



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

Monthly Environmental Monitoring & Audit Report No.18 for June 2020

July 2020

#### **ERM**

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





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

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

#### Reference Document/Plan

Document/Plan to be Certified/Verified:

Monthly Environmental Monitoring & Audit Report No.18

for June 2020 for South East New Territories (SENT)

Landfill Extension

Date of Report:

6 July 2020

#### Reference EP Condition

EP Condition:

Condition No. 3.4

Four hard copies and one electronic copy of monthly EM&A Report shall be submitted to the Director within 10 working days after the end of the reporting month. The EM&A Reports shall include a summary of all non-compliance (exceedances) of the environmental quality performance limits (Action and Limit Levels). The submissions shall be verified by the IEC. Additional copies of the submission shall be provided to the Director upon request by the Director.

#### **ET Certification**

I hereby certify that the above referenced document/plan complies with the above referenced condition of EP-308/2008/B and FEP-01/308/2008/B.

Warchitt.

Frank Wan,

Environmental Team Leader:

(ERM Hong-Kong, Limited)

Date:

6 July 2020

**IEC Verification** 

I hereby verify that the above referenced document/plan complies with the above referenced condition of EP-308/2008/B and FEP-01/308/2008/B.

W.K. Chiu,

Independent Environmental Checker:

(Meinhardt Infrastructure and

Environment Limited)

Date: 6 July 2 20

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

# Monthly Environmental Monitoring & Audit Report for June 2020

# **Environmental Resources Management**

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

Telephone: (852) 2271 3000 Facsimile: (852) 2723 5660 E-mail: post.hk@erm.com http://www.erm.com

Client:		Projec	ct No:		
Green V	alley Landfill Ltd.	0465	5169		
Summary		Date:			
		6 Jul	y 2020		
		Approved by:  Warchit			
		Fran Partr	k Wan er		
0	Monthly EM&A Report No.18 (for June 2020)	AL	FW	FW	6 Jul 20
Revision	Description	Ву	Checked	Approved	Date
of 'ERM Hor	has been prepared by Environmental Resources Management the trading name ng-Kong, Limited', with all reasonable skill, care and diligence within the terms act with the client, incorporating our General Terms and Conditions of Business	Distribution		BSI	
	account of the resources devoted to it by agreement with the client.		Internal	C	OHSAS 18001:2007 ertificate No. OHS 515956
We disclaim scope of the	any responsibility to the client and others in respect of any matters outside the above.	$\boxtimes$	Public		BSI
This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.			Confide		15O 9001 : 2008 Certificate No. FS 32515



#### **CONTENTS**

EXECUT	TIVE SUMMARY	1
1	INTRODUCTION	1
1.1	BACKGROUND	1
1.2	PROJECT DESCRIPTION	1
1.3	SCOPE OF THE EM&A REPORT	2
1.4	PROJECT ORGANISATION	2
1.5	SUMMARY OF CONSTRUCTION WORKS	3
1.6	SUMMARY OF EM&A PROGRAMME REQUIREMENTS	4
1.7	STATUS OF STATUTORY ENVIRONMENTAL COMPLIANCE WITH THE	
	Environmental Permit	5
1.8	STATUS OF OTHER STATUTORY ENVIRONMENTAL REQUIREMENTS	6
2	EM&A RESULTS	7
2.1	AIR QUALITY MONITORING	7
2.2	Noise Monitoring	9
2.3	SURFACE WATER QUALITY MONITORING	10
2.4	LANDSCAPE AND VISUAL MONITORING	12
2.5	EM&A SITE INSPECTION	13
2.6	WASTE MANAGEMENT STATUS	15
2.7	IMPLEMENTATION STATUS OF ENVIRONMENTAL MITIGATION MEASURES	15
2.8	SUMMARY OF EXCEEDANCES OF THE ENVIRONMENTAL QUALITY PERFORMA	
	LIMIT	16
2.9	SUMMARY OF COMPLAINTS, NOTIFICATION OF SUMMONS AND SUCCESSFUL	
	PROSECUTIONS	16
3	FUTURE KEY ISSUES	17
3.1	CONSTRUCTION PROGRAMME FOR THE COMING MONTH	17
3.2	KEY ISSUES FOR THE COMING MONTH	17
3.3	MONITORING SCHEDULE FOR THE COMING MONTH	18
4	CONCLUSION AND RECOMMENDATION	19

#### ANNEXES

- ANNEX A WORK PROGRAMME
- ANNEX B ENVIRONMENTAL MITIGATION IMPLEMENTATION SCHEDULE
- ANNEX C MONITORING SCHEDULE FOR THIS REPORTING PERIOD
- ANNEX D AIR QUALITY
- ANNEX D1 CALIBRATION CERTIFICATES FOR DUST MONITORING EQUIPMENT
- ANNEX D2 24-HOUR TSP MONITORING RESULTS
- ANNEX D3 EVENT AND ACTION PLAN FOR DUST MONITORING
- ANNEX D4 METEOROLOGICAL DATA
- ANNEX E NOISE
- ANNEX E1 CALIBRATION CERTIFICATES FOR NOISE MONITORING EQUIPMENT
- ANNEX E2 NOISE MONITORING RESULTS
- ANNEX E3 EVENT AND ACTION PLAN FOR NOISE MONITORING
- ANNEX F SURFACE WATER QUALITY
- ANNEX F1 CALIBRATION CERTIFICATES FOR SURFACE WATER QUALITY MONITORING EQUIPMENT
- ANNEX F2 SURFACE WATER QUALITY MONITORING RESULTS
- ANNEX F3 EVENT AND ACTION PLAN FOR SURFACE WATER QUALITY MONITORING
- ANNEX F4 INVESTIGATION REPORTS OF ENVIRONMENTAL QUALITY LIMIT EXCEEDANCE
- ANNEX G CUMULATIVE STATISTICS ON EXCEEDANCES, ENVIRONMENTAL COMPLAINTS, NOTIFICATION OF SUMMONS AND STATUS OF PROSECUTIONS
- ANNEX H MONITORING SCHEDULE FOR THE NEXT REPORTING PERIOD

#### 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 June 2020 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**

One exceedance of the Limit Level for pH was recorded for surface water quality impact monitoring in the reporting period. The pH exceedance at DP4 (Future, temporary) on 4 June 2020 was found deemed to Project-related activities.

#### **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 July 2020 are mainly associated with the potential surface water impact in the rainy season.

#### 1 INTRODUCTION

#### 1.1 BACKGROUND

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

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

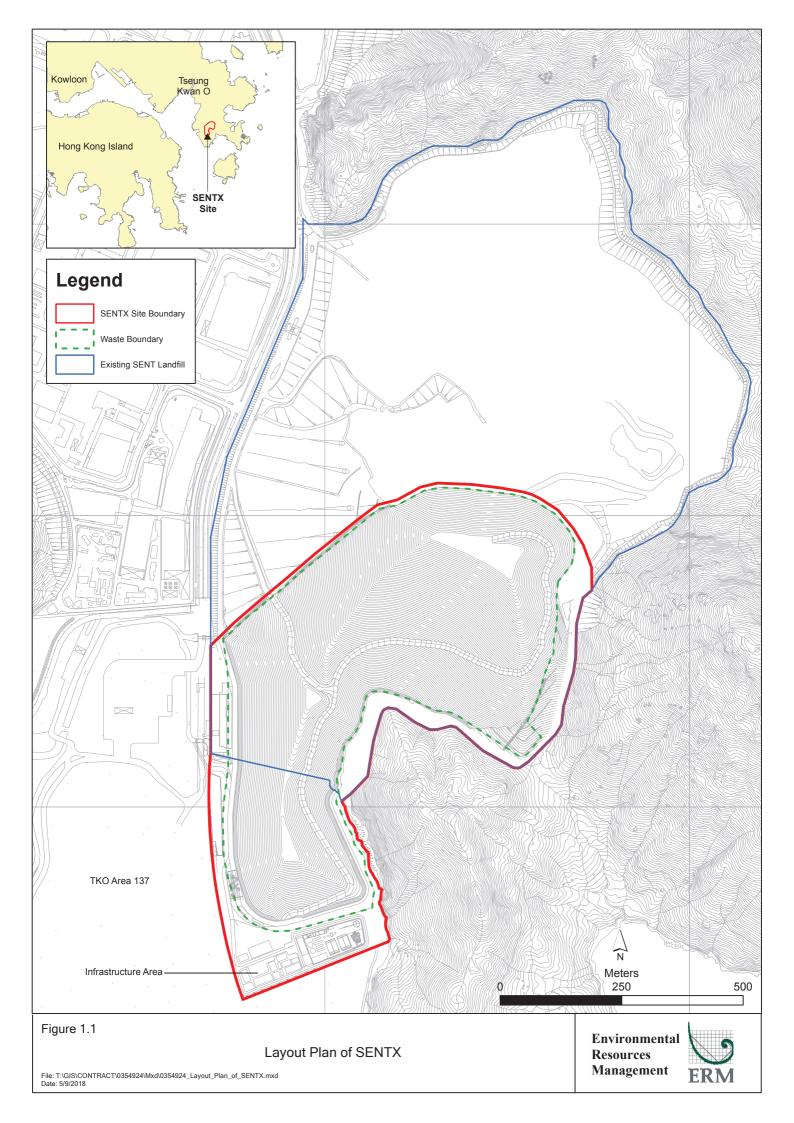
ERM-Hong Kong, Limited (ERM) and Meinhardt Infrastructure and Environment Limited (Meinhardt) are commissioned to undertake the roles of Environmental Team (ET) and the Independent Environmental Checker (IEC), respectively, to undertake the EM&A activities for the Project in accordance with the requirements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

#### 1.2 PROJECT DESCRIPTION

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

<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



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.

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.

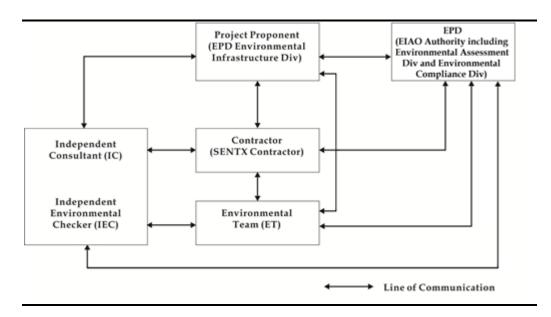
#### 1.3 Scope of the EM&A Report

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 June 2020 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	W.K. Chiu	2859 1881
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:

- Building services works and fitting-out works for landfill gas (LFG) plant;
- Laying cables in CLP room of LFG plant;
- Drip leg and electro-mechanical installation at LFG plant;
- Installation of accessories such as staircases, pipes and walkways for equalization tanks, sequencing batch reactor tanks, treated effluent tank, Glass Reinforced Plastic (GRP) tanks and other tanks at Leachate Treatment Plant (LTP) area;

- Installation of cables and cable containment at LTP area;
- Electro-mechanical installation at LTP area;
- Building services works and fitting-out works for infrastructure buildings (EPD building, GVL building and laboratory building);
- Construction of superstructure of fire service tank room and water service room;
- Construction of pits and ducting for underground utilities;
- Installation of diesel fuel tanks;
- Construction of perimeter bund channel;
- Construction of sump house 1 and 2;
- Equipment installation at sump house 1 and 2;
- Shotcreting and mass concrete for Buttress Wall; and
- Maintenance and improvement of the temporary surface water drainage.

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 On-going	
Channel		
Environmental Log Book	On-going	
<b>Groundwater Quality</b>		
Pre-operation Baseline	Commenced on 24 March 2020	
Monitoring		
Landfill Gas		
Pre-operation Baseline	Commenced on 24 March 2020	
Monitoring		
Ambient VOCs, ammonia and	$H_2S$	
Pre-operation Baseline	Commenced on 27 May 2020	
Monitoring		

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 impact monitoring schedule of air quality, noise and surface water quality monitoring are provided in *Annex C*. Groundwater and landfill gas pre-operation baseline monitoring and ambient VOCs, ammonia and H2S pre-operation baseline monitoring were commenced on 24 March 2020 and 27 May 2020 respectively.

