Ensure remedial measures are properly implemented</li> <li>Have additional monitoring if exceedance is due to the Project. If exceedance stops, cease additional monitoring</li> </ul>	<ul> <li>Verify the Notification of Exceedance</li> <li>Check monitoring data submitted by ET</li> <li>Discuss with ET and Contractor on proposed remedial measures</li> <li>Review proposals on remedial measures</li> <li>Audit the implementation of the remedial measures</li> <li>Audit the effectiveness of the implemented remedial measures</li> </ul>	<ul> <li>Submit proposals for remedial measures to IEC</li> <li>Implement the agreed proposals</li> </ul>							
Limit Level	<ul> <li>Identify the source(s) and investigate the cause(s) of exceedance and complaint</li> <li>Prepare Notification of Exceedance within 24 hours</li> <li>Inform Contractor, IEC, Project Proponent and EPD whether the cause of exceedance is due to the Project</li> <li>Analyse the operation of SENTX and investigate the causes of exceedance</li> <li>Provide interim report to Contractor, IEC, Project Proponent and EPD the causes of the exceedances</li> <li>Discuss with Contractor and IEC for remedial measures required</li> <li>Ensure remedial measures are properly implemented</li> <li>Report the remedial measures implemented and the additional monitoring results to Contactor, IEC, Project Proponent and EPD</li> <li>Have additional monitoring if exceedance is due to the Project. If exceedance stops, cease additional monitoring</li> </ul>	<ul> <li>Verify the Notification of Exceedance</li> <li>Check monitoring data submitted by ET</li> <li>Discuss with ET and Contractor on proposed remedial measures</li> <li>Review proposals on remedial measures</li> <li>Audit the implementation of the remedial measures</li> <li>Audit the effectiveness of the implemented remedial measures</li> </ul>	<ul> <li>Take immediate measures to avoid further exceedance</li> <li>Submit proposals for remedial measures to IEC within 3 working days of notification</li> <li>Implement the agreed proposals</li> <li>Resubmit proposals if problem still not under control</li> <li>Stop the relevant activity of works as determined by the Project Proponent until the exceedance is abated</li> </ul>							

# Surface Water Quality

Calibration Certificates for Surface Water Quality Monitoring Equipment



#### ALS Technichem (HK) Pty Ltd

11/F, Chung Shun Knitting Centre 1-3 Wing Yip Street, Kwai Chung N.T., Hong Kong T: +852 2610 1044 | F: +852 2610 2021

# REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

CONTACT: MR BEN TAM WORK ORDER: HK1936450

CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND

CONSULTING

ADDRESS: RM A 20/F., GOLD KING IND BLDG, SUB-BATCH: 0

NO. 35-41 TAI LIN PAI ROAD, LABORATORY: HONG KONG KWAI CHUNG, N.T. HONG KONG DATE RECEIVED: 26-Aug-2019

DATE OF ISSUE: 02-Sep-2019

#### COMMENTS

Equipment information (Brand name, Model No., Serial No. and Equipment No.) is provided by client. 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.

The "Next Calibration Date" is recommended according to best practice principle as practised 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/ Model No.: YSI Professional DSS

Serial No./ Equipment No.: 15H102620/ 15H103928 (EQW018)

Date of Calibration: 30-Aug-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: HK1936450

SUB-BATCH: C

DATE OF ISSUE: 02-Sep-2019

CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter Brand Name/

Model No.:

YSI Professional DSS

Serial No./
Equipment No.:

15H102620/ 15H103928 (EQW018)

Date of Calibration: 30-Aug-2019 Date of Next Calibration: 30-Nov-2019

PARAMETERS:

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

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)		
146.9	160.7	+9.4		
6667	6485	-2.7		
12890	12380	-4.O		
58670	55669	-5.1		
	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)
7.43	7.41	-0.02
4.06	4.07	+0.01
2.05	2.20	+0.15
	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	4.15	+0.15
7.0	7.07	+0.07
10.0	9.90	-0.10
	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

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### REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1936450

SUB-BATCH: C

DATE OF ISSUE: 02-Sep-2019

CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter Brand Name/

Model No.:

YSI Professional DSS

Serial No./
Equipment No.:

15H102620/ 15H103928 (EQW018)

Date of Calibration: 30-Aug-2019 Date of Next Calibration: 30-Nov-2019

PARAMETERS:

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

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)					
0	0.02						
4	3.76	-6.0					
40	37.23	-6.9					
80	73.56	-8.1					
400	401.38	+0.3					
800	780.12	-2.5					
	Tolerance Limit (%)	±10.0					

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.00	
10	10.30	+3.0
20	20.32	+1.6
30	31.32	+ 4.4
	Tolerance Limit (%)	±10.0

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

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## REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK1936450

SUB-BATCH: 0

DATE OF ISSUE: 02-Sep-2019

CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter

Brand Name/ Model No.:

YSI Professional DSS

Serial No./
Equipment No.:

15H102620/ 15H103928 (EQW018)

Date of Calibration: 30-Aug-2019 Date of Next Calibration: 30-Nov-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)
10.0	9.9	-0.1
20.0	18.9	-1.1
38.0	36.4	-1.6
	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

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# Surface Water Quality Monitoring Results