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 18 June 2020; and
- Environmental toolbox trainings on Persistent Organic Pollutants and Wastewater Management at Construction Site were provided on 12 June and 23 June 2020 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.
2.8	Advance Screen Planting	Advance Screen Planting works were
		completed on 28 June 2019.
2.9	Provision of Multi-layer Composite Liner	Under implementation.
	System	<del>-</del>

### 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 Producer (Permit Holder: Chun Wo)	5213-839-C3507-10	Issued on 23 August 2018
Registration as a Chemical Waste Producer (Permit Holder: REC)	5518-839-R2289-06	Issued on 24 October 2019
Construction Noise Permit (Permit	GW-RE0075-20	Validity from 12 February
Holder: GVL)		2020 to 11 August 2020
Construction Noise Permit (Permit	GW-RE1001-19	Validity from 16 December
Holder: Chun Wo)		2019 to 10 June 2020
·	GW-RE0516-20	Validity from 17 June 2020
		to 7 December 2020
Construction Noise Permit (Permit	GW-RE0466-20	Validity from 1 June 2020 to
Holder: REC)		31 October 2020

#### 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.

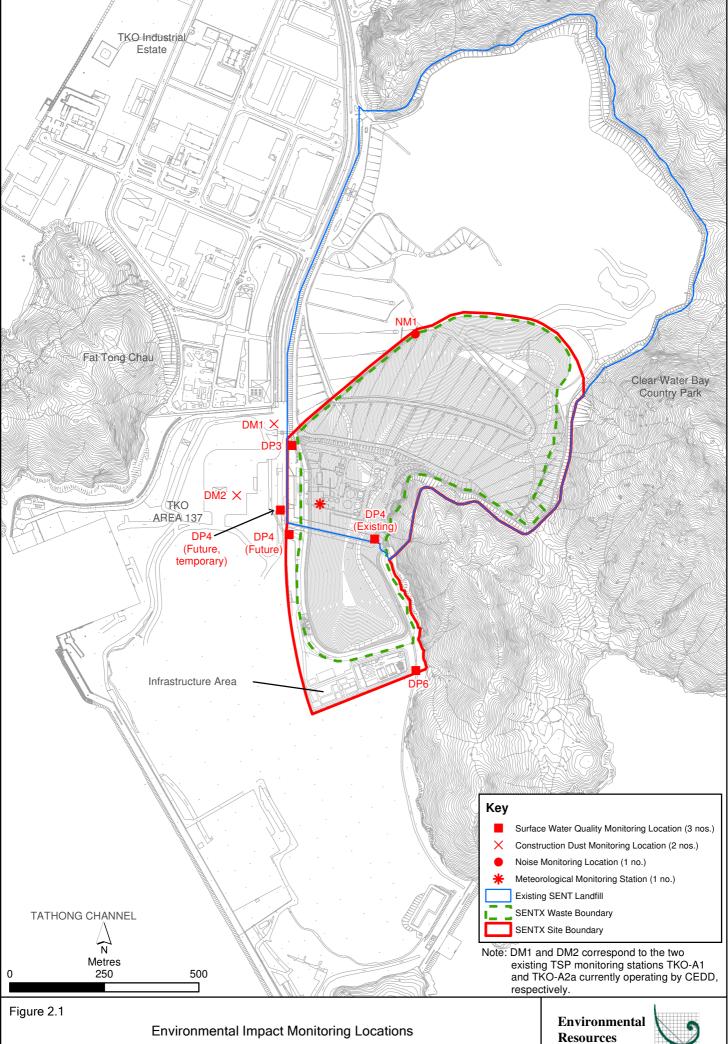
The Action and Limit Levels of the air quality monitoring is provided in *Table 2.1* below.

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*.



 $File: T. \\ IGIS/CONTRACT/0465169 \\ Imxd/0465169 \\ Environmental\_Impact\_Monitoring\_Locations. \\ mxd/Date: 28/5/2019$ 

Management



Table 2.2 Dust Monitoring Details

Monitoring Station	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
DM1	Site Egress of TKO Area 137 Fill Bank	24-hour TSP	Once every 6 days during the construction	3, 9, 15, 21, 27 June 2020	HVS Greasby 105 (S/N: 9795 (ET/EA/003/18))
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	96 (86 - 105)	204	260
DM-2A -Combined Reception and Exit Office (CREO) of TKO Area 137 Fill Bank	88 (78 – 100)	193	260

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

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

#### 2.1.4 Meteorological Data

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

considered that meteorological data obtained at the existing the on-site meteorological monitoring station are representative of the Project area and could be used for the construction phase dust monitoring programme for the Project.

#### 2.2 Noise Monitoring

#### 2.2.1 Monitoring Requirements and Equipment

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

The Action and Limit 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	· · · · · · · · · · · · · · · · · · ·	
	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 Station (1)	Location	Parameter	Frequency and Duration	Monitoring Dates	Equipment
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	4, 11, 17, 24 June 2020	Sound Level Meter: B&K 2238 (S/N: 2285762) Acoustic Calibrator: 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	Measi	ured Noise Level L	eq (30 min), dB(A)
	Average	Range	Action and Limit Level
NM1	56.0	54.8 - 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	$> 11.7 \mathrm{mg/L}$	> 12.7 mg/L	
рН	> 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	4, 11, 17, 24 June 2020	•pH •DO	YSI Professional DSS (S/N: 17B102764)
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 on 4 June 2020 at DP6, on 11 June 2020 at DP4 (Future, temporary), on 17 June 2020 at DP6 and on 24 June 2020 at all monitoring locations due to insufficient flow. Impact water quality monitoring results and graphical presentations are provided in *Annex F2*.

Action and Limit Level exceedance was recorded for surface water quality impact monitoring in the reporting period and actions in accordance with the Event and Action Plan presented in *Annex F3* were undertaken. Investigations of the Action and Limit Levels exceedance is conducted and summarized in *Table 2.9* below. Investigation report of the exceedance is presented in *Annex F4*.

Table 2.9 Details of Exceedances Recorded for Surface Water Quality Monitoring

Date	Monitoring Location	Parameter	Type of Exceedance	Remarks
4 June 2020	DP4 (Future, temporary)	рН	Limit Level	Project-related

Based on the investigation conducted for the monitoring event with potential Action and Limit Levels exceedance with the Contractor, and the IEC, the pH exceedance at DP4 (Future, temporary) on 4 June 2020 was found deemed to Project-related activities. The Contractor was reminded to implement all relevant mitigation measures for the construction works and maintain good site practice. The ET will keep track on the monitoring data and ensure Contractor's compliance of the environmental requirements.

#### 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 22 June 2020 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 4, 11, 18 and 24 June 2020.

Key observations during the site inspections are summarised in *Table 2.10*.

Table 2.10 Key Observations Identified during the Site Inspection in this Reporting Month

Inspection Date	Environmental Observations and Recommendations
4 June 2020	<ul> <li>The Contractor shall remove the silt accumulated in the temporary drain near site entrance regularly to ensure the drain is functioning properly.</li> <li>The Contractor shall maintain the excavator near DP4T to avoid black smoke emission.</li> <li>The Contractor shall remove the stagnant water accumulated in the drip tray near future GVL building and remove the construction materials in the drip tray near buttress wall.</li> </ul>
	<ul> <li>The Contractor shall designate an area for concrete truck washing and ensure all wash-water is treated before discharge to DP4T channel.</li> </ul>
11 June 2020	<ul> <li>The Contractor shall remove the stagnant water accumulated in the drip tray near future GVL building and treat the clean-up materials as chemical waste.</li> </ul>
	<ul> <li>The Contractor shall replace the faded NRMM label displayed on the generator near Cell 1X.</li> </ul>
	<ul> <li>The Contractor shall remove the general refuse accumulated near DP4T channel and dispose of the waste regularly.</li> </ul>
18 June 2020	<ul> <li>The Contractor shall remove the general refuse accumulated near the temporary drain along the Southern site boundary and near future EPD building and dispose of the waste regularly.</li> </ul>
	<ul> <li>The Contractor shall avoid accumulation of stagnant water around the site, especially at future EPD building and along the silt fencing near DP6 channel.</li> </ul>
	• The Contractor shall provide drip tray for chemicals placed near DP6 and store unused chemical in chemical storage cabinet.

Inspection Date	Environmental Observations and Recommendations
24 June 2020	The Contractor shall display NRMM label on the bulldozer near
	DP4T and replace the faded NRMM labels on the generator and
	crane near channel X9B.
	<ul> <li>The Contractor shall clear the silt along the haul road near site</li> </ul>
	entrance regularly to minimise dust impact.
	The Contractor shall remove the general refuse at the temporary
	drain near site entrance and dispose of the waste accumulated on
	site regularly.

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 2.11*.

Table 2.11 Summary of Environmental Deficiencies Identified and Corresponding Rectification Actions

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

Deficiencies	Rectifications Implemented	Proposed Additional Control Measures
Stockpiles & exposed soil	Installed silt fencing near surface water channel along DP6 channel.	<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 non-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 2.12*.

Table 2.12 Quantities of Different Waste Generated and Imported Fill Materials

Month/ Year	Inert C&D Materials	(in '00	rted Fill 10kg) <sup>(b)</sup>	Inert Construction Waste Re- used (in '000m³)	Non-inert Construction Waste (c) (in '000m³)	Recyclable Materials <sup>(d)</sup> (in '000kg)	Chemical Wastes (in '000kg)
	(111 (000m³)	Rock	Soil	(III oooms)			
1 <b>-</b> 30 June	0.030	0	0	0	0.179	0	0
2020							

#### 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) Imported fill refers to materials generated from other project for on-site reuse.
- (c) Non-inert construction wastes include general refuse disposed at landfill. Density assumption:  $0.9 \, (kg/L)$  for general refuse.
- (d) 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. One exceedance of the Limit Level for pH was recorded for surface water quality impact monitoring in the reporting period. The pH exceedance at DP4 (Future, temporary) on 4 June 2020 was found deemed to Project-related activities.

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 July 2020 will be:

- Excavation and removal of unsuitable fill materials;
- Filling of perimeter bund for Cell 3X;
- Construction of buttress wall;
- Construction of perimeter wall and plinths at LTP area;
- Building services and fitting-out works for LTP building;
- Installation of ammonia stripping plant with pipe work and control panel room at LTP area;
- Installation of other equipment e.g. lime silo at LTP;
- Installation of pipes and cables on pipe racks;
- Building service and fitting-out works at new infrastructure buildings;
- Pavement works at LFG plant area;
- Building service and fitting-out works at LFG plant buildings;
- Construction of perimeter bund channel and surface channel;
- Construction of groundwater pipe along Eastern side from Cell 3X to 4X;
- Construction of superstructure at maintenance building;
- Construction of concrete pits, drainage, sewage and ducting for underground utilities;
- Construction of superstructure of fire service tank room and water services room;
- Enhancement of the external slope surface of perimeter bund of Cell 1X and 2X;
- Installation of gas and leachate HDPE pipes;
- Installation of equipment at sump house 1 and 2; and
- Construction of diesel fuel tank.

#### 3.2 KEY ISSUES FOR THE COMING MONTH

Potential environmental impacts arising from the above upcoming construction activities in the next reporting period of July 2020 are mainly associated with the potential surface water impact in the rainy season. The ET will keep track on the construction works to confirm compliance of environmental requirements and the proper implementation of all necessary mitigation measures.

#### 3.3 MONITORING SCHEDULE FOR THE COMING MONTH

The tentative schedules for environmental monitoring in July 2020 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 June 2020 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. One exceedance of the Limit Level for pH was recorded for surface water quality impact monitoring in the reporting period. The pH exceedance at DP4 (Future, temporary) on 4 June 2020 was found deemed to Project-related activities.

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

A2.5 Construction (Initial Works)  6A2.5.02 Advance Works & Site Establishment  SA2.5.02.01 Site Establishment & Mobilization  5.00.04	1153 12-Apr-18 07-Jun-21 705 1148 12-Apr-18 02-Jun-21 35 333 12-Apr-18 10-Mar-19 820		
02.01       52-1000       Site Mobilization for Parts X1 & X2         02.01       52-1100       Site Mobilization for Parts X3, X4 & X5         02.01       52-1200       Temporary Office for Employer / ER / IC	30 31-Dec-18 29-Jan-19 820 11-1100: FS, 11-1200: FS 30 12-Apr-18 11-May-18 1083 11-1300: FS, 11-1400: FS, 11-1500: FS 60 10-Oct-18 08-Dec-18 0 23-1300: FS	52-1300: FS, M 3. 1: FS, M 3. 2: FS  52-1300: FS, M 3. 1: FF  11-1700: SS, M 3. 1: FS	
A2.5.02.02 Site Survey & Investigation Works for Parts X1 & X2  5.02.02 52-1400 Condition Survey	40 30-Jan-19 10-Mar-19 820 52-1000: FS, 52-1100: FS  50 31-Dec-18 18-Feb-19 840 25 31-Dec-18 24-Jan-19 840 11-1100: FS, 11-1200: FS	32-1500: FS, M10. 1: FS -26, M10. 2: FS -13, M10. 3: FS  52-1600: FS	
5.02.02 52-1500 Topographic Survey 5.02.02 52-1600 Site inspection, Review of Condition Survey Report  SA2.5.02.03 Site Survey & Investigation Works for Parts X3, X4 & X5	20 31-Dec-18 19-Jan-19 845 11-1100: FS, 11-1200: FS 25 25-Jan-19 18-Feb-19 840 52-1500: FS, 52-1400: FS 50 12-Apr-18 31-May-18 1103	52-1600: FS 32-1500: FS	
5.02.03 52-1700 Condition Survey 5.02.03 52-1800 Topographic Survey 5.02.03 52-1900 Site inspection, Review of Condition Survey Report	25 12-Apr-18 06-May-18 1103 11-1300: FS, 11-1400: FS, 11-1500: FS 20 12-Apr-18 01-May-18 1108 11-1300: FS, 11-1400: FS, 11-1500: FS 25 07-May-18 31-May-18 1103 52-1700: FS, 52-1800: FS	52-1900: FS 52-1900: FS 32-1500: FS	
SA2.5.02.04 Environmental Monitoring  5.02.04 52-2000 Installation of Monitoring Stations & Wells (GP & GW)  5.02.04 52-2100 Installation of Monitoring Stations & Wells (GP & GW) on Buttress Wall	975 02-Oct-18 02-Jun-21 35 120 02-Oct-18 29-Jan-19 0 23-1600: FS 120 02-Oct-18 29-Jan-19 0 23-1600: FS	52-2200: SS 60 52-2200: SS 60	
5.02.04 52-2200 Conduct Baseline Monitoring for Construction (one month) 5.02.04 52-2300 Conduct Baseline Monitoring for Operation (one year)	30 01-Dec-18 30-Dec-18 0 52-2000: SS 60, 52-2100: SS 60 365 03-Jun-20 02-Jun-21 35 32-1500: FS -400, 53-4500: FS	11-1100: FS 12-1400: FS	
SA2.5.03 Civil Engineering Works           SA2.5.03.0 Buttress Wall           5.03.0 Section adj. SENT	748         13-Jan-19         29-Jan-21         834           475         02-Mar-19         18-Jun-20         83           300         13-Apr-19         06-Feb-20         96         11-1300: FS, 23-2500: FS, 53-3000: FS, 31-1200: F           11-1400: FS	S, 53-1100: FS, 53-1300: FS, 53-3100: FS, M 3. 5: FS -150, M 3. 7: FS	
5.03.0         53-1100         Diversion of SENT Landfill Gas Pipe           5.03.0         53-1200         Section at Cell 4	45 07-Feb-20 22-Mar-20 96 23-2500: FS, 53-1000: FS 400 02-Mar-19 04-Apr-20 83 11-1300: FS, 23-2500: FS, 53-3000: FS, 11-1400: F		
5.03.0       53-1300       Install Landfill Gas Pipe on Buttress Wall         SA2.5.03.1       Landfill Cell 1         5.03.1       53-1400       Earth bund (Eastern)	75 05-Apr-20 18-Jun-20 83 41-1500: FS, 53-1100: FS, 53-1200: FS, 53-1000: F  503 13-Jan-19 29-May-20 214  90 04-Aug-19 01-Nov-19 9 11-1100: FS, 23-2500: FS, 53-4200: FS, 53-2800: F	5 53-2000: FS, 53-2300: FS, 53-3400: FS, 63-1000: FS,	
5.03.1 53-1500 Earth bund (Southern)	90 26-Apr-19 24-Jul-19 314 11-1100: FS, 23-2500: FS, 53-2800: FS	63-1100: FS, 63-1200: FS, 63-1300: FS, M 4. 2: FS  53-2000: FS, 53-2200: FS, 53-2300: FS, 53-3400: FS, 53-3700: FS, 53-3800: FS	
5.03.1 53-1600 Earth bund (Western)  5.03.1 53-1700 Intercell bund (Cell 1/2)	90 13-Jan-19 12-Apr-19 417 11-1100: FS, 23-2500: FS  75 13-Jan-19 28-Mar-19 432 11-1100: FS, 23-2500: FS	53-1900: FS, 53-2000: FS, 53-2200: FS, 53-3800: FS  53-2000: FS	
5.03.1 53-1800 Site Formation  5.03.1 53-1900 Pump Station (PS#1X)  5.03.1 53-2000 Lining Works	90 13-Jan-19 12-Apr-19 217 11-1100: FS, 23-2500: FS, 31-1300: FS 45 13-Apr-19 27-May-19 507 53-1800: FS, 53-1600: FS 135 02-Nov-19* 15-Mar-20 214 41-1500: FS, 53-1400: FS, 53-1500: FS, 53-1600: FS	53-1900: FS, 63-1100: FS, 63-1200: FS, 63-1300: FS, M 4. 1: FS -45 53-2100: FS, 53-2200: FS	
5.03.1       53-2000       Lining Works         5.03.1       53-2100       Protective Stone Laying & Leachate Collection Pipe         5.03.1       53-2200       Install Leachate Force Main	135 02-Nov-19* 15-Mar-20 214 41-1500: FS, 53-1400: FS, 53-1500: FS, 53-1600: F  75 16-Mar-20 29-May-20 214 53-2000: FS, 41-1500: FS, 53-1900: FS  75 25-Jul-19 07-Oct-19 449 53-1500: FS, 53-1600: FS, 41-1500: FS, 53-1900: F	32-1500: FS, 54-2800: FS, M 4. 3: FS	
5.03.1 53-2300 Install Landfill Gas Pipe on earth bund 5.03.1 53-2400 Leachate Pipe Connection (Cell 1 to LTP)	55 02-Nov-19 26-Dec-19 258 41-1500: FS, 53-1400: FS, 53-1500: FS 30 09-Mar-20 07-Apr-20 266 23-2500: FS, 54-1000: SS	54-4000: FS 54-2800: FS	
SA2.5.03.4 Landfill Cell 4  5.03.4 53-2500 Provide Temporary Leachate Pipe on Cell 4 Area  SA2.5.03.5 Drainage - Surface Run-Off  5.03.5 53-2600 Construct Cut-Off Channel 12A	30 09-Jul-20 07-Aug-20 144 30 09-Jul-20 07-Aug-20 144 23-2500: FS, 63-2600: SS -90 740 16-Jan-19 24-Jan-21 839 60 16-Jan-19 16-Mar-19 9 11-1100: FS 23-2800: FS	54-2800: FS, M 3. 3: FS	
5.03.5 53-2600 Construct Cut-Off Channel 12A 5.03.5 53-2700 Connect Cut-Off Channel 12A to DP6 5.03.5 53-2800 Diversion from Existing Trapezoidal Channel into Channel 12A	60 16-Jan-19 16-Mar-19 9 11-1100: FS, 23-2800: FS 20 17-Mar-19 05-Apr-19 9 53-2600: FS, 31-1400: FS, 23-1900: FS 20 06-Apr-19 25-Apr-19 9 53-2700: FS	53-2700: FS 53-2800: FS 53-1400: FS, 53-1500: FS, 53-2900: FS, 63-1000: FS, 63-1900: FS, M 3. 3: FS	
5.03.5 53-2900 Removal of Existing Trapezoidal Channel along Eastern Bund 5.03.5 53-3000 Cut-Off Channel C4 Diversion to Cut-Off Channel 17-2 5.03.5 53-3100 Cut-Off Channel X5 on Buttress Wall, Cell 4, Cell 3	30 26-Apr-19 25-May-19 9 53-2800: FS 45 16-Jan-19 01-Mar-19 83 11-1300: FS, 23-2800: FS 90 05-Apr-20 03-Jul-20 289 53-1000: FS, 53-1200: FS	63-1900: FS, M 3. 3: FS 53-4200: FS 53-1000: FS, 53-1200: FS	
5.03.5 53-3200 Temporary Diversion Cut-Off Channel X5 to 12A 5.03.5 53-3300 Culvert X5 (5m long) & Perm Connection of Cut-Off Channel X5	20 04-Jul-20 23-Jul-20 289 53-3100: FS, 23-1900: FS 30 26-Dec-20 24-Jan-21 134 53-4100: FF, 63-1900: FS, 53-3200: FS	53-3300: FS, M 3. 4: FS 32-1500: FS	
<ul> <li>5.03.5</li></ul>	50 02-Nov-19 21-Dec-19 249 53-1400: FS, 53-1500: FS 50 20-Feb-20 09-Apr-20 189 63-1000: FS, 53-3400: FS 50 09-Jun-20 28-Jul-20 129 63-1900: FS, 53-3500: FS	53-3500: FS 53-3600: FS 53-3900: FS	
5.03.5       53-3700       Culvert X6 (25m long) at Cell 1 Southern Bund         5.03.5       53-3800       Perimeter Channel (X9B) at Cell 1 Southern & Western Bund         5.03.5       53-3900       Drop Inlet & Culvert (X9) - 21m long	75 25-Jul-19 07-Oct-19 1314 53-1500: FS 45 25-Jul-19 07-Sep-19 1344 53-1500: FS, 53-1600: FS 180 29-Jul-20 24-Jan-21 129 11-1100: FS, 23-1900: FS, 53-3600: FS	53-4000: FF, 53-4100: FF, 53-6000: FS, M 9. 1: FS -90, M 9.	
5.03.5 53-4000 Sediment Trap (ST)  5.03.5 53-4100 Dual Culvert 74m long (connect to DP4)	180 29-Jul-20 24-Jan-21 129 11-1100: FS, 23-1900: FS, 11-1200: FS, 53-3900: F	2: FS 53-6000: FS, M 9. 3: FS -90, M 9. 4: FS	
5.03.5   53-4100   Dual Culvert 74m long (connect to DP4)  SA2.5.03.6   Drainage - Ground Water  5.03.6   53-4200   Construct Groundwater Collection Pipe along Cells X1 & X2 Eastern Bund	180 29-Jul-20 24-Jan-21 129 11-1100: FS, 11-1200: FS, 23-1900: FS, 53-3900: F  200 26-May-19 11-Dec-19 209  70 26-May-19 03-Aug-19 9 11-1100: FS, 23-1600: FS, 53-2900: FS	53-3300: FF, 53-6000: FS, M 9. 1: FS -90, M 9. 2: FS 53-1400: FS, 53-4300: FS, 63-1000: FS, 63-1900: FS	
5.03.6 53-4300 Construct Groundwater Collection Pipe along Cell X3 Eastern Bund 5.03.6 53-4400 Construct Groundwater Collection Pipe along Intercell Bund X2/X3 5.03.6 53-4500 Construct Manhole MH-X1	50 04-Aug-19 22-Sep-19 159 53-4200: FS 50 23-Sep-19 11-Nov-19 209 53-4300: FS 30 12-Nov-19 11-Dec-19 209 53-4400: FS	53-4400: FS, 63-1900: FS 53-4500: FS, 63-1200: FS 52-2300: FS M 9, 5: FS	
5.03.6 53-4500 Construct Manhole MH-X1  SA2.5.03.7 Utilities - Distribution within New Infrastructure Area  5.03.7 53-4600 Power Supply HV Works (Transformer & HV switchgear)	30 12-Nov-19 11-Dec-19 209 53-4400: FS  391 11-Aug-19 04-Sep-20 276  5 30-Jun-20 04-Jul-20 0 54-3000: FS	52-2300: FS, M 9. 5: FS 12-1200: FS	
<ul> <li>5.03.7</li></ul>	2 05-Jul-20 06-Jul-20 0 54-3100: FS, 12-1200: FS 60 07-Jul-20 04-Sep-20 271 54-1000: FS, 54-3100: FS, 54-3300: FS, 54-4100: F 60 07-Jul-20 04-Sep-20 271 54-1000: FS, 54-4100: FS, 54-4600: FS	12-1000: FS 3 12-1100: FS, 53-6100: FS 12-1100: FS, 53-6100: FS	
5.03.7     53-5000     Lighting Provision       5.03.7     53-5100     Fire Services	30 07-Jul-20 05-Aug-20 6 54-1000: FS, 54-4100: FS, 54-4600: FS 115 12-Mar-20 04-Jul-20 2 53-6800: FS	12-1100: FS, 32-2100: FS 12-1000: FS	
5.03.7       53-5200       Water Supply (Fresh & Salt)         5.03.7       53-5300       Telecom & Network         5.03.7       53-5400       Gas Network (LFG to LTP)	115 12-Mar-20 04-Jul-20 338 53-6600: FS, 53-6700: FS  45 11-Aug-19 24-Sep-19 622 53-6400: FS  15 22-Jun-20 06-Jul-20 176 54-1000: FF	12-1100: FS 12-1100: FS 54-2800: FS	
SA2.5.03.8 Utilities - Works Associated with Utilities Undertakers  SA2.5.03.8.U1 CLP  5.03.8.U1 53-5500 Excavate Trench for CLP Cable	703     27-Feb-19     29-Jan-21     129       459     27-Feb-19     30-May-20     43       100     13-May-19     20-Aug-19     194     23-2900: FS	53-5800: FS, 54-1000: SS, 54-4100: SS, 54-4600: SS, M10. 1: FS -60, M10. 2: FS -30, M10. 3: FS	
5.03.8.U1 53-5600 Backfill Trench after CLP Cable Laying 5.03.8.U1 53-5700 CLP Cable Laying (from CLP Substation to Site Boundary)	30 01-May-20 30-May-20 43 53-5800: FS 200 27-Feb-19 14-Sep-19 229 32-2400: FS	54-1000: FF, 54-4100: FF, 54-4600: FF 54-3000: FS	
5.03.8.U1 53-5800 CLP Cable Laying (from Site Boundary to HV Switchroom)  5.03.8.U1 53-5900 CLP HV associated equipment installation	60 02-Mar-20 30-Apr-20 0 53-5500: FS, 54-2900: FS, 32-2400: FS, 53-5900: F 120 18-Dec-19 15-Apr-20 0 54-2900: FS, 32-2400: FS	53-5600: FS, 54-3000: FS 53-5800: FF 15	
SA2.5.03.8.U2 DSD           5.03.8.U2         53-6000         Connection to Storm Drain System           5.03.8.U2         53-6100         Connection to Foul Drain System	147     05-Sep-20     29-Jan-21     129       5     25-Jan-21     29-Jan-21     129     53-4100: FS, 53-4000: FS, 53-3900: FS       5     05-Sep-20     09-Sep-20     271     53-4800: FS, 53-4900: FS       100     13 May 19     20 Aug 19     327	32-1500: FS 32-1500: FS	
SA2.5.03.8.U3         Telecom           5.03.8.U3         53-6200         Excavate Trench for PCCW	100 13-May-19 20-Aug-19 327 60 13-May-19 11-Jul-19 307 23-2900: FS	53-6400: FS, 54-1000: SS, 54-4100: SS, 54-4600: SS, M10. 1: FS -40, M10. 2: FS -20, M10. 3: FS	
5.03.8.U3       53-6300       Backfill Trench after PCCW Cable Laying         5.03.8.U3       53-6400       Laying Cables & Connection         SA2.5.03.8.U4       WSD	10 11-Aug-19 20-Aug-19 327 53-6400: FS 30 12-Jul-19 10-Aug-19 327 53-6200: FS 304 13-May-19 11-Mar-20 338	54-1000: FF, 54-4100: FF, 54-4600: FF  53-5300: FS, 53-6300: FS	
<ul> <li>5.03.8.U4 53-6500 Install Watermain &amp; Piping for Water Supplies</li> <li>5.03.8.U4 53-6600 Connection for Fresh Water &amp; Meter Installation</li> </ul>	60 13-May-19 11-Jul-19 216 23-2900: FS 30 11-Feb-20 11-Mar-20 338 53-6500: FS, 32-2300: FS	53-6600: FS, 53-6700: FS, 53-6800: FS, 53-6900: FS  53-5200: FS  53-5200: FS	
5.03.8.U4 53-6700 Connection for Salt Water 5.03.8.U4 53-6800 Connection for Fire Services 5.03.8.U4 53-6900 Connection for Cooling Tower & Meter Installation	30 11-Feb-20 11-Mar-20 338 53-6500: FS, 32-2300: FS 30 11-Feb-20 11-Mar-20 2 53-6500: FS, 32-2300: FS 30 11-Feb-20 11-Mar-20 117 53-6500: FS, 32-2300: FS	53-5200: FS 53-5100: FS 54-2700: FS, 54-3900: FS	
SA2.5.03.8.U5 HyD Lighting 5.03.8.U5 53-7000 Installation of Public Street Lighting / Handover SA2.5.04 Building Construction, incl. E&M and System Installation, and T&C SA2.5.04 Part X1 Area A	120 07-Jul-20 03-Nov-20 216 120 07-Jul-20 03-Nov-20 216 54-4100: FS, 54-4600: FS, 54-1000: FS 890 31-Dec-18 07-Jun-21 0	32-1500: FS	
SA2.5.04.A Part X1 Area A  5.04.A 54-1000 General Area & Access Road	554 31-Dec-18 06-Jul-20 36 120 09-Mar-20 06-Jul-20 6 23-1300: FS, 53-5500: SS, 53-5600: FF, 53-6200: S 53-6300: FF, 12-1000: FF, 11-1100: FS, 54-1100: FI 54-1800: FF	, 53-5000: FS, 53-5400: FF, 53-7000: FS, 68-1700: FS	
5.04.A         54-1100         Carpark & Supporting Area           5.04.A         54-1200         Diesel Fuel Tanks	60 31-Dec-18 28-Feb-19 64 23-1300: FS, 11-1100: FS 60 08-May-20 06-Jul-20 36 23-1300: FS, 23-5200: FS, 12-1000: FF, 11-1100: FS		
5.04.A 54-1300 EPD Building 5.04.A 54-1400 Fire Service Tank	270 30-Apr-19 24-Jan-20 44 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1700: Si 270 29-Jun-19 24-Mar-20 44 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1300: Si	54-1400: SS 60	
5.04.A 54-1500 GVL Building 5.04.A 54-1600 Laboratory Building	300 31-Dec-18 26-Oct-19 44 23-1300: FS, 23-5200: FS, 11-1100: FS 270 28-Aug-19 23-May-20 44 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1400: S	32-2100: FS, M 5. 1: SF 30, M 5. 2: SF 150, M 5. 3: FS, 54-1700: SS 60 32-2100: FS, M 5. 6: FS -135, M 5. 7: FS, 12-1000: FS,	
5.04.A 54-1700 Maintenance Building & Area 5.04.A 54-1800 Storage Facility & Area	270 01-Mar-19 25-Nov-19 44 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1500: S 60 01-Mar-19 29-Apr-19 64 23-1300: FS, 11-1100: FS, 54-1100: FS	54-1300: SS 60 32-1500: FS, M 5.11: FS -30, M 5.12: FS, 54-1000: FF,	
5.04.A 54-2000 Waste Oil Tanks 5.04.A 54-2000 Water Service House	90 08-Apr-20 06-Jul-20 36 23-1300: FS, 23-5200: FS, 12-1000: FF, 11-1100: FS 60 30-Apr-19 28-Jun-19 64 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-1800: F	54-2000: FS 32-2200: FS	
SA2.5.04.B Part X1 Area B SA2.5.04.B.1 BioPlant Building	890 31-Dec-18 07-Jun-21 0 330 17-Jan-19 12-Dec-19 243		
5.04.B.1 54-2100 LTP BioPlant Building  SA2.5.04.B.2 Leachate Treatment Plant  5.04.B.2 54-2200 Main Plant Area included Civil works	330 17-Jan-19 12-Dec-19 243 23-1300: FS, 23-5200: FS, 23-3200: FS, 11-1100: FS 31-1000: FS 31-Dec-18 10-Aug-20 21 274 31-Dec-18 30-Sep-19 0 23-1300: FS, 23-3200: FS, 11-1100: FS	54-2300: FS, 54-2400: FS, 54-2500: FS, 64-1100: FS, M 6. 1:	
5.04.B.2 54-2300 MEP Installation	220 01-Oct-19 07-May-20 0 41-2100: FS, 41-1800: FS, 22-2100: FS, 54-2200: FS	SF 30, M 6. 4: FS -137, M 6. 5: FS	
5.04.B.2 54-2400 SBR Tanks 5.04.B.2 54-2500 Ammonia Stripper  SA2.5.04.B.3 LTP - Test & Commission	100 01-Oct-19 08-Jan-20 236 41-2400: FS, 54-2200: FS 315 01-Oct-19 10-Aug-20 21 41-3000: FS, 54-2200: FS 301 11-Aug-20 07-Jun-21 0	54-2600: FS, M 6. 6: FS 54-2600: FS, M 6. 8: FS -150, M 6. 9: FS	
5.04.B.3 54-2700 Wet testing  5.04.B.3 54-2700 Wet testing	45 11-Aug-20 24-Sep-20 21 54-2300: FS, 54-2400: FS, 54-2500: FS  75 25-Sep-20 08-Dec-20 21 54-2600: FS, 12-1200: FS, 53-6900: FS, 31-2200: FS 23-6800: FS	23-6600: FS -150, 23-6900: SS, 54-2700: FS, M11. 1: FS 5, 54-2800: FS, M11. 2: FS	
5.04.B.3 54-2800 Operational testing  SA2 5.04.C. Part X1 Area C.	160 30-Dec-20 07-Jun-21 0 54-2700: FS, 53-2400: FS, 53-2500: FS, 53-2100: FS 53-2200: FS, 63-1700: FS, 63-2600: FS, 53-5400: FS 54-4000: FS		
SA2.5.04.C.1 LFG - Power Supply Building  5.04.C.1 54-2900 LFG Building (with Transformer Room)	730 31-Dec-18 29-Dec-20 0 530 17-Jan-19 29-Jun-20 5 335 17-Jan-19 17-Dec-19 0 23-1300: FS, 23-3500: FS, 11-1100: FS, 31-1000: FS	FS S	
5.04.C.1 54-3000 Transformer & HV Swtichgear Installation 5.04.C.1 54-3100 MEP Installation, with T&C	60 01-May-20 29-Jun-20 0 54-2900: FS, 41-1200: FS, 53-5800: FS, 53-5700: FS 75 18-Dec-19 01-Mar-20 125 54-2900: FS	5 53-4600: FS, M 7. 4: FS -30, M 7. 5: FS, M 7. 5: FF  32-1400: FS, 32-2100: FS, 53-4700: FS, 53-4800: FS, M 7. 4: FS -30, M 7. 5: FS	
SA2.5.04.C.2 LFG Treatment Plant  5.04.C.2 54-3200 Main Plant Area included Civil Works	554         31-Dec-18         06-Jul-20         0           384         31-Dec-18         18-Jan-20         0         23-3500: FS, 11-1100: FS	54-3300: FS, 54-3400: FS, 54-3500: FS, 54-3600: FS, 54-3700: FS, 54-3800: FS, M 7. 1: SF 30, M 7. 2: FS -200, M 7. 3: FS	
5.04.C.2 54-3300 MEP Installation  5.04.C.2 54-3400 GHS600 Blower 601 A&B Relocation	170 19-Jan-20 06-Jul-20 0 54-3200: FS, 12-1000: FF  15 19-Jan-20 02-Feb-20 155 23-5800: FS, 54-3200: FS	32-2000: FS, 53-4800: FS, 54-3900: FS, M 7. 4: FS -80, M 7. 5: FS 54-3900: FS, M 7. 4: FS -8, M 7. 5: FS	
5.04.C.2 54-3500 Pre-treatment 5.04.C.2 54-3600 Flares (incl. PLC control, interlink to Towngas PF & LTP) 5.04.C.2 54-3700 LFG Engine (incl. on-grid protection, PLC control, turning)	60 19-Jan-20 18-Mar-20 110 41-3900: FS, 54-3200: FS 125 19-Jan-20 22-May-20 45 41-3300: FS, 54-3200: FS 110 21-Feb-20 09-Jun-20 27 41-3600: FS, 54-3200: FS	54-3900: FS, M 7. 4: FS -30, M 7. 5: FS 54-3900: FS, M 7. 4: FS -60, M 7. 5: FS 54-3900: FS, M 7. 4: FS -60	
5.04.C.2 54-3800 Cooling System  SA2.5.04.C.3 LFG - Test & Commission  5.04.C.3 54-3900 MEP Testing	45 19-Jan-20 03-Mar-20 125 22-1500: FS, 54-3200: FS  176 07-Jul-20 29-Dec-20 0  65 07-Jul-20 09-Sep-20 0 54-3400: FS, 54-3500: FS, 54-3600: FS, 54-3700: FS 54-3800: FS, 54-3800: 54-38	54-3900: FS, M 7. 4: FS -25, M 7. 5: FS 6, 23-7000: SS -150, 23-7300: SS, 54-4000: FS, M11. 1: FS -30,	
5.04.C.3 54-4000 Operational Testing	54-3800: FS, 12-1200: FS, 53-6900: FS, 31-2200: FS 54-3300: FS 111	S, M11. 2: FS	
SA2.5.04.D Part X1 Area D 5.04.D 54-4100 General Area & Access Road	374         29-Jun-19         06-Jul-20         6           120         09-Mar-20         06-Jul-20         6         23-1300: FS, 53-5500: SS, 53-5600: FF, 53-6200: SS	3, 32-2100: FS, 53-4800: FS, 53-4900: FS, 53-5000: FS, 53-7000: FS, M 8. 5: FS	
5.04.D 54-4200 VWF Building 5.04.D 54-4300 Weighbridge	120 28-Oct-19 24-Feb-20 63 23-1300: FS, 23-5200: FS, 41-4500: FS, 11-1100: FS 54-4300: SS 60  75 29-Aug-19 11-Nov-19 63 41-4200: FS, 23-1300: FS, 23-5200: FS, 11-1100: FS	S, 32-2100: FS, M 8. 4: FS, M 8. 6: FS -60, M 8. 7: FS, 12-1000: FS, 54-4500: SS 60	
5.04.D         54-4300         Weighbridge           5.04.D         54-4400         Weighmaster House	54-4400: SS 60 120 29-Jun-19 26-Oct-19 64 23-1300: FS, 23-5200: FS, 11-1100: FS, 54-2000: FS	32-2100: FS, M 8. 1: FS, 12-1000: FS, 54-4300: SS 60	
5.04.D 54-4500 Wheel Wash Bath  SA2.5.04.E Part X1 Area E & Part X2  5.04.E 54-4600 General Area & Access Road	75 27-Dec-19 10-Mar-20 63 23-1300: FS, 23-5200: FS, 41-4500: FS, 11-1100: FS 54-4200: SS 60  163 26-Jan-20 06-Jul-20 6 53-5500: SS, 53-5600: FF, 53-6200: SS, 53-6300: FI		
5.04.E 54-4600 General Area & Access Road  5.04.E 54-4700 Guard House & Entrance Gate	120 09-Mar-20 06-Jul-20 6 53-5500: SS, 53-5600: FF, 53-6200: SS, 53-6300: FF 12-1000: FF, 11-1100: FS, 11-1200: FS 100 26-Jan-20 04-May-20 63 23-1300: FS, 23-5200: FS, 11-1100: FS, 11-1200: FS 54-4500: SS 30		
SA2.5.08 Landscape Works - Advance Screen Planting in CWB Country Park SA2.5.08.N Area N  5.08.N 58-1000 Advance Screen Planting	54-4500: SS 30  270	14-1800: SS -60, 58-1100: SS, 68-1600: SS 30, M 3. 2: FS	
5.08.N 58-1100 Establishment of Screen Planting  SA2.5.08.S Area S	270 01-Apr-19* 26-Dec-19 529 58-1000: SS, 14-1800: FS 270 01-Apr-19 26-Dec-19 529	32-1500: FS	
5.08.S 58-1200 Advance Screen Planting 5.08.S 58-1300 Establishment of Screen Planting 6A2.6 Construction (Remaining Works)	90 01-Apr-19* 29-Jun-19 529 23-7900: FS, 31-1100: FS, 11-1500: FS 270 01-Apr-19* 26-Dec-19 529 58-1200: SS 1474 01-Apr-19 13-Apr-23 30	58-1300: SS, M 3. 2: FS 32-1500: FS	
SA2.6.02 Advance Works SA2.6.02.9 Demolition of SENT Infrastructure Area 6.02.9 62-1000 Existing SENT General Infrastructure Facility & Building	80         09-Jul-21         26-Sep-21         339           80         09-Jul-21         26-Sep-21         339           60         09-Jul-21         06-Sep-21         239         32-2100: FS, 12-1300: FS	23-2000: SS -90, 63-2800: FS, 63-2900: FS, 63-3000: FS, 63-4300: FS, M12. 4: FS -30, M12. 5: FS	
6.02.9 62-1100 Existing SENT LTP	60 29-Jul-21 26-Sep-21 339 32-1500: FS, 12-1300: FS, 23-2200: FS 60 29-Jul-21 26-Sep-21 339 32-1500: FS, 12-1300: FS, 23-2200: FS	63-3000: FS, 63-4500: FS, M12. 4: FS -30, M12. 5: FS	
6.02.9 62-1200 Existing SENT LFG	60 29-Jul-21 26-Sep-21 339 32-1500: FS, 12-1300: FS, 23-2200: FS	63-3000: FS, 63-4500: FS, M12. 4: FS -30, M12. 5: FS	