Table F2.1 Surface Water Quality Monitoring Results at DP4T

Date	Time	Weather Condition	Water Appearance	Water Condition	Water Temperature (°C)	Dissolved Oxygen (DO) (mg/L)	рН	Suspended Solids (SS) (mg/L)
7 Nov 19	14:12	Sunny		Unable	o collect water samp	ole due to insufficient	flow	
15 Nov 19	14:10	Sunny		Unable	o collect water samp	ole due to insufficient	flow	
21 Nov 19	14:23	Sunny		Unable	o collect water samp	ole due to insufficient	flow	
28 Nov 19	14:26	Sunny		Unable	o collect water samp	ole 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	Dissolved Oxygen	pН	Suspended
					Temperature (°C)	(DO) (mg/L)		Solids (SS)
								(mg/L)
7 Nov 19	14:20	Sunny		Unable	to collect water samp	ole due to insufficient f	low	
15 Nov 19	14:21	Sunny		Unable	to collect water samp	ole due to insufficient f	low	
21 Nov 19	14:08	Sunny		Unable	to collect water samp	ole due to insufficient f	low	
28 Nov 19	14:12	Sunny		Unable	to collect water samp	ole due to insufficient f	low	
					Average	-	-	-
					Min	-	-	-
					Max	-	-	-

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> <li>Repeat <i>in situ</i> measurement to confirm findings</li> <li>Identify the source(s) and investigate the cause(s) of exceedance</li> <li>Prepare Notification of Exceedance within 24 hours</li> <li>Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project</li> <li>Repeat measurement on the next day of exceedance if exceedance is due to the Project</li> </ul>	<ul> <li>Verify the Notification of Exceedance</li> <li>Check monitoring data submitted by ET</li> <li>Check Contractor's working methods</li> </ul>	Rectify any unacceptable practice     Amend working methods if appropriate		
Action Level being exceeded by two consecutive sampling days	<ul> <li>Repeat <i>in situ</i> measurement to confirm findings</li> <li>Identify the source(s) and investigate the cause(s) of exceedance</li> <li>Prepare Notification of Exceedance within 24 hours</li> <li>Inform Contractor, IEC and Project Proponent whether the cause of exceedance is due to the Project</li> <li>Discuss with Contractor and IEC for remedial measures required</li> <li>Ensure remedial measures are properly implemented</li> <li>Increase the monitoring frequency to daily if exceedance is due to the Project and continue until no exceedance of Action Level</li> </ul>	<ul> <li>Verify the Notification of Exceedance</li> <li>Check monitoring data submitted by ET</li> <li>Check Contractor's working methods</li> <li>Discuss with ET Leader and Contractor on proposed remedial measures</li> <li>Review proposals on remedial measures</li> <li>Audit the implementation of the remedial measures</li> <li>Audit the effectiveness of the implemented remedial measures</li> </ul>	<ul> <li>Submit proposals for remedial measures to IEC</li> <li>Implement the agreed proposals</li> <li>Amend proposal if appropriate</li> </ul>		

Event	Action					
	ET	IEC	Contractor			
Limit Level being exceeded by two consecutive sampling days	<ul> <li>Repeat <i>in situ</i> measurement to confirm findings</li> <li>Identify source(s) of impact and cause(s) of exceedance</li> <li>Prepare the Notification of Exceedance within 24 hours</li> <li>Inform Contractor, IEC, Project Proponent and EPD whether the cause of exceedance is due to the Project</li> <li>Discuss with Contractor and IEC for remedial measures required</li> <li>Ensure remedial measures are properly implemented</li> <li>Increase the monitoring frequency to daily if exceedance is due to the Project until no exceedance of Limit Level</li> </ul>	<ul> <li>Verify the Notification of Exceedance</li> <li>Check monitoring data submitted by ET</li> <li>Check Contractor's working methods</li> <li>Discuss with ET and Contractor on proposed remedial measures</li> <li>Review proposals on remedial measures</li> <li>Audit the implementation of the remedial measures</li> <li>Audit the effectiveness of the implemented remedial measures</li> </ul>	<ul> <li>Critically review the working methods</li> <li>Rectify unacceptable practice</li> <li>Check all plant and equipment</li> <li>Consider changes of working methods</li> <li>Discuss with the ET and IEC and propose mitigation measures to the IEC</li> <li>Implement the agreed mitigation measures</li> </ul>			
Limit Level being exceeded by more than two consecutive sampling days	<ul> <li>Repeat <i>in situ</i> measurement to confirm findings</li> <li>Identify source(s) of impact and cause(s) of exceedance</li> <li>Prepare the Notification of Exceedance within 24 hours</li> <li>Inform Contractor, IEC, Project Proponent and EPD whether the cause of exceedance is due to the Project</li> <li>Check monitoring data, all plant, equipment and Contractor's working methods</li> <li>Discuss with Contractor and IEC for remedial measures required</li> <li>Ensure mitigation measures are implemented</li> <li>Increase the monitoring frequency to daily if exceedance is due to the Project until no exceedance of Limit Level for two consecutive days</li> </ul>	<ul> <li>Verify the Notification of Exceedance</li> <li>Check monitoring data submitted by ET</li> <li>Check Contractor's working methods</li> <li>Discuss with ET and Contractor on proposed remedial measures</li> <li>Review proposals on remedial measures</li> <li>Audit the implementation of the remedial measures</li> <li>Audit the effectiveness of the implemented remedial measures</li> </ul>	<ul> <li>Critically review the working methods</li> <li>Rectify unacceptable practice</li> <li>Check all plant and equipment</li> <li>Consider changes of working methods</li> <li>Discuss with the ET and IEC and propose mitigation measures</li> <li>Implement the agreed mitigation measure</li> <li>As directed by the Project Proponent, slow down or stop all or part of the construction activities</li> </ul>			

ENVIRONMENTAL RESOURCES MANAGEMENT

GREEN VALLEY LANDFILL LTD.

#### 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	36

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 November 2019)	0	0	0	
Total no. received since project commencement	1	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

December 2019

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