		$\rightarrow$	ctivity						
#	WBS Path		D	Activity Name	Dur	St	rt Finish	Total Predecessor Details Float	Successor Details
509	H	<mark>6.03 Civ</mark> .6.03.2 L	_	neering Works			9 13-Apr-23 9 23-Jan-21		
511				Earth bund (Eastern)				9 11-1100: FS, 23-2500: FS, 53-4200: FS, 53-1400: F	
								53-2800: FS	63-2000: FS, 63-2100: FS, 63-2200: FS, M12. 1: FS -50, M12. 2: FS, 63-1100: FS
512	6.03	3.2	3-1100	Earth bund (Western)	110	20-Feb-	0 08-Jun-20	84 11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: F	S, 63-1400: FS, 63-1500: FS, 63-1700: FS, 63-3500: FS,
0.2				,				63-1000: FS	63-3600: FS, 63-1200: FS
513	6.03	.2	3-1200	Intercell bund (Cell 2/3)	90	09-Jun-	0 06-Sep-20	734 11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: F 53-4400: FS, 63-1100: FS	63-1500: FS
514	6.03	,.2	3-1300	Site Formation	75	02-Nov-	9 15-Jan-20	14 11-1100: FS, 23-2500: FS, 53-1800: FS, 53-1400: F	S 63-1400: FS, 63-4200: FS
515	6.03	3.2	3-1400	Pump Station (PS#2X)	45	09-Jun-	0 23-Jul-20	84 63-1300: FS, 63-1100: FS	63-1600: FS, 63-1700: FS
516				Lining Works				710 41-1500: FS, 63-1000: FS, 63-1100: FS, 63-1200: F	·
517	6.0	, ,	2 1600	Protective Stone Laying & Leachate Collection Pipe	25	20 Doo	0 22 Ion 21	810 63-1500: FS, 41-1500: FS, 63-1400: FS	32-1600: FS, M12. 3: FS
518				Install Leachate Force Main				84 63-1100: FS, 41-1500: FS, 63-1400: FS	54-2800: FS, M12. 3: FS
519				Install Landfill Gas Pipe on earth bund				168 41-1500: FS, 63-1000: FS	54-4000: FS, M12. 3: FS
520		.6.03.3 L		'	714	20-Feb-	0 02-Feb-22	435	·
521	6.03	.3	3-1900	Earth bund (Eastern)	110	20-Feb-	0 08-Jun-20	9 11-1100: FS, 53-4200: FS, 63-1000: FS, 53-4300: F 53-2800: FS, 63-4200: FS	S, 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
								33-2000.13,03-4200.13	1 3 -30, WHZ. 2.1 3, 03-2000. 1 3 -43, 03-2200. 1 3
522	6.03	.3	3-2000	Earth bund (Western)	110	25-Apr-	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	3-2100	Intercell bund (Cell 3/4)	105	29-Jun-	0 11-Oct-20	789 11-1100: FS, 63-1000: FS, 63-4200: FS, 63-2000: F	
				, ,					
524				Site Formation				9 11-1100: FS, 63-1000: FS, 63-1900: FS	63-2300: FS
525				Pump Station (PS#3X) Lining Works				9 63-2200: FS, 63-2000: FS 435 41-1500: FS, 63-1900: FS, 63-2000: FS, 63-2100: F	63-2500: FS, 63-2600: FS S, 63-2500: FS, M12. 3: FS
320	6.0.	.5	3-2400	Lilling Works	100	01-061-2	1 00-Jan-22	435 41-1300. FS, 63-1300. FS, 63-2100. FS 63-1500: FS	3, 03-2300. F3, W12. 3. F3
527				Protective Stone Laying & Leachate Collection Pipe	25	09-Jan-	2 02-Feb-22	435 63-2400: FS, 41-1500: FS, 63-2300: FS	32-1700: FS, M12. 3: FS
528				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
530 531		. <b>6.03.4</b> La		Remaining Portion of Buttress Wall			1 13-Apr-23 1 04-Jan-22	30 494 62-1000: FS	
532				Earth bund (Western) incl. MSE Wall				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, M 9. 7: FS -30, M 9. 8: FS
									·
533	6.03	.4	3-3000	Site Formation	120	05-Jan-	2 04-May-22	239 62-1000: FS, 62-1100: FS, 62-1200: FS, 63-2900: F	S, 63-3100: FS
534	6.00	3.4	3-3100	Pump Station (PS#4X)	45	05-May-	2 18-Jun-22	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			_	- Surface Run-Off			0 03-Feb-22		
539				Perimeter Channel (X9A) at Cell 2 Western Bund				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 Perimeter Channel (X10A) at Cell 4 Western Bund		_		964 63-2000: FS 464 63-2900: FS	63-4000: FS 63-4000: FS
542				Perimeter Channel (X10A) at Cell 4 Western Bund  Perimeter Channel (X10C) at Cell 4 Western Bund				464 63-2900: FS 469 63-2900: FS	63-4000: FS
544				Connection to Existing DP3				464 63-3900: FS, 63-3600: FS, 63-3700: FS, 63-3800: F	
				-					
545				Remove Cut-Off Channel C-7 at bottom of Buttress Wall				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
547 548			_	- Ground Water  Construct Temporary Channel (TC-1), from MH-1 to Existing UC-825			1 30-Nov-21 26-Oct-21	529 529 23-1900: FS, 11-1300: FS, 62-1000: FS	63-4400: FS
549				Divert GW at MH-1 to TC-1		<u> </u>		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				Works Associated with Utilities Undertakers	255	15-Nov-	0 27-Jul-21	655	
552		2.6.03.8.L		LFG Generator On-grid Testing			0 27-Jul-21	655   32-2500: FS, 12-1200: FS, 54-4000: FS	63-4700: FS
554				LFG Generator On-grid Testing  LFG Generator On-grid Inspection & Verify				655 63-4600: FS 63-4600: FS	12-1900: FS
555		2.6.03.8.U					0 08-Jan-21		12 1000.10
556	6.0			Laying Gas Mains (from LFG to Town Gas PF)				855 54-4000: FF	63-4900: FS
557				Gas Meter Relocation & Connection at LFG				855 63-4800: FS, 54-4000: FS	12-1900: FS
558			_	E&M Works			9 22-Jul-21		
560		.6.04.C P		rea C Treatment Plant			9 22-Jul-21 9 22-Jul-21		
564	5A	. <u>6.04</u> .C.	LFG 1	GHS600 Blower 601 C Relocation				660 32-1500: FS	12-1900: FS
301					00			1231 54-2200: FS	12-1900: FS
562	6.0	04.C.02 04.C.02	4-1000 4-1100	Absorption Chiller (Optional)				801	
562 563	6.0 6.0 <b>SA2.</b>	04.C.02   04.C.0	4-1000 4-1100 <mark>dscape</mark>	e Works	613		9 03-Dec-20		
562 563 564 565	6.0 6.0 <b>SA2.</b> <b>SA2</b>	04.C.02 04.C.02 04.C.02 04.C.02 04.C.02 04.C.02 04.C.02 04.C.08.1 S	4-1000 4-1100 dscape	e Works a - Tree Removal & Transplanting	613 240	01-Apr-	9 26-Nov-19	1264	68-1100; FS, 68-1200; FS, 68-1400; FS
562 563 564 565 566	6.0 6.0 <b>SA2.</b> <b>SA2</b> 6.00	04.C.02 04.C.02 6.08 Lau .6.08.1 S	4-1000 4-1100 dscape NT Area 8-1000	e Works	613 240 30	01-Apr- 01-Apr-1	9 26-Nov-19 9* 30-Apr-19		68-1100: FS, 68-1200: FS, 68-1400: FS 68-1200: SS
562 563 564 565 566 567	6.0 SA2. SA2. 6.00 6.00	04.C.02 04.C.02 6.08 Lau 6.08.1 S 3.1	4-1000 4-1100 dscape NT Area 8-1000 8-1100	e Works a - Tree Removal & Transplanting Access trees condition and select for transplanting	613 240 30 90	01-Apr-1 01-Apr-1 01-May-	9 26-Nov-19 30-Apr-19 9 29-Jul-19	1264 1264 14-1300: FS	· · · · · · · · · · · · · · · · · · ·
562 563 564 565 566 567	6.0 6.0 <b>SA2.</b> <b>SA2</b> 6.00 6.00	04.C.02 04.C.02 6.08 Lar .6.08.1 S 3.1 3.1	4-1000 4-1100 dscape ENT Area 8-1000 8-1100 8-1200	e Works a - Tree Removal & Transplanting Access trees condition and select for transplanting Prepare new site to receive trees	613 240 30 90 120	01-Apr- 01-Apr-1 01-May- 01-May-	9 26-Nov-19 3* 30-Apr-19 9 29-Jul-19 9 28-Aug-19	1264 1264 14-1300: FS 1264 68-1000: FS	68-1200: SS
562 563 564 565 566 567 568	6.0 6.0 SA2. SA2. 6.00 6.00 6.00	04.C.02 04.C.02 6.08 Land 6.08.1 S 3.1 3.1 3.1	4-1000 4-1100 dscape :NT Area 8-1000 8-1100 8-1200 8-1300	e Works a - Tree Removal & Transplanting Access trees condition and select for transplanting Prepare new site to receive trees Transplant selected trees	613 240 30 90 120 90	01-Apr- 01-Apr-1 01-May- 01-May- 29-Aug-	9 26-Nov-19 9* 30-Apr-19 9 29-Jul-19 9 28-Aug-19 9 26-Nov-19	1264 1264 14-1300: FS 1264 68-1000: FS 1264 68-1000: FS, 68-1100: SS	68-1200: SS 68-1300: FS
562 563 564 565 566 567 568 569	6.0 SA2. SA2. 6.00 6.00 6.00 6.00 SA2	04.C.02   04.C.02   04.C.02   04.C.02   04.C.02   04.C.02   04.C.02   04.C.02   04.C.03   04.C.0	4-1000 4-1100 dscape ENT Area 8-1000 8-1100 8-1200 8-1300 8-1400 ENTX Area	e Works a - Tree Removal & Transplanting Access trees condition and select for transplanting Prepare new site to receive trees Transplant selected trees Prune trees prior to removal from Cell 4 Tree Felling - Part X3 rea - Trial Nursery & Tree Planting	90 90 90 90 583	01-Apr- 01-Apr-1 01-May- 01-May- 29-Aug- 01-May- 01-May-	9 26-Nov-19 30-Apr-19 9 29-Jul-19 9 28-Aug-19 9 26-Nov-19 9 29-Jul-19 9 03-Dec-20	1264 1264 14-1300: FS 1264 68-1000: FS 1264 68-1000: FS, 68-1100: SS 1264 68-1200: FS 1384 23-8200: FS, 31-1600: FS, 68-1000: FS 891	68-1200: SS 68-1300: FS 12-1900: FS 12-1900: FS
562 563 564 565 566 567 568 569 570 571	6.0 6.0 SA2. 6.00 6.00 6.00 6.00 SA2 6.00	04.C.02 04.C.02 04.C.02 04.C.02 06.08 Land 6.6.08.1 S 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	4-1000  4-1100  dscape  NT Area  8-1000  8-1100  8-1300  8-1400  ENTX Area  8-1600	e Works a - Tree Removal & Transplanting Access trees condition and select for transplanting Prepare new site to receive trees Transplant selected trees Prune trees prior to removal from Cell 4 Tree Felling - Part X3	90 90 90 90 90 90 90 90	01-Apr- 01-Apr-1 01-May- 01-May- 29-Aug- 01-May- 01-May- 01-May-	9 26-Nov-19 30-Apr-19 9 29-Jul-19 9 28-Aug-19 9 26-Nov-19 9 29-Jul-19 9 03-Dec-20 9 24-Feb-20	1264 1264 14-1300: FS 1264 68-1000: FS 1264 68-1000: FS, 68-1100: SS 1264 68-1200: FS 1384 23-8200: FS, 31-1600: FS, 68-1000: FS	68-1200: SS 68-1300: 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?		implemen sure? <sup>(1)</sup> O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
Air Qualit	ty - Const	truction Phase							
4.8.1	AQ1	Blasting	To minimise potential	0	SENTX	✓		Air Pollution Control	Not applicable.
		• The area within 30m of the blasting area will be wetted prior to blasting.	dust nuisance	and 30m of blasting area	Contractor			(Construction Dust) Regulations	Blasting is not required in the latest landfill design
		<ul> <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> </ul>							Ü
		<ul> <li>loose material and stones in the Site will be removed prior to the blast operation</li> </ul>							
		<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	Rock Drilling	To minimise potential		SENTX	✓		Air Pollution Control	Not applicable. Rock
		<ul> <li>Watering will be carried out at the rock drilling activities to avoid fugitive dust emissions.</li> </ul>	dust nuisance	area	Contractor			(Construction Dust) Regulations	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?	the m		impleme ure? <sup>(1)</sup> O/R	or standards for the	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 the 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		✓		Air Pollution Control (Construction Dust) Regulations HKAQO and EIAO- TM Annex 4	Implemented
4.8.1	AQ6	<ul> <li>Site Boundary and Entrance</li> <li>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</li> </ul>	To minimise potential dust nuisance	Site boundary and entrance	SENTX Contractor		✓		Air Pollution Control (Construction Dust) Regulations HKAQO and EIAO-	Not applicable

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	the me	eası	implement are? <sup>(1)</sup> O/R A	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 the operation so as to ensure that the entire surface is wet.</li> </ul>	dust nuisance	construction works area	Contractor				(Construction Dust) Regulations HKAQO and EIAO- TM Annex 4	
4.8.1	AQ8	Building Demolition	To minimise potential dust nuisance	All construction works area	SENTX	•	/		Air Pollution Control	Not applicable
		• The area where the demolition works are planned to take place will be sprayed with water immediately prior to, during and immediately after the demolition activities.			Contractor				(Construction Dust) Regulations  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	<ul> <li>Construction of the Superstructure of Building</li> <li>Effective dust screens, sheeting or netting will be provided to enclose the scaffolding from the ground level up to the highest level of the scaffolding.</li> </ul>	To minimise potential dust nuisance	All construction works area	SENTX Contractor	•			Air Pollution Control (Construction Dust) Regulations HKAQO and EIAO- TM Annex 4	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?		imple: ure? <sup>(1)</sup> O/R	ı	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 <i>Best Practicable Means Requirement for Mineral Works</i> ( <i>Stone Crushing Plants</i> ) <i>BPM 11/1</i> 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	Deficiency of mitigation measures but rectified by the Contractor
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	A Environmental Protection Measures/ Mitigation Measures	Recommended the Measures in	Who to implement			imple ure? (1		What requirements or standards for the	Implementation Status and Remarks	
					the measure?	D	С	O/R	A	measure to achieve?	
5.7.1	N1	<ul> <li>Adopt good site practice listed below:</li> <li>Only well-maintained plant will be operated on-site and plant should be serviced regularly during the</li> </ul>	To minimise potential construction noise nuisance.	All construction works area	SENTX Contractor		✓			Noise Control Ordinance (NCO) and EIAO-TM Annex 5	Implemented
		construction program;	11								
		• 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	Location of the Measures	Who to implement			implement sure? (1)	What requirements or standards for the	Implementation Status and Remarks
	TCI	Milgarion Measures	Measure & Main Concerns to address	the Measures	the measure?	D	С	O/R A	measure to achieve?	Status and Remarks
5.8	N2	Weekly noise monitoring	Ensure noise generated from the project meets the criteria	At monitoring locations shown in Figure 6.4a	SENTX Contractor		✓		Noise Control Ordinance (NCO) and EIAO-TM Annex 5	Implemented
Water Qua	ality - 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	Deficiency of
		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)	mitigation measures but rectified by the Contractor
		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	World ureu					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	water quality impacts arising from the	construction works area	Contractor					WPCO	
		interceptors.	construction works	works area						EIAO-TM Annex 6	
6.8.1	WQ6	• All sewer and drains will be sealed to	To minimise potential		SENTX		✓			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	
		excuvated stockplies	from the SENTX Site							EIAO-TM Annex 6	
6.13	WQ10	Monitoring of surface water quality	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	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
			Concerns to address							
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	Location of the Measures	Who to implement		o implement	What requirements or standards for the	Implementation Status and Remarks
			Measure & Main Concerns to address		the measure?	D C		measure to achieve?	
		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	✓		WDO EIAO-TM Annex 7	Reminder was given to the Contractor
7.6.1	WM4	<u>Chemical Waste</u>				,			
		The construction contractor will register as a chemical waste producer with the EPD. Chemical waste will be handled in accordance with the <i>Code of Practice on the Packaging, Handling and Storage of</i>	To ensure proper handling of chemical waste	SENTX Site	SENTX Contractor	<b>V</b>		WDO  Code of Practice on the Packaging, Handling and Storage of Chemical Wastes	Implemented

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?		to impleme asure? (1) O/R	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.	To ensure proper handling of sewage	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	To ensure that adverse environmental	SENTX Site	SENTX Contractor	✓			Implemented

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?		implement ure? <sup>(1)</sup> O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		waste reduction, reuse and recycling.	Concerns to address						
7.8	WM8	Environmental Monitoring & Audit Requirements	To ensure that	SENTX Site	SENTX	<b>√</b>		WDO	Implemented
		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.	adverse environmental	SENTA Site	Contractor				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	<b>✓</b>		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	✓			Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended	Location of the Measures	Who to implement			implesure? (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.									
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	Implemented

EIA Ref.	EM&A Ref	Environmental Protection Measures/ Mitigation Measures	Objectives of the Recommended Measure & Main Concerns to address	Location of the Measures	Who to implement the measure?	When to the mea D C	o implemen sure? <sup>(1)</sup> O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		between the waste and the new infrastructure area to monitor the migration of landfill gas, if any.							
Ecology -	Construc	tion Phase							
9.10.2	EC1	<ul> <li>Measures to control construction runoff:</li> <li>Exposed soil areas will be minimised to reduce the contamination of runoff and erosion;</li> </ul>	To minimise potential water quality impacts affecting ecological resources		SENTX Contractor	<b>√</b>		EIAO-TM Annex 16 ProPECC PN 1/94 Water Pollution Control Ordinance (WPCO) EIAO-TM Annex 6	Implemented
		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;						-	Deficiency of mitigation measures but rectified by the Contractor
		<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

		Objectives of the	Location of	Who to					What requirements	Implementation Status and Remarks
Kei	winigation measures	Measure & Main Concerns to address	the ivicasures	_					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
EC2	Good Construction Practice:									
	<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		<b>√</b>			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>									
EC9	Environmental Monitoring & Audit Requirements									
	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
	Ref  EC2	The surface runoff contained any oil and grease will pass through the oil interceptors; and,  Control measures, including implementation of excavation schedules, lining and covering of excavated stockpiles will be implemented to minimise contaminated stormwater run-off from the SENTX site.  EC2 Good Construction Practice:  Fences along the boundary of the SENTX Site will be erected before the commencement of works to prevent vehicle movements, and encroachment of personnel, onto adjacent areas.  The work site boundaries will be regularly checked to ensure that they are not breached and that damage does not occur to surrounding areas.  EC9 Environmental Monitoring & Audit Requirements  The implementation of the ecological mitigation measures should be checked as part of the environmental monitoring	Ref Mitigation Measures  Procommended Measure & Main Concerns to address  The surface runoff contained any oil and grease will pass through the oil interceptors; and,  Control measures, including implementation of excavation schedules, lining and covering of excavated stockpiles will be implemented to minimise contaminated stormwater run-off from the SENTX site.  FC2 Good Construction Practice:  Fences along the boundary of the SENTX Site will be erected before the commencement of works to prevent vehicle movements, and encroachment of personnel, onto adjacent areas.  The work site boundaries will be regularly checked to ensure that they are not breached and that damage does not occur to surrounding areas.  EC9 Environmental Monitoring & Audit Requirements The implementation of the ecological mitigation measures should be checked as part of the environmental monitoring	Ref Mitigation Measures Recommended Measure & Main Concerns to address  * The surface runoff contained any oil and grease will pass through the oil interceptors; and,  * Control measures, including implementation of excavation schedules, lining and covering of excavated stockpiles will be implemented to minimise contaminated stormwater run-off from the SENTX site.  * Fences along the boundary of the SENTX Site will be erected before the commencement of works to prevent vehicle movements, and encroachment of personnel, onto adjacent areas.  * The work site boundaries will be regularly checked to ensure that they are not breached and that damage does not occur to surrounding areas.  * EC9  * Environmental Monitoring & Audit Requirements  The implementation of the ecological mitigation measures should be checked as part of the environmental monitoring	Recommended Measures Econocerns to address implement the measure? Concerns to address implementation of excavation schedules, lining and covering of excavated stockpiles will be implemented to minimise contaminated stormwater run-off from the SENTX site.  EC2 Cood Construction Practice:  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.  FC9 The work site boundaries will be regularly checked to ensure that they are not breached and that damage does not occur to surrounding areas.  EC9 Environmental Monitoring & Audit Requirements  The implementation of the ecological mitigation measures should be checked as part of the environmental monitoring and covering of excavation schedules, lining and covering of excavated stockpiles will be implementation of the ecological mitigation measures should be checked as part of the environmental monitoring and the measure should be checked as part of the environmental monitoring and the environmental monitoring and the environmental monitoring and the environmental monitoring and adverse ecological mipacts are prevented as part of the environmental monitoring and	Recommended Measures implement the measure? Decorporation of the Sentra service of the measure in the measure? Decorporation of the measure in the measure? Decorporation of the measure in the measure in the measure of the 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.  EC2	Recommended Measures implement the measure? Do Comerns to address  It is not measures. The surface runoff contained any oil and grease will pass through the oil interceptors; and,  Concerns to address  It is measured. The surface runoff contained any oil and grease will pass through the oil interceptors; and,  Concerns to address  Concerns to address  The surface runoff contained any oil and grease will pass through the oil interceptors; and,  Concerns to address  Concerns to address  To 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.  Fect Second Construction Practice:  Fences along the boundary of the SENTX Site will be erected before the commencement of works to prevent vehicle movements, and encroachment of personnel, onto adjacent areas.  The work site boundaries will be regularly checked to ensure that they are not breached and that damage does not occur to surrounding areas.  ECS Environmental Monitoring & Audit Requirements  To ensure that adverse ecological impacts are prevented and that admeasures should be checked and mitigation measures should be checked and part of the environmental monitoring as part of the environmental monitoring as part of the environmental monitoring as a part of the environmental monitoring are prevented as part of the environmental monitoring are prevented as part of the environmental monitoring and covering the contents and the surface and the properties are prevented and that adverse ecological impacts are prevented and properties are prevented as a part of the environmental monitoring and the properties are prevented and the properties are prevented and the measures	Recommended Measures implement the measure? Of the measure in the measure? Of th	Recommended Measures Main Concerns to address  In the surface runoff contained any oil and grease will pass through the oil interceptors; and,  In the surface runoff contained any oil and grease will pass through the oil interceptors; and,  In the surface runoff contained any oil and grease will pass through the oil interceptors; and,  In the surface runoff contained any oil and grease will pass through the oil interceptors; and,  In the surface runoff contained any oil and grease will pass through the oil interceptors; and,  In the surface runoff contained any oil and grease will pass through the oil interceptors; and,  In the surface runoff contained any oil and grease will pass through the oil interceptors; and,  In the surface runoff contained any oil and grease will pass through the oil interceptors; and,  In the surface runoff contained any oil and grease will pass through the oil interceptors; and,  In the surface runoff contained any oil and grease will pass through the oil interceptors; and,  In the surface runoff contained and that damage does not occur to surrounding areas.  In the work site boundaries will be regularly checked to ensure that damage does not occur to surrounding areas.  In the implemental Monitoring & Audit Requirements  To ensure that adverse ecological mintigation measures should be checked and sa part of the environmental monitoring in the surface and pass are prevented and the cological mintigation measures should be checked and pass are prevented any of the evironmental monitoring in the pass are prevented and the cological mintigation measures should be checked and pass are prevented and the cological mintigation measures should be checked and pass are prevented and the cological mintigation measures should be checked and pass are prevented and the cological mintigation measures should be checked and pass are prevented and the cological mintigation measures should be checked and pass are prevented and the cological mintigation measures should be checked and the cological mintig	Recommended Measures Main Concerns to address  **Influence of the Measure & Main Concerns to address**  **Influence of the SENTX Site will be erected before the commencement of works to adjacent areas.  **Project**  **Influence of the commencement of works to adjacent areas.  **Project**  **Influence of the Concerns to address**  **Project**  **Project**

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? (1) O/R A	What requirements or standards for the measure to achieve?	Implementation Status and Remarks
		construction period.								
Landscape	e and Visu	al - 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	Not applicable
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	the	meas	implement sure? <sup>(1)</sup>	or standards for the	Implementation Status and Remarks
			Measure & Main Concerns to address		the measure?	D	С	O/R A	measure to achieve?	
		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		<b>✓</b>		EIAO-TM Annex 18	Implemented
10.6.5	LV6	CM6 - The Contractor's office, leachate treatment plant and laboratory will be given an aesthetic treatment in earth tones to reduce their visual impact and albedo and blend them into the surrounding landscape.	To minimise the landscape and visual impacts	Infrastructure area	SENTX Contractor	<b>√</b>	✓		EIAO-TM Annex 18	Implemented
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	<b>✓</b>	✓		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? (1)	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?	
		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	Implemented
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

June 2020

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

Note

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

## Air Quality

Calibration Certificates for Dust Monitoring Equipment



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

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

# Calibration Report of High Volume Air Sampler

Manufacturer

Graseby 105

Date of Calibration

15 April 2020

Serial No.

9795 (ET/EA/003/18)

Calibration Due Date

14 June 2020

Method

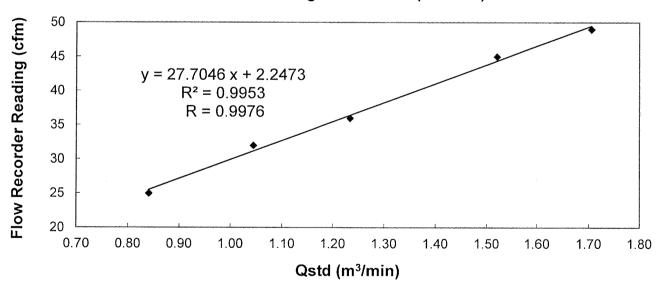
Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the

**Operations Manual** 

Results

Flow recorder rea	49	45	36	32	25	
Qstd (Actual flow rate, m³/min)		1.71	1.52	1.23	1.04	0.84
Pressure :	760.56 mm Hg		Temp.:	295	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)



Veristrong Industrial Centre, 34-36 Au Pui Wan Street, Fo Tan, Hong Kong T: +852 2695 8318

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

#### Calibration Report of

**High Volume Air Sampler** 

Manufacturer

Graseby 105

Date of Calibration

12 June 2020

Serial No.

9795 (ET/EA/003/18)

Calibration Due Date

11 August 2020

Method

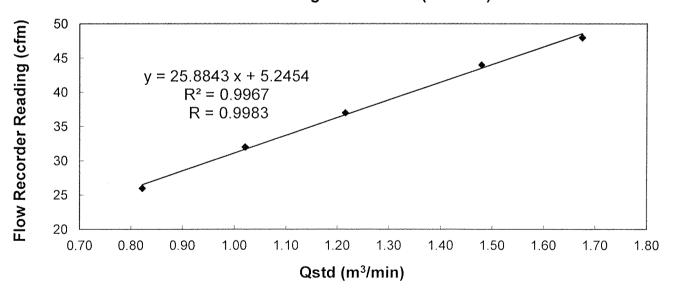
Five-point calibration by using standard calibration kit Tisch TE-5025A refer to the

**Operations Manual** 

Results

Flow recorder read	48	44	37	32	26	
Qstd (Actual flow ra	1.67	1.48	1.22	1.02	0.82	
Pressure: 753.81 mm Hg			Temp. :	306	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)



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

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

# Calibration Report of High Volume Air Sampler

Manufacturer

Andersen G1051

Date of Calibration

15 April 2020

Serial No.

1176 (ET/EA/003/05)

Calibration Due Date

14 June 2020

Method

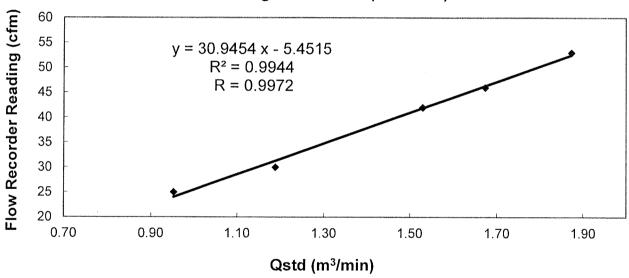
Based on Operations Manual for the 5-point calibration using standard calibration kit

manufactured by Tisch TE-5025 A

Results

Flow recorder reading (cfm)		53	46	42	30	25
Qstd (Actual flow rate, m³/min)		1.87	1.67	1.53	1.19	0.95
Pressure :	762.06 mm Hg		Temp.:	295	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)



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

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

# Calibration Report of High Volume Air Sampler

Manufacturer

Andersen G1051

Date of Calibration

12 June 2020

Serial No.

1176 (ET/EA/003/05)

Calibration Due Date

11 August 2020

Method

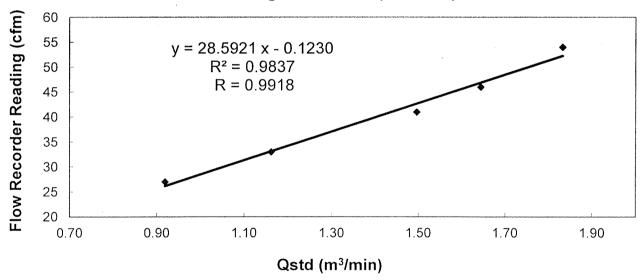
Based on Operations Manual for the 5-point calibration using standard calibration kit

manufactured by Tisch TE-5025 A

Results

Flow recorder read	54	46	41	33	27	
Qstd (Actual flow ra	1.83	1.64	1.50	1.16	0.92	
Pressure: 753.81 mm Hg			Temp. :	306	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)

## 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)
3 Jun 20	13:10	4 Jun 20	13:10	Rainy	104
9 Jun 20	8:00	10 Jun 20	8:00	Rainy	86
15 Jun 20	8:40	16 Jun 20	8:40	Cloudy	93
21 Jun 20	8:00	22 Jun 20	8:00	Rainy	91
27 Jun 20	8:00	28 Jun 20	8:00	Cloudy	105
				Average	96
				Min	86
				Max	105

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

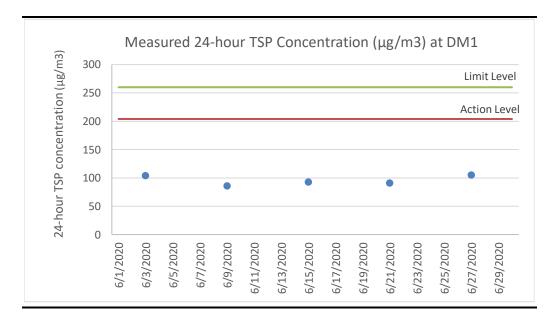


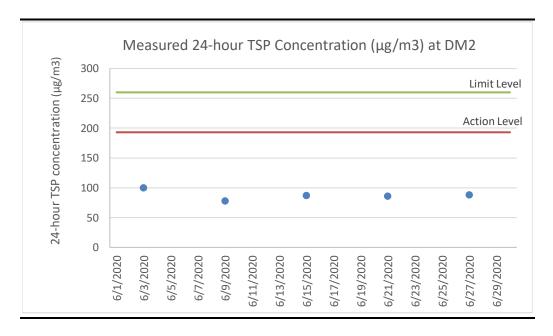
Table D2.2 24-hour TSP Monitoring Results at DM2

Start Date	Start Time	Finish Date	Finish Time	Weather	24-hour TSP (μg/m3)
3 Jun 20	13:16	4 Jun 20	13:16	Rainy	100
9 Jun 20	8:00	10 Jun 20	8:00	Rainy	78
15 Jun 20	8:44	16 Jun 20	8:44	Cloudy	87
21 Jun 20	8:00	22 Jun 20	8:00	Rainy	86
27 Jun 20	8:00	28 Jun 20	8:00	Cloudy	88
				Average	88
				Min	78
				Max	100

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>

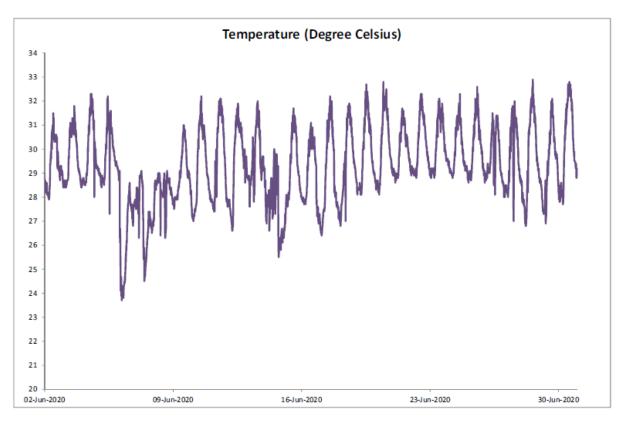
		Action	
Event	ET	IEC	Contractor
Limit Level			
Exceedance for one sample	<ul> <li>Identify the source(s) and investigate the cause(s) of exceedance</li> <li>Prepare Notification of Exceedance within 24 hours</li> <li>Inform Contractor, IEC, Project Proponent and EPD whether the cause of exceedance is 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>

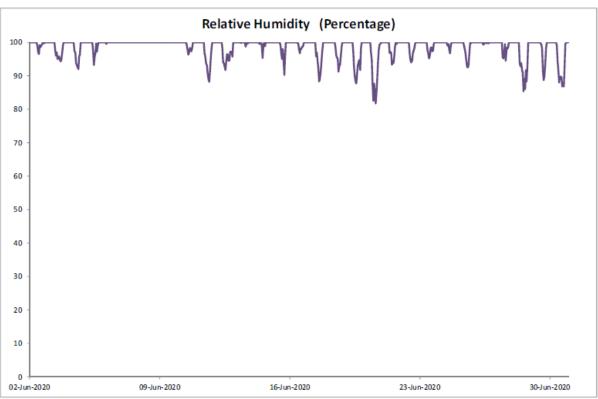
ENVIRONMENTAL RESOURCES MANAGEMENT

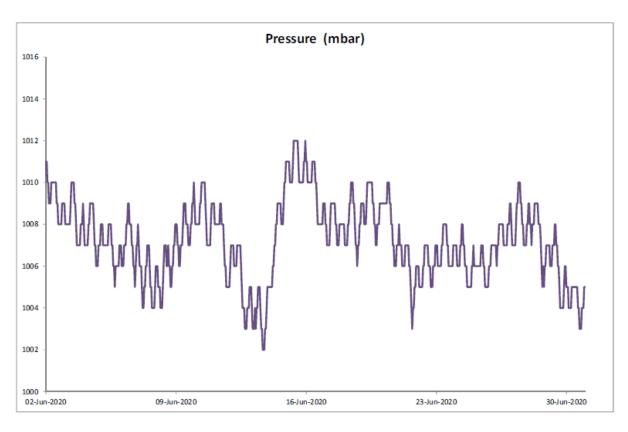
GREEN VALLEY LANDFILL LTD.

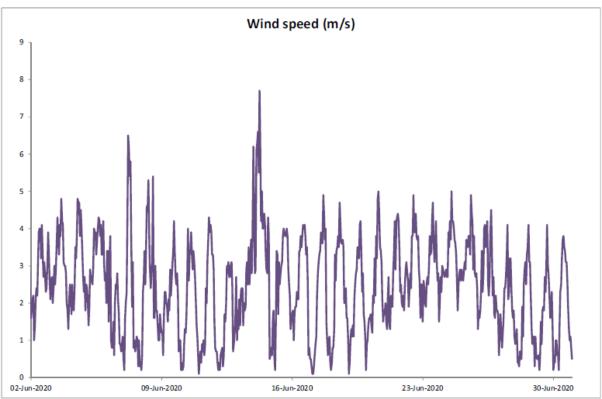
# Meteorological Data

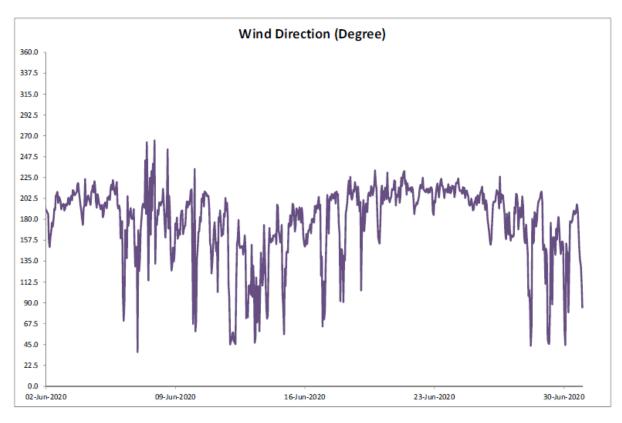
Annex D4 Meteorological Data

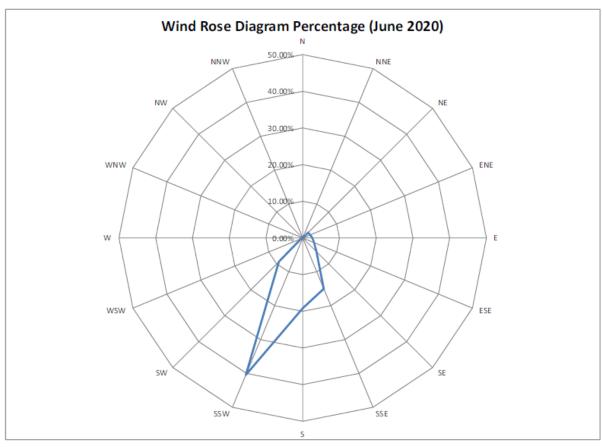


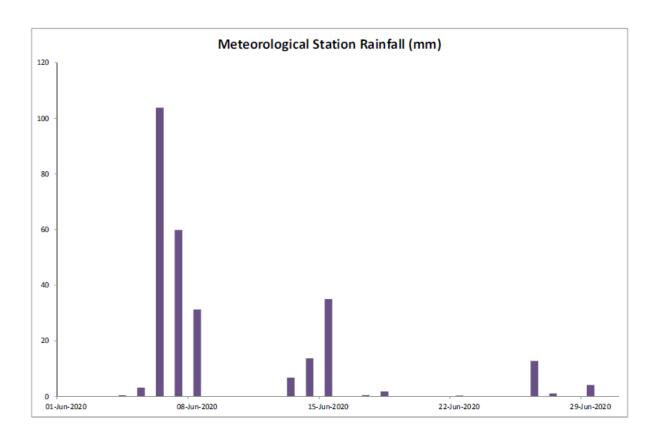












Annex E

Noise

#### Annex E1

Calibration Certificates for Noise Monitoring Equipment



## 輝創工程有限公司

#### 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

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。

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 c/o 香港新界屯門興安里一號四樓



### 輝創工程有限公司

#### **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 Setting			Applied	Value	UUT
Range	Parameter	Frequency	Time	Level	Freq.	Reading
(dB)		Weighting	Weighting	(dB)	(kHz)	(dB)
50 - 130	$L_{AFP}$	A	F	94.00	1	94.4

#### 6.1.1.2 After Self-calibration

	UUT Setting				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

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。



### 輝創工程有限公司

**Sun Creation Engineering Limited** 

**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

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	$-26.2 \pm 1.5$
					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.

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。

Sun Creation Engineering Limited – Calibration & Testing Laboratory c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 輝創工程有限公司 — 校正及檢測實驗所 c/o 香港新界屯門興安里—號四樓



## 輝創工程有限公司

#### **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

		Setting		Appl	ied 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

	UUI	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.

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。

Sun Creation Engineering Limited – Calibration & Testing Laboratory c/o 4/F, 1 Hing On Lane, Tuen Mun, New Territories, Hong Kong 輝創工程有限公司 — 校正及檢測實驗所 c/o 香港新界屯門興安里一號四樓



### 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

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。

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

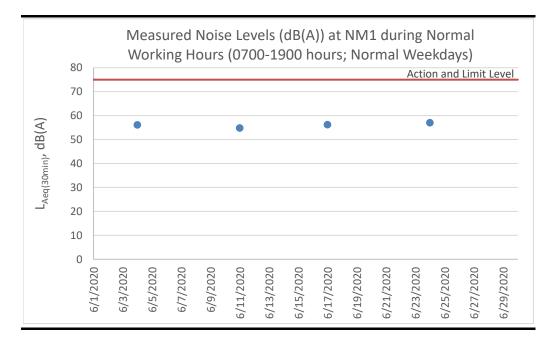
Table E2.1 Measured Noise Levels (dB(A)) at NM1 during Normal Working Hours (0700-1900 hours; Normal Weekdays)

Date	<b>Start Time</b>	Finish Time	Weather	L <sub>10 (30min)</sub>	L <sub>90 (30min)</sub>	Leq (30min)
4 Jun 20	15:09	15:39	Sunny	57.5	53.5	56.1
11 Jun 20	15:31	16:01	Sunny	57.0	52.0	54.8
17 Jun 20	15:01	15:31	Sunny	57.5	53.0	56.2
24 Jun 20	14:33	15:03	Sunny	58.5	53.5	57.0
					Average	e 56.0
					Mir	1 54.8
					Max	<b>x</b> 57.0

Note:

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

Figure E2.1 Graphical Presentation for Noise Monitoring at NM1



#### Annex E3

# Event and Action Plan for Noise Monitoring

### Annex E3 Event and Action Plan for Construction Noise

<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: HK2016290

CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND

CONSULTING

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

NO. 35-41 TAI LIN PAI ROAD, LABORATORY: HONG KONG KWAI CHUNG, N.T. HONG KONG DATE RECEIVED: 05-May-2020

DATE OF ISSUE: 12-May-2020

#### SPECIFIC 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 laboratory or quoted from relevant international standards.

The "Next Calibration Date" is recommended according to best practice principle as practised by the laboratory or quoted from relevant international standards.

The validity of equipment/ meter performance only applies to the result(s) stated in the report.

Equipment Type: Multifunctional Meter Service Nature: Performance Check

Scope: Conductivity, Dissolved Oxygen, pH Value, Turbidity, Salinity and Temperature

Brand Name/ Model No.: YSI Professional DSS

Serial No./ Equipment No.: 17B102764/17B100758 (EQW019)

Date of Calibration: 12-May-2020

#### **GENERAL COMMENTS**

This is the Final Report and supersedes any preliminary report with this batch number. All pages of this report have been checked and approved for release.

Mr Chan Siu Ming, Vico Manager - Inorganic

Ma Ship

This report may not be reproduced except with prior written approval from ALS Technichem (HK) Pty Ltd.

#### REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2016290

SUB-BATCH: C

DATE OF ISSUE: 12-May-2020

CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter Brand Name/

Model No.:

YSI Professional DSS

Serial No./
Equipment No.:

17B102764/17B100758 (EQW019)

Date of Calibration: 12-May-2020 Date of Next Calibration: 12-August-2020

PARAMETERS:

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

Expected Reading (µS/cm)	Displayed Reading (µS/cm)	Tolerance (%)
146.9	160.3	+9.1
6667	6794	+1.9
12890	12778	-0.9
58670	61479	+4.8
	Tolerance Limit (%)	±10.0

Dissolved Oxygen

Method Ref: APHA (21st edition), 45000: G

Expected Reading (mg/L)	Displayed Reading (mg/L)	Tolerance (mg/L)
2.75	2.67	-0.08
5.26	5.15	-0.11
7.15	6.99	-0.16
	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	7.18	+0.18
10.0	9.95	-0.05
	Tolerance Limit (pH unit)	±0.20

Remark: "Displayed Reading" presents the figures shown on item under calibration / checking regardless

of equipment precision or significant figures.

Mr Chan Siu Ming, Vico Manager - Inorganic

Ma Sig

#### REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2016290

SUB-BATCH: 0

DATE OF ISSUE: 12-May-2020

CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter Brand Name/

Model No.:

YSI Professional DSS

Serial No./
Equipment No.:

17B102764/17B100758 (EQW019)

Date of Calibration: 12-May-2020 Date of Next Calibration: 12-August-2020

PARAMETERS:

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

Expected Reading (NTU)	Displayed Reading (NTU)	Tolerance (%)
0	0.37	<del>-</del>
4	4.08	+2.0
40	43.45	+8.6
80	77.65	-2.9
400	411.61	+2.9
800	819.08	+2.4
	Tolerance Limit (%)	±10.0

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

Expected Reading (ppt)	Displayed Reading (ppt)	Tolerance (%)
0	0.01	
10	10.98	+9.8
20	20.23	+1.2
30	32.03	+6.8
	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

Ma Ship

#### REPORT OF EQUIPMENT PERFORMANCE CHECK/CALIBRATION

WORK ORDER: HK2016290

SUB-BATCH: 0

DATE OF ISSUE: 12-May-2020

CLIENT: ACTION UNITED ENVIRONMENT SERVICES AND CONSULTING

Equipment Type: Multifunctional Meter

Brand Name/ Model No.:

YSI Professional DSS

Serial No./
Equipment No.:

17B102764/17B100758 (EQW019)

Date of Calibration: 12-May-2020 Date of Next Calibration: 12-August-2020

PARAMETERS:

Temperature Method Ref: Section 6 of International Accreditation New Zealand Technical

Guide No. 3 Second edition March 2008: Working Thermometer Calibration Procedure.

Expected Reading (°C)	Displayed Reading (°C)	Tolerance (°C)
10.5	10.3	-0.2
20.0	20.6	+0.6
39.5	40.2	+O.7
	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

Ma Si

# 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)	pН	Suspended Solids (SS) (mg/L)	Remarks
4 Jun 20	14:35	Sunny	Light yellow	Semi clear	30.3	7.96	8.53	8.2	-
4 Jun 20	14:35	Sunny	Light yellow	Semi clear	30.1	7.99	8.49	-	DP4 (Future, temporary) (Remeasurement)
4 Jun 20	14:46	Sunny	Light yellow	Semi clear	30.4	8.05	8.45	8.4	DP4 (Future, temporary) (Duplicate)
4 Jun 20	14:46	Sunny	Light yellow	Semi clear	30.4	8.08	8.45	-	DP4 (Future, temporary) (Duplicate) (Remeasurement)
11 Jun 20	15:12	Sunny		Unable to	collect water sam	ple due to insuffi	icient flow		
17 Jun 20	14:26	Sunny	Colourless	Clear	30.3	7.41	8.04	10.6	-
17 Jun 20	14:35	Sunny	Colourless	Clear	30.2	7.42	7.62	10.2	DP4 (Future, temporary) (Duplicate)
24 Jun 20	14:19	Sunny		Unable to	collect water sam	ple due to insuffi	icient flow		-
					Average	7.82	8.26	9.4	-
					Min	7.41	7.62	8.2	-
					Max	8.08	8.53	10.6	-

Notes: DP4 was temporary relocated to DP4 (Future, temporary) (i.e. DP4T) as an interim discharge point from the monitoring event on 16 May 2019.

Table F2.2 Surface Water Quality Monitoring Results at DP6

Date	Time	Weather	Water	Water	Water	Dissolved	pН	Suspended	Remarks
		Condition	Appearance	Condition	Temperature	Oxygen (DO)		Solids (SS)	
					(°C)	(mg/L)		(mg/L)	
4 Jun 20	14:33	Sunny		Unable to	collect water sam	ple due to insuff	icient flow		-
11 Jun 20	14:30	Sunny	Colourless	Clear	32.8	7.34	7.86	5.1	-
11 Jun 20	14:42	Sunny	Colourless	Clear	32.7	7.33	8.02	3.2	DP6 (Duplicate)
17 Jun 20	14:10	Sunny		Unable to	collect water sam	ple due to insuffi	icient flow		-
24 Jun 20	14:05	Sunny		Unable to	collect water sam	ple due to insuffi	icient flow		-
					Average	7.34	7.94	4.2	-
					Min	7.33	7.86	3.2	-
					Max	7.34	8.02	5.1	-

Figure F2.1 Graphical Presentation for Surface Water Quality Monitoring (DO)

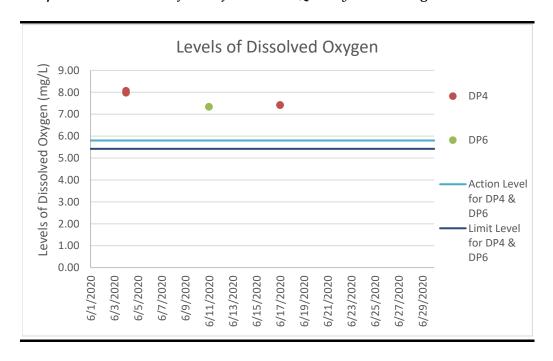


Figure F2.2 Graphical Presentation for Surface Water Quality Monitoring (pH)

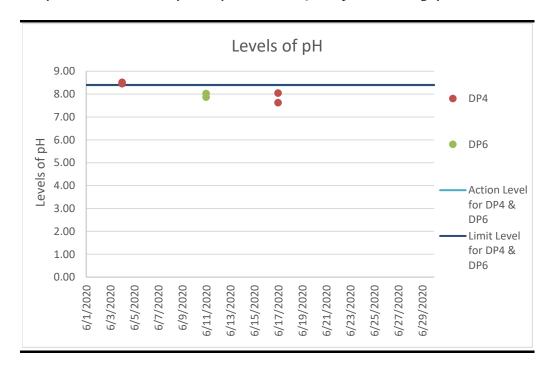
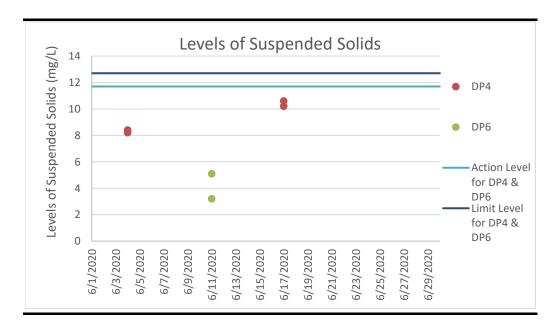


Figure F2.3 Graphical Presentation for Surface Water Quality Monitoring (SS)



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.

Investigation Reports of Environmental Quality Limit Exceedance

## **Investigation Report of Environmental Quality Limit Exceedance**

Project	South East New Territories (SENT) Landfill Extension
Date	4 June 2020
Time	DP4T: 14:35 and 14:46 (Duplicate)
Monitoring Location	DP4T
Parameter	Surface Water (pH)
Action / Limit Levels	DP4T: Action level: >8.39
	Limit level: >8.40
Measured Level	DP4T: 8.53 & 8.49
	DP4T (Duplicate): 8.45 & 8.45
Possible reason	No works which may lead to potential pH increase (e.g. concreting works) was conducted in the vicinity of surface water channel leading to DP4T on and before the sampling day based on on-site observations and construction activities described by the Contractor. During the sampling event, no potential surface water overflow to the DP4T channel was observed.
	Surface runoff collected at DP4T channel was treated by the Wetsep prior to discharge. Yet during the sampling event, it was observed that the Wetsep near DP4T was not functioning properly with reference to the on-site checking of the treated water at the outlet of the processing chamber of the Wetsep. The pH display of the Wetsep was found not functioning properly while the pH of the treated water (i.e. 8.53) exceeded the Action and Limit Level.
	Based on the above, the pH exceedance at DP4T was deemed to Project-related activities. However, it is noted that the Water Pollution Control Ordinance (WPCO) water discharge licence was obtained by the Contractor for the operation of the Wetsep near DP4T and the allowable discharge limit for pH is 6 to 9. The treated water from the Wetsep did not exceed the WPCO discharge limit and cause any adverse water quality impact.
Action Taken / Action to be Taken	Examination of environmental performance of the Project will be continued during the weekly inspections. The Contractor is reminded to implement relevant and appropriate mitigation measures according to the updated EM&A Manual to avoid any exceedance of the Action and Limit Level.  In addition, the Contractor shall repair the pH display and review the efficiency of the Wetsep at DP4T. The Contractor shall also check and monitor the Wetsep operation regularly to ensure it is functioning properly at all times and the quality of the treated water comply with the discharge standard.
Remarks	-

Prepared by: Abbey Lau
Designation: Environmental Team
Date: 30 June 2020

#### 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	1	38

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 June 2020)	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

July 2020

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

Note

